

# BIRD-BANDING

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## CHIPPING SPARROW NOTES

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During 1939 I banded a pair of Chipping Sparrows (*Spizella passerina passerina*) at Battle Creek, Michigan. Neither one returned. During 1944 I banded three females and two males, all nesting in late July and early August in our front yard in a space 14.77 x 10.15 x 6.15 meters. During 1945 another female and another male were banded. Twenty-eight nestlings, which left nests in the yard, have been banded but none of these have returned.

Three females out of six and two males out of four did not return in later years. One female and two males came two summers; one female came three summers and another came five, including the year they were banded. Since the birds were adult when banded, the ten adults averaged 1.90 (1 to 5) known years in age. Since the average would probably be six months longer, the ten adults probably averaged 2.40 years known age.

The territories of each male were different than those of closely related Field Sparrows (*Spizella pusilla pusilla*). The male Chipping Sparrow had a definite territory over which he battled with other male Chipping Sparrows but territories were changed usually each summer. One pair nested in a certain tree early during the summer of 1945 then moved to a new location and another pair used the same tree. Territory appeared to be associated a great deal with available optimum nesting sites also.

## INDIVIDUAL HISTORY 43-20212

The female, 43-20212 was the most interesting in that she returned over a period of more years than any other. I found her nesting 10 times in our yard and twice in neighbors' yards during five summers.

1944 nest. Found August 6. It contained one infertile egg marked very sparingly with blackish spots and scrawls and one young bird about six days old. No male bird was ever observed at this nest. The female and young were banded. The female, 43-20212, was also marked with colored bands.

1945 nest 1. The nest was built between April 16 and May 1. The male and female copulated in a tree near the front porch April 12 during the early morning, again on April 14 and April 19. At the latter time they copulated while on the ground. Between April 19 and 25 the female did no work on the nest. She laid four eggs May 4 to 7 all between 5 and 6 a.m. Then the weather turned cool. She sat until May 21 when one egg hatched. None of the others hatched. With very wet down at 7 a.m. May 21, this youngster weighed .8 gram. He remained in the nest until June 2. On May 30, 31 and June 1 the weather was extremely cool, the mean temperatures

dropping to 52°, 55° and 50° F. respectively, so that the mother covered the young bird nearly all day long. Incubation at this nest required 14 days; the nestling period 12 days, both much longer than usual and both apparently due to extraordinarily cold weather. When the youngster left the nest he flew into an arbor vitae 3.66 meters from the juniper in which the nest was located and two meters above ground. When I approached toward him, he flew 39 meters without effort and rose into a tree a good 11 meters above ground, much farther and higher than the usual young Chipping Sparrow of eight to ten days when he leaves the nest.

1945 nest 2. The male and female copulated June 4 during the early morning about three meters above ground in a staghorn sumac near the yard. On June 6 she was carrying lining material to this new nest in an arbor vitae about four meters from her first nest. The lining material was pulled out from the first nest from which the three infertile eggs had now disappeared. She went onto the new nest at 5:10 a.m. June 7 leaving at 7:30 a.m. when the first egg was found. She went on at 5:30 a.m. June 8 and when examined, the nest at 8 a.m. contained two eggs. The day the fourth egg was laid, June 10, she went on at 5:00 a.m. but after she left the nest that morning she was never seen on it again. On June 13 she was observed with her mate feeding the now full grown 24-day-old young from nest one only a few meters from nest two but she did not return to it.

Apparently another nest was used during 1945 in late June and early July but I did not find it nor did I find her.

1945 nest 4. On July 11 she was building a nest two meters up in a small arbor vitae about 10 meters west of nest two. Three eggs were laid, one each on July 12, 13 and 14 and two hatched July 25 before 5 a.m. for at that time I saw the female eating the egg shells from the newly hatched eggs. The third egg did not hatch. On July 27 I put a young Field Sparrow about the same size in the nest with the two baby Chipping Sparrows. I left him there until August 2 when he was replaced in his rightful nest. On that day I caught the male Chipping Sparrow banding him with number 139-12362 and colored bands. The two youngsters only eight days old left the nest.

1945 nest 5. On August 13 in a pyramidal arbor vitae in our front yard, 24 meters from nest 4 I found this nest with its three eggs. A number of detailed observations were taken at this nest and are recorded in Tables 1 and 2. Two young hatched on August 23, the third early in the morning August 24. The young were still in the nest August 31 and were found out of the nest September 3 probably having left September 1 or 2 while we were away.

This female apparently laid at least 18 eggs during the summer of 1945, hatching and raising three broods of one, two and three young respectively. Two other nests were failures.

1946 nest 1. April 22, 1946 I noted both birds of the 1945 pair on our front porch and on April 23 the female was building a nest in the same juniper by the porch where she built her first 1945 nest. The nest was completed April 25; the eggs laid April 27 to 30. Incu-

bation began the night of April 30 and three eggs hatched May 12, the fourth May 13 before 6 a.m. The four young left May 22. I was gone from then until late June so do not know what happened during that time.

1946 nest 2 (?). On July 8 I found a nest 183 centimeters above ground in an arbor vitae about 14 meters from nest one. It contained four eggs but they were taken by some predator July 13 and I did not see the pair again during the summer.

1947 nest 1. During 1947 early spring I did not find either 43-20212 or her mate of the previous two years. I left during mid-May for Saskatchewan but on June 24 found on the south side of our lot two meters above ground in a small arbor vitae a nest belonging to 43-20212 and an unbanded male. The nest contained four young ready to leave the nest, at least eight days old indicating the eggs were laid about June 2-5. She probably had another nest in May.

1947 nest 2. On June 30 a completed nest was found in our neighbors' grapevines exactly 28.3 meters directly west of the earlier nest. Four eggs were laid July 1-4 but some predator devoured them about July 11.

1947 nest 3. Found July 31 along the driveway two meters above ground in another arbor vitae in the hedge beside our driveway, this nest was 21.5 meters from nest two. It contained two eggs. Finally on August 18, the female deserted her two infertile eggs. The male still sang during the early morning until August 25.

1948 nest 1. This nest was across the road in our neighbors' yard three meters above ground in an arbor vitae. I found it May 7 with two eggs but when examined May 12 I found it empty.

On July 10 this female and her unbanded mate were found feeding three young in our yard. The nest must have been located across the street but the parents now had brought the young into our yard.

1948 nest 3. On July 12 I found this nest two meters above ground in an arbor vitae along the driveway. This nest contained three eggs. A fourth egg was laid the next morning but the female deserted the eggs. On August 20 I observed this pair in our yard with one of their youngsters. The male fed the young bird which now had a full-grown tail and must have been between 51 to 55 days old. The young bird was also observed eating grass seeds by himself.

I did not find female 43-20212 again. She nested in our yard during five summers and I found 12 of her nests, 10 of them in our yard. Although all of the nests were not found, the greatest distance between those found was 76.2 meters. Otherwise the remaining 11 were located in a rectangular area the size of our city lot, 20 x 40 meters. One nest was less than a meter from our back yard in a neighbor's lot and the remaining 10 in the yard were all more than five meters from the front of the lot. Probably seven nests were not found. In only one case did I find that she had produced young in an unfound nest. Eighteen eggs hatched and the 18 young left the nest from a known 43 eggs (41.86% success) but probably 70 eggs were laid during the five summers (25.71% success). During one summer she raised three broods of young (1945); during 1946 she produced one brood; 1947, one, and 1948, one.

TABLE I  
INCUBATION OF THE CHIPPING SPARROW AT NIGHT  
BATTLE CREEK, MICHIGAN

Date 1945	Sunrise A.M.	Female Left Nest Morning	Minutes Before Sunrise	Sunset P.M.	Female On Nest for Night	Minutes Before Sunset	Minutes Female On Nest During Night	Weather
Aug. 13				7:46	7:24	22		Clear
Aug. 14				7:44	7:41	3		Clear
Aug. 15	5:48			7:43	7:50	-7		Clear
Aug. 16	5:50			7:42	7:52	-10	604	Clear
Aug. 17	5:52	5:56	-4	7:41	7:32	9	629	Clear
Aug. 18	5:53	6:01	-8	7:37	7:22	15	623	Foggy A.M. Clear P.M.
Aug. 19	5:53	5:45	8	7:36				Clear
Aug. 20	5:54			7:35	7:44	-9	614	Clear
Aug. 21	5:54	5:49	5	7:34	7:10	24		Clear
Aug. 29	6:03			7:23	7:20	3		Clear
Average	5:53	5:52	0.25	7:38	7:33	5.55	617	Clear

Two young hatched August 23.

TABLE 2  
ATTENTIVENESS OF THE CHIPPING SPARROW AUGUST 1945  
BATTLE CREEK, MICHIGAN

Date	Incubation of Last Egg in Days	Number of Minutes Observed	Number	Periods on Nest Average in Minutes	Extremes in Minutes	Number	Periods off Nest Average in Minutes	Extremes in Minutes	Percentage of Time on Nest
Aug. 16	3	240	9	15.1	5-21	8	13.0	4-40	56.7
Aug. 17	4	197	7	20.0	12-30	8	7.1	4-11	71.06
Aug. 18	5	272	8	23.4	9-41	10	8.5	5-14	68.75
Aug. 19	6	379	12	22.8	12-37	13	8.1	3-33	72.03
Aug. 20	7	34	1	25.0	—	1	9.0	—	73.5
Aug. 21	8	6	0	—	—	1	6.0	—	—
Total		1128	37			41			
Averages				20.5			8.95		67.47
Extremes					5-41			3-40	

Total Minutes on Nest 761  
 Total Minutes off Nest 367  
 Average Temperature 70°F. (extremes in mean 65°-75°).

TABLE 3  
PROBABLE EFFECT OF TEMPERATURE ON THE KNOWN  
INCUBATION PERIOD OF THE CHIPPING SPARROW

Year	Last Egg Laid	Last Egg Hatched	Incubation Period	Average Mean Temp.	High Temp. F.	Average High Temp.	Low Temp. F.	Average Low Temp.
1944	July 27	Aug. 7	11 Days	76.0°	100°	89.3°	53°	62.8°
1945	July 14	July 25	11 Days	70.8°	91°	80.8°	49°	61.5°
1944	May 16	May 27	11 Days	66.9°	89°	77.7°	46°	55.8°
1933	May 21	June 1	11 Days	66.2°	85°	77.6°	47°	55.1°
1945	June 10	June 22	12 Days	65.9°	84°	63.6°	46°	55.6°
1938	May 11	May 22	11½ Days	55.4°	82°	62.5°	34°	46.1°
1948	May 4	May 17	13 Days	53.2°	76°	62.5°	31°	44.2°
1946	Apr. 30	May 13	13 Days	51.6°	76°	61.9°	31°	39.1°
1945	May 6	May 20	14 Days	48.7°	68°	57.6°	30°	39.9°

Thirty-three of her eggs were examined and measured. All were darker blue than usual Chipping Sparrow eggs and had fewer spots. Most often they had scrawls and sometimes only three or four of these. The 33 eggs averaged 17.31 (16.4-19.0) x 12.89 (12.2-13.0) millimeters in measurements.

#### OTHER NOTES

During the five summers 1944-1948, from one to three pairs of Chipping Sparrows nested in our yard. During 1945 three pairs nested in the front yard while on the third lot directly west of us another pair nested and another on the lot directly south so that five pairs nested in an area of about 1.4 acres (56 ares). However, some of these birds did not spend the entire summer on this small an area. Probably their entire summer range consisted of several acres of residences.

During 1945, 43-20212, the female, produced six young (three broods) from 18 eggs; another pair had six young (two broods) leave the nest and she laid 10 eggs; another pair produced three young; a fourth pair three young and a fifth pair two so that the five pairs had 20 young which left their respective nests.

One pair of Chipping Sparrows banded during 1944 did not return during 1945 but another pair returned; the female nesting 42 meters to the northwest; the male 96 meters east of the 1944 site. The female returned with her mate to our yard later during 1945 but neither of these banded birds were seen again. Another female banded during 1945 produced three young in 1945; three in 1946 and eight during 1947.

In several nests females laid eggs five days after young had left earlier nests. The male cared for the young of the previous nests.

In my studies of the Chipping Sparrow I have followed 88 nests from the time of finding until the nests were terminated. In these 58 (65.90%) have had young hatch in them; from 55 (62.5%) young have left. From 277 eggs, 185 hatched (66.78%) and 170 (61.37%) left the nest. This is a much higher average than with female 43-40212 in our yard.

#### INCUBATION PERIODS

Nine nests of the Chipping Sparrow have been followed from the time of the laying of the last egg until that egg or an earlier marked egg hatched. Incubation required from 11 to 14 days. In examining the daily weather records I have found that probably the air temperature during the period affects the length of incubation. Chipping Sparrows have rather loosely constructed nests and all have been above ground where wind and air reach them easily. However, other factors are certain to affect incubation such as the attentiveness of the female. A study of these factors with many species of wild birds would make an interesting project. Table 3 gives a list of the nine nests with the average temperatures during the period of incubation at Battle Creek, Michigan.

## SUMMARY

Six female Chipping Sparrows have been banded by the author in his yard at Battle Creek, Michigan. One of these spent five summers in the yard; another spent three and another two. Two males out of four returned a second summer. The average of the ten adults was 2.40 years of known age.

One female, nesting for five summers, produced from one to six young per year, a total of 18 young for the five years from a known 43 eggs (41.86% success) but she probably laid 70 eggs during these five years (25.71% success). The two of her nests farthest apart were 76.2 meters from each other and 11 of her nests which I found were in an area 20 x 40 meters in size. Thirty-three of her eggs were examined. All darker blue than most Chipping Sparrow eggs, had very few spots, dark black in color. The eggs averaged 17.31 (16.4-19.0) x 12.89 (12.2-13.0) millimeters in measurements. The bird's mate was banded during 1945 and he returned to mate with her during 1946. He did not reappear in 1947.

Another banded pair returned the second year but both of them mated with new unbanded birds.

During 1945 five pairs of Chipping Sparrows nested in an area of 1.4 acres (56 ares) but they fed some on surrounding areas. All did not nest on this area during the entire summer nor did I know how far they moved when not nesting off the area.

In several nests females laid eggs five days after young left an earlier nest. The male fed young, in one case, when the youngster was 51 to 55 days old even though the youngster was eating grass seeds that he picked from the ground.

From 88 nests of the Chipping Sparrow, young hatched in 58 (65.90% success) and young left 55 (62.50% success). From 277 eggs, 185 hatched (66.78%) and 170 (61.37%) left the nest. Of the unhatched eggs, 10 were not fertile, 12 were deserted and 5 plus 4 young were destroyed by cats.

Nine nests of the Chipping Sparrow were followed through the incubation period. Incubation varied from 11 to 14 days. Apparently colder days, mean temperatures 48.7° to 65.9° and low temperatures from 30° to 46° F. take longer, 12 to 14 days. The minimum incubation period, 11 days, occurred at four nests where mean temperatures were 66.9° to 76° and low temperatures 46° to 53° F.

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