

1942

BIOLOGICAL RESEARCH DIVISION

THE EDMUND NILES HUYCK PRESERVE, RENSSELAERVILLE, N.Y.

Report for the Summer of 1942

June 2 - August 15

by

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INTRODUCTION

The only research worker in the Biological Research Division of the Preserve during the summer of 1942 was the writer, S. Charles Kendeigh, who came with his family of wife and two children on June 2 and left on August 17. His permanent position is that of Associate Professor of Zoology at the University of Illinois.

Weather
The summer season was unusually cool, windy, and rainy. Water poured over the dam from Lincoln Pond throughout June, receded to some extent during July, and flowed over again for a few days in early August. At no time were there exposed mud flats around the Pond. Showers were frequent and often severe, and there were frequent fogs. The water falls became high on August 15th.

Doubtlessly due to the wet spring and summer, mosquitoes were very abundant, more so than any residents can remember for the past. They swarmed in the woods during the daytime and spread elsewhere at night.

Due to curtailment in the use of rubber and gasoline there were no scientific visitors at the laboratory. Likewise the writer made no excursions elsewhere and confined his research activities to the Preserve. These activities dealt principally with birds during June and early July and with mammals during July and August. The observations on birds were written up in manuscript form preparatory to publication.

WORK WITH BIRDS

Population Studies - On the abandoned farmland and previously lumbered forest areas that constitute the Preserve, ecological succession progresses through grassy fields, briars, mixed shrubs, aspen-birch-ash, to a climax either of hemlock-beech or beech-maple-hemlock. A study was made of the bird populations in these various communities.

The grassy fields were quite poor in birds, but occasional fields contained meadowlarks, bobolinks, grasshopper and vesper sparrows, and other species less frequently.

With the occurrence of the first briars and low bushes, song and field sparrows made their appearance. Many additional species appeared as more and more shrubs came in. An area of about eight acres containing mixed shrubs, various young deciduous trees, and some pine and spruce plantings was made the subject of a special study. On Odum's vegetable map this was the field marked P5 south of the Lincoln Pond woods, the narrow strip between the woods and the road on the east, and across the road around the headwaters of the first small stream.

The number of pairs of birds of different species represented on these eight acres is as follows:

Northern yellow-throat	-	7 pairs
Towhee	-	4
Chestnut-sided Warbler	-	3
Song Sparrow	-	3
Robin	-	3
Field Sparrow	-	2
Magnolia Warbler	-	2

Nashville Warbler	-	1
Black and White Warbler	-	1
Purple Finch	-	1
Alder Flycatcher	-	1
Indigo Bunting	-	1
Catbird	-	1
Brown Thrasher	-	1
Veery	-	1
Black-billed Cuckoo	-	1
Baltimore Oriole	-	1
Cedar Waxwing	-	1
Flicker	-	1
Kingbird	-	1
Goldfinch	-	1
Bluebird	-	1
Cowbird	-	1

These total to 40 pairs. However, not all species nested on the area, some used it only as a source of food, and the territories of many extended beyond the limits of the area under study. Probably the density on a hundred acres of this type of community would be about 264 pairs.

The bird population in the hemlock-beech woods at Lincoln Pond was determined. This included 21 acres and areas W1, W2, W3, W4, and W5 on Odum's map and also the hemlock areas adjacent on the north. Here the count was as follows:

Oven-bird	10 pairs
Black-throated Green Warbler	7
Magnolia Warbler	5
Blackburnian Warbler	4
Canada Warbler	3
Hermit Thrush	3
Black-capped Chickadee	3
Black-throated Blue Warbler	2
Black and White Warbler	2
Robin	1
Hairy Woodpecker	1
Pileated Woodpecker	1
Blue Jay	1
Scarlet Tanager	1
Red-eyed Vireo	1
White-breasted Nuthatch	1
Ruffed Grouse	1
Crow	1
Veery	1
Barred (?) Owl	1

This equals 50 pairs and when analyzed by species and the area required by each, probably represents a density of about 191 pairs per hundred acres.

For comparison with this preponderantly evergreen forest, a bird census was made in a preponderantly deciduous forest of beech-maple-hemlock on the west side of Lake Myosotis. This area covered 62 acres and on Odum's map included W11 to W19 inclusive. The following population data were obtained.

Oven-bird	22 pairs
Red-eyed Vireo	17
Black-throated Green Warbler	10
Blackburnian Warbler	5
Black-throated Blue Warbler	4
Black and White Warbler	3
Veery	3
Hermit Thrush	3
Scarlet Tanager	3
Crested Flycatcher	3
Crow	3
Canada Warbler	2
Magnolia Warbler	2
Black-capped Chickadee	2
Robin	2
Ruffed Grouse	2
Blue Jay	1
Hairy Woodpecker	1
White-breasted Nuthatch	1
Pileated Woodpecker	1
Wood Pewee	1
Barred (?)	1

The total is 92 pairs and represents a probable density of about 147 pairs per hundred acres.

Interpretation of Community Relations - In addition to the biotic succession from grassy fields to forest above mentioned, there is also a climatic succession which involves change from one climax forest type to another.

As the continental glacier that covered much of North America some 25,000 to 50,000 years ago receded northward with the amelioration of temperature, this area was first covered with a spruce-fir forest in all probability. This forest was then replaced with a pine - hemlock one, and probably this one in turn will be replaced by a deciduous forest. This process is still going on, and the region is at the stage where white pine has largely disappeared, largely hastened by man, and hemlock forests are becoming heavily impregnated with beech. There may be local areas or cycles of years when the hemlock appears to be holding its own or even recovering lost ground, but in the long run the evidence is stronger that beech advances farther with each swing of the climatic cycle and will eventually, along with other deciduous trees, gradually drive out the hemlock. The influence of these changes on the bird-life is therefore an interesting one and the chief purpose in making these censuses

Species especially characteristic of the hemlock forests are the black-throated green, blackburnian, black-throated blue, magnolia, and Canada warblers and the hermit thrush. Their occurrence in the deciduous forest on the west side of Lake Myosotis was due to the presence of scattered hemlock. One would expect these species of birds to disappear from the region along with the hemlock forests, although this will be a long time in the future.

Birds found characteristically only in the deciduous forests are oven-bird, red-eyed vireo, wood pewee, and crested flycatcher. The occurrence of the first two species in the Lincoln Pond woods is due to beech being scattered throughout this woods. These species will become more widely dispersed and abundant as the deciduous forest expand. Other species occur equally well in forests of either type.

Considerable attention was paid to the analysis of factors or reasons for the limitation of the various species to particular communities or habitats. Usually these involved definite requirements for a particular type of feeding area, for special nest-sites or nest material, or for singing posts of certain types around which the birds have evolved their own specific nesting behavior.

Territorial and Mating Behavior of the Warblers - Of great concern is the behavior pattern each species has evolved for the acquiring of territories and mates. Territories are areas around the nest that the male bird defends from other males of the same species to aid him in obtaining and isolating a female and for insuring a food supply for himself, his mate, and his young. Pertinent information concerning this behavior was obtained on about half of the sixteen species of warblers recorded during the summer.

In general it appeared that song was used as a notification to other males that the territory was occupied but when this was not sufficient, chasing resulted. Song was also used as an advertisement of the male to passing females and to attract them into his territory. Stimulation leading to mating was not brought about by special song, as in some other species, but by mutual display of plumage. Perhaps this is one reason why warblers are so brightly colored or markedly colored. In addition to the territory around the nest some species of warblers were found to have a larger undefended home range.

Recording of Nest Activities * By means of an itograph, brought from the University of Illinois, it was possible to record mechanically over several days the number of times adults brought food to their young. This was done for a kingfisher and a hermit thrush. When

these records are analyzed it should be possible to correlate rate of feeding with rate of growth of the young of these species. These records should also aid in interpreting the behavior pattern of the adults in respect to their nesting duties.

Miscellaneous Notes - One or two pairs of mallards started the season on the north end of Lincoln Pond, but after a couple of weeks they disappeared and no brood was raised.

Green herons first appeared on the Pond on July 16, the great blue heron on July 17, and a pied-billed grebe on July 26. There were no egrets.

The following species were recorded during June and July and may have nested in the vicinity. These species were not listed by either Hamilton or Odum as occurring during the summer.

Woodcock, July 9 , Lincoln Pond woods
Yellow-breasted Chat, June 26, field F12
Golden-winged Warbler, July 25, Trout Pond Ravine
Bald-Eagle over Lincoln Pond
Yellow-billed Cuckoo

WORK WITH MAMMALS

Population Studies - An attempt was made to measure the abundance and determine the choice of communities by mammals in a manner comparable to the study with birds. Since many of the mammals are secretive and nocturnal in habits and require trapping for recording, their study was more difficult and less productive. The general procedure was to trap-out all the small mammals in a measured area over a period of three days and taking this catch as representing the population on that area. The results of this trapping will be given in detail to permit comparison with possible trapping in the same communities in future years. The scientific nomenclature follows that used in Hamilton's report.

The first area trapped, July 1 - 4, was in a grassy field to the north of W4. A circular plot, a half-acre in size, was marked out and in this area 100 snap traps and 17 Sherman live traps were placed. Oatmeal and raisins were used as bait in all the trapping. The species and number of individuals obtained were:

<u>Microtus pennsylvanicus</u> , meadow mouse	2
<u>Peromyscus maniculatus gracilis</u> , Canadian deer mouse	1
Total - 3; density - 6 per acre	

The next area trapped, July 6 - 10, was in a wet shrubby field, east of W1 and W5, in the same area that was used for the bird census. A circular half-acre was again used, and since there were many more runways apparent, 125 snap traps and 17 Sherman traps were placed.

Results:

<u>Parascalops breweri</u> , hairy tailed mole	5
<u>Blarina brevicauda talpoides</u> , short-tailed shrew	3
<u>Sorex f. fumeus</u> , smoky shrew	1
<u>Zapus hudsonius</u> , meadow jumping mouse	1
<u>M. pennsylvanicus</u> , meadow mouse	1
<u>P.m. gracilis</u> , Canadian deer mouse	1
Total - 12; density - 24 per acre	

The next trapping was in the hemlock-beech woods on the east side of Lincoln Pond. Three areas were trapped, of which the first was a circular half-acre in area W1, and in which 119 snap traps were set out. The trapping was done July 13 to 16 with the following results

<u>B.b. talpoides</u> , short-tailed shrew	3
<u>P.m. gracilis</u> , Canadian deer mouse	2
<u>S. f. fumeus</u> , smoky shrew	1
Total - 6; density - 12 per acre	

In addition, one live specimen of the woodland jumping mouse, Napeozapus insignis, was taken just outside the measured area.

Believing that the low population in this area, seemingly rich in burrows and runways, might be due to the soil being dried out so that the mammals were forced to move to a wetter habitat, another area was trapped in the flood plain and bog and along their margin between W4 and W5. This area was 270 x 54 ft. in size or about one third of an acre. One hundred eleven traps were run from July 16 to 20, an extra day being allowed because frequent showers spoiled much of the early trapping.

<u>P.m. gracilis</u> , Canadian deer mouse	5
<u>S. f. fumeus</u> , smoky shrew	3
<u>B. b. talpoides</u> , short-tailed shrew	2
<u>Sorex c. cinereus</u> , masked shrew (?)	1
Total - 11; density - 33 per acre	

To make comparison between the use of snap-traps and live-traps in censusing an area, the 17 Sherman traps were set out at the south end of W2 between July 14 and 22. Every other day, beginning at the margin of the Pond, the traps were reset 15 - 20 ft. inward, so

that in all an area of 0.6 acres was covered. Many of the mice caught alive were toe-clipped for individual recognition, and then liberated.

The number caught were:

<u>P.m. gracilis</u> , Canadian deer mouse	7
<u>B.b. talpoides</u> , short-tailed shrew	6
Total - 13; density - 22 per acre	

The next area trapped was also in hemlock with a mixture of yellow birch and striped maple and with a thick ground cover of yew, moss, and ferns. This was on the north-facing slope of the Trout Pond Ravine where the trail winds up the hill at the edge of W8. The side of the ravine is steep, rocky, moist, cool and with many nooks and crannies. The area was small, only 0.08 acres in size. The trapping was begun July 23 - 25 and then was interrupted because of an accident so that the traps were not looked at again until they were taken up on August 7th. Results:

<u>P.m. gracilis</u> , Canadian deer mouse	4
<u>B.b. talpoides</u> , short-tailed shrew	3
<u>S. f. fumeus</u> , smoky shrew (?)	1
<u>Clethrionomys g. gapperi</u> , red-backed mouse	1
Total - 9; density - 112 per acre	

The final trapping was done in the beech-maple-hemlock woods on the west side of Lake Myosotis in area W13 just to the right of the path leading up the slope on the way towards Haganan Falls. Eighty-eight snap and 17 live traps were set out in a circular half acre, August 11 - 14, and the following constitute the catch.

<u>B. b. talpoides</u> , short tailed shrew	13
<u>P.m. gracilis</u> , Canadian deer mouse	3
<u>S.f. fumeus</u> , smoky shrew	3
Total - 19; density - 38 per acre	

Home Range of the White Footed Mouse - Since many of the white-footed or deer mice were caught alive in the trapping of July 14 -22 in W2, marked by toe clipping, and later recaptured, some information was obtained as to the range of their normal wandering. Often when released the mice would climb the nearest tree, although live short-tailed shrews invariably plunged underground in the nearest opening of a runway. Two mice wandered off 10 ft. and over 35 ft. respectively when released. Four mice were recaptured at distances of 25, 40, 90 and 50 ft. from where first captured. The first three were immature, the last was an adult female.

Further information on the homing instinct and homing ability was obtained inadvertently when two mice escaped from the barn where they were being experimented with. One adult male escaped in the barn at 6:00 P.M. one day, was recaptured near where first captured in W1 the next morning at 9:40 A.M. Another, also an adult male, escaped at 9:30 A.M. in the barn and was caught again at 9:30 the next morning back in the woods. The mouse again escaped at 5:45 P.M. the same day and was taken the following morning at 9:40 again in the woods. This distance is close to 900 ft. and involves circling the south end of the Pond either below the dam or over the road bridge.

Body Temperature - A beginning was made in the study of body temperature of small mammals. These were caught alive, taken to the laboratory, and their temperatures taken immediately by means of thermocouple and potentiometer. For mice and shrew it was found best to insert the thermocouple through the mouth so the sensitive registering point lay near or in the stomach. For chipmunks the thermocouple was more effectively thrust well up into the rectum. Usually each animal was kept in a cage for several days and temperatures taken at intervals. Altogether temperatures were obtained on 6 white-footed mice, 3 short-tailed shrews, 2 chipmunks and 1 woodland jumping mouse.

There was very little difference in the temperature of the different species. When the temperature was taken after the animal had been quiet for some time, it was apt to be around 95°F so that this may be considered the basal temperature. However, if the animal struggled in the hand, or if there was difficulty in capturing it in the cage, or if previously it had been active, its temperature was at various levels higher than this commonly up to 104.7° . One record as high as 108.1° was obtained. Frequently if the animal were held quietly in the hand its body temperature would drop appreciably, in one case 7.6° in five minutes.

Frequently the animals were chilled in the trap in the woods before they were collected. Under these conditions their temperatures drop below normal. This was the case of the woodland jumping mouse whose initial temperature was 88° . This mouse did not recover and its temperature dropped to 72° or 0.5° below the air temperature, before it died. One white-footed mouse, however, recovered from a temperatur^e

of 74.1°. The short-tailed shrew suffers very quickly in the metal live traps and the majority caught were dead and very wet. Apparently the rate at which they lose moisture is very high, and this is a factor in their susceptibility to chilling.

There may well be a daily rhythm in body temperature for at least some species. The white-footed or deer mouse in captivity usually had a higher temperature in the early morning than in midday or late afternoon. Doubtlessly this is due to the mice being nocturnal in their activity and resting during the day. Shrews that are active both day and night may show no rhythm, while diurnal chipmunks may have higher temperature during the day. This would best be measured under natural conditions, for which an opportunity this summer did not present itself.

Miscellaneous - Woodchucks were very abundant this summer. They had burrows in grassy fields, shrubby fields, evergreen and deciduous woods; in all sorts of habitats except where the ground was too wet.

Red squirrels were seen only three or four times and only in hemlock woods. I would estimate one pair per 6 acres in the Lincoln Pond Woods.

Gray squirrels likewise were seen only a few times and only in deciduous woods. Both species were more conspicuous and scolding during early August than during the preceding two months.

Deer appeared abundant although seen but twice. Fresh tracks were noticed almost daily and in August tracks of young fawns were noted.

Gray foxes were seen twice. Hamilton commented on their scarcity in 1937, but these observations and reports of local sportsmen indicate they are as common or more so than the red fox.