

NOTES ON REPRODUCTIVE ACTIVITIES OF ROBINS IN IOWA AND ILLINOIS

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FIELD observations made in Iowa from 1946 through 1948, and in Illinois during 1955 yielded data on nesting and reproduction of the American Robin (*Turdus migratorius*). In Iowa, the observations were made in Ames, Eldon, and a rural area 4 miles southeast of Eldon, representing, respectively, central and southeastern localities in the state. Ames is situated at 42° North Latitude, and Eldon at 40.5°. In Illinois, data were collected from within the city limits of Carbondale, which is about 200 and 275 air miles south of Eldon and Ames, respectively, and 37.4° N. The observations made in Iowa were restricted largely to nest site, clutch size and hatching success, whereas in Illinois they included general breeding activities. Records from 173 nests were available for study; 112 in Iowa and 61 in Illinois.

PHENOLOGY OF NESTING

The first nest in the Carbondale area was completed on April 1, three weeks after the peak of the Robin migration had passed through this area. The initial nest-building activities continued until April 23, with the peak of construction occurring from April 10 to April 15 when 70 per cent of all observed nest construction took place. In Iowa, first nests were recorded on March 15, 1946; April 6, 1947; and April 9, 1948, with the peak of initial nestings falling within the period from April 18 to April 28 in each of the three years. There was some indication that nesting around Eldon was five to 10 days earlier than at Ames. Data for 1947 and 1948 available from a study in Wisconsin (Young, 1955) showed the peak of activity to be 10 to 20 days later than in Iowa (125 air miles north of Ames, 43.5° N.). The unusually early nesting in Iowa in 1946 may have been a response to the abnormally high temperatures in late winter and early spring, especially those of March when the mean was 11.7° F. above normal. The slightly later peak of activities in Iowa and Wisconsin probably reflected the effects of the more northerly climatic conditions. Because studies in Carbondale were not conducted after early June, dates for later nests were not available. In Iowa the latest dates for nest establishment were August 3 (1946), August 9 (1947), and August 26 (1948). These dates are significantly later than those reported by Young (1955), for July 22 was the latest date recorded in Wisconsin.

NEST CONSTRUCTION AND LOCATION

Without exception, females established the nesting site only after several possible locations were investigated. Methodical inspection of the crotches of trees, such as reported by Meuli (1935), was not observed. Howell (1942) believed that both members of the pair took part in selection of nest sites, whereas Howe (1898) expressed

the opinion that this activity was limited solely to the female.

As observed by others (Howe, 1898; Howell, 1942; Burns, 1924), nest construction was accomplished by the female. During nest building activities, the male was often perched nearby, but in no case did he give aid. Construction of the nests in the Carbondale area required from three to six days; the average for 18 nests was 3.5 days. The time utilized was dependent seemingly upon weather conditions and availability of nesting materials. Composition of three nests analyzed on a weight basis proved to be approximately 35 per cent mud, 35 per cent dried grass, 25 per cent weedy stems, and 5 per cent miscellaneous items (twigs, string, pieces of paper, cotton, and cloth). The approximate average dry weight of these nests was 205 grams.

A wide variety of structures are utilized as nesting substrates. Howe (1898) states that Robin nests were observed on buildings, old carriages, and woodpiles, in addition to those found in trees. Miller (1918) and Blincoe (1924) report nests on the ground. Stewart (1931) observed a pair of Robins nesting within a tree cavity. Of the nests under observation during this study (Table 1), 97.7 per cent were constructed in trees, 1.7 per cent on buildings, and 0.6 per cent in shrubs. Twenty-nine species of trees were utilized for nesting, but only eight (3.7 per cent) of the nests were located in coniferous species. Howell (1942) reported that 57.6 per cent of the early nests in a New York study were located in conifers and 25.4 per cent in deciduous species; later nestings, however, showed a reverse trend. It should be pointed out that conifers are much more abundant in New York than in most of the Midwest.

Of interest was the relative position of nests in trees characterized by a main trunk with prominent forked branches extending upward and outward, such as is characteristic of the elm (*Ulmus*) and maple (*Acer*) trees. Of the nest sites in these trees, 62.8 per cent were constructed in the first fork of the main trunk. Less than 25.6 per cent (11) of the nests were more than three feet from the main trunk. Such sites possibly offered greater stability, and were better protected from wind than those situated on limbs away from the trunk.

In Iowa, nest height above the ground varied from 5 to 45 feet, whereas those in Illinois ranged from 5 to 35 feet. Mean heights for the two areas were 10.7 feet and 15.4 feet, respectively. Young (1955) reported a mean height of 7.4 feet. In Ithaca, New York, 50 per cent of the nests were within 10 feet of the ground (Howell 1942).

CLUTCH SIZE

Sizes of 29 completed clutches (nest known to have been incubated) in the Carbondale area ranged from 1 to 5 eggs, showing a mean of 3.17. In Iowa 81 completed clutches numbered from 2 to 4 eggs with a mean of 3.44, which was almost identical to the value (3.4) reported by Young (1955). Possibly the slightly larger average clutches for Iowa and Wisconsin indicate a climatic relationship resulting in greater reproductive rate among species in the northern parts of their range. Abnormally large clutches (8 eggs), as reported by Keyser (1908) and Loveridge (1939) were not observed.

TABLE I
NESTING SITES OF THE AMERICAN ROBIN IN ILLINOIS AND IOWA

	No. of nests	Per cent of total
Trees		
Deciduous species (95.3 per cent)		
American elm (<i>Ulmus americana</i>)	57	32.9
Box elder (<i>Acer negundo</i>)	28	16.1
Black maple (<i>Acer nigrum</i>)	10	5.8
Silver maple (<i>Acer saccharinum</i>)	8	4.5
Red maple (<i>Acer rubrum</i>)	6	3.5
Apple (<i>Malus pumila</i>)	6	3.5
Black willow (<i>Salix nigra</i>)	4	2.3
Green ash (<i>Fraxinus pennsylvanica</i>)	4	2.3
Norway maple (<i>Acer platanoides</i>)	3	1.8
Red mulberry (<i>Morus rubra</i>)	3	1.8
Wild plum (<i>Prunus hortulana</i>)	3	1.8
Sycamore (<i>Platanus occidentalis</i>)	3	1.8
Osage orange (<i>Maclura pomifera</i>)	3	1.8
White oak (<i>Quercus alba</i>)	3	1.8
Peach (<i>Prunus Persica</i>)	3	1.8
Sugar maple (<i>Acer saccharum</i>)	2	1.1
Catalpa (<i>Catalpa speciosa</i>)	2	1.1
Wild cherry (<i>Prunus serotina</i>)	2	1.1
Wild crabapple (<i>Malus ioensis</i>)	2	1.1
River birch (<i>Betula nigra</i>)	2	1.1
Persimmon (<i>Diospyros virginiana</i>)	2	1.1
Black walnut (<i>Juglans nigra</i>)	1	0.6
Post oak (<i>Quercus stellata</i>)	1	0.6
Shingle oak (<i>Quercus imbricaria</i>)	1	0.6
Dogwood (<i>Cornus florida</i>)	1	0.6
Pig nut hickory (<i>Carya glabra</i>)	1	0.6
Coniferous species (4.5 per cent)		
White pine (<i>Pinus strobus</i>)	2	1.1
Shortleaf pine (<i>Pinus echinata</i>)	1	0.6
Red cedar (<i>Juniperus virginiana</i>)	5	2.9
	169	97.7
Shrubs		
Coralberry (<i>Symphoricarpos orbiculatus</i>)	1	0.6
	1	0.6
Other Structures		
Houses	2	1.1
Corn granary	1	0.6
	3	1.7
TOTALS	173	100.0

INCUBATION

In all observed cases, the female accomplished incubation. The male was usually perched nearby, and on several occasions was noted to drive off other species which ventured near the nest. No instances of "incubation feeding" by the male, as reported by Brackbill (1944), were observed. During the early stages, the nest was vacated for fairly long periods for feeding, but as the time of hatching approached, the nest was left infrequently and then for very short periods. Only two cases of nest desertion were observed following the commencement of incubation.

HATCHING AND NESTING SUCCESS

In the Carbondale area the peak of hatching for spring nesting occurred from April 23 to May 1; 77 per cent of the nests hatched during this period. The earliest date on which a brood hatched was April 20. In Iowa 68 per cent of the nests were recorded hatching during the first 10 days of May. The earliest hatchings were on April 9 in 1946, April 20 in 1947, and April 26 in 1948. The peak of hatching reported for Wisconsin (Young, 1955) appears to occur about 20 to 30 days later than that in southern Illinois and 10 to 20 days after that observed in Iowa.

Of the 61 nests found at Carbondale, Illinois, only 31 could be considered for an evaluation of hatching success, since 30 nests contained no eggs during the period of study. One or more eggs hatched in 29 (93.5 per cent) of the 31 nests with eggs. Hatching success for nests observed in Iowa was found to be 48.6, 51.0, and 42.0 per cent for 1946, 1947, and 1948, respectively. Howell (1942) and Young (1955), reporting on success of nests which contained one or more eggs, showed 64.7 and 48.8 per cent hatches in New York and Wisconsin, respectively. An analysis of nest data by Kendeigh (1942) revealed a success of approximately 82 per cent for the American Robin, whereas an extreme of only 13 per cent was recorded by Thomsen (1944).

Ninety-four per cent of the eggs deposited in nests in the Carbondale area hatched, in comparison to 79.6 per cent in Iowa. Data presented by Howell (1942), Young (1955), and Kendeigh (1942) showed hatches of 60.6, 57.6 and 86.0 per cent, respectively.

The rural nesting sites assured greater safety to nesting birds than did those within urban areas in Iowa. Rural nests (49) showed 69.0 per cent success compared with 32.7 per cent for 63 urban nests. It was believed that the virtual absence of house cats (*Felis domesticus*) from the rural areas was a major factor contributing to the observed differential in rates of nesting success.

Data on the factors responsible for nesting losses were accumulated for 38 nests; wind, predators, miscellaneous factors and human interference were found responsible for 41, 29, 21 and 9 per cent of the losses, respectively.

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