

1934

A. V. Fuller

3. GOLDFINCH - *Astragalinus tristus tristus*

Introduction: Three nests were used for this study. The first one was discovered with three eggs and this one was used for most of the observations on incubation and development.

The second nest was originally Mr. Davis' but since he did not remove the young after the third day, I continued observation from the blind without touching the nest to see if the nesting period would be prolonged over that of the first nest.

The third nest was observed for the building process.

Nests, Location and Structure: All three nests were placed close to camp thoroughfares, No. 1 being on top of the hill close to a commonly used route to the gorge, and Nos. 2 and 3 being directly over the sidewalk on State St.

No. 1 was 6' from the ground in an oak sapling. It had three supports, being in a crotch formed by the main trunk and two upright branches. It merely pressed against the trunk but was woven around the two branches. The resulting shape was conically ovoid. Measurements were: inside depth - 1 1/4", outside depth - 3 1/4", inside diameter 2 1/4" x 3 1/4", outside diameter - 2 1/2" x 3".

No. 2 and 3 were laid on horizontal branches of maples held on all sides by small upright twigs. No. 2 was 10' from the ground and 8' from the trunk. No. 3 was 13' from the ground and about 6' from the trunk.

To observe No. 3 a tower was placed about 8' away but no blind was erected. The female worked on the nest a week with the male close at hand singing, but not observed working. Much of the material brought was fibers from a nearby clothesline, also downy feathers and plant down. Today, the eighth day, the nest seems completed but there is no activity around it altho the goldfinches can be heard in the neighborhood. Both nests placed horizontally are necessarily less conical and more the shape of a hollow cup.

In observing the structure of nest No. 1 more closely, the bulk is seen to be grasses, fine plant stems, and plant down with a very few twigs. The inside is lined with plant down and then this is held in place by a scant lining of very fine grass fibers permitting the down lining to show through.

Reactions toward observer during incubation and development of young: At nest No. 1 the female always saw me approach and would be gone by the time I was 10' from the nest. But she would return very soon and pay me no more attention. At nest No. 2 where people were constantly passing directly under the nest, the female did not appear to notice my entrance into the blind and I would judge she acted very normally. The males never seemed to know of my presence.

Incubation at Nest No. 1. I first visited the nest on July 11th and found 3 eggs. Mr. Henderson wished to remove one for experi-

mental purposes, but in the process of taking them out and marking them, one was dropped and one was slightly crushed. The crushed one was replaced.

July 12th. Crushed egg had been removed. A fourth egg had been laid. The female was very perturbed and spent some time off the nest crying "ba-bee" from various places. Before returning to the nest she always perched on the telephone wire directly over it, then dropped down to the base of the tree and worked up to the nest by a regular route.

July 13th. Fifth egg.

July 14th. Sixth egg. Two males responded to her alarm cry, but the male evidently chased the other one away.

The eggs were bluish white and measured:

1. 12 x 15.5 mm.
2. 12.6 x 16.2
3. 12.8 x 15.8
4. 13.1 x 16.2

July 15th. Incubation begun. After feeling of the eggs I withdrew about 50' to observe. Female remained on the nest unless disturbed by passersby. The male brought food into the tree but she generally left to receive it on her favorite perch, the telephone wire.

During the next ten days the male paid very little attention to his mate save to bring her food, sometimes once in an hour, sometimes once in several hours. He passed over singing his flight song every 15 or 20 minutes and during the first few days of incubation two other males were often seen with him, but the 10th day they had disappeared. Often when the female was frightened off the nest a robin or a chipping sparrow would sit about ten feet from her on the wire, just interested in her cries or sometimes joining in. Sometimes the male would come, but not seeing anything to fuss about would leave again.

July 24th. During most of the incubation period the weather was very hot and with little wind. But on the 24th the wind became increasingly strong and at times the oak swayed violently. However, there was no evidence of disturbance on the part of the bird. She incubated with very little rest all day.

July 25th. 5:30 A.M. male was flying.

8:30 - 11:30 observed from about 100'.

Female incubated almost continually, leaving the nest only for brief flights. During the latter part of the forenoon she permitted the male to bring her food right to the nest.

5:30 P.M. Flushed the bird and found eggs. 1 and 2 hatched, 3 with one side crushed and part of the outer shell picked away. No. 4 was intact.

July 26th. Fourth egg hatched, and third crushed egg had disappeared.

Note: In nest No. 2 the two sterile eggs are still in the nest on the 14th day. Mr. Davis observed the parents eat the broken shells.

Care of the Three Young: Both parents fed the young by regurgitation about once very hour, the female leaving the nest while the male fed them, and then returning immediately and feeding them again. The feeding was less often than with the Vesper sparrows, but this is probably due to the fact that the regurgitated food was in a more concentrated form.

Excreta from both nests was weighed on the fifth day and the sacs from the Vespers weighed more. Was this due to the presence of more undigestible material in the food of the Vespers, or to the greater size of the Vespers. Probably due to the latter.

Feeding began at daybreak and ended at dusk.

Brooding was quite continuous during the first few days, but the female only was observed. Later in the first week the brooding periods were shorter and less often and during the second week the chicks were left entirely alone, night and day, except for about an hourly feeding during the day.

During the first week the parents ate or removed the fecal sacs even after the young were able to void them over the edge of the nest. During the second week, however, the parents paid no attention to the sanitation and the rim of the nest became very untidy. (In nest No. 2 the parents seemed a little more exacting in the care of the nest and on the 14th day this nest presented a somewhat neater appearance than the first nest, but there were only two birds to care for.)

Development of the Young: The chart shows the details of development. I was most interested in comparing their development as a tree-nesting species with the vesper sparrow as ground-nesting birds. The goldfinches were much more active in the nest, stretching, preening the feathers with their mandibles, etc.

I especially noticed the rapid development of their grasping powers and very soon it was difficult to pry them loose from the nest. I also began to appreciate why it was possible for the vespers to leave their nest at a much earlier stage in their development.

During the first few days the young would open their mouths expecting me to feed them, but by the end of the week they seemed to differentiate but showed no fear of me. Soon they were hearing and recognizing the song of the male as he flew near and opening their mouths in anticipation.

During the last three days weighing and measuring was very difficult because the chick was so active. On the 12th day, August 6th, one chick had left, the second chick to hatch (the one I had been measuring) was clinging to a twig several feet away from the nest, and the third chick had gone to sleep in the nest. After weighing the second chick for the last time I put him back in the nest and I believe he remained there for the night.

On the 13th day, August 7th, all three chicks were out, the last one using the perch occupied by the second chick the day before. I returned for several days but never was able to discover the chicks altho I heard the parents calling them and several times before I reached their territory thought I heard the chicks themselves.

Conclusion: I found this study very interesting and was especially glad to compare to two types of nesting birds. My greatest surprise was to find them leaving the nest with the tail feathers, especially, so undeveloped.

Note: 14th Day - birds are still in nest #2, altho due to leave. The parents are calling them and one bird is clinging high in the nest but has not yet attained the rim.

Date	Age	Wgt.	Length	Wing	Tail	Alar Ext.	Wing + Tail	Wing + Tail + Alar Ext.	Wing + Tail + Alar Ext. + Head + Neck	Wing + Tail + Alar Ext. + Head + Neck + Feet	Wing + Tail + Alar Ext. + Head + Neck + Feet + Wings
7/25/34	1 day	1.45g	30. mm	1.7	1.7	1.7	3.4	3.4	3.4	3.4	3.4
7/26	2 days	2.89	36.	3.7	1.7	1.7	5.4	5.4	5.4	5.4	5.4
7/27	3 days	2.90	39	4.9	1.8	1.8	6.7	6.7	6.7	6.7	6.7
7/28	4	5.1	39	5.9	1.8	1.8	7.7	7.7	7.7	7.7	7.7
7/29	5	6.18	39	7.2	1.8	1.8	9.0	9.0	9.0	9.0	9.0
7/30	6	7.90	52.	8.9	1.8	1.8	10.7	10.7	10.7	10.7	10.7
7/31	7	8.39	56.	9.7	1.8	1.8	11.5	11.5	11.5	11.5	11.5
8/1	8	9.14	58.	10.9	1.8	1.8	12.7	12.7	12.7	12.7	12.7
8/2	9	10.54	66.	11.1	1.8	1.8	12.9	12.9	12.9	12.9	12.9
8/3	10	10.98	72.	11.1	1.8	1.8	12.9	12.9	12.9	12.9	12.9
8/4	11	11.91	75.	11.1	1.8	1.8	12.9	12.9	12.9	12.9	12.9
8/5/34	12	11.25	83.	11.1	1.8	1.8	12.9	12.9	12.9	12.9	12.9
8/6/34	12	11.25	85.	11.1	1.8	1.8	12.9	12.9	12.9	12.9	12.9
7/25	10	5.5	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
7/26	11	6.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
7/27	12	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
7/28	13	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
7/29	14	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
7/30	15	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
7/31	16	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/1	17	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/2	18	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/3	19	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/4	20	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/5	21	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/6	22	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/7	23	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/8	24	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/9	25	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/10	26	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/11	27	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/12	28	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/13	29	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/14	30	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/15	31	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/16	32	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/17	33	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/18	34	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/19	35	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/20	36	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/21	37	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/22	38	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/23	39	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/24	40	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/25	41	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/26	42	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/27	43	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/28	44	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/29	45	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/30	46	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
8/31	47	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/1	48	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/2	49	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/3	50	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/4	51	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/5	52	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/6	53	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/7	54	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/8	55	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/9	56	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/10	57	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/11	58	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/12	59	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/13	60	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/14	61	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/15	62	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/16	63	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/17	64	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/18	65	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/19	66	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/20	67	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/21	68	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/22	69	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/23	70	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/24	71	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/25	72	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/26	73	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/27	74	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/28	75	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/29	76	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/30	77	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
9/31	78	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/1	79	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/2	80	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/3	81	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/4	82	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/5	83	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/6	84	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/7	85	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/8	86	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/9	87	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/10	88	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/11	89	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/12	90	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/13	91	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/14	92	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/15	93	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/16	94	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/17	95	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/18	96	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/19	97	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/20	98	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/21	99	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2
10/22	100	7.1	35.	4.1	4.1	4.1	8.2	8.2	8.2	8.2	8.2

Goldfinch
Wgt. and
Measurements

Sides brown. sides of breast yellow. head + back mustard color. Very active. grasp strong. black edged with tan seedorns same. Primaries tan edged with black. Head + upper back olive br. rump + tip of tail black. Had to sack to weigh. Removed from branch - gave loud alarm cry.

Down areas on head, down back of leg down wing sides of belly down on head 5 mm. faint "cheep" toes. Flies open. eyes partly open. excreta .8 g.

Feather tracts appearing along wing shoulder, sides

Weight Development

grams 16

15
14
13
12
11
10
9
8
7
6
5
4
3
2
1

Vesper Sp.
Gain in Weight

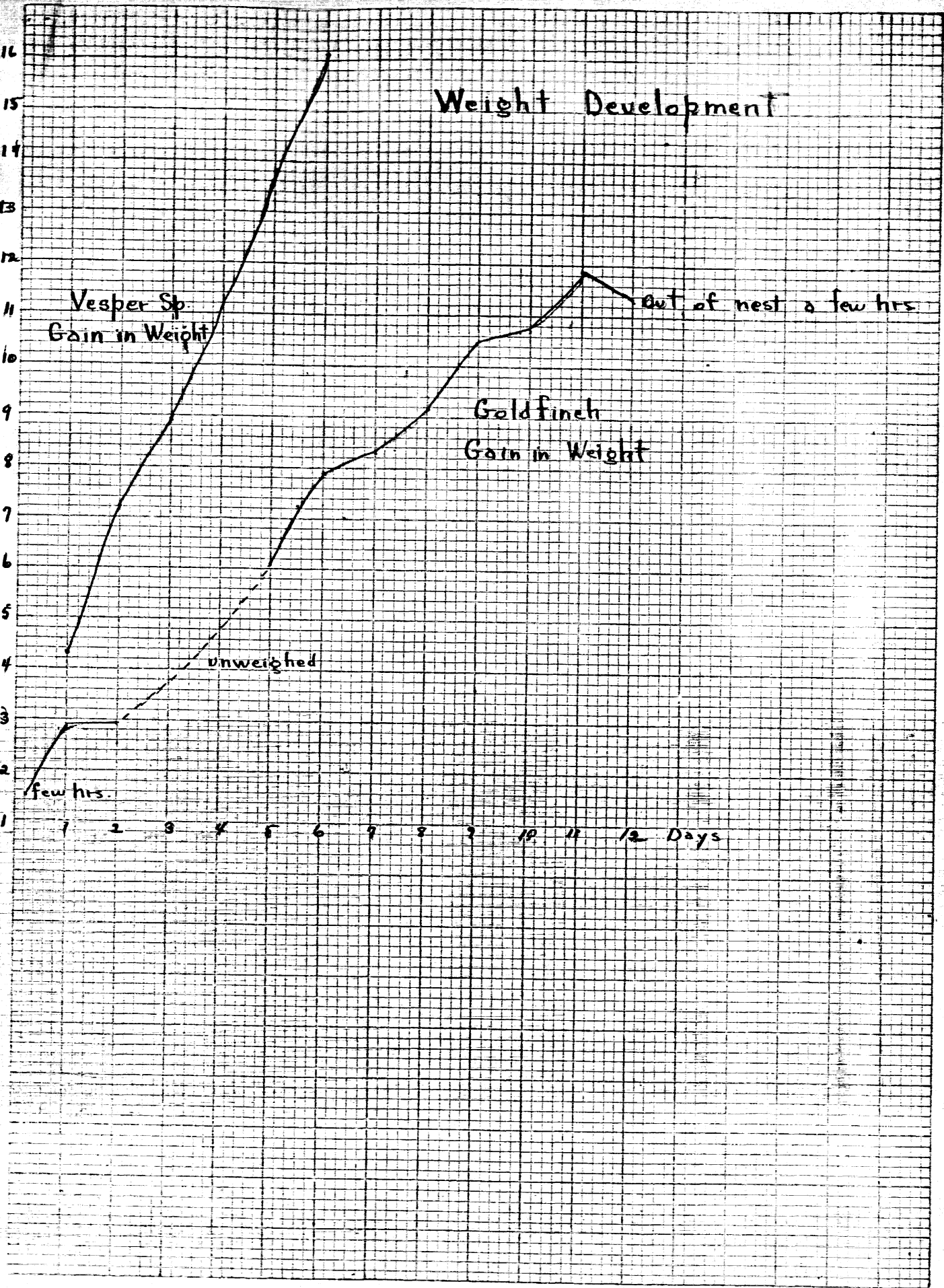
Goldfinch
Gain in Weight

unweighed

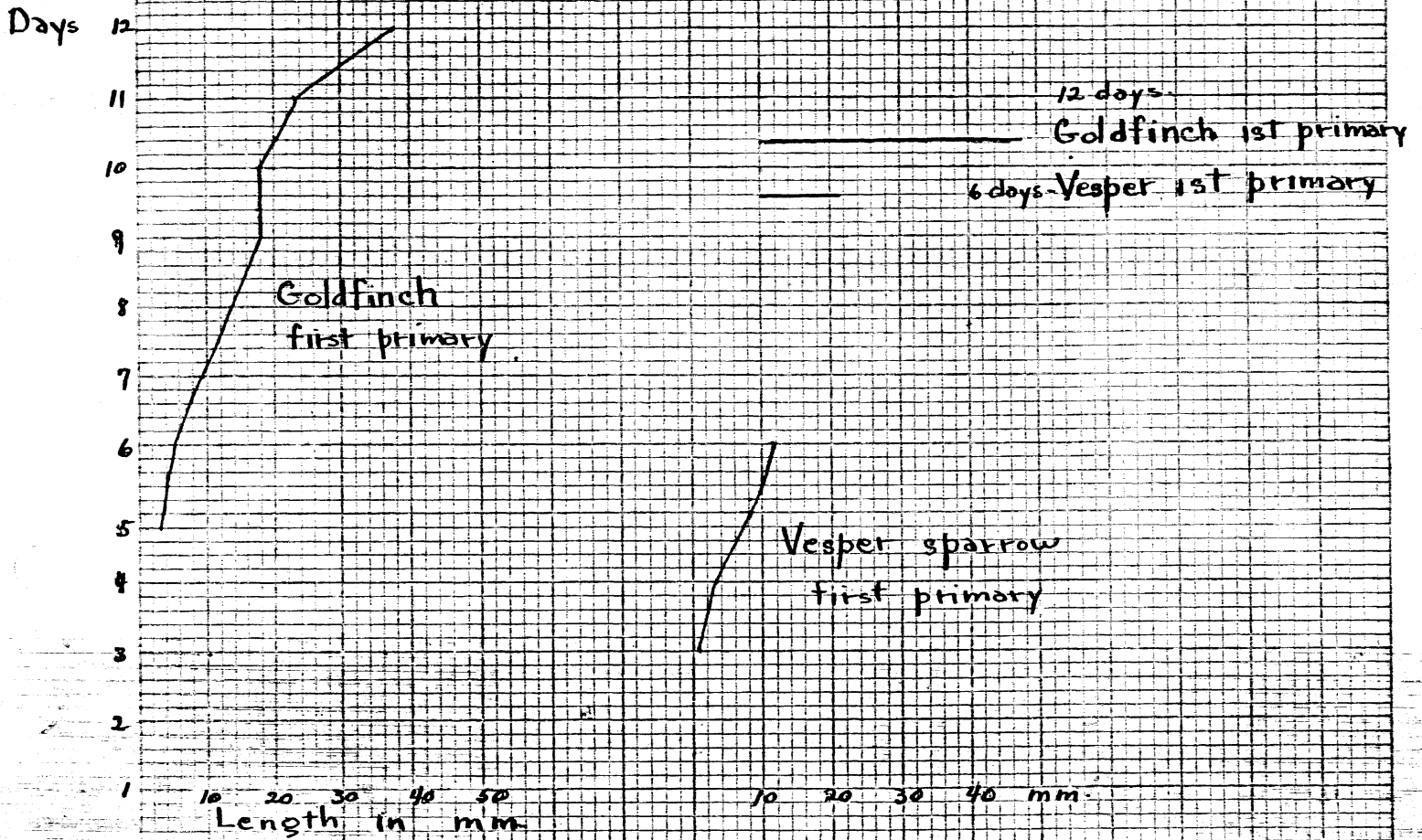
few hrs.

out of nest a few hrs

1 2 3 4 5 6 7 8 9 10 11 12 Days



Wing Development



Growth in Length

