

Breeding Population  
of a  
Mature Aspen Area

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Elizabeth Vandegrift

Louise Ritsera

## Breeding Population of a Mature Aspen Area

The purpose of this study was to determine the breeding population of a mature aspen area located on a low ridge directly south and west of the University of Michigan Biological Station on Douglas Lake in Cheboygan County, Michigan.

An irregular section with an area of about twenty-nine acres was laid out. Every fifty meters a numbered tag was tacked on a tree to aid in locating the locations on the map. Three cross trails were laid with letter posted every fifty meters. A record of the time, length, and frequency of observation will be found in table one.

We recorded the birds observed or heard on each trip on a map. Territories as shown on the accompanying maps were determined by the occurrence of a male bird in contiguous sections of the area during several observations. Where the failures to observe the bird regularly indicated that part of the territory lay outside of the area, the lines indicating the territory are left open.

On table two will be found a record of the birds seen in the area. Column one indicates the actual number of pairs which had all or most of their territory in the area except those indicated as 1-. These species were represented by one pair which had over half their territory outside the area. Column two represents the estimated mathematical density for the twenty-nine acres. The figures in column three, the density per one hundred acres, were

# Key to Maps

Symbol                  Date

1                  July 2

2                  July 5

3                  July 9

4                  July 11

5                  July 13

6                  July 16

7                  July 17

8                  July 23

9                  July 25

0                  Nest

# Table I

Date	Time	Observer	Weather
June 28	6:45-9:00 P.M.	Vandegrift Ritsema	Laying out area
July 2	7:45-11:45 A.M. 1:00-5:00 P.M.	Vandegrift Ritsema	Laying out area (cont.) Observations Begun Weather - Clear, Warm, Little Wind
July 5	7:30-11:00 A.M.	Vandegrift	Weather - Warm, Sunny
July 9	7:10 P.M.-9:20 P.M.	Vandegrift Ritsema	Weather - Warm, little wind from North west - Storm coming up
July 11	7:30-9:15 A.M.	Vandegrift Ritsema	Weather - Cooler, Windy
July 13	5:10-6:30 A.M.	With Class	Weather - Clear, Cool Warmed up rapidly
July 16	7:45-10:10 A.M. 8:00-10:30 A.M.	Ritsema Vandegrift Working Individually	Weather - Still, clear, cold Temperature rising rapidly
July 17	7:20-9:20 A.M.	Ritsema	Weather - Clear, warm, still
July 23	7:30-9:30 A.M. 8:00-10:00 A.M.	Ritsema Vandegrift	Weather - Warm, cloudy at intervals, slight wind
July 25	3:55-5:00 P.M.	Ritsema	Weather - Clear but windy
		2	

Table II

<u>Species</u>	<u>No. of Breed- ing Pairs</u>	<u>Estimated Density</u>	<u>No. of Breeding Pairs per 100 acres</u>
x1. Cedar Waxwing	7	<del>4</del> 3+	14 10
x2. Robin	5	<del>3</del> 2	10 8
x3. Ovenbird	3	2	7
x4. Red-eyed Vireo	3	3	10
x5. Chickadee	2	1	3
x6. Wood Pewee	2	2	7
7. Chipping Sparrow	2	2	7
x8. Whip-poor-will	1	1	3
9. Ruffed-grouse	1	1(-)	3 2
x10. Crested Flycatcher	1-	1(-)	3 2
x11. Vesper Sparrow	1-	.5	2 1
x12. Baltimore Oriole	1-	.5	2
x13. Least Flycatcher	1-	.5	2 +
x14. Flicker	1-	.5	2
15. Humming Bird	1-	.5	2 +
x16. Cowbird	<u>1-</u>	<u>.5</u>	<u>2 1</u>
TOTALS	33	23	79 69
x17. Kingbird		Feed in area.	
x18. Purple Martin		Feed in area.	
19. Tree Swallow		Feed in area.	
20. Nighthawk		Feed in area.	

arrived at by using the figures in column two.

The area selected for the study lay in a large area of aspen growth. It was bounded by sand roads except for a short distance where the boundary touched a grassy field used as a baseball diamond and continued about fifty meters through the woods.

The area had been cut over and burned over as was indicated by the charred stumps and standing tree trunks. The soil was sandy. At the ground level grew the reindeer "moss," mosses such as polytricum and dicranum, wintergreen plants (Gaultheria procumbens), and various grasses. Bracken (Pteris acqualina), blueberry (Vaccinum sp.), raspberry (Rubus sp.), and spreading dogbane (Apocynum androsaemifolium) formed a concealing undergrowth for ground nesting species of birds. Sumac (Rhus glabra), service berry (Amelanchier canadensis), wild cherry (Prunus pennsylvanica), scrubby growth of beech (Fagus grandifolia), red maple (Acer rubrum), and young trees formed a low level reaching from about two feet to ten feet. Aspen (Populus grandidentata and P. tremuloides) were the dominant trees as far as abundance is concerned. The largest, tallest trees were red oak (Quercus rubra v. borealis). The red pines (Pinus resinosa) often rivaled the oaks. Individuals of the white birch (Betula alba), White Pine (Pinus Strobus), and Aspen extended to the highest levels of the trees. The level reached from about fifteen to forty or forty-five feet.

The areas along the roads were often open and scrubby or/and grassy. Throughout the wooded area clearings were frequent. The

section bounded by the lines 103 to 99, 99 to 98, 120 to 98, 103 to 120 was generally less densely wooded with a treetop level of perhaps twenty five feet at the most.

Insect life seems abundant. The vegetation shows the result of much infestation by insect. The forest floor, the leaves of plants, every part of the area yields its quota of insects and spiders.

The total number of species found on the area was twenty--sixteen of which nested in or near the area, and four of which fed over or in the area. The most abundant bird was the Cedar Waxwing (see table two). There were thirty-three pairs of birds which had some or all of their territory in the area.

In the following discussion we will attempt to give the niche requirements of each species and show how the aspen area fulfills those requirements.

#### Cedar Waxwing

Through our observations we can account for seven breeding pairs which were well scattered throughout the area (see map for Cedar Waxwings). All seven territories seemed to extend beyond our area because the birds did not remain in the area but moved to points just outside near their territory within the area. The waxwings use deciduous trees as nesting sites placing the nests from five to forty-five feet from the ground. Such sites were plentiful in the area. This species makes its' nest of grasses, weed stems, bark strips, moss, and possibly pine needles, all of which are abundant. We observed them using the tops of trees as singing perches. Their chief source of food is fruit.





Such fruits as service berries (Amelanchier canadensis), cherries (Prunus pennsylvanica), and blue berries (Vaccinium) were plentiful in the area. They also feed on caterpillars, grasshoppers, beetles, crickets, and flying insects which they capture by darting from an elevated perch. Perches and insects are available.

The observations of July seventeenth, twenty-third, and twenty-fifth showed them less localized and roaming through the area in search of food. The young, out of the nest, and able to fly were observed on July seventeenth.

#### Robin:

The Robins were found in the area of lower trees and more open woods. Coarse grass, rootlets, leaves, and fine grass for nesting material was available in the vicinity. We are not certain about the mud whether the sand can be used or not. Nesting sites could be found in the trees. The Robin requires a site from five to thirty feet from the ground. A male was observed singing from the top of a red pine (Pinus resinosa). Another male used the top of an oak (Quercus rubra) for a singing perch. Both trees were over thirty feet high.

Food available for this species included service berries (Amelanchier canadensis) which they were seen eating, possibly the cherries (Prunus pennsylvanica) and blue berries (Vaccinum sp.). Grasshoppers and crickets could be found in the open areas. Caterpillars and other vermiform larvae of insects were found on the leafy plants. Snail shells indicated the presence of small numbers of these mollusks. Spiders could be found anywhere.



By July seventeenth, full grown juvenile robins were observed feeding in the area. The adults were flying in and out of the area chasing other individuals. The male was also observed singing from the top of the pine during the morning.

### Red-eyed Vireo

The Red-eyed Vireos' territories were found in the more densely wooded, taller-treed part of the area (See map for Red-eyed Vireo). The birds were usually observed feeding singing about fifteen to twenty feet up in a deciduous tree. One bird was observed singing in a red pine (Pinus resinosa).

The food of this species consists of the adults and larvae of moths, beetles, bugs, flies, ants, wasps, wild bees, and spiders which it takes from the leaves of deciduous trees. Grasshoppers and crickets recorded as eaten by this species were found in the open spaces.

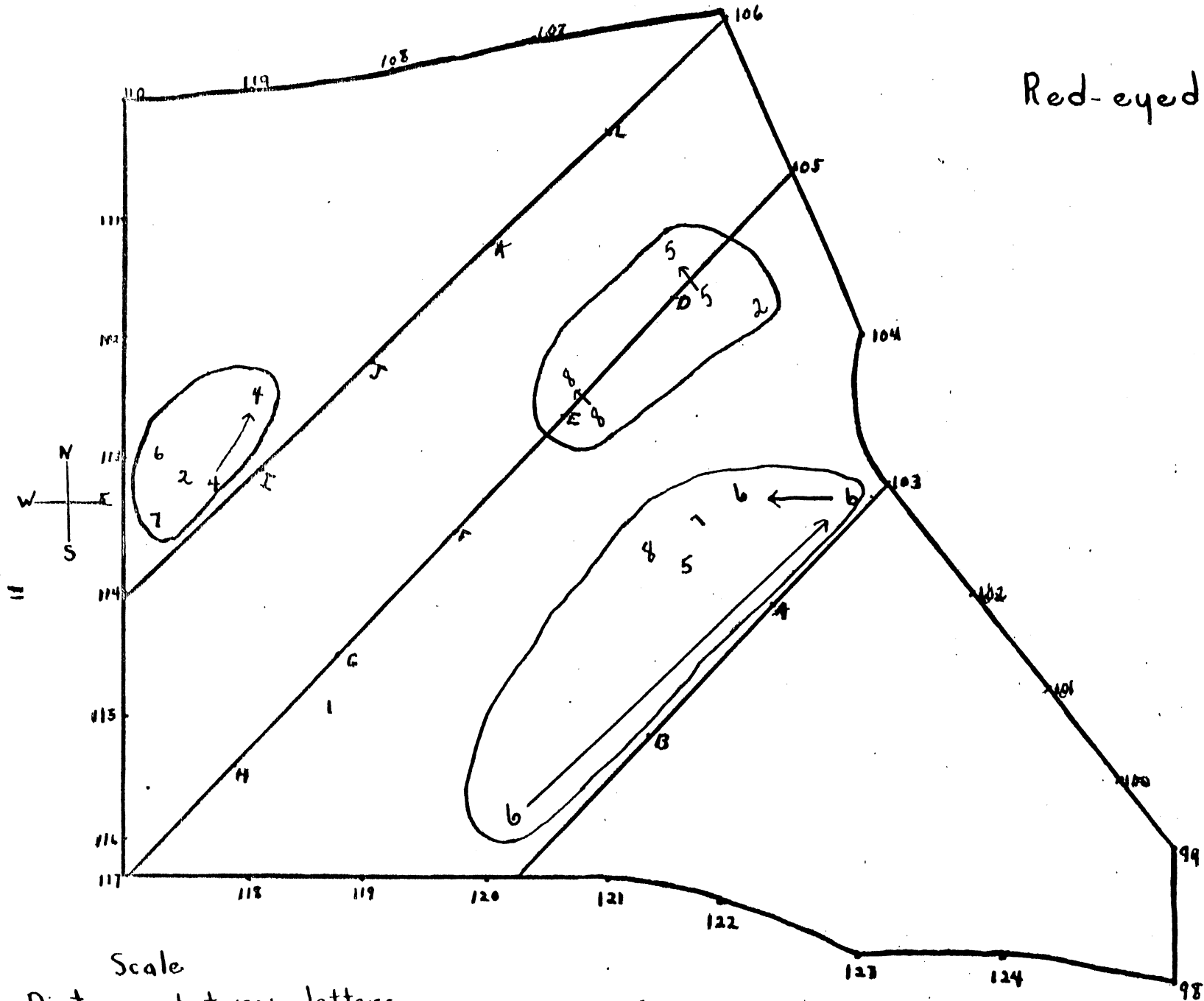
The nest of the Red-eyed Vireo is made of inner bark fibers, tough weed fibers, and covered over the outside with the spider cocoons of birch bark. It is suspended from a forking branch from five to forty feet up in a deciduous tree. Nesting material and nesting sites were to be found in the area.

On July seventeenth, two individuals were observed in bushes hopping from branch to branch uttering a little cat-like call. A third individual joined them. Chasing ensued. Whether this was a prelude to a second mating or not could not be determined. The male was observed several times later in his territory.

### Ovenbird

There were three breeding pairs of Ovenbirds located in the area. The territory of two extended outside the area. The

# Red-eyed Vireo



territories were all located in the more densely wooded part of the area (see map for Ovenbird).

Ovenbirds can find innumerable spots in the area for nesting as they nest on the ground frequently choosing a more open area. Nesting materials were also plentiful since leaves, grass, and weed stalks are used. A nest was found between 118 and 119 (see map) on July seventeenth just as the young birds were getting ready to leave the territory. There were present in the area, a male, a female, and a juvenile bird. They were feeding. The male was singing from the ground and from low branches. As we approached the nest they grew noisier--scolding at the intrusion. The nest was located beneath a small aspen on the edge of a clearing. It had the typical dome-shaped appearance and a side entrance. It was composed chiefly of deciduous leaves. There was nothing in the nest. By July twenty-third the family had gone.

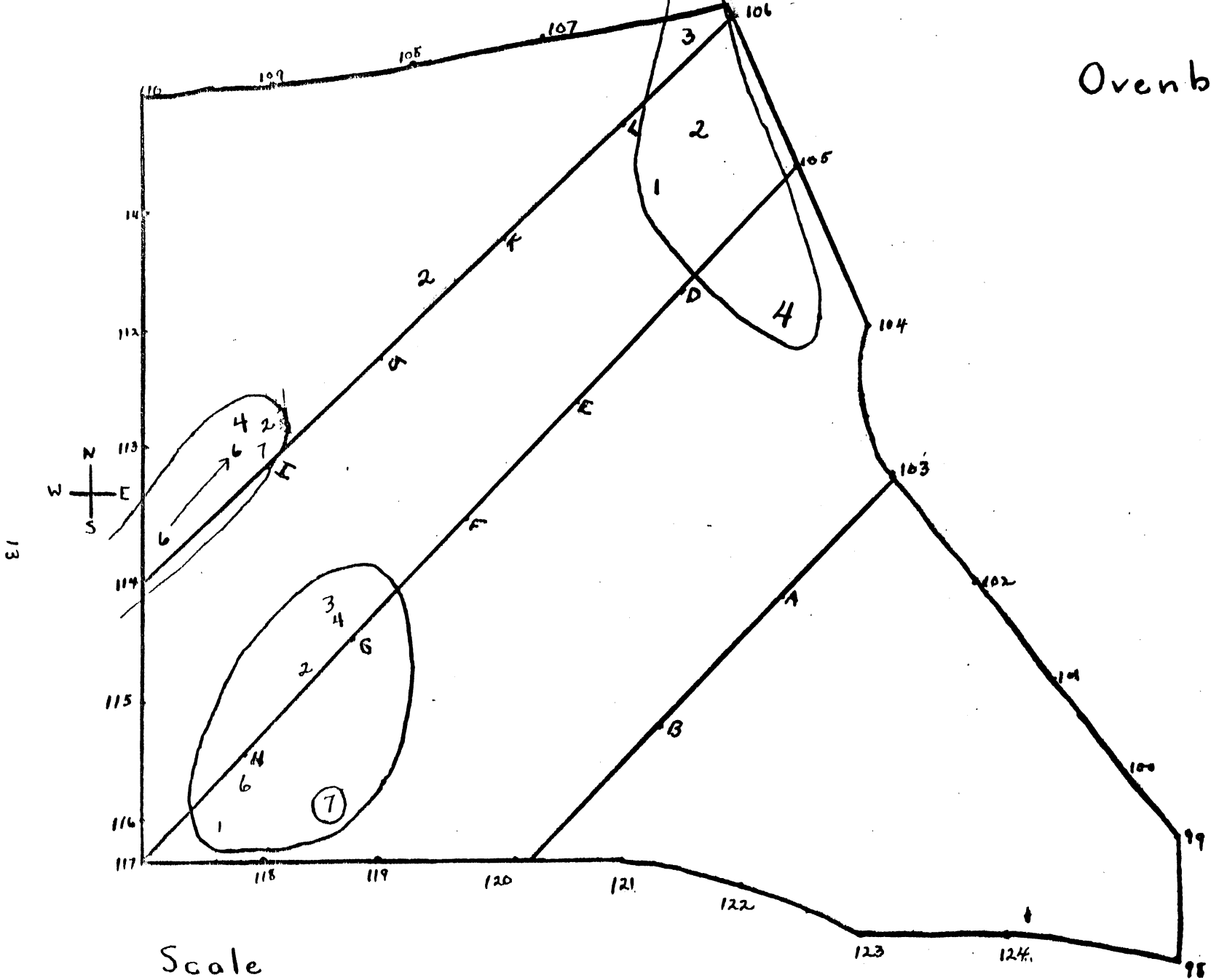
A male and female were observed near 114 (see map) feeding and singing. They scratched around in the leaves, apparently looking for small insects. At intervals the male would perch on a low branch and sing his "teacher" song.

From our observations of the activities of this species in the area, we conclude that this type of habitat is one which meets its niche requirements.

#### Chickadee

This species occurred throughout the observation period as family groups, except for one observation on July sixteenth of a single individual feeding and calling in a red pine (Pinus resinosa). It was impossible to tell where the territories may

# Ovenbird



## Scale

Distance between letters  
and numbers usually 50 meters

Area. approximately - 29 acres

have been. Our figure of two breeding pairs on the twenty-nine acres is an estimate rather than an actual recording of known territories.

The food of the Chickadees consists of small caterpillars and moths, as well as the eggs of moths which occur in the area. Small seeds and the pulp of fruit are also available items in their diets. Out of four observations, three were of the birds feeding in fairly large red pine (Pinus resinosa). The other record was of them feeding in an aspen (Populus grandidentata). They were observed feeding in the crevices of the bark at various heights in the trees.

The nests are usually placed in stumps of white birch (Betula alba) or deserted woodpecker nests. Probably other kinds of stumps were used in this area. The leaves, moss, grass, and probably hair, fur, or feathers of which they built their nests were available in the area. We say probably hair, fur, or feathers, because although we did not observe any loose in the area, there were evidences of deer and smaller mammals living in the area.

#### Wood Peewee

There were definitely two breeding pairs of this species in the area. One was located along Trail 103, which I will designate as Family 103, and the second family was located on Trail 114, which I will call Family 114 (see map of Wood Peewee). We found the probable nesting site for both families.

On July thirteenth, Family 114's nest was located. It was situated in typical Peewee fashion about ten feet above the ground





saddled on a horizontal dead branch in a Red Oak (Quercus borealis). The outer surface of which was covered with lichens, which are abundant in the area. At the time the nest was found it was no longer in use.

We had observed both the male and female of this family on July ninth. At this time, one was perched in a dead birch tree (Betula alba) and the other on a dead limb in an aspen (Populus tremuloides) near I on Trail 114. They were both feeding and the male was calling. They would leave their perch to catch an insect on the wing, and return directly to the same perch. This behavior is characteristic of this species, and a perch of this sort is one of their chief niche requirements as their food is largely insects, flies, wasps, bees, and moths which are caught on the wing.

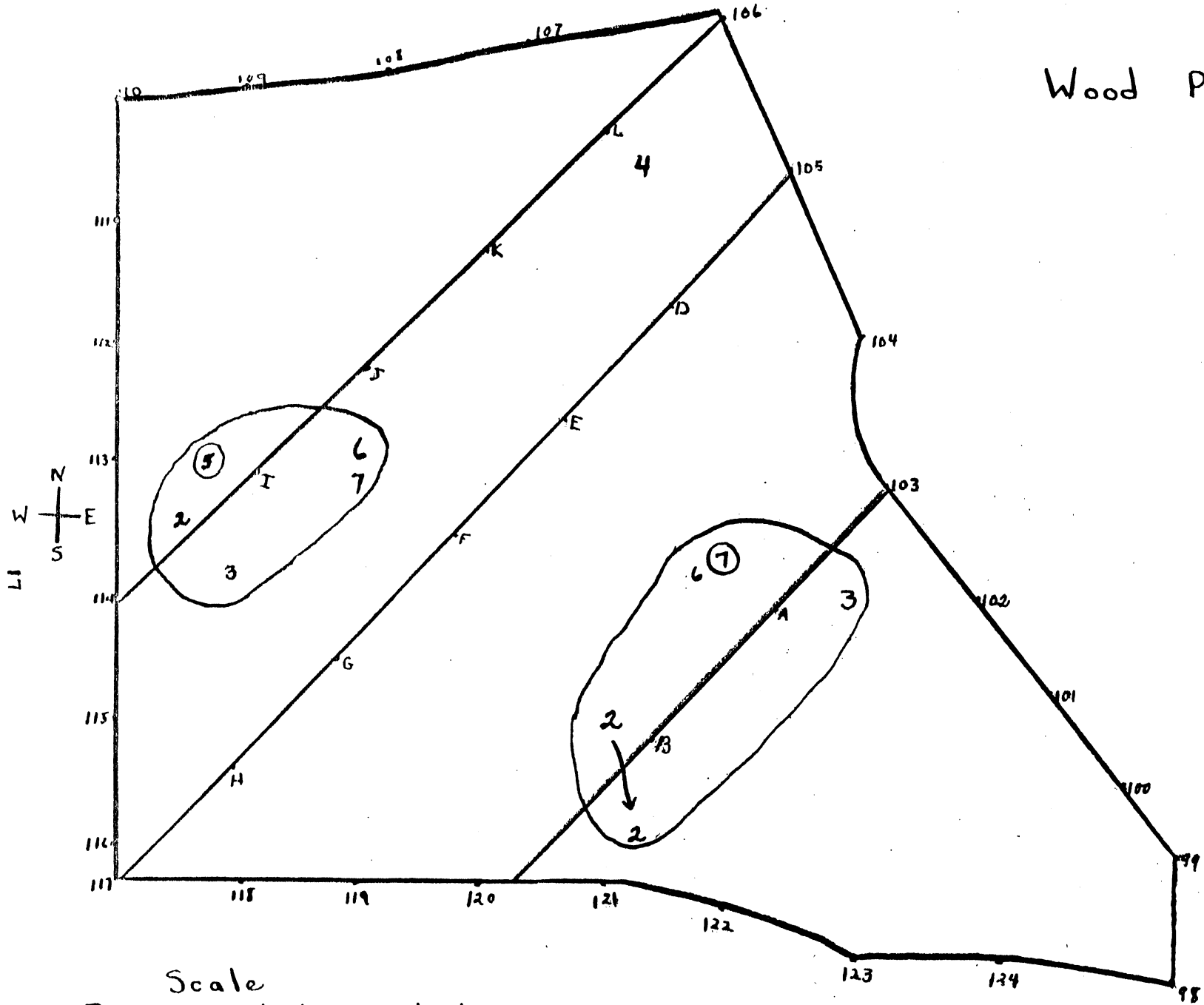
The probable site of Family 103's nest was discovered on July seventeenth; but this, too, was no longer in use. It was located in a red oak (Quercus borealis) but was situated higher in the tree, but in the same relative position. The male was observed singing and feeding from a dead branch near the tip of the tree.

Our area contained many deciduous trees, which could serve as nesting sites; many dead branches which could be used as song and feeding posts; and an ample supply of food and nesting material, so this type of an area seems to meet the niche requirements of this species.

#### Chipping Sparrow

The Chipping Sparrows were observed in the clearings containing sumac and other low bushes (see map of Sparrows). Since

# Wood Pewee



Scale

Distance between letters  
and numbers usually 50 meters

Area - approximately 39 acres

this species' nests in low bushes, and sings from a two or three foot perch, this part of the area fulfilled these requirements. The rootlets of which they build their nests are available. We do not know whether the birds used horse hair or not or where they would get it.

The food of this species available in the area consisted of weed seeds, beetles, ants, wasps, bugs, spiders, and caterpillars all of which could be found in low bushes or on the ground. They were observed feeding in both situations.

### Whip-poor-will

One family of Whip-poor-wills evidently nested in the area, as we observed them three times during our study in the same relative area (see map of Other Species). Each time we flushed them from the ground where they were apparently roosting for the day. On July eleventh, we had an opportunity to observe one of the birds more closely as it flew a short distance and perched on a low dead branch of an aspen (Populus tremuloides). It remained here chirping for a short time, but when we moved closer it flew away.

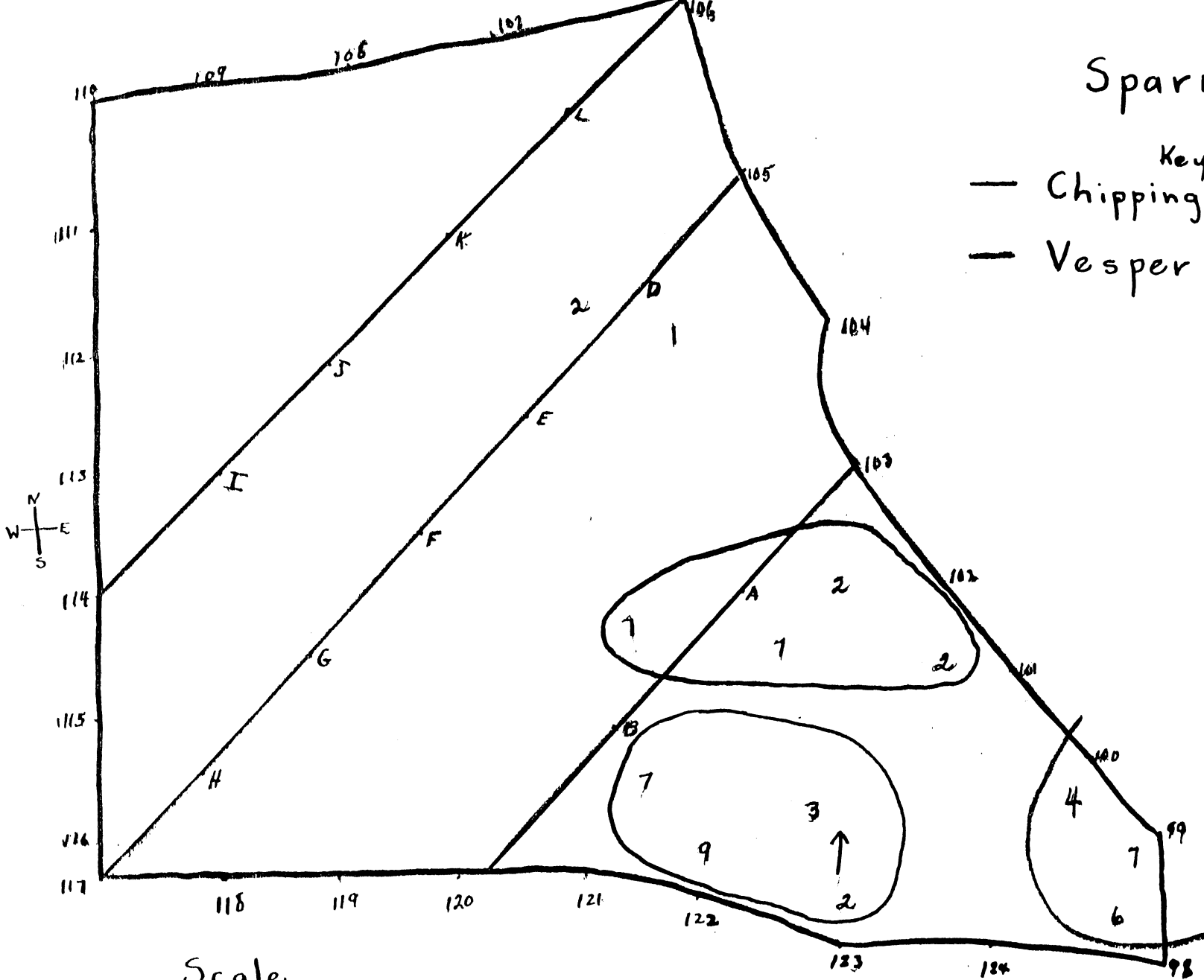
The spot where we observed them would fulfill their niche requirements as they nest on the ground, depositing their eggs on dry leaves under low bushes. They feed at night on flying insects such as moths, mosquitoes, and June bugs.

### Grouse

The Ruffed Grouse was observed on June twenty-ninth while making a preliminary survey. At that time the female had young out of the nest. The only other observation was of the male, which was flushed in a different section of the area (see map of Other Species).

# Sparrows

Key  
— Chipping Sparrow  
— Vesper Sparrow



Scale

Distance between letters  
and numbers usually 50 meters

Area - approximately 29 acres

In the spring the male drums from a stump, log, or from the ground. He usually has some favorite perch. Such perches are readily available here. Fallen logs, undergrowth, and leaves are available for nesting sites and nesting materials.

The available food for the adult birds would include acorns, maple seeds, leaves, and buds of poplar and birch, and the seeds of sumac. The diet of the young birds in the area could include spiders, ants, caterpillars, and other insects.

### Crested Flycatcher

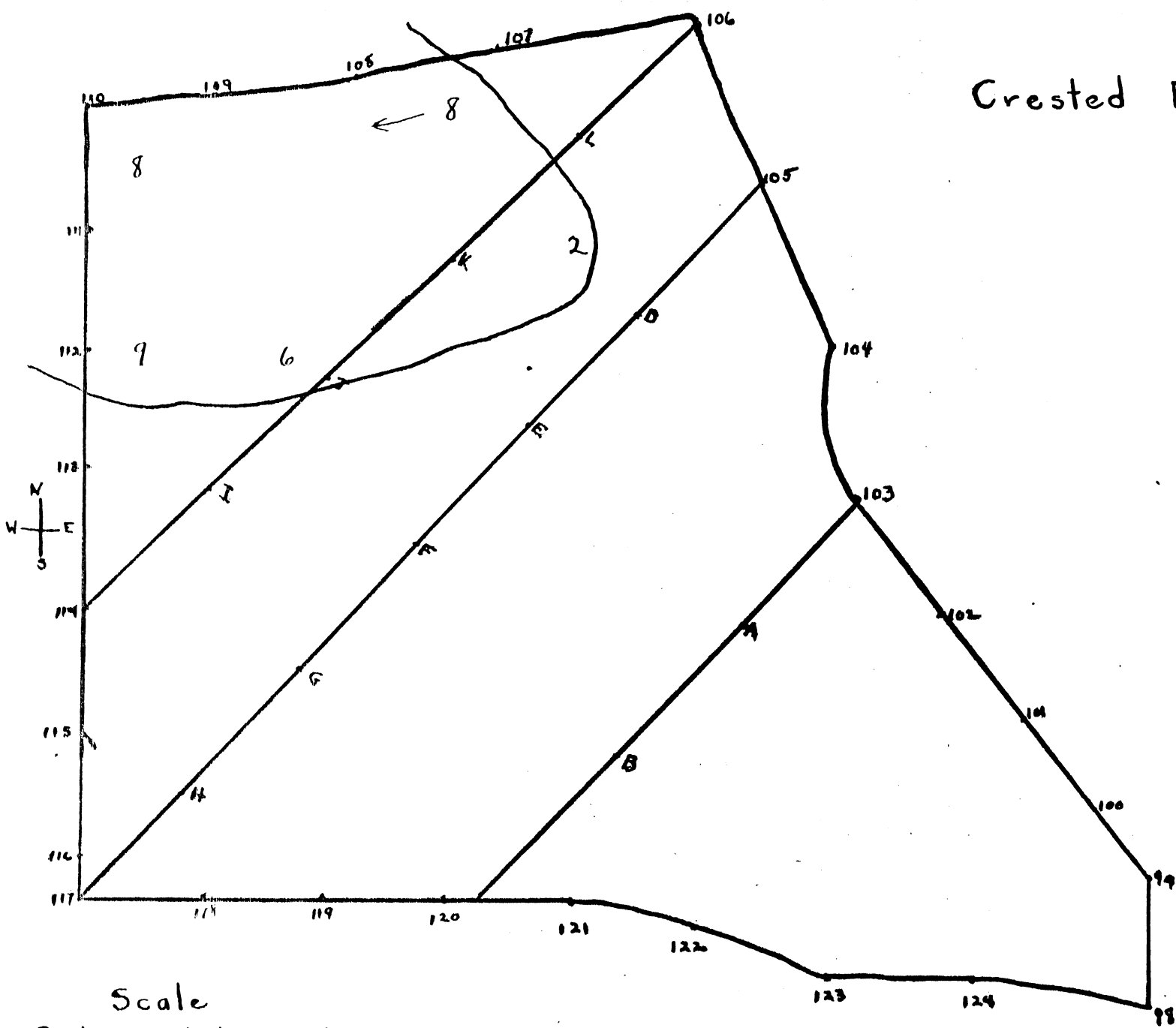
We had but one breeding pair of Crested Flycatchers in our area, and their territory extended outside of our area (see map of the Crested Flycatcher).

It was on one of our last trips out, July twenty-third, that we saw the male, female, and a juvenile. We heard them giving their raucous call so went in search of them. We found the adult birds perched on dead branches fifteen to twenty feet above the ground. We observed them as they darted from their branches getting insects on the wing. We finally spotted a juvenile close to us on the ground. As we approached it, it would fly a few feet and land on some low twig near the ground. Occasionally it would make a soft call and be answered by the adult bird which remained close at hand. The young bird's tail was short but the body was quite well-feathered. We went out again on July twenty-fifth, but this time found but one adult bird.

This pair of Flycatchers probably nested in this section of the forest, but not necessarily near 110 as they are known to rove quite a distance in the forest as a family group after the young leave the nest.

# Crested Flycatcher

21



## Scale

Distance between letters  
and numbers usually 50 meters

Area approximately 29 acres

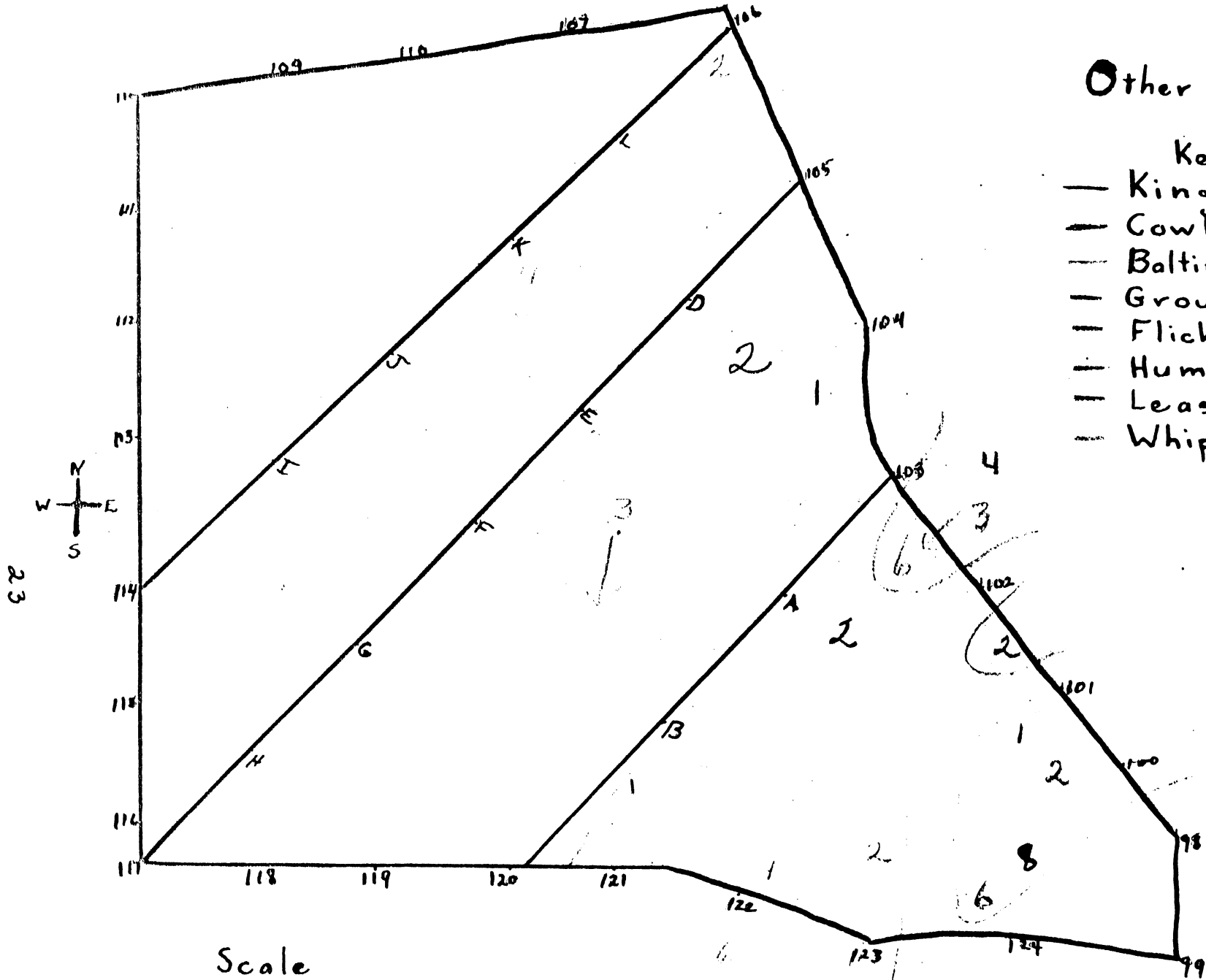
There are a great many dead trees and stumps, which they could use as nesting sites. There is grass, leaves, and bark available from which they could make their nests. There are many suitable song posts as they not only use dead limbs but the tops of trees. As food, there are moths, butterflies, caterpillars, beetles, wasps, wild bees, locusts, dragonflies, and cicadas which they catch on the wing. One bird was observed low in a bush with a caterpillar in his mouth.

#### Vesper Sparrow

The Vesper Sparrow was found on the edge of the area near the ball diamond where the low bushes give way to the grassy area (see map of Sparrows). The bird nests on the ground in a more or less open situation. The nest is made of grasses. The food available consists of beetles, grasshoppers, smooth caterpillars, and seeds. The male sings from a low perch furnished by the sumac in the area.

#### Baltimore Oriole

A pair of Baltimore Orioles had their territory on both sides of the trail around 121-122-123, as we observed them four times in this vicinity (see map for Other Species). As a nesting site, this species prefers elms, but also uses other deciduous trees and conifers. As there are no elms here they must have resorted to either of the other types of trees. For their nests they use milkweed stalks, plant fibers, and strips of bark as well as horse hair and cord which probably were not available. For food they eat caterpillars, larvae of insects, ants, grasshoppers, wasps, spiders, and fruit all of which are found in the area. Thus this species niche requirements were also satisfied in this type of habitat.



## Other Species

- Key
- Kingbird
  - Cowbird
  - Baltimore Oriole
  - Grouse
  - Flicker
  - Hummingbird
  - Least Flycatcher
  - Whip-poor-will

### Scale

Distance between letters  
and numbers usually 50 meters

Area - approximately 29 acres



### Flicker

This species we observed in the southeast corner of our area. (See map of Other Species). Its' territory extended outside our area, and we are not certain that it nested within our boundaries as we did not locate the nest. They did use this section for feeding, as we observed them on the ground feeding on ants or other insects and fruit.

### Least Flycatcher

The Least Flycatcher probably nested on the other side of the road, but evidently included the road and an open section of our area as their territory. The male was observed once to be calling from the lower branches of a fairly large red pine (Pinus resinosa). This species nests in the forks of trees or bushes. The height does not seem important. Nest material of weed stalks, finer plant fibers, down from plants, and spider webs were all known to be available.

Low perches for obtaining food were available, as were the following items of the birds diet: ants, wasps, beetles, bugs, moths, flies, caterpillars, and spiders.

### Humming Bird

The male Humming Bird, which is known to leave the female after mating, was observed feeding in the fly honeysuckle (Diervilla Lonicera) at the edge of the road. His feeding territory evidently extended on both sides of the road. His presence at that time was probably due to the condition of the flowers.

## Cowbird

Two male cowbirds were observed in the area. One was calling from the top of a twenty-five foot pine. Males were also observed feeding on the ball diamond which is adjacent to our area.

Whether the females parasitized any of the nests in the area we do not know. They do parasitize sparrows, ovenbirds, vireos, and flycatchers among the species present in our area. Available food and the more open areas would fulfill the niche requirements of this species.

## Kingbird, Purple Martin, Tree Swallow, and Nighthawk

These species fed over or in our area. The Purple Martins and Tree Swallows nested in boxes or houses put out for them by the Biological Station not far from the area. The Nighthawks nest in open fields. We doubt that any of the sections of our area were open enough to accommodate them. All three of these birds feed on flying insects, and feed on the wing. Such insects seemed abundant in the area.

The Kingbird was observed only twice in the area, at random places, and during the time when other Kingbirds in this region had young in the nest. Therefore, we regard this species as accidental. He was probably in search of insect food which is abundant in the area.

Before concluding our paper we would like to state that on a trip through the area August fifth, the Red-eyed Vireo, Peewee, Nighthawk, Cedar Waxwing, Robin, and Chipping Sparrow were the only species observed in the area.

In conclusion we should like to evaluate our problem. First, we do not consider our findings of thirty-three breeding pairs on the twenty-nine acre plot to be conclusive for the following reasons: the problem was begun too late in the nesting season, the observers were inexperienced in handling this type of problem, and the time that could be given to the study was not adequate. Second, we have learned the following: how to set up an area for a population study, how to map out a territory, how to estimate population densities, and niche requirements of several species. The work on this problem has given us the background necessary so that in the future we should be able to carry on other such problems more successfully.

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