

Life History Study of The Vesper Sparrow.

Introduction

This paper is based on a study of the Vesper Sparrow made at the University of Michigan Biological Station during the summer of 1938.

The parents and young of 2 nests were studied in considerable detail. Both nests were located on the hill behind the Biological Station. Nest no. 1 was found by Mr. Ehler and Le Roy Harvey when they flushed the bird from the nest on June 27. The second nest was reported to me by Mr. Parker on July 9. Both nests contained 4 eggs at the time of discovery. The young birds left nest no. 1 at the end of 7 days making my records slightly incomplete. By building a little fence of chess sticks around nest no. 2, I was able to observe the young for 12 days.

Habitat

This shy, plain little bird seems to prefer the open dry uplands. Both of the nests studied were in a rather open area where the vegetation consisted largely of sumac shrubs, aspen seedlings, and scattered pines. The ground cover was sparse, being made up largely of Pteris aquilina and Hieracium lanceola. Observations on bird trips seem to indicate that this bird is also found on country road-sides and burned over areas. Upon hearing the alarm note of an adult Vesper Sparrow I was able to locate a nest in a burned over area about 5 miles from the Biological Station. Here the young poplar seedlings formed a dense cover. In sharp contrast to this setting was one observed in a sand dune region where vegetation was almost entirely absent. The protective coloration of the ^{incubating} adult concealed her from my eyes until she was flushed from the nest.

Nest.

The simple little nest of dried grasses is placed in a slight depression on the ground. All the four nests observed were placed under a bush from 1 1/2 - 2 ft. high. I wasn't able to decide whether such a site was chosen for added concealment or for the purpose of providing the nest with shade at mid-day since in each case the clump of vegetation was south of the nest.

Very little variation as to the materials in the nests was observed in those on which data was taken. The bulk was composed of dried grasses with a lining of slightly finer grasses. Most of the pieces toward the inside and bottom averaged between 5-7 inches in length while those around the outer top edges were much shorter. A few old pine needles were identified among the rest of the materials. Measurements for the 2 nests are given below.

	Outside diam.	Inside diam.	Outside depth	Inside depth
Nest no. 1	5"	2 1/2"	2"	2 1/4"
Nest no. 2	5"	2 3/4"	2 1/4"	2 3/8"

Eggs.

Considerable variation was noticed in the markings of the eggs. In either case the ground color was a pinkish white. In nest no. 1 the eggs were uniformly marked with tiny purple spots and scrawls. The eggs in the second nest had much larger spots and scrawls of a more purplish hue. Measurements were taken only on one egg in nest no. 1 and all the eggs in nest 2. Only 3 eggs hatched in each nest. It may be interesting to know that the lightest egg in nest 2 is the one that didn't hatch.

Nest no. 1	2.1 mm. x 2.5 mm.	2.18 grams
Nest no. 2	2 " x 1.5 "	2.18 grams
	1.9 " x 1.5 "	1.95 "
	2 " x 1.6 "	2.30 "
	2 " x 1.6 "	2.40 "

Incubation

Incubation was observed in nest no. 2 for between the hours of 5 and 12 P.M. on July 9, 2 days before the young hatched. The sky was overcast, the air was calm and damp. A summary of the length of time the adults spent on and off the nest are as follows:

Average time off nest	—	10 min.
" " on	—	18 "
Longest " off	—	15 "
" " on	—	30 "
Shortest " off	—	5 "
" " on	—	6 "

Differentiating the sexes by size and mannerisms I concluded that both birds incubated the eggs, although the time spent by the male was by far the least and was confined to the early part of the day. The bird I considered the male approached the nest differently, took a different position on the nest, and seemed much shyer, approaching most cautiously and looking carefully in all directions for a minute or more before departing. The eggs were turned several times by means of feet and bill. The female did quite a bit of shifting around on the nest, preened herself for some time and in general was quite nonchalant when my presence was not suspected. During this morning's observation two incomplete songs of the male were heard just once from a nearby tree. In all my observations of both nests, this was the only musical sound I heard from my birds. The proximity of the camp must have influenced this because I heard them sing in fields farther removed.

Young.

The young birds of nest no. 1 hatched during the late afternoon on night of June 29. Two babies in nest no. 2 hatched on Mon., July 11, the third one hatching the following day. Since

I wasn't present at either event. I don't know how the shells were disposed of although Jarboak says they are eaten. The bad egg was removed from nest no. 1, but I left the unhatched egg in nest no. 2 just to see what would happen. It disappeared the 5th day after the first bird had hatched.

The unattractive babies are flesh colored with dark gray eye bulges and a few tufts of black down on their otherwise naked bodies. The ~~front~~ inside lining of their mouths is a bright rose color. When the edge of the nest are whatever supported them was slightly jamed they would automatically open their little mouths wide as if in expectation of food. I found that this reaction ceased after they began to open their eyes. This began about the 4th day, but their eyes weren't completely open until the 6th day.

The weights for the birds of nest 2 are recorded in graph form on p. 10. Measurements were taken only of the birds in nest no. 1, they together with the weights of these birds are tabulated on p. 11. No graph is shown for them because they represent such a short period.

While 2 of the birds in nest no. 1 were being weighed on July 6, the other one waddled from the nest. Knowing that its wings were not strong enough for flight, I searched the surroundings for almost 2 hours but did not recover the missing nestling. The parents kept up a constant chip as always but gave me no clues. When I came to the nest the next morning, they were still very disturbed. One of the parents kept flying madly from the branch of a nearby alder to the top of my head as he kept up a constant chip as if to decoy the remaining birds from the nest. When I returned after lunch, both of the ^{young} birds were gone.

3.

When the young birds in nest no. 2 left at the end of 12 days, they were fully feathered and well able to fly.

Adults.

Both adults are nondescript brownish striped birds with rufous wing patches and white outer tail feathers. This drab attire is very efficient at concealing the parent on the nest, for seldom is the bird seen before he is flushed. The sexes in nest no. 2 were easily differentiated since one had a well defined white spot on its breast. I considered the larger bird (the one with the breast spot) the male. Both parents from the first nest seemed to be much shyer than those of nest no. 2 probably because explained by the proximity of nest no. 2 to the ballfield. The other nest was several hundred feet beyond the fire tower. In general, however, the actions of both pairs were very similar.

The extreme shyness of this little ground sparrow increased the difficulty of study considerably. It was almost impossible for me to approach the blind unseen. Sometimes the parent would stay away from the nest for $1\frac{1}{2}$ hours when the blind was present. I found out later that if another person accompanied me when I entered the blind and walked away from the nest a little later, my nervous little friends soon forgot their worries. When the parents were disturbed they would keep up a constant chip of alarm. At one observation I had been sitting quietly in the blind for an hour and the parent hadn't returned to the nest or ceased his alarm note for a minute. I suddenly realized that my blind was defective and within 5 minutes after I fixed it, the bird came quietly back to the nest.

I found that sudden rustling sounds were the most disturbing. Sometimes a little rustling of paper in the blind would bring the anxious parent hurrying and chipping back to the nest.

When undisturbed, one must watch very closely if he is to see the reaper depart and approach the nest. Upon leaving, the bird looks carefully in all directions to see if the coast is clear. Then without the slightest sound it slips from the nest and walks quietly along the ground for about 6 or 7 feet before flying away. The approach is generally just as cautious and hesitant. After I had made my appearance in the vicinity of the nests for several days, one of the parents from nest 2 generally sat on guard in a tall aspen overlooking the nest and would start to chirp as soon as I appeared on the scene.

In the first nest, the trees kept me from seeing where the adults spent most of their time when off the nest. I was of the opinion, however, that they remained very close to the nest because whenever there was any disturbance, both of them were immediately at hand. The open hall field seemed as a recreation grounds for the adults of nest 2. I would find them flying around in the trees at the edge of the field or picking up insects from the ground when they had time off. I believe most of the food for the young was gathered here.

The presence of other species of birds never seemed to be a disturbing factor. Goldfinches, Robins, and Cedar waxwings would come within a few feet of the parent on the nest, but no measures were taken against the intruders. I was amazed upon one occasion to see a red squirrel come within 5 ft. of the adult bird on the nest without causing any apparent discomfort to the bird. There may be a possibility that the bird sat very still to escape detection.

On some occasions when the young from nest no. 2 were removed for weighing after they were quite old, they would give way to their fear

by calling to the parents. Each time this happened it brought them hurrying to the nest and feigning injury by dragging a wing on the ground. They chased each to the nest in this manner at a distance of about 15 feet.

Care of young.

Both parents share the important task of raising the family. When the babies are quite young, a great deal of brooding is done. In contrast to this, when the weather is warm, the adult will stand on the edge of the nest with her bill open and shade the nestlings with her spread wing.

Being very tidy housekeepers, no excrement is ever left to collect in the nest. When the birds are very young some of it is eaten but later it is carried off and dropped at some distance from the nest. On some occasions the parent flew up on top of the bird and dropped it there. One faecal sac was generally ^{removed} at a time. This was done when the parent flew from the nest after bringing food.

The system used in feeding the young was most interesting to me. If one bird was on the nest when the other approached, a soft chirp was given and the bird on the nest would quietly leave. This little signalling method worked very well. Only once did I observe any confusion at feeding. After having been disturbed by my approach, neither of them ^{the parents} came to the nest for about half an hour and then both of them must have come without consulting the other. The female had just flown to her favorite perch in the aspen when she saw her mate coming along the ground with food in his mouth. She waited until he was through feeding, and came down immediately after he left to do the same thing.

Sometimes all three birds were fed at one visit by the adult while at other times only one or two were fed. Generally the bird who reached

the father got fed the most, although I have seen the parent take some food out of one mouth and place it in another.

The food at first consisted of small insects and geometrid larvae but later larger larvae and grasshoppers were fed. While the parents were still guarding the young, both parents did about an equal amount of feeding, but later the female seemed to carry the greater burden of the work and generally left the nest as once after feeding.

The young were fed at intervals of about every 10-15 minutes, although the rhythm was disturbed when I came to the bird. After the parents had stayed away from the nest at long periods because of my presence, they would feed very rapidly, sometimes every 2 minutes when they thought I was gone.

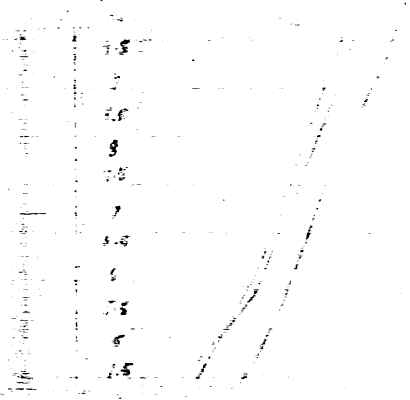
On the day before the young in nest no. 2 flew away, they had left the ~~parent~~ nest and crawled to the chamber of the little pen where they made their own little nest in a depression. I watched the parent come with food for them several times and everytime she would go to the nest before going to the place where the young really were. I should have expected her to do this the first time, but she couldn't understand the change.

Summary.

- 1- The meadow sparrow is a very shy, peaceful dweller of open clearings and meadows.
- 2- The nest made of dried grasses, is placed on the ground in the shelter of some bit of vegetation.
- 3- A considerable variation occurs in the marking of the eggs; 4 seems to be the usual number found in a nest.
- 4- The nestlings gain about 1.5 - 2 grams a day up until about the 6th or 7th day when the feathers develop most rapidly.

5. Both adults take part in incubating, feeding young, and removing excreta.

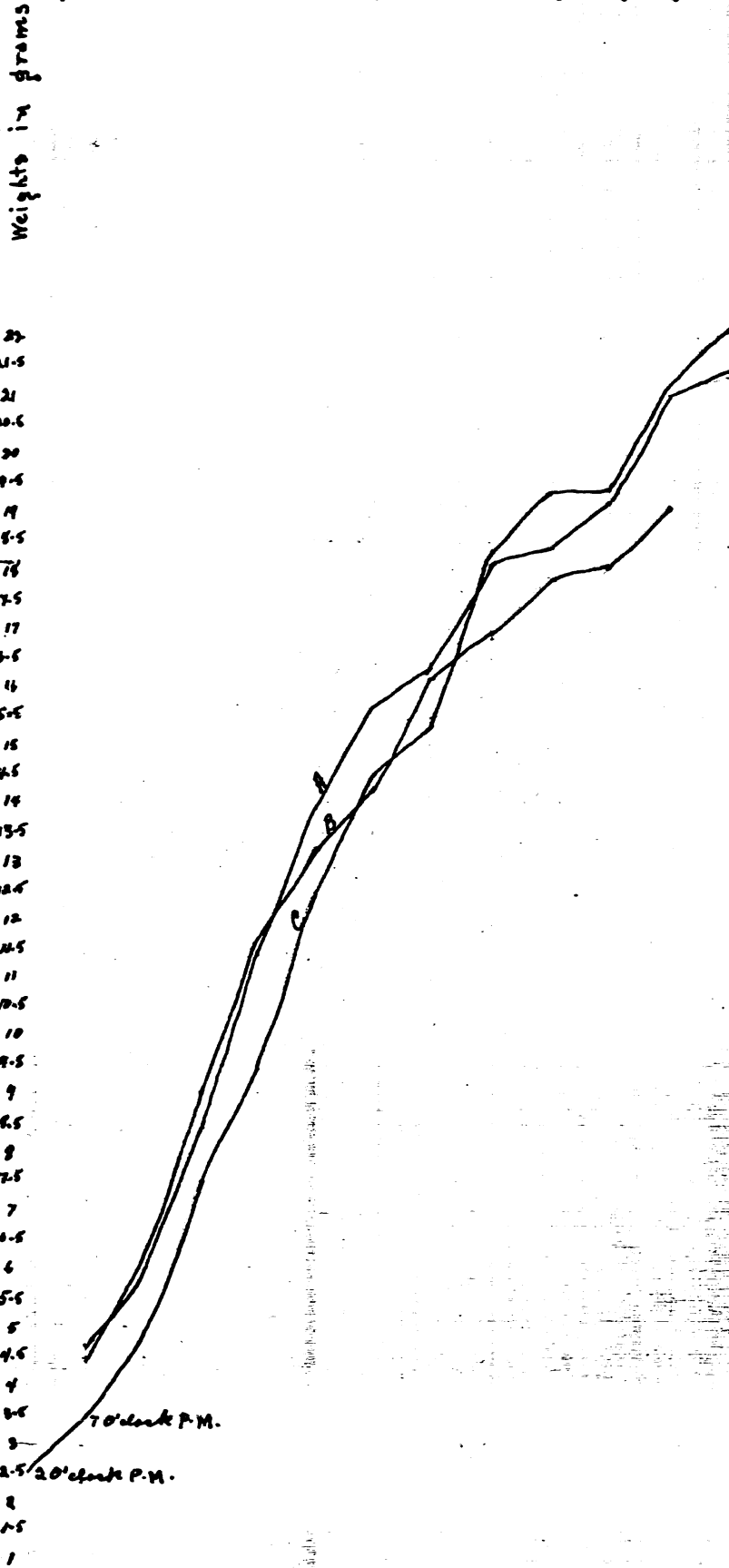
6. If disturbed, the young leave the nest at the end of 6 days, but may be kept in the nest as long as long if a pen is put up.



15	11.84	11.53	9.25
16	13.24	13.21	12.63
17	15.64	14.50	14.92
18	16.35	16.03	15.7
19	18.20	16.77	16.6
20	18.60	17.50	17.77
21	19.35	18.25	18.77
22	21.00	19.05	21.82
23	21.75		22.07

Weights of birds in Nest No. 2

July 12 July 13 July 14 July 15 July 16 July 17 July 18 July 19 July 20 July 21 July 22 July 23



July	A	B	C
12	4.6	4.4	3.5 (2.61 grams at 2 o'clock)
13	6.89	6.23	4.7
14	8.96	9.08	7.5
15	11.84	11.53	9.85
16	13.84	13.21	12.63
17	15.64	14.50	14.92
18	16.35	16.03	15.7
19	18.20	16.79	18.6
20	18.60	17.90	19.77
21	19.35	18.05	19.77
22	21.80	19.85	21.20
23	21.45		22.07

Weights and Measurements of birds in Nest no. 1

	Date	Length	Extent	Wing	Tarsus	Bill	Weight
Bird A	June 30	48 mm.	50	106	10.5	5	4.725 grams
	July 1						6.79
	July 2	59	73	15	14	6	8.45
	July 3						10.96
	July 4	63	113	27	21	7	12.17
	July 5						13.10
	July 6	73	140	38	23	9	15.27
Bird B	July 1	59					7.85
	July 2		73	12	15	6	8.80
	July 3	65					11.96
	July 4		107	27	21	7.5	12.72
	July 5						13.79
	July 6	75	148	36	23	8	
Bird C	July 1						4.74
	July 2	50	51	10	11	6	6.33
	July 3						8.8
	July 4	55.7	90	21	18	7	9.88
	July 5						10.34
	July 6	64	125	32	21	7.5	12.41

Record of Temperature and Precipitation

Date	Temperature at night		Temperature - day		24 hr. prec. in inches
	Max	Min.	Max	Min.	
June 26	63°F	50°F	68°F	58°F	
27	65	47	70	52	
28	67	51	75	56	
29	68	44	80	67	
30	69	58	66	59	0.12
July 1	62	59	68	61	
2	67	56	78	58	Trace
3	71	51	81	60	
4	75	55	84	61	
5	78	58	83	65	
6	77	61	83	64	0.02
7	74	66	88	67	
8	79	64	86	68	0.02
9	68	61	75	65	
10	73	57	72	61	0.09
11	70	54	83	61	
12	77	70	84	65	Trace
13	80	60	87	65	0.43
14	72	63	71	61	
15	62	51	75	57	
16	69	60	83	67	
17	78	57	85	64	
18	76	54	81	60	
19	78	57	85	64	0.14
20	66	56	71	60	
21	68	47	78	52	
22	71	55	75	48	
23	71	46	76	63	

Illustrations



*Nest no. 2 showing side of
nest and eggs.*



Nest no. 2 showing young in nest