

THE CHIPPING SPARROW

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TABLE OF CONTENTS

1 - Introduction-----	page 1
2 - Location of Area-----	1
3 - Climate-----	1
4 - Breeding Range of the Chipping Sparrow-----	1
5 - Special Factors-----	2
6 - General Methods Used for Observation-----	2
7 - Observations Made and Recorded-----	2
8 - Conclusions-----	4
9 - Summary-----	5
10 - Literature Cited-----	5
11 - Acknowledgments-----	5
12 - Graphs 1 & 2-----	6
13. Table 1-----	7
14. Photographs-----	8

THE CHIPPING SPARROW

INTRODUCTION

This paper is based on a life history study of the chipping sparrow, during the Summer Session of 1938, at the University of Michigan Biological Station, under the direction of Dr. Olin Sewall Pettingill, Jr. The data collected, and which will be presented in this paper, was obtained as a regular project in Advance Ornithology between June 30 and July 8, 1938.

LOCATION OF AREAS

The field work upon which this paper is based was done in Cheboygan County, in the lower peninsula of Michigan, in the vicinity of Douglas Lake, on the Biological Station grounds.

CLIMATE

Twenty-five years of meteorological study by Dr. Frank C. Gates, during the periods in which the Biological Station was in session, indicates that the summers are mild, with few periods of extremely warm days and cool nights; there is a high percentage of sunshine, and normally but a modest amount of rainfall during the summer--sometimes even to the point of severe drought. (1) The climate of this region is such that Douglas Lake region is placed in the Canadian zone of the Boreal region. (2)

BREEDING RANGE OF THE CHIPPING SPARROW

Breeds from Yukon, north British Columbia, Saskatchewan,

central Manitoba, north^{ern} Ontario, south^{ern} Quebec, and Cape Breton Islands, to central Texas, southern Mississippi and central Georgia. Winters chiefly in the southern states, occasionally as far north as Oklahoma and southern New Jersey. Casual in Cuba and northeastern Mexico. (3)

SPECIAL FACTORS

Human Interference -- Probably the greatest factor which effects the study of a true life history of any bird is the interference of the human element. Most of the nests observed were located in such places that many people would pass within a few feet of the nest. Also the removing of the birds for weighing and measuring interfered with the daily routine of the bird's life.

GENERAL METHODS USED FOR OBSERVATION

Most of the observations made of the chipping sparrow was from a "blind", which is a tent-like affair, placed near a nest, so that the activities of the birds can be observed without too much disturbance to the bird.

OBSERVATIONS MADE AND RECORDED

Several nests were under observation, but most of the data was collected from one nest, which was located in a Sumach tree, *Rhus glabra borealis*, 15 feet from the east corner of the Entomology laboratory, and about 5 feet from the ground. Photographs of one of the nests under observation, with young and female adult, will be found on page 3.

Nest-- The bulk of the nests observed consisted of fine grasses and rootlets, trimmed with chickweed (*Stellaria* sp.)

and was lined with hair of varying lengths, probably depending on the source. The size of the nest averaged -- diameters, outside $3\frac{1}{2}$ inches, inside 2 inches; depth, outside $1\frac{1}{2}$ inches, inside $\frac{3}{4}$ inch.

Eggs -- The number of eggs varied, ^{and} from 4 nest observed, the numbers were 2, 2, 3 & one cowbird, and 4. The normal number being between 4 and 5 according to Chapman and the nest from which data was collected contained four eggs. The eggs ~~were~~ a light bluish green, spotted with dark brown blotches, mostly on the larger end and they averaged 1.75mm. X 1.4mm. The weight of the eggs averaged 1.55 grams.

Young Birds -- The record of one bird's weight was obtained a few minutes after hatching, and the loss of weight was 15% as compared with the original weight of the egg, which was due to the egg shell and water. The daily weights of four birds were recorded and which will be found in form of graphs on page 6, graph 1. Also weights were taken of the birds when they retired at night and again in the morning, before being fed. The average loss during the night, in $7\frac{1}{2}$ hours, was .68 grams or a little over 7% of the original weight. Measurements of the different parts of the young birds were taken every other day and the data obtained will be found in form of a table, page 7, Table I. The feathers broke through the sheaths between the 4th and 5th day.

Adult Birds -- The sexes of the chipping sparrow are practically alike in plumage, but the author was able to distinguish the sexes in his life history study of the chipping sparrow, the female being much duller in color,

especially about the head. The female did all the incubating, and would occasionally leave the nest for short intervals to feed. The feeding of the young was shared equally among both sexes. Feeding started at approximately 5 A.M. and the rate was greatest between 5:30 and 6:30 A.M., about 15 times per hour. During the greater part of the day the feeding was very irregular and after 6 P.M. feeding was sped up to 6 and 8 times per hour and going on as late as 8:45 P.M.

Food -- When the birds were very small, from one to three days old, they were fed principally on small naked caterpillars. But when they became older, they were fed almost entirely on small grasshoppers with an occasional tent caterpillar moth. Both types of food was very plentiful at the time.

CONCLUSIONS

In studying the weight graphs of the young birds, it may be observed that the young birds never gained less than 10% of their mature weight ^{in one day}, and the greatest gain being on the 3rd and 4th day, which was as high as 20%. The gaining dropped off at about the 6th and 7th day, and when the feathers started to develop, the birds began to lose weight. The exact weight of a mature young bird was never obtained, because all the birds left between the 7th and 8th day of hatching and their feathers were not fully developed. Probably without any human interference, the birds would have stayed two more days or left between the 9th and 10th day.

No definite conclusions can be drawn from the measurement data, because the birds left too soon. It does show that

the extent of the birds develop very rapidly, the reason probably due to the need of wings early.

SUMMARY

1. The field work on the chipping sparrow was done at the University of Michigan Biological Station, in Cheboygan County, Michigan, as a project in Advance Ornithology, under the direction of Dr. Olin Sewall Pettingill, Jr.
2. The nest is characteristically lined with hair, and found in trees of varying heights, from 3 to 25 feet.
3. The female does all of the incubating.
4. Both male and female adults take the feeding responsibility, and food consists mainly of insect food.
5. The main feeding hours are in the ^{early} morning and late evening.
6. Young when disturbed leave early, approximately on the 8th day.

LITERATURE CITED

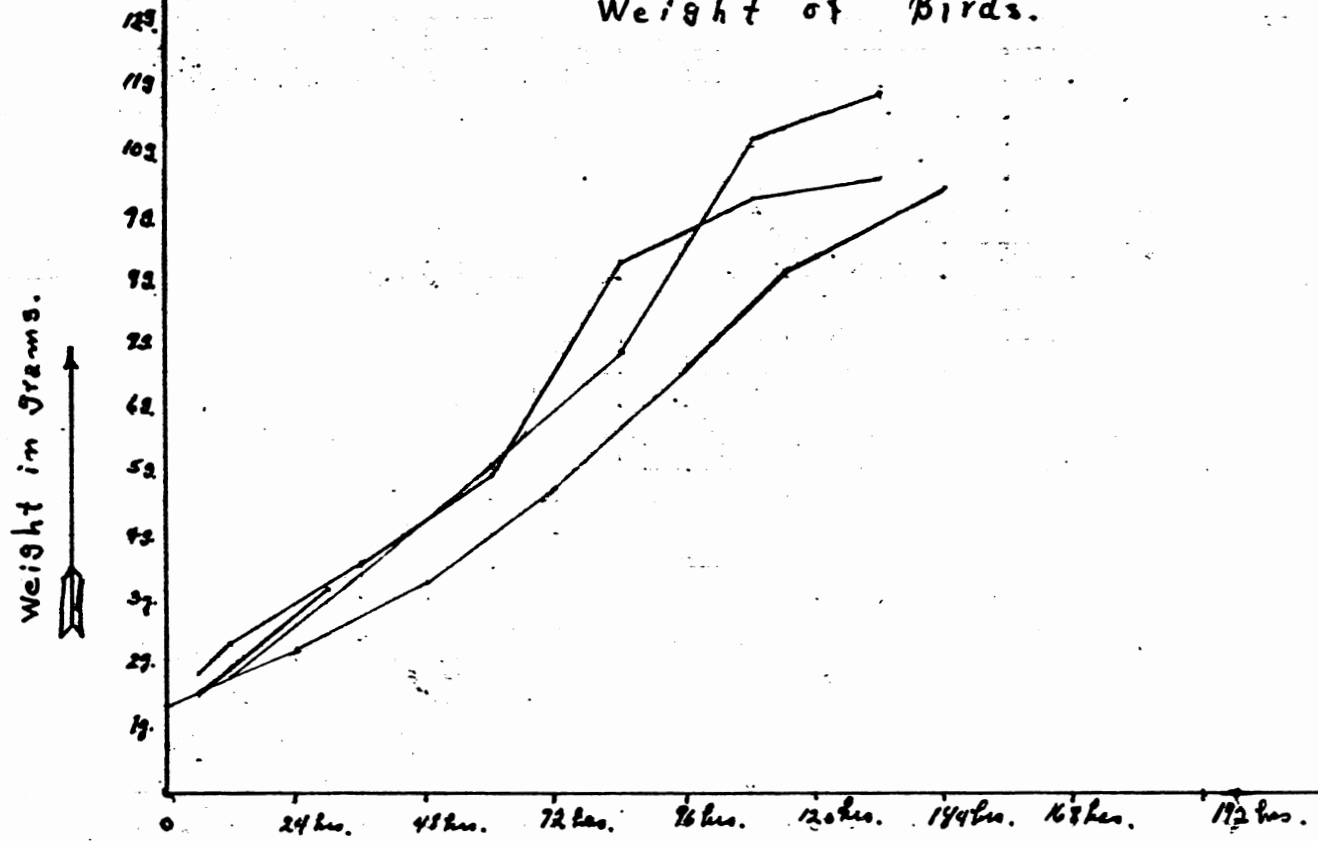
- (1) - Gates, F. C. - Quarter Century of Meteorological Data, Douglas Lake, Michigan, Mich. Acad. of Sci., Vol. 23, 1927.
- (2) Zone Map of North America - Department of Agriculture from the Fourth Provisional Map of the Biological Survey.
- (3) - Chapman, F. M. - Handbook of Birds of Eastern North America, Chipping Sparrow, page 533.

ACKNOWLEDGMENT

Credit is due Maxine Smith for photographs appearing in this paper.

Graph 1.

Weight of Birds.

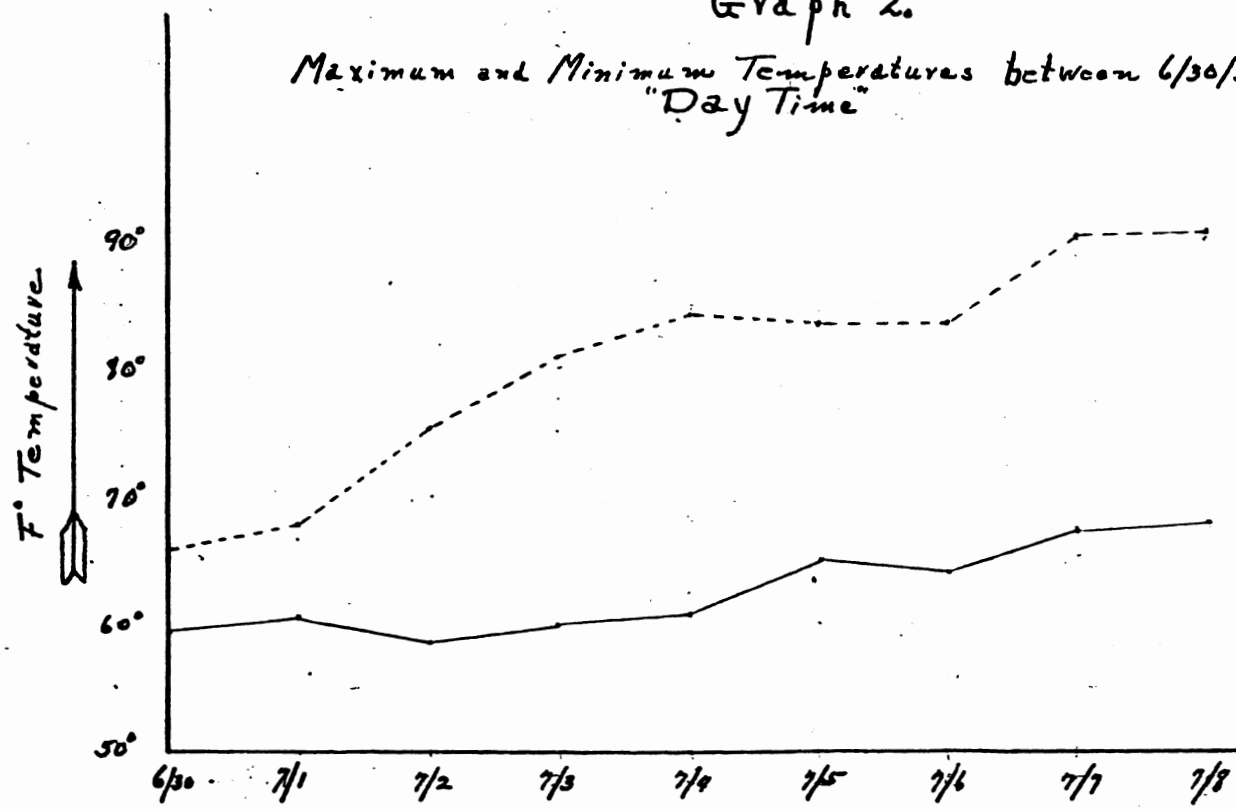


— X-Bird
 — Y-Bird
 — Z-Bird
 - - - S-Bird (Died 30 hours after hatching)

 Age of Bird

Graph 2.

Maximum and Minimum Temperatures between 6/30/38 + 7/8/38 "Day Time"



- - - Maximum temperature
 — Minimum temperature

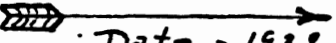
 Date - 1938

TABLE I.

	Y-bird.				
	7/1	7/3	7/5	7/7	
Length	3.4	4.6	6.0	6.8	
Extent	3.1	5.5	9.8	12.5	
Wing	0.6	1.1	2.2	3.2	(all measurements in centimeters)
Tail	0.0	0.0	0.2	0.8	
Bill	0.4	0.5	0.6	0.8	
Tarsus	0.7	1.2	1.7	1.9	

	Z-bird.				
	7/1	7/3	7/5	7/7	
Length	3.1	3.9	5.4	6.0	
Extent	2.7	3.9	7.7	10.5	
Wing	0.38	0.75	1.65	2.7	(all measurements in centimeters)
Tail	0.0	0.0	0.05	0.5	
Bill	0.3	0.5	0.6	0.7	
Tarsus	0.6	1.0	1.5	1.8	

PHOTOGRAPHS

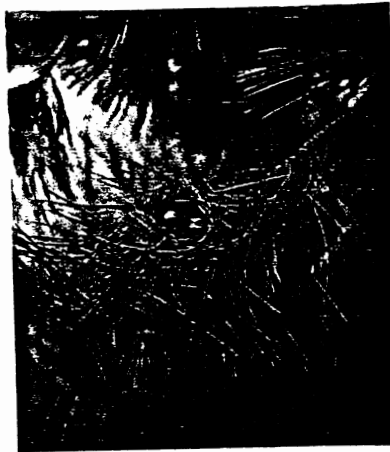
Plate 1.



M. Smith - 1938

Female on the nest.

Plate 2.



M. Smith - 1938

One young and one egg.