

CONCLUSIONS

It will be seen that between sixty-five and seventy species were benefited by the temporary presence of the project, as it furnished a resting place for them in the middle of the dry wilderness of West Texas, a situation which does not exist, as far as I could ascertain, for several hundred miles north or south of there. It is certain that the residents of the area benefited by its presence, as they were definitely more common in that particular spot than they were anywhere else on the reservation. It was unfortunate that I could not take more time from military duties to carry on my observations further, as I am certain that many more interesting notes could have been made.

Camp Gruber, Oklahoma

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OBSERVATIONS ON NESTING ASSOCIATES

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Plate 7

INTRODUCTION

ANYONE who has done much field work is certain to have had some interesting and even strange experiences with nesting birds. It was my belief at first that these unusual incidents were possibly very rare and that such observations were few and far between. Upon talking to many persons with considerable field experience I find that most of them have noted incidents that are of particular interest to our understanding of bird relationships and especially bird associations. Many of these incidents should be published for the benefit of those of us who are interested in the life-history phase of bird work. We are apt to make statements pertaining to the isolation or territory tolerance of certain birds to other species and then find several exceptions. If all were known from all possible sources possibly our ideas of territory tolerance might change a little. Such has been the case with my own work. It is with this in mind that I present this collection of observations on several species of birds.

1. RED-EYED TOWHEE AND FIELD SPARROW SHARE NESTING SITE

On June 6, 1942, Mrs. Hoyt and I found a white pine on a heavily wooded area near Ithaca, New York, that contained two nests, both



DOUBLE MALLARD NESTS, SHOWING PROXIMITY OF DUCKS DURING INCUBATION.

with young at the same time. One nest was of a Red-eyed Towhee (*Pipilo erythrophthalmus*) and was placed between the two stems of the pine and not more than three feet from the ground. This nest contained three young and one unhatched egg. The young were about five days old and were being brooded by the female when we first discovered the site.

On a limb to the left of this nest and exactly eighteen inches from it was placed a nest of the Field Sparrow (*Spizella pusilla*) also containing young, four in number, about five days old. This nest was not well built and was about ready to drop off the limb had it not been for a few well-placed pieces of grass bound around the limb at the edge of the nest.

We returned on June 8 to photograph the nests and make further observations. While in the blind we had ample chance to witness the reciprocal relations of these two nests. Repeatedly the male Towhee fed his young and cleaned his nest, then moved down the limb to clean the sparrow nest. Upon one occasion the male Towhee found that his own young were too full to accept the green caterpillar he had to offer them, so after several attempts to feed them he took the food to the sparrow nest where it was well received by the young of that nest. He cleaned this sparrow nest and went after more food. Upon returning he went straight to the sparrow nest where again the food was well received by the young sparrows.

Waiting long enough in the blind brought its reward, for the sparrow came in to feed its young, then went to the nest of the Towhee and looked in. When it returned it alighted on the edge of its own nest but, receiving no great response, hopped up the limb to the Towhee nest and proceeded to feed the young of that nest.

At no time while we were in the blind was the female Towhee seen at the nest nor did she make any attempt to come to feed her young. Throughout the two hours that we stayed near the nests, we witnessed this exchange of nesting attention by these two birds some fifteen times.

When there were so many suitable nesting sites available, why did these two species nest in the same tree? Were there some territory fights at the beginning of this reciprocal relationship? Such questions inevitably stimulate one's thoughts and provoke more attention to field studies of our commoner species.

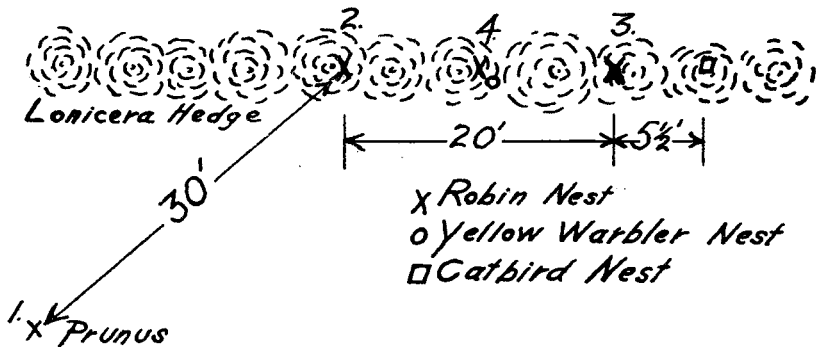
2. CROWDED ROBIN TERRITORIES

Howell (1942) states that where two Robins are found to nest close together the line separating their boundaries may lie about halfway

between the two nests. He also mentions that the actual size of the territories may vary a great deal in proportion to the number of Robins present.

In May, 1942, Mrs. Hoyt and I found several nests in our yard near Ithaca, that seemed much too close for any territory relationships. Nest number one was located in a cherry tree (*Prunus avium*) while nest number two was in a honeysuckle hedge (*Lonicera Morrowi*) just thirty feet away. Nest number three was placed in the same honeysuckle hedge exactly twenty feet from nest number two, and about fifty feet from nest number one. In the hedge, also, and between the robin nests numbers two and three, was a Yellow Warbler nest (*Dendroica petechia*) and some six feet past nest number three was one of a Catbird (*Dumetella carolinensis*). Nest number one contained young, number two held incubating eggs, and number three was under construction.

To add to the already confused picture, a fourth Robin nest was placed halfway between nests numbers two and three in the same bush and ten inches from the warbler nest (see Text-figure 1).



TEXT-FIGURE 1.—Overcrowded Robin territories showing Robin nests in close proximity to each other and to nests of other species.

The young left number one with no trouble as was true with number three, but number two was deserted just after number four was started. Eggs in number four were being incubated when I last checked the situation just before I left for the army. The Catbirds got their young off successfully as did also the Yellow Warblers.

Such a situation as this would be very fascinating to study in great detail with careful observations on interspecific and intraspecific relationships and the territorial complications. Possibly such associations are more common than we dare think.

3. COWBIRD ATTACKS A YELLOW WARBLER ON NEST

On April 28, 1942, in Forest Home, a residential section of Ithaca, a Yellow Warbler started a nest in the crotch of a dead tree just off the edge of the roof of my apartment. By the next day the nest appeared well shaped and seemed to need only a lining to complete it.

May 6: Today while eating lunch I heard a strange, squeaky, fussy noise at the Yellow Warbler's nest. The birds were still placing bits of lining within the nest and the female had just brought in a mouthful of what appeared to be fuzz from the willow catkins. She was sitting in the nest with her wings spread out over the surface and her tail spread, and she was all puffed up in general appearance. In the bush approaching the nest was a female Cowbird (*Molothrus ater*). As the Cowbird got closer to the nest, the warbler became more excited and at times stood up, continuing to give this pitiful, squeaky cry. The Cowbird finally came up beside the nest and, leaning over, gave the warbler a hard blow on the head. At this the warbler became more aggressive and returned the blow by striking at the Cowbird, I think actually hitting her in the neck. The Cowbird gave several other hard blows and received as many blows from the little warbler. Finally the warbler jumped onto the rim of the nest, still with her wings outspread and still crying, and flew at the Cowbird, driving it from the bush but remaining there herself. She then jumped up on a limb above the nest and sang as well as a male. At this point the male came in and perched beside the nest, singing, while the female flew into a near-by tree. The female Cowbird was soon joined by a male of the same species and flew away. This behavior of the Cowbird seems to be out of the ordinary, for it is usually thought of as laying in nests while the owner is away. Also it usually lays in nests that already contain an egg, but in this case the nest was still being built.

May 8: It was about eight o'clock in the morning when we were again disturbed by the distressing cries of the Yellow Warbler. Upon looking out we saw a truly pitiful situation. On the nest was the female warbler as before with her wings out, tail spread, bill open, and in the greatest of excitement protecting her nest from the advances of a female Cowbird which, in turn, was escorted by two male Cowbirds, all calling and the males courting. The male warbler soon appeared on the scene. The female Cowbird approached the warbler nest as closely as possible but this time did not attempt to strike the warbler. The Cowbird was driven off as before by the aggressive attacks of the female warbler. In her departure she was accompanied by her two courting males; none of them returned to the nest as long as I was

able to watch it. The two warblers soon left the nest together but the female returned when a pair of House Wrens (*Troglodytes aëdon*) perched on the roof above the nest and scolded.

May 11: The Yellow Warblers have not been around the nest for the last few days, but on looking into the nest I found one cold egg on the bottom.

May 13: I watched the nest for several days following the discovery of this egg but did not see the birds at all interested in the nest. Both birds have been heard singing in near-by trees. Today the female appeared at the nest and seemed to pull at the sides but did not enter it. There is still just the one egg present.

May 17: To date the only one of the birds appearing at the nest has been the female which continues to pull at the sides and edges from time to time. Upon investigating I found that the nest had been considerably torn apart and the edges are ragged and thin. The remains of the eggshell were on the ground under the nest. The pair of Yellow Warblers are still in the neighborhood, possibly with another nest. The nest observed was made partly of pieces of a tent caterpillar nest situated in a chokecherry tree across the road. While building the nest the female was seen flying repeatedly back and forth between the two places.

May 23: A Yellow Warbler nest was found at the side of the house in a *Lonicera* bush. I believe this to be a product of the same pair of birds involved in the ill-fated nest under our roof, for the female is unusually brightly colored and sings a very clear song at frequent intervals.

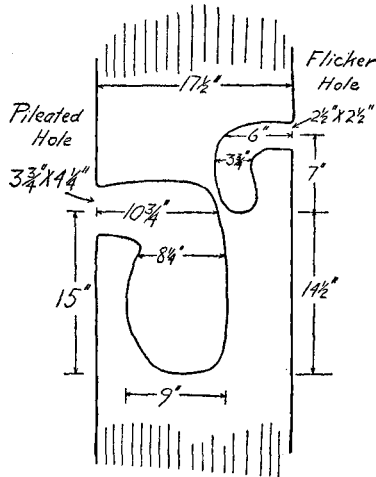
4. THE PILEATED WOODPECKER SHARES ITS NESTING STUMP WITH A FLICKER

In May, 1939, while studying the nesting habits of the Pileated Woodpecker (*Ceophloeus pileatus*) in Ithaca, I encountered a very strange situation that seemed quite different from the recorded behavior of these birds.

Dr. James Tanner reports that he once witnessed a fight between a Pileated Woodpecker and a Flicker over a nesting hole, in which the larger bird emerged victorious by driving the Flicker away. I have also seen a fight for territory between these two birds, when the Pileated Woodpecker won by driving the Flicker about a quarter of a mile through the woods. Audubon (1842) cites a case where some Bluebirds had nested in an old Pileated Woodpecker nest only to have the woodpeckers return later in the season and bodily carry the young Bluebirds out and drop them some distance from the nest.

At the nest under my observation, while the young Pileated Woodpeckers were just six days old, a pair of Flickers came to the nest stump and started an excavation on the side opposite to that on which the Pileateds had dug their hole. The Flickers worked on their hole intermittently for several days and by the time the Pileateds were twelve days old the Flickers had completed their nest cavity—a masterful piece of work. On this day both species arrived at their respective nest holes at the same time but paid absolutely no attention to each other.

This Flicker hole was started just six inches above the roof of the other hole and I feared that the excavation might go through into the other nest. When the Flicker hole reached the level of the roof of the Pileated Woodpecker's hole it was turned a little to the outside and continued downward, with the net result that its floor was opposite but below the roof of the other nest. This situation is clearly illustrated in the accompanying drawing (Text-figure 2). The tree measures $17\frac{1}{2}$ inches in diameter at the Pileated Woodpecker's nest. This hole went into the tree $10\frac{3}{4}$ inches as measured from the bark to the back of the hole. The Flicker nest went into the tree six inches and was larger toward the bottom than at the entrance. This means that $16\frac{3}{4}$ of the $17\frac{1}{2}$ inches of diameter is occupied with these two holes so at the most the partition separating the two nests cannot measure more than three-quarters of an inch. Actually it must be considerably less for the flicker hole bulges on the inside. (See Text-figure 2.)



TEXT-FIGURE 2. Diagram showing relative positions of Pileated Woodpecker nest and Flicker nest in the same tree.

Why do some birds tolerate situations like this and others not? When the young Pileated Woodpeckers left the nest the Flickers were incubating seven eggs, and in due time six young left the nest successfully; the seventh egg did not hatch.

5. A PILEATED WOODPECKER HATCHES A STARLING EGG

I had found a Pileated Woodpecker nest and had seen it through several days of the building process, visiting the nest every morning early to observe the first signs of egg laying. On April 19, 1941, I had observed the female enter the nest early, remaining about an hour and a half, and then leave for the rest of the day. This I knew from past experience meant the laying of the first egg. I was especially anxious that nothing disturb this nest now that egg laying and incubation were starting, so I always remained a safe distance from the nest tree while the parent birds were in attendance.

On April 20, I arrived at the nest in time to see the male leave from his night roosting on the nest and to see the female enter. Once again the female remained about an hour and a half and then left for the day. I was waiting to make sure that the parents were not going to return to the nest again this morning when a Starling (*Sturnus vulgaris*) came to the tree and seemed to show interest in the nest hole. I was undecided whether to shoot the Starling to prevent any interference with this well-situated nest or to let nature take its course. I decided upon the latter course and sat near by to see what happened. The Starling looked in the hole then flew off, only to return very shortly with some nesting material in its mouth. While I watched, the Starling carried about ten mouthfuls of nesting material into the already occupied nest. I had to return to the campus for classes and so was unable to observe what took place. When I returned the next morning I was very anxious to see what first came from the hole. To my great relief the male woodpecker appeared as usual in the entrance and soon flew away just as the female came and entered the nest. This was normal procedure so I gave no further thought to the Starling incident other than to make note of the affair.

On April 29, after there should have been eight days of incubation, I climbed to the nest to inspect the contents. The nest contained four Pileated Woodpecker eggs and one Starling egg. This was most disconcerting for I did not know when the Starling had laid the egg. All of the nesting material that I saw the Starling carry into the nest was gone. I weighed the eggs and numbered them and hastily retreated to my observation post some distance away. I was relieved to see the female woodpecker arrive and enter the nest without hesitation as she had done in the past.

By my calculation the eggs should hatch on May 10 and this they did, on the eighteenth day of incubation. I was more than anxious to learn the situation in the nest and climbed up as soon as the parent was flushed. When the contents were removed there were three young Pileated Woodpeckers, one unhatched woodpecker egg, and one young Starling. The empty eggshells were still in the nest and were carefully removed and photographed, as was also the unhatched egg.

I am at a loss to explain fully what took place in this nest. Obviously the Starling happened to lay its egg on the right day to have it hatch with the woodpeckers', but I do not know what day this was nor do I know what took place when the Pileated Woodpecker returned to find the Starling in possession of the nest. The results speak for themselves; the woodpecker was not driven from the nest but evidently evicted the Starling and its nest material so forcibly that it did not return.

This young Starling remained in the woodpecker nest for one entire day but was gone on the morning of the next. Whether the parent woodpeckers fed this little Starling or not I do not know. When I removed it upon finding it in the nest it seemed to have been fed, but I could not be sure. If it was fed in the usual manner of the Pileated Woodpeckers it must have been pure torture, for its neck was so short compared with that of the young woodpeckers that the bill of the parents would undoubtedly reach and puncture its stomach. I searched the entire area around the nest but was unable to find any trace of this baby bird, although this is not surprising since the area was very swampy, with considerable standing water.

This, to my knowledge, is the second record of a Starling becoming parasitic although in this case it was entirely accidental and absolutely unsuccessful. The first record was reported by Musselman in *The Auk*, 59 (4): 589, 1942.

6. A DOUBLE MALLARD NEST AT ITHACA, N. Y.

On May 15, 1942, while I was taking photographs along the waterfront at the head of Cayuga Lake, one of the local fishermen who lives at the foot of the breakwater told us of an unusual nest of a Mallard (*Anas platyrhynchos*) that he had under observation. Upon investigation we found a most interesting situation.

Two ducks had chosen a nesting site next to each other under a small bush of Virginia creeper (*Parthenocissus quinquefolia*) along the edge of the base of the breakwater. The two nests were so placed that each duck touched the other while incubating. A slight, but not too large, partition kept the nests from being a common nest. One nest contained eight and the other twelve eggs. The eggs were due to hatch

any moment and consequently the two ducks defended the nests with their lives, biting and jabbing at the intruder with vicious blows.

Talking to the local fisherman, we found that two ducks for five years past have built nests such as this and in one instance a common nest, and both ducks were attended by the same drake.

When the eggs hatched, the young of each duck went with their respective parents and when we saw them next there were two full families feeding along the water's edge. Even then the drake was to be found not too far away.

SUMMARY

A Red-eyed Towhee and Field Sparrow were found nesting in the same tree. Observations showed that each species frequently fed and cared for the young of the other species.

Four Robin nests were found very close to each other and also in close association with the nest of a Yellow Warbler and that of a Catbird. A diagram is shown illustrating the exact relationship of each nest.

A female Cowbird was observed several times to attack a female Yellow Warbler that was building her nest. The Cowbird was being courted by two male Cowbirds throughout the entire performance.

A Flicker was found sharing a nesting stump with a Pileated Woodpecker. The Flicker nest was so constructed that the floor was beside and below the roof of the Pileated Woodpecker nest. No enmity was observed between these two birds. A diagram is given showing the condition of these two nests in the same stump.

A Pileated Woodpecker incubated and hatched a Starling egg placed in its nest by the Starling during the early period of egg laying of the woodpecker. This young Starling lived in the woodpecker nest for one day and then was carried out, leaving three young woodpeckers in the nest.

A double nest is reported in which two Mallards have nests next to each other with a small partition separating them. This condition has persisted in this same locality for five years previous to this incident. The two ducks are said to have the same drake which is almost always near by.

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Etna,

N. Y.