

STUDIES IN THE LIFE HISTORY OF THE
WOOD THRUSH¹

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HABITAT

THE habitat of the Wood Thrush (*Hylocichla mustelina*) is in cool damp woodlands in the vicinity of streams. This is probably a necessity because of the use of mud and damp plant material in the construction of the nest. Undergrowth and the presence of saplings seemed to determine the suitability of an area for nesting. Nests were never found in conifers.

Thickets similar to those used by the Catbird were never chosen by the Wood Thrush. One nest was found in a dense patch of Ash-leaved Maple saplings. A. A. Allen '34, has suggested that the large eyes of the species cause the bird to dislike bright sun so it keeps to thick woods where there is plenty of moisture and therefore plenty of vegetation and its resulting shade.

Mention must be made of the increasing tendency of the species to dwell in parks and about the abodes of men where they use shade and ornamental trees as nesting sites. Several nests were found during this study, from four to twenty feet of occupied houses. In all cases, however, these houses were in the vicinity of gorges, streams, woods, or damp places.

TERRITORY

The territory of the Wood Thrush is established early, and in the close vicinity of the place of arrival. In 1938 at the time of the departure of the young from one nest, the banded male of the pair was trapped. The bird proved to be the one banded in this same territory two years previously. Observations were made on a banded bird in this territory in 1937. This case gives some evidence that a territory is used by a male for three years in succession. Unfortunately the female was not banded.

The territory is believed to be chosen by the male since males, identified by their singing, arrive first and remain in the place of arrival which becomes the territory. The actual nesting site is probably chosen by the female. One was observed to alight in a crotch and turn around several times as if testing the suitability of the location. This took place immediately after the courtship performance.

The size of the territory is shown on the diagrammatic map, Figure 1, which indicates the movements of the birds and the locations of the nests of six of the pairs of Wood Thrushes studied during the season of 1938. The area mapped is approximately 1,000 feet in

¹This paper is a section of a Masters thesis at Cornell University, 1938.

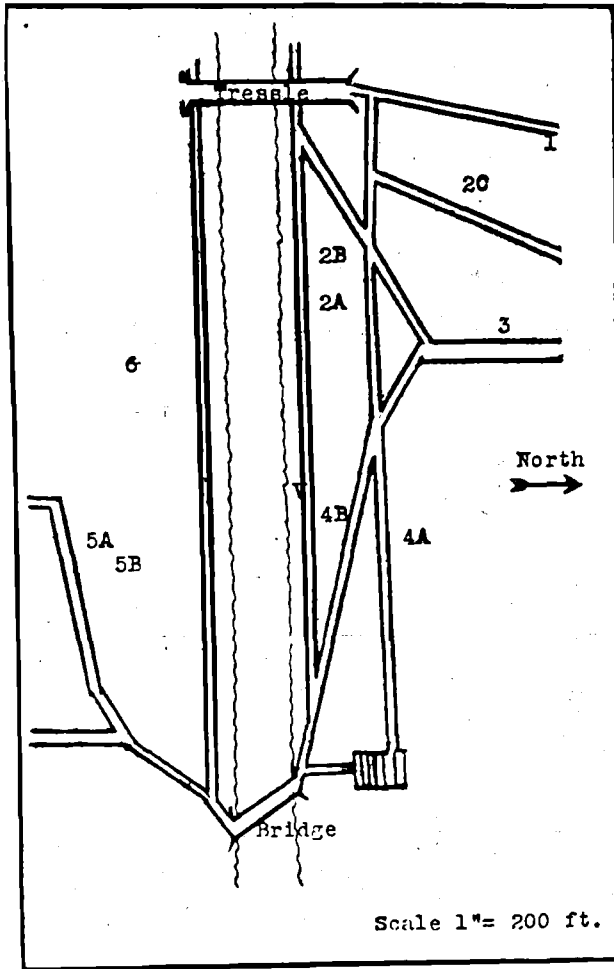


FIG. 1.—Diagrammatic map of the Cascadilla Gorge area showing territories of the Wood Thrush

length and 800 feet in width, divided by Cascadilla Gorge which is approximately 50 feet wide and from 15 to 50 feet deep through this area. Using this map, the following information will be of interest. Each pair of birds was given a number. All nests having 2 in the number belonged to the same pair. Nest 1 contained three eggs on May 29. Nest 2-A contained three eggs on May 27, the eggs were gone on May 29 and another nest 2-B was half done on May 29, 100 feet to the west. This one was collected by mistake. On June 6, the third nest, 2-C 300 feet to the northwest of 2-B was found. Nest 3 was first found on June 5. Nest 4-A was found on May 26, and on June 3 the eggs were gone. Nest 4-B was found 100 feet southwest of 4-A on June 5. Nest 5 was found May 19. The young in nest 5 hatched June third and fourth and the adults and young were banded. The nest of the second brood, 5-B was found July 2. Nest 6 was found empty on June 9. The significant date to this study of territory is June 8. On that date the female of nest 1 was feeding one young. There was a female with two eggs on nest 2-C. The female was on nest 3 and one was on 4-B. The female of 5-A was feeding four young. Therefore, there were five active nests and territories in this section at the same time, giving us some idea of the size of the territory of the Wood Thrush and its tolerance of others of the same species.

The size of the territory may be as small as one-fifth of an acre in area but may be as extensive as two acres.

In the same area were many other species. The Wood Thrushes paid little attention to those birds smaller than itself including the Redstart, Baltimore Oriole, Yellow Warbler, Chickadee, Goldfinch, Ovenbird, Blue-headed Vireo, Northern Yellowthroat, Song Sparrow, Phoebe, Pewee, Cowbird, Red-eyed Vireo, Downy Woodpecker, White-breasted Nuthatch, Rose-breasted Grosbeak, Scarlet Tanager, Chipping Sparrow, Louisiana Water Thrush, and Ruby-throated Hummingbird. Redstarts could, seeming to be inquisitive, come within a few inches of the nest of the Wood Thrush without being attacked. Attention was paid to but few birds, including other Wood Thrushes, Veerys and Robins.

Other birds of the same species were sometimes driven out, but at other times not. The male bird would fly at times to the place where another Wood Thrush was singing and sing his full song over and over for about ten minutes. There seemed to be two different reactions to the presence in the territory of another bird of the same species. In several instances when another male entered the territory of a Wood Thrush, the reaction of the possessor was to sing. This same reaction was observed after the building of a blind beside one nest. The calls of excitement attracted another male to the vicinity. Both birds sang.

In another instance observations were being made of a young bird one day out of the nest. The bird sat for three hours perched in a small shrub a foot and a half off the ground. When the young bird

called for food a male from across the gorge responded to the call. The male parent of the bird flew to the spot immediately. Evidently the male defends the entire feeding territory, both that used by himself and the female, since the male was on hand immediately to drive the intruding male from the region. The intruder had alighted on a shrub ten feet from the young and had sung very weakly.

Referring again to the territory map, Figure 1, conflicts were observed between the male birds from nest 4 and the one from 5; even though these nests were located on opposite sides of the gorge. On one occasion the male from 4 alighted on the branch of a hemlock overhanging the gorge. The male from 5 flew down immediately and chased the intruder out. After leaving this territory and returning to his own side of the gorge, this male and the possessor engaged in a rapid fire of song lasting for three minutes.

Robins seem to disturb the Wood Thrush more than any species observed, except other Wood Thrushes. Reactions to Robins are both negative and positive. In most cases of intrusion, Robins were driven from the territory. All degrees of alarm were displayed from the mild form of alarm in which the adult sat quietly and merely raised the feathers of his head to the most furious type of fighting. On some occasions the intruder was pursued quietly until he was out of the territory. At other times he was rapidly chased accompanied by calls of excitement from the Wood Thrush. On one occasion a vigorous fight ensued during which both birds flew upward attacking each other in the air, with wings beating rapidly and feathers fluffed from the body. A fight for territory between a Wood Thrush and a Veery was observed in which the Veery won. On another occasion a Scarlet Tanager was attracted by the call of a young Wood Thrush when it was out of the nest just a day. The Scarlet Tanager flew away unattacked while a Wood Thrush which alighted on the same branch as had the Scarlet Tanager, was driven out.

SONG

The song of the Wood Thrush early in the season is more elaborate, performed with more vigor, and is of longer duration than songs later in the season. There are two low notes which precede the song. Then the bird repeats the E-o-lie, with variations in pitch and in the number of syllables in the phrases.

The calls fell into three classifications discussed here in order of the degree of feeling seemingly expressed by them. When slightly disturbed, apparently to indicate his or her presence, either bird utters a sound which can be expressed by Trrrrr, Trrrrr. The other bird would then often respond with the same call. If they became alarmed they used the pit, pit, pit, call. When greatly alarmed, as when the nest or young were in danger, the call changed to quirt, quirt, quirt, quirt, usually accompanied by swift flights at the intruding person, bird or object.

Another sound made by both male and female was a squeaky whistle. During the nesting period both male and female were heard to give this clear whistle upon several occasions. This was used by either adult upon arrival at the nest with food, especially when the young did not open their mouths to receive it. Sometimes it was necessary for an adult to repeat this at least four times. It can be described by saying that it seemed to have been produced by inhaling with the bill almost closed. It was often given when the bill was filled with food. The female sometimes gave this sound while she was on the nest. It was also used by the male when he sat at some distance from the nest or when he arrived with food and the female did not leave the nest so he could feed the young.

Early in the season Wood Thrushes perched in the tops of the highest trees in their territories to sing their loudest most complete and varied songs of the season. A week later perches were about fifteen feet above the ground. Often they chose short, dead branches of hemlocks. Others were known to sing from the ground, from large logs, or even from the edge of the nest in the absence of the female.

From my observations, Wood Thrushes begin their morning songs with the break of day, singing at the end of June at 3:45 A. M. in Ithaca, New York. At this time it is still quite dark and feeding has not yet begun. This singing continues both through the periods of incubation and brooding. Evening song usually ceases at dark or about 8:00 P. M. in June in Ithaca.

Song on the breeding grounds begins with the arrival of the first birds so it is believed that the males do not wait until the females arrive before the song period begins. Males arrive and sing to denote the possession of their territory. There was song in the evening only, after the young had left the nest. By the end of July the song period was closed and little was seen of the birds from this time on. During the post-nuptial molt birds were found by listening for the calls of excitement, but no song was heard.

COURTSHIP AND MATING

The males arrive first on the breeding ground, as the records of Cornell University show that the first Wood Thrushes reported for twelve different seasons were singing birds. In 1938, in a certain area, the male arrived on April 29. Three days later, on May 2, the female arrived in this region. At 7:45 A. M. the male bird sat high up in a leafless tree singing. A low trrrr, which I have often heard both male and female give as if in acknowledgement of its presence, could be heard. There was a sudden flight to the ground. On first observation it appeared that some other male had entered the protected domain of the first. The mistake in this assumption was apparent when, after witnessing six or seven swift circular flights of about thirty feet in diameter, one bird in pursuit of the other, they both alighted contentedly in the same shrub and began feeding

among the fresh leaves. This circular flight was accompanied by swift turnings to bank with the curve. A few low notes were uttered during this performance. On May 6, four days later, the song of the male in this territory was unusually loud and long. Loud calls of excitement were also heard, leading me to believe that the territory was well established.

Another observation of a similar performance was made from 6:30 A. M. until 7:15 on May 6, 1938. The female stood on a low branch and fluffed her feathers and raised her wings. The male chased the female in half a dozen circular flights. Between flights both birds fed among the fresh leaves, often biting off pieces which fell to the ground. The male arrived in the area on April 30, and chose the very highest tree as his song perch. He was heard here again on May 2, at 5:30 A. M. and also on May 5. On May 6, the female was first observed.

On another occasion, a nest was found above which two Wood Thrushes were chasing each other in circles, which is some evidence of the fact that courtship is continued after the nest is built.

On a very bright spring morning in Toledo, Ohio, May 6, 1937, the following observation, believed to be the act of copulation, was made. A. A. Allen states that he believes he has observed this act and that normally it takes place on the ground. The pair flew about in a large circle. The two birds met in the air. One bird lowered itself to contact the other at about eight feet above the ground. They then continued to fly around after one another.

NEST

The nest is a firm compact cup of grasses and weed stalks with a middle layer of mud or leaf mold. Dead leaves or leaf skeletons and sometimes moss are tucked into the bottom. Out of 20 nests, all except two contained paper, cellophane, cloth or some white substance. One of these two was ornamented with long pieces of dried grass which hung about two yards below the nest. This practice seems to me to break the contour of the nest.

In a few cases where the nest was saddled on the branch, it was cemented to the branch with mud. The lining is composed of fine dark rootlets which are not fastened to the middle layer of mud.

The nest is usually fixed in a fork in saplings or undergrowth but some have been saddled on a horizontal branch. Nests range from six to fifty feet with the average at ten feet above the ground.

Nesting materials varied considerably with the availability of different materials. Much paper was used where much was available, dried grass was predominant in a grassy location, many leaf skeletons were used where they were plentiful. Depths varied with the situation, being deep if in a crotch and shallow if on a horizontal branch.

About five days are required for the building of the nest. In Ithaca, the nesting season extends from May 12 until the end of July.

SOCIAL PARASITISM

In 1938 three nests out of fifteen were parasitized by the Cowbird. In 1937 three out of 16 were parasitized. In 1936 two out of eight contained Cowbird eggs. The Wood Thrushes react to Cowbird eggs in several ways. In some instances the Wood Thrush has attempted to imbibe the intruder's eggs. Several desertions have resulted from intrusions by the Cowbird. In other cases the young of the two species have lived in the same nest successfully.

NUMBER OF EGGS LAID AND SURVIVAL OF YOUNG

In 1937, 45 Wood Thrush eggs were laid in 16 nests. Three nests were parasitized by the Cowbird. In one case two Cowbird eggs were found in the same nest. From the 45 eggs, 26 young hatched. The average number of eggs per nest was three.

In 1938, 51 eggs were laid in 15 nests. Three nests were parasitized, one nest having three eggs. There were 33 young Wood Thrushes hatched of which 22 survived, making the survival 43.13%. The average number of eggs laid was three.

In no case were more than four eggs found in a nest.

SECOND BROOD

The Wood Thrush in Ithaca, at an altitude of 1,000 feet and at a latitude of 42°27' and longitude of 76°29' raised two broods in 1938. This fact was proven by the following procedure. When the young were ready to leave the nest, one was placed in a drop trap. First one adult was caught. This one was kept at a distance in a collecting cage. The food calls of the young in the trap attracted the other adult. When caught, the adults were marked with colored celluloid bands, and an aluminum Biological Survey band. A colored feather was glued with household cement between the upper tail coverts and the rectrices. Sexes could be determined by the brood spot of the female. The first egg of the first clutch was laid May 19. The birds were out of the nest on June 15. The first egg of the second clutch was laid July 2. Two eggs hatched July 16 and 17. The birds were feeding young of the first brood on June 19 and the same female was on the second nest on July 2. The interval between broods in this case was 16 days from the day the young left the nest until the laying of the first egg of the second clutch. The same adults mated for the second brood. The second nest was located about ten feet from the first.

There are few references in the literature as to the number of broods of this species. Forbush, 1927, says that June 15 is the date for the second brood in Virginia. He also states: "One brood yearly in New England, though said to rear two in the west and south." Eaton, 1914, says eggs of the Wood Thrush are usually laid from May 17 to May 30 but later sets are frequently found as late as June 25 and July 10. Trafton, 1917, says: "The Bluebird and Robin generally rear two broods, while the other thrushes rear only one brood."

It seems probable that if two or three trials for a successful nesting are made, the season is too far advanced for a second brood, but if the first brood is successfully raised, a second brood may follow.

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A STUDY OF NESTING EASTERN BLUEBIRDS

By AMELIA R. LASKEY

This past season it has been my privilege to conduct the Bluebird (*Sialia sialis sialis*) nest-box project started in 1936 in Percy Warner Park in the suburbs of Nashville, Tennessee. This park consists of 2141 acres (see map), much of it wooded hills, with many miles of winding automobile roads, bridle paths, and hiking trails, interspersed with picnic grounds, shelter houses, and homes of park employes. On the outer boundaries are numerous meadows, bordered on one or two sides with narrow thickets of trees and undergrowth. These meadows provide excellent sites for the Bluebird nest-boxes that have been placed there.

Although it is necessary to drive twelve miles in the park to visit these nest sites, most of the boxes are concentrated within an area of 1.1 by .7 miles in the southeastern section of the park adjacent to farm land. The majority of the boxes are placed from one to two tenths of a mile apart, facing the road, and in most cases they are screened from each other by the intervening vegetation.

From February 23, 1938 to mid-August, forty-five visits were made to examine the boxes, record data, band the nestlings and brooding birds, and recapture the latter for identification. This necessitated spending three or four hours in the field each trip after brooding started, as this year extraordinary efforts were made to trap the occupants during each nesting period. The object was to determine whether the same birds remained in their respective nest-boxes for the entire season or whether there had been any shifting in the population for the later nests. As the season advanced this part of the project became increasingly difficult and required patient, strategic stalking including many trips in the rain which experience taught was the only time many individuals could be captured. During the long, warm season Bluebirds spend much time away from the nest and their daytime brooding is often carried on with heads