

OBSERVATIONS ON ONE NEST OF THE RED-EYED VIREO  
(Vireo olivaceus)

by

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A report of an original field study conducted  
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Acknowledgements

The following observations of a Red-eyed Vireo (Vireo olivaceus<sup>CEUS</sup>) were conducted at the University of Michigan Biological Station located on Douglas Lake in the summer of 1941. The equipment used in the study was furnished by the Ornithology Department of the Biological Station.

Observations began on July 10. A blind was erected eight feet from the nest from which activities in and about the nest were observed. The nest was observed until July 29 at which time the young had left the nest. Notes on incubation, feeding, growth rate, development, and sanitation were recorded throughout this period.

Included also in this paper are notes taken on five other Red-eyed Vireo nests found in the vicinity of the nest mentioned above. Only two of the five nests contained nestling vireos. The others were barren, but apparently had been previously occupied this season.

Cowbirds greatly influence the nesting procedure of the Red-eyed Vireo in this region since they parasitise their nests in many instances. However, only one of these nests found occupied by young contained cowbirds or their eggs. Since they are such an important factor in the life history of the Red-eyed Vireo, some observations on the cowbird will be included in this study.

#### Acknowledgements

At this time the writer wishes to express his sincere appreciation for the help and information given him by Dr. Olin Sewall Pettingill, Jr., Dr. Theodora Nelson, and Miss Ruth Spencer.

## The Nest

### Location

The nest which was observed during part of the incubation period and throughout the nesting period was located in a small drooping Moosewood (*Acer* sp.) on the north slope of the sandy hill between Douglas and Burt Lakes. The surrounding vegetation was composed of Northern Red Oak (*Quercus borealis* var. *maxima*), Aspens (*Populus tremuloides* and *P. grandidentata*), Northern White Pine (*Pinus strobus*) and Dogwood (*Cornus* sp.). This vegetation was very dense to the west, but was much thinner to the east, giving way to a small opening in the trees some ten to twenty feet in that direction.

The site selected for this nest as well as the site selected for three of the five other nests was very well chosen. The leaves of the tree in which the nest was located drooped about the nest in such a manner that one approaching the nest from practically any direction could scarcely see the nest without stooping, or walking close enough to the nest to flush the bird.

No species of tree was chosen more than once as the nesting site, a fact which indicates that the Red-eyed Vireo has no preference for any one species of tree to support its nest in Northern Michigan. However, in each case the nest was located in the edge of a dense thicket with a break in the vegetation close by forming an opening or clearing.

### Description

Each of the nests found was located in a simple fork of a branch running in a horizontal position. The nest was fastened to this fork and hung from it in much the same manner as the net of a basketball goal. Thus it may be readily seen that the nest is not absolutely

round, but slightly angulate on the fork side.

The nests were found to be supported by a heavier piece of material, usually a strip of bark running completely underneath the nest and up the sides. The nest proper consisted of materials woven about the supporting branches and suspended from them in a short, woven, sac-like structure. The inside of this structure was lined with a thin layer of grasses or Northern White Pine needles along the side as well as in the bottom. No feathers were found in any of the nests. The materials used in constructing the nest in order of proportions used were bark from trees, twigs, grass, pine needles, roots, leaves, cobwebs and scraps of wool.

The average measurements of the nest were as follows:

inside diameter	6 cm.
outside diameter	7.5 cm.
outside depth	6 cm.

#### Eggs

The nest was discovered on July 8 by Miss Spencer two days before the study began. At this time she reported two eggs in the nest, one a Vireo and the other a Cowbird. On July 10 there were three eggs in the nest, two Vireo eggs and one Cowbird egg. Underneath the nest was found a second Cowbird egg which perhaps was pushed from the nest by the Vireo.

The Cowbird egg was to be removed from the nest, but during the measuring of the eggs, one of the Vireo eggs was punctured and it was decided to leave the cowbird egg in the nest until the remaining Vireo egg hatched. Since the puncture was in the air space only, the punctured egg was also left in the nest. Upon return to the nest the following day it was missing from the nest. It could not be found on the ground near the nest and is thought to have been

carried away by the Vireo.

Dimensions and weights of the eggs were as follows:

2.0 cm x 1.55 cm	2.30 g.
2.1 cm x 1.55 cm	2.90 g.

The eggs were white with several umber specks concentrated on the larger end of the egg.

#### Incubation

The incubation period given by Bergtold (1917 p.100) is 12-14 days for the Red-eyed Vireo. Since the date these eggs were laid is not known, the incubation period for this nest could not be determined. It was known to exceed eleven days, however.

#### Sex involved

Throughout the incubation period only one bird was seen at the nest. Once another Vireo was seen in the low trees near the nest. It flew to a tree directly above the incubating vireo and sang. I assumed it was a male because of its singing. The vireo on the nest fluttered its wings and uttered two short call notes. Soon it left the nest and the singing of the male ceased. The singing continued again when the female returned to the nest again.

It is thought that the one bird which took care of the nest and incubated the eggs was the female bird because the other bird sang all the time incubation was carried on. However, the sex was not definitely determined even though one bird (which was marked by ink smeared on the edge of the nest) was seen near the nest.

#### Activities during the incubation period

The nest was under observation more than eight hours during the incubation period. One-half of this time was spent in the morning between the hours of 8:15 and 10:30 July 14 and 9:00 and 11:10 July 18. During the afternoon of July 14 the nest was

observed from 2:00 until 4:00, and on July 17 and 18 from 7:15 p.m. until 8:15 p.m. The bird left the nest an average of two times an hour during these observations. The length of time away from the nest varied from one-half minute to twelve minutes while the average length of time away from the nest was 4.6 minutes.

#### Reaction to Intruders

When flushed from the nest during the incubation period, the Vireo always allowed the person to come very close to the nest, often within two feet. Seemingly it depended upon concealment of the nest and blending coloration rather than quick flight for protection. Once it realized that it had been discovered, it would slip quickly over the edge of the nest and fly low to another tree about twenty-five feet away and alight without uttering a call or feigning injury.

#### The Young

On July 18 the Cowbird egg was found to have hatched. Growth rates of it were taken daily until the vireo egg hatched. At this time the Cowbird was removed.

Since the same Vireo was feeding one Cowbird at one time and one Vireo at another, it is possible to get a comparison of the growth rates of these two birds when fed by the same individual without competition of other young in the nest. The Cowbird remained in the nest but three days. This duration is not long enough to give a complete account for a comparison with the growth of the Vireo, but does offer some information about the earlier rates of growth. A graph showing growth rates may be found on page 11.

The young Vireo was found to have hatched on the morning of July 21. It appeared small indeed beside the three-day-old Cowbird which possessed a bulk slightly more than seven times the bulk of

the Vireo. Scales to weigh the young were not available until 7:30 in the evening of each day. Each recording of the young was taken at that time each day except on the last day when the young Vireo was weighed at 9:00 a.m.

### Feeding

The feeding of the young Vireo was watched more closely than any procedure in the study. All feeding observed consisted of some form of insects which apparently had been killed by the parent before returning to the nest. However, the adult was never seen killing any of the food. This food consisted of caterpillars for the greater part and once the young was observed being fed a large beetle.

Feeding and other nesting activities after hatching were observed 11 hours and 90 minutes. Four hours were spent observing on July 19 during the morning; two hours July 23 in mid afternoon; two hours July 25, from daybreak until 6:30 a.m. and three hours and 90 minutes on July 25 in the late afternoon and evening. During these periods food was brought to the young 26 times, or an average of 2.1 feedings an hour. The average length of time spent away from the nest was ten minutes each trip and the extremes were one-half minute and 65 minutes.

The feeding intervals of this particular Red-eyed Vireo varied greatly. Feedings did not appear to be a simple routine task which occurred a certain number of times each hour or day as has been recorded in many birds. Sometimes food was brought to the young at ten or fifteen minute intervals for two hours or more. Owing to the fact that only one young was being fed, such irregularities in feeding may possibly be explained.

Food was not accepted by the nestling on every occasion it was



presented. On a few occasions the adult brought the food to the nest, offered it to the young, and then ate the food itself. Each feeding was accompanied by a brooding for the first few days, but soon the broodings became more irregular.

It was noted that the length of time between feedings on raw windy or rainy days was greater than the intervals between feedings on clear days with less wind. It might logically be thought that the reverse would be true because more food would be needed to maintain the body temperature, but such was not the case. No reason can be given for this unless insects were more difficult to obtain on the raw wet days.

#### Growth rate

A comparison of the rates of growth of the young Cowbird and young Vireo during the first three days shows that the Cowbird grows much faster. A comparison of the number of times each was fed was attempted, but no adequate comparisons could be made because observation periods did not correspond completely enough. The records kept do point out the fact that this more rapid growth was accompanied by more numerous feedings even though the bird was still incubating and received no assistance in feeding or incubation from its mate.

#### Development

When but one day old the young Vireo was very helpless. Development from this point on was surprisingly rapid. At the end of the second day it could be heard calling for food when the nest was touched. Before its eyes opened on the fourth day, it would hold its head up and mouth open for food whenever the nest swayed in the breeze. After its eyes were open, it no longer begged for food when the nest swayed.

On the fifth day the young Vireo clung to the nest for the first time when being removed for weighing. These attempts to cling to the inside of the nest were weak on the first day, but after that the young bird became noticeably more and more strong. After the sixth day the feather tracts began to develop much more rapidly than before. At this stage the nestling began to gain less weight each day. It also lost its exceedingly large stomach and began to attain the adult form very rapidly. Even at this advanced stage the young was frequently brooded by the adult.

#### Nest Sanitation

The nest remained remarkably clean throughout the rearing of the young. The adult carried the egg shells away in its beak. On the fourth day after hatching it removed the fecal sac and ate it after first having fed the young. Fecal sacs did not appear after each feeding, but occurred much less frequently.

#### Reaction to intrusions at this period

Formerly when flushed, the Vireo left the nest as quietly as possible. Soon after the eggs hatched, she became much more aggressive. Her calls soon brought her mate and both would alight on a low limb often no more than five or six feet away and repeat a nasal two note call, chee-w-e-i-n, much as a Frenchman would pronounce the same group of letters. On one occasion, after having disturbed the nest, both adults followed the intruder for a distance of one-hundred feet from the nest, repeatedly scolding him. Their aggression was always limited to scolding. They were never observed darting at the object of their threats as the Kingbird or Black Tern frequently do.

#### Departure from the nest

The manner in which the young left the nest is not known. All

appeared as usual when the nest was visited in the morning, but upon returning in the afternoon the young was not to be found.

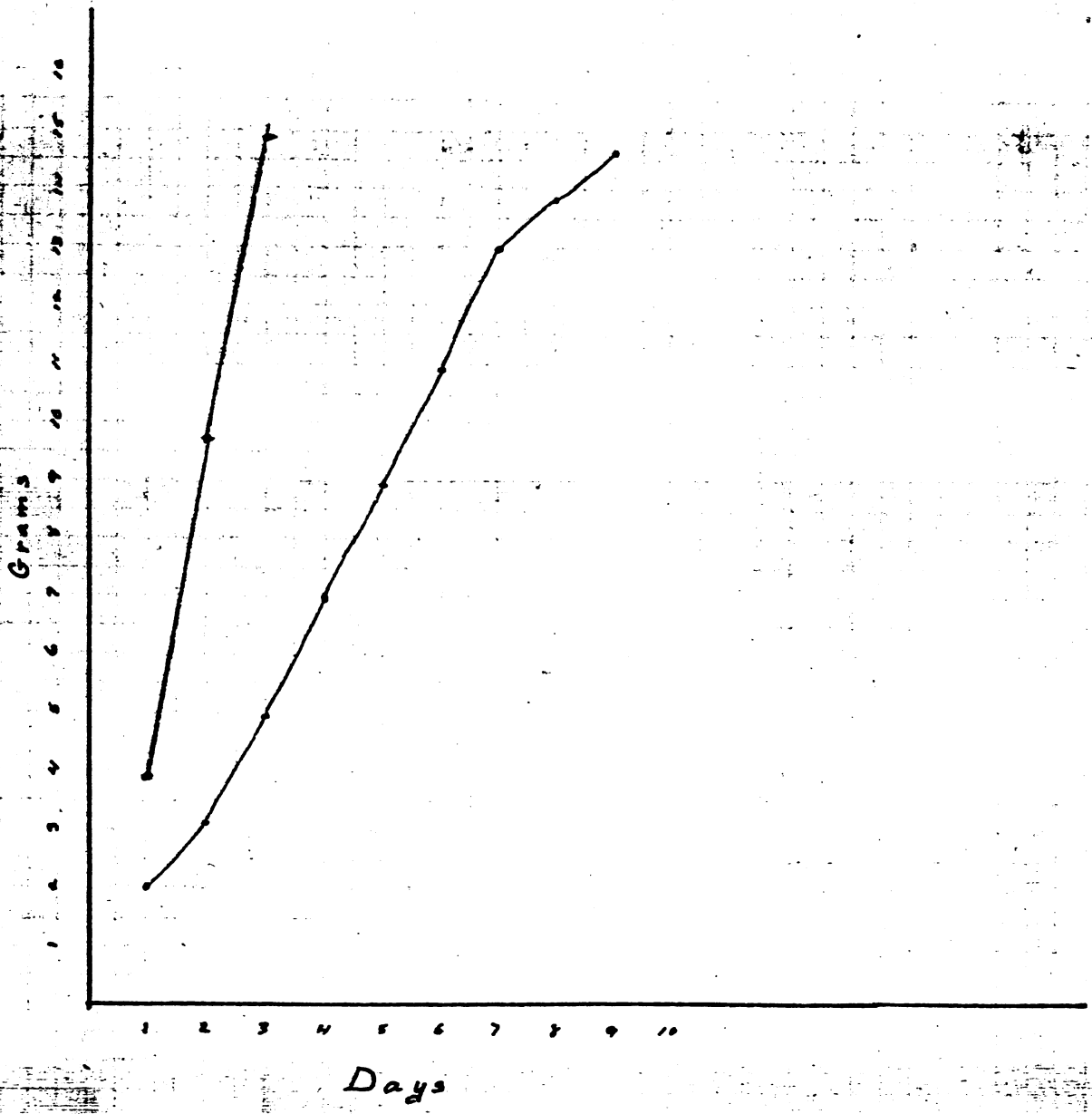
#### Summary

1. The nest and eggs of the Red-eyed Vireo observed were typical vireo nest and eggs. All nests were located on a low limb in a fork, and not more than ten feet from the edge of a clearing.
2. The exact length of the incubation period is not known, but is known to have exceeded eleven days.
3. Vireo nest in the Douglas Lake Region are often parasitised by Cowbirds. The young Cowbirds hatch first and grow more rapidly than do the Vireos.
4. The food given the young consisted entirely of insects.
5. Feeding intervals are very irregular. The average rate of feeding was 2.1 times per hour. Feedings were <sup>two-tenths</sup> ~~two~~ hours less frequent on rainy or raw days than on clear warm days.
6. The most rapid development of the feather tracts occurred after the fifth day.
7. Fecal sacs were eaten by the adult in all cases observed.
8. One bird, believed to be the female, was observed taking care of the nest during incubation or rearing the young.
9. The bird, when on the nest, would allow an individual to approach within two feet of the nest before flushing.

## Literature Cited

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South States of the Red  
and the Coast



Growth rates of the Red-eyed Vireo  
and the Cowbird

C. H. JOHNSON

August 21, 1942

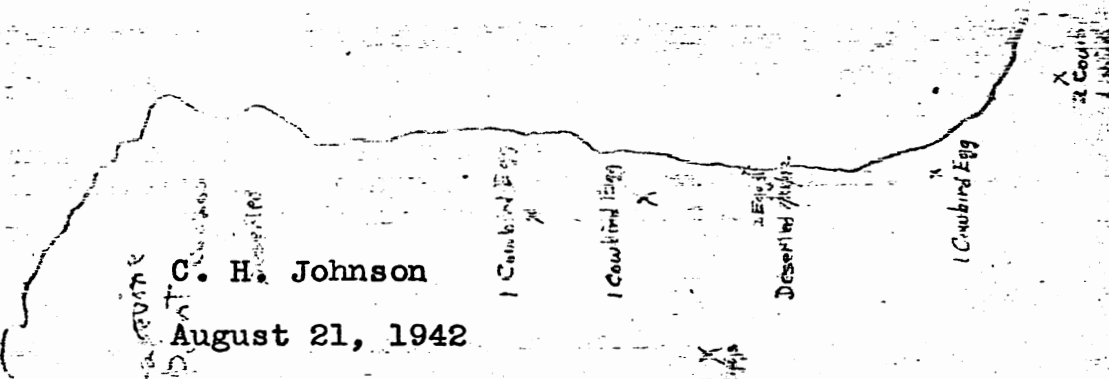
Red-eyed Vireo \_\_\_\_\_

Cowbird \_\_\_\_\_

RED-EYED VIREO

An Informal Report  
on  
Observations of Two Nests

C. H. Johnson  
August 21, 1942



1 Cowbird Egg  
+  
2 Vireo Egg  
2 Cowbird  
Deserted 7/11

+ No eggs

□ Yellow-billed Cuckoo  
2 Nests  
2 Young fledged  
X Red-eyed Vireo  
9 Vireo Nests  
2 Cowbirds Fledged  
from those occupied

S. Fishtail Bay

Road

X 2 Cowbirds fledged  
1 Vireo Young died

Grapevine Point Cuckoo  
□ Deserted

1 Cowbird Egg  
X

1 Cowbird Egg  
X

2 Eggs  
Deserted 7/11

X  
1 Cowbird Egg

Cuckoo  
□  
2 Young Fledged  
7/19/92

X  
No Eggs

INFORMAL REPORT ON WORK WITH RED-EYED VIREO

Nine nests were found of which only three showed any sign of life.

At the beginning one nest near the Men's Toilet on Upper State Street had one young Vireo and two young Cowbirds. The Vireo died and the Cowbirds were fledged and the Vireo parents were observed feeding them several times.

On June 27 an empty nest was discovered near the North Fishtail Bay road.

June 30, it had two Vireo eggs and one Cowbird egg.

June 31, there were three Vireo eggs and still the Cowbird egg.

July 3, a blind was placed at the nest; incubation.

July 5, 2 hrs. 25' observation.

July 6, 1 hr. 20' observation.

July 7, unsuccessful effort to trap adult.

July 8, eggs found on the ground.

Total observation time-----3 hrs. 45'

July 11, another nest discovered at edge of lake a little north of the boat-house; construction nearing completion; 2 hrs. 35' observation in two periods.

~~July 12, 3 hrs. 15' in three periods; construction stopped in the afternoon.~~

July 12, 3 hrs. 15' in three periods; construction stopped

in the afternoon.

July 13, incubation begun; adult observed on nest.

July 14, 2 hrs. observation; 2 eggs found in nest.

July 15, 1 egg seen on ground; incubation later observed.

July 16, 6 hrs. 5' observation; 1 egg observed in nest and territorial disputes being carried on.

July 17, 1 hr observation; both birds came to nest once.

July 18, tower blind placed at nest; incubation later.



July 19, 3 hrs. observation; observation carried on till darkness; last attentive period ~~ended~~ begun at 7:30 p. m.

July 20, 2 hrs. observation; an inattentive period of only 30".

July 21, 5 hrs. 30' observation besides time taken in trapping; no inattentiveness before 6:30 a. m.; in the afternoon a hair net was placed over the nest and made to close over the bird as it returned to the nest; the bird fought with little noise and much courage while being banded; when released, it flew away swiftly and was never observed to return; one hour of continuous watch was kept in the afternoon and may subsequent visits were made, but the nest was always empty

Other nests were found as indicated on the map, but none ever had any birds in attendance.

Total observation time---33 hrs. 15' on both nests

Red-eyed Vireos were heard singing and scolding up to the time of the writing of this report.