

A COMPARATIVE STUDY OF THE NEST LIFE OF THE TOWHEE, MEADOW LARK AND ROSE- BREASTED GROSBEAK.

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The observations here reported were made at Winona, Indiana, during the summer of 1924 by use of a bird blind. The blind was made of an umbrella covered with burlap and supported by a long copper tube with a spike in the end which was driven into the ground. The upper half of the burlap was green and the lower half extending to the ground was brown. The side away from the nest was opened and closed by means of a slit that could be fastened by buttoning it to the opposite flap, and holes for observation purposes were cut in the burlap at different heights from the ground. A camp stool and a pair of Bausch and Lomb Number six binoculars comprised the equipment of the tent-like blind. Two observers were necessary for relief purposes.

The nests of the towhee, meadowlark and rose-breasted grosbeak were selected because of the easy accessibility of the nests,—the towhee and meadowlark being on the ground and the grosbeak about five feet above the ground in an elderberry bush—and because of my own personal interest in these three species.

The dates of the observations were as follows: rose-breasted grosbeak on June 26, meadowlark on July 2, 3, and 4, and the towhee on July 15. The time of observation in each case was 17 hours,—from 3:30 a. m. to 8:30 p. m. The blind was set up near the nest before daylight and taken down at night after dark.

In each case under observation four young from six to nine days old were found in the nests. The juvenal plumage was about half developed on the towhees and meadowlarks and was just starting on the grosbeaks.

Frank Chapman speaks of the meadowlark as one of the most suspicious of birds with regard to the intrusion of a blind into its nest activities and we found it true for the male meadowlark was the first to brave a trip to the nest one hour and two minutes after his first inspection trip over the blind. The female came for her first trip 15 minutes later and then waited 27 minutes before her second visit while the male waited one hour and 43 minutes before venturing to the nest a second time. When the blind was used on the subsequent days it was taken for granted as a part of the landscape and nest life appeared normal. The towhee was very suspicious and it was two hours before the male first ventured to the nest, followed one minute later by the female. The next trips were made by both sexes within five minutes and from then on they came regularly all day. The rose-breasted grosbeak showed no concern at all over the blind and its activity went on with no apparent interruption.

From the blind at the towhee's nest 19 different species of birds were seen or heard during the day; 17 from the meadowlark's, and 21 from the grosbeak's. The nearest nest to the meadowlark's was over 100 feet distant, but a peewee's nest was in use at a distance of only 20 feet from the towhee's nest. We found about 25 nests of different species within 100 feet of the grosbeak's nest,—the nearest being that of a wood thrush about 25 feet away.

The activities of the adults in each case were limited to areas within 100 feet from the nests, and within these areas they carried excreta, found their food, sang and called. In each case the adults had favorite perches where they sat, preened their feathers, watched the nest, sang or called. The meadowlark's perches varied in distance from 25 to 50 feet from the nest, but the male used two of them more than the others. One favorite place was on a fence post and the other at the end of a dead limb of a tree at the edge of the meadow. The towhees and grosbeaks used four or five perches which were nearly equidistant from the nest and encircled it.

The meadowlark's nest was made of grass and was situated in a clump of grass about 18 inches tall, in the middle of an open field. The towhee's was made of grass and twigs in an open woods, while that of the rose-breasted grosbeak was a simple platform of twigs hastily thrown together to form an apparently weak structure.

Several things were the same in the three cases observed. All ate much more excreta than they carried away. In each case the male was the first to come to the nest. The young called all day up to the time for the night brooding.

TABLE 1. COMPARATIVE STUDY OF MEADOW LARK, TOWHEE AND GROSBEAK

	Towhee			Meadow Lark			Grosbeak		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Trips for feeding	85	65	150	28	66	94	49	30	79
Without feeding	0	0	0	0	0	0	6	9	15
Total trips to nest	85	65	150	28	66	94	55	39	94
Excreta eaten	18	26	44	44	39	83	40	26	66
Excreta carried	15	7	22	8	15	23	3	4	7
Total	33	33	66	52	54	106	43	30	73
Male fed Female while Brooding	7			0			7		
Times Brooding in Day		7	7		3	3	6	24	30
Time spent in Brooding		70 min.			20 min.		60 min.	200 min.	260 min.
Actual time at Nest	149m	68m	217m	36½m	93½m	130m	183m	406m	589m
Came to nest on average of every	13½m	10m		34m	14½m		17½m	25m	
Average time at Nest		¾m	2¼m		1¼m		3½m	10½m	

TABLE 2. COMPARATIVE STUDY OF MEADOW LARK, TOWHEE AND GROSBEAK.

	Towhee	Meadow Lark	Grosbeak
Times when both parents were at nest together	11	3	7
Actual time together at nest (in minutes)	6½	2	25
Number of times that young were alone in day	118	89	48
Actual time young were alone (in hours)	4.04	13.08	6.5
Longest time away from nest (in minutes)	26	34	41
When	6:30-7 P. M.	6-6:30 A. M.	3-4 P. M.
Next longest time away from nest (in minutes)	25	33	30
When	5-5:30 P. M.	10-11 A. M.	2-3 P. M.

In other things there were great variations. (See tables 1 and 2 for a comparative study of the nest activities.) The female towhee and grosbeak stayed at the nest all night, while the female meadowlark appeared at 4:05 at the first signs of dawn and left at 7:20 when it grew dark. After brooding all night the female towhee left the nest at 3:45 a. m., to begin the day's activities and at 7.38 p. m. settled down again for the night. The female grosbeak left the nest at 4:05 after brooding all night and after the male had made one trip to feed her and another to feed the young. She returned to brood again at 7:13 p. m. for the day had been dark and cool and rain began to fall about 6:45.

Another matter of difference was the method of approaching and leaving the nest. Both male and female towhee flew to a point from two to ten feet from the nest and then hopped the rest of the way. Both adults of the meadowlark flew to about four feet from the nest and then walked. The grosbeaks came by direct flight about half of the time and the rest of the time from a perch within a foot of the nest. In

TABLE 3. COMPARATIVE FEEDING CHART

	Towhee			Meadow Lark			Grosbeak		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Number of times that one nestling was fed.....	65	54	119	20	22	42	5	6	11
Number of times that two nestlings were fed.....	20	11	31	8	39	38	20	14	34
Number of times three nestlings were fed.....	0	0	0	0	14	14	6	1	7
Number of times four nestlings were fed.....	0	0	0	0	0	0	15	12	27
Trips to nest without feeding.....	0	0	0	0	0	0	9	6	15
Total trips made to nest.....	85	65	150	28	66	94	55	39	94
Average number of feedings for each nestling.....	24½	19	.....	9	31	.....	31	21	.....
Actual feedings given by each adult.....	105	76	181	38	124	160	123	85	208
Each young bird feed on average (times).....	.....	.....	45	.....	.....	40	.....	.....	52

TABLE 4. KINDS OF FOOD CONSUMED.

	Towhee			Meadow Lark			Grosbeak			Grand Total of 3 species
	M	F	T	M	F	T	M	F	T	
Caterpillars.....	23	14	37	15	31	46	4	3	7	90
Moths.....	18	16	34	0	2	2	0	0	0	36
Dragon Flies.....	1	1	2	0	0	0	0	0	0	2
Crane Flies.....	4	2	6	0	0	0	0	0	0	6
Mosquitoes.....	1	1	2	0	0	0	0	0	0	2
Grasshoppers.....	0	0	0	3	9	12	0	0	0	12
Crickets.....	0	0	0	0	2	2	0	0	0	2
June Bugs.....	0	0	0	1	0	1	0	0	0	1
Beetles (unclassified as to family).....	1	1	2	0	0	0	0	0	0	2
Grab-worms (insect larvae).....	0	0	0	1	2	3	0	0	0	3
Spiders.....	0	0	0	2	1	3	0	0	0	3
Earthworms.....	0	0	0	1	0	1	0	0	0	1
Unclassified insects.....	1	1	2	0	0	0	0	0	0	2
Mulberries.....	12	7	19	0	0	0	0	1	1	20
Seeds (number of times brought).....	3	2	5	0	7	7	10	25	35	47
Unclassified Food.....	21	20	41	5	12	17	16	20	36	94
Total Feedings.....	85	65	150	28	66	94	30	49	79	.....
Trips to nest without feed.....	0	0	0	0	0	0	9	6	15	.....
Total trips during day.....	85	65	150	28	66	94	39	55	94	.....

leaving the nest the towhees always flew directly from it, the meadowlarks either flew directly or took several steps before flying, and the grosbeak's flight was directly away without the use of any perches.

As the feeding of the young is the universal duty of nest life it is of primary importance. Tables 3 and 4 record the kinds of food given and a comparative feeding schedule. The towhees and meadowlarks fed the insects, seeds and other foods directly from bill to throat, but the rose-breasted grosbeak always regurgitated all foods given. Usually this regurgitation took place at the nest so it was possible to identify over half of the food. Tables 5 and 6 give the per cents of different kinds of food given,—one taking into consideration the unidentified food and the other giving only the per cents of the food which was identified.

TABLE 5. PER CENTS OF IDENTIFIED AND UNIDENTIFIED FOODS.

	Towhee	Meadow Lark	Grosbeak
Unidentified Foods.....	27.33%	18.06%	45.56%
Berries.....	12.67%	.....	.75%
Seeds.....	3.33%	7.50%	44.75%
Insects.....	56.67%	70.00%	9.00%
Chaetopods (Earthworms).....	.....	1.00%	.....
Arachnids (Spiders).....	.....	3.00%	.....

TABLE 6. PER CENTS OF IDENTIFIED FOODS.

	Towhee	Meadow Lark	Grosbeak
Berries.....	17.50%	.....	2.33%
Seeds.....	4.50%	10.00%	81.36%
Insects.....	78.00%	87.00%	16.31%
Chaetopods (Earthworms).....	.....	.75%	.....
Arachnids (Spiders).....	.....	2.25%	.....

A distinction was made between song and call and therefore the calls of the three species are not shown, but in figure 1 is a graph showing the songs during the day of the male meadowlark and the male grosbeak. The male towhee sang so seldom that no record was made of it.

In conclusion, I shall summarize briefly a few of the main differences in the habits of these three birds. First:—The male towhee made more trips than his mate, while the nest-cleaning duties were evenly divided. Both adults usually fed only one young at a time. The male did not brood but he fed the female each time she brooded during the day. The male took nesting duties with greater concern than the meadowlark male. Both towhees were very cautious and suspicious, seeming more timid than the meadowlarks. They made innumerable trips and flights to and around the blind, but when apparently satisfied with their inspection, they went on with the regular duties. Second:—The meadowlarks were suspicious and very timid, possibly because of the open spaces where they nest, and even after they had gone to the nest they kept the blind under close scrutiny and continued their inspection flights around it. The male was less timid than his mate but felt the nest responsibilities much less than the males of the

other two species. He never fed the female while she brooded, seldom went to the nest when she was there, and fed the young much less than she did. Much of his time was spent on his favorite perch guarding the nest and calling while the female did most of the actual work of feeding. In cleaning the nest both were about equal in activity. Third:—The male grosbeak was the greatest singer, the least annoyed by invasion and the least suspicious. He made more trips and fed more than the female who spent much of her time at the nest. He seemed to be the best nest mate of the three species for he did his share of the brooding while the other two males did not. Although the grosbeaks made

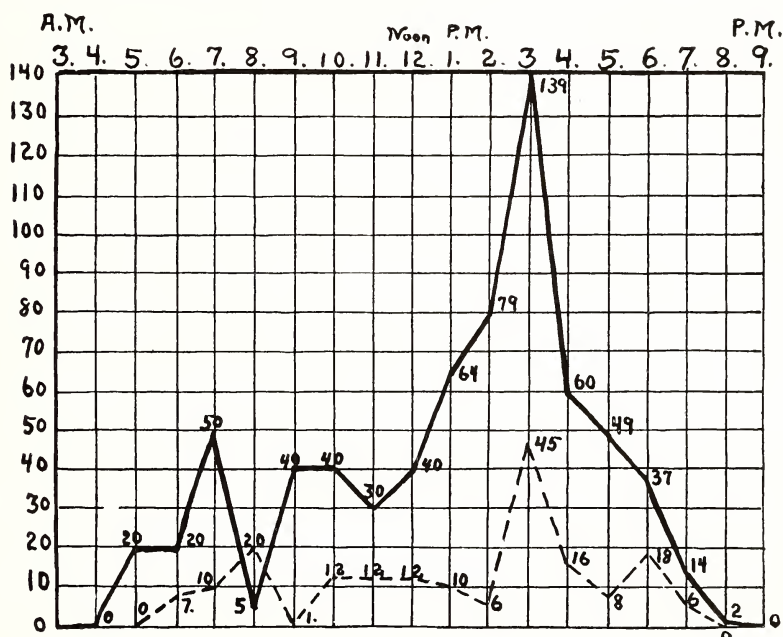


Fig. 1. Graph showing a comparison of the number of times the Rose-breasted Grosbeak and Meadow Lark sang, and the number of times per hour from 3:00 a. m. to 9:00 p. m. The continuous line refers to the Grosbeak (total 689 times singing during day) and broken line to the Meadow Lark (total 183 times singing during day).

fewer trips to the nest than the others, yet they fed more,—feeding each young on an average of 52 times a day. The female brooded much more during the day than the females of the other two species, and the grosbeaks guarded the nest by staying at it more hours of the day than the others. It was the usual custom with this species for one to stay at the nest until the other came and then to leave as the other alighted on the nest. The male ate more excreta and cleaned the nest more than the female, but she rearranged the twigs of the nest and repaired it four times during the day. Both ate lice a number of times. With the rose-breasted grosbeaks the duties were more evenly accepted by both sexes than they were by the other species.

