

THE BIRD POPULATION OF AN ASPEN
ASSOCIATION IN CHEBOYGAN COUNTY, MICHIGAN

by

Robert A. Whiting
1228 Chittock Ave.
Jackson, Michigan

An original investigation conducted in conjunction
with Advanced Zoological Studies (Zoology 219) at
the University of Michigan Biological Station.

1949

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Introduction

The purpose of this study was to determine the breeding population of a mature aspen association, and to compare the results of this study with a previous investigation in the same area. The work covered a period of four weeks during which time 10 half day field trips were spent on the plot. Six shorter trips were made to check nest conditions toward the close of the study.

The area studied is located just southeast of the University of Michigan Biological Station located on Douglas Lake in Cheboygan County (see Map A in the Appendix). The study plot is 48.66 acres, measuring 1,456 feet on a side and oriented in a north-south-east-west direction. The southwest corner stake is situated in the northeast corner of the junction of the Burt Lake and Reese's Bog roads T36N-R3W-S3. The northern half of the plot is located in T37N-R3W-S34. Only the northwest quarter of the plot is within Station property.

The plot itself is further divided by eight rows of stakes situated at 208 foot intervals and lettered from A to H. The lettered stakes run north and south, while the numbered stakes run east and west. Thus, the first stake on the south-east corner is 1A, while the stake in the northwest corner is 8H. Each individual stake is made of cedar approximately four feet high with the top foot painted white. Each stake is numbered on both the north and south side, to facilitate movement in either direction. These 64 stakes then divide the

plot into 49 squares approximately one acre each. This grid pattern makes possible the accurate location of a singing bird or nest at any point in the plot.

Fortunately for me, the hard work of setting up the plot was already complete. However, within the short space of two years the undergrowth had grown to such an extent that two and a half days of work with an axe were required to enable me to travel from one stake to the other without getting lost. Cloth strips were used between markers in the more dense growth to indicate the trail. Orange or red markers proved the better colors. All other colors tended to blend with the green of the leaves. Once the trails were well established, the plot itself was ready for accurate census work.

Next I made a series of grid patterns to fill my nine by five aluminum cover field note book. This proved more satisfactory than the too large standard clip board which could not be put in your pocket when searching for nests. (See Field Sheets in Appendix). Each intersection on the grid corresponded to the location of a marker on the plot and was so numbered. Below the grid were columns of figures to record the species of birds heard or seen. Abbreviations were used for the most common birds of the area, as, for example, OB for Oven-bird and H.T. for Hermit Thrush. The names of less common species were entered in full. An asterisk following a listed species indicated special field notes on that particular individual. These notes were written in the field on the back of the sheet under the same number. The date and time were recorded

at the top of the sheet. Weather data which would also have to be taken was merely recorded from the daily weather sheet posted by Dr. F. C. Gates. (See the Appendix). The letter T after a species name indicated a transient and an N indicated a nest.

In taking the actual census, practice is required in judging the distance of bird songs which can be most deceptive, especially in the case of the Hermit Thrush (Hyl-
o-
cichla guttata) I found that it was not safe to attempt to judge a singing bird that was more than one row on either side of the path I was taking. I checked all songs at each marker and approximately half way between markers. Thus, about every 100 feet a careful check was made on all singing birds. Once heard, a check was made on my notebook grid and a small numeral placed beside it. The identity of the bird was recorded at the corresponding number on the column of numbers below the grid. For the sake of a further check against error, the numbers were taken in numerical sequence.

To my knowledge, the only way that the territories of close nesting pairs could be determined would be to record the simultaneous song of two different birds of the same species. Fortunately, this occurs more frequently than one would at first suspect. In fact, song on the part of one bird usually would challenge one or more nearby nesting pairs. Also, there is a great deal of variation in the amount of song with the exception of early morning. Several singing birds would always bring song from additional

birds, even encouraging unrelated species.

Because of the high improbability that every mated male bird would sing while I was within his territory, I attempted to cover my territory at least three times a week. Thus, by the sheer laws of chance sooner or later I would hear and record every singing male nesting in the area. Joseph Hickey in A Guide to Bird Watching actually worked out mathematically his chances of hearing a certain individual Red-eyed Vireo in a single trip were 58 out of a 100 times. The further advantage of these multiple observations over and against the once a week observations of my predecessor is that as the same bird was recorded on different singing perches each new perch further helped to establish more definite limits to his territory.

At the end of the second week I began to plot my data a single species to a sheet. For this I used the larger dittoed sheet recording the location and the date of the observation. In some cases for the less commonly heard species I plotted two species to the sheet. Using the data for location I attempted to find the nest, which in the final analysis is the proof of the pudding. I did not have time enough to do as much of this kind of work as I should have liked. In all I found ten nests: Two Nighthawk nests, two Cedar Waxwing nests, an Oven-bird's nest, a Wood Pewee nest, a Vesper Sparrow nest, a Robin nest, a Red-eyed Vireo nest, and a Mourning Dove nest. It wasn't that I didn't spend a great deal of time searching, but for some reason I failed to find a single Hermit Thrush nest. I spent one half a day checking one pair of Hermit Thrush. I saw the birds make

repeated flights to the ground, but I strongly suspect I was watching the feeding area for a pair (~~of Hermit Thrush~~).

I purposely varied the time of day^{to} record any possible variation in the amount of song. On June 26 I made my traverse from 6:30 P.M. to 9:30 P.M.. On July 14 I made the trip from 4:15 A.M. to 7:30 A.M. in the morning. All other trips were made in the morning from right after breakfast to lunch. Observations after 10:30 A.M. were definitely limited by a low in song that seemed to occur about that time each morning. On hot, humid days this period occurred ^{earlier}, and on cool gray days somewhat later.

I also started various trips at different points on the grid to avoid being at the same spot at the same time each day.

I wish to acknowledge the many helpful suggestions made by Dr. Olin Sewall Pettingill, Jr. during the progress of my work. I am also indebted to my predecessor Douglas James and to Robert B. Lea for the actual work of establishing the grid pattern. To Dr. Frank C. Gates goes credit for much of the historical and climatic data.

History: Geological

The plot is underlain by the Traverse formation, while the immediate surface is the result of glaciation. The southern boundary of the plot is the old Algonquin lake level, while the northeast morainic portion was an island that existed as part of the archipelago of the Nipissing Lake level. The bulk of the area is sandy till and outwash plain from the moraine

which forms the hill in the northeast corner of my plot. This moraine is part of the Riggsville moraine. The sandy nature of this soil creates an edaphic condition that greatly effects the vegetation of the area.

History: Recent

The more immediate history of the area is largely the work of man. This area was lumbered about 1870. Evidence of this cutting can be found in the form of great pine stumps still in position indicating that at one time this was a mature pine forest. Following cutting fires swept through the slash left by the wasteful cutting so typical of early Michigan lumbering history. Again in 1916 the engineers burned the area to facilitate surveying. This was a severe burn that killed all the trees and destroyed the soil. In 1919, there was a brush fire in the thick young aspen growth. This was the last of the fires and not as destructive as the 1916 blaze. The young pines along the ridges that were not burned are the mature pines of this area today.

Ecology

In general, the survey plot is a mature aspen association varying according to edaphic ^{conditions} and accident of fire in the secondary or associated growth. (See Vegetation Map B in the Appendix). The mature pine and aspen portion lies along two ridges where the fire of 1919 did not, for some reason, wipe out the pine just coming in from the 1916 fire. Between the mature pine and aspen is an area of lightly stocked aspen and pine. Here the trees are loosely spaced and much sun

strikes the forest floor. Through the center of the plot between the ridge and the hill in the northeast corner is a belt of low land. Here the greater accumulation of organic material enables the maple to take over at the expense of the aspen. This area in the next twenty years should be well on its way to a climax type beech-maple association. After a narrow strip of aspen-pine association we come to the steeper slopes of the moraine in the northeast corner. Here we find a lightly stocked aspen and oak association. The soil, because of the slope, never really recovered from the fire and the ground is bare over much of the surface. Much of the remaining surface is covered with isolated clumps of the lichens, Cladonia rangiferine and Cladonia tenuis, which is further evidence of the poverty of the soil. Both of these lichens require sunshine and will disappear when the shade cover is sufficient.

The time elapsed since the last fire is thirty years. Few aspens exceed thirty-five years. Thus, within the next decade or two the aspen forest will become less and less of a factor, especially in the lower central area. The central portion will unquestionably go directly into a beech-maple climax forest. The present lightly stocked areas, after a much longer period of time, will go into a pine forest. A tremendous period of time will be required to convert the pine sub-climax into a beech-maple climax.

Over most of the lightly stocked areas is a ground cover of Pteridium latiusculum with associated ground plants such as

Gaultheria procumbens, Vaccinium pennsylvanicum, Diervilla lonicera, Rubus allegheniensis, and Aralia nudicaulis. In the moister areas there is a greater variety of shrubs and shrub trees. Under the mature pine-aspen association the acid pine needles form a mat that precludes most herbaceous plants. Here is found only an occasional woody shrub.

In all cases, the associated tree, whether it be pine, maple, beech or oak will tend to dominate the aspen, and with these changes in vegetation should come associated changes in the avifauna.

Climate

The climatic information for this region is in the meteorological chart in the appendix. For so northern a latitude the climate is relatively moderate. Only three times in the past 25 years has the temperature exceeded 100° F, and prolonged cold spells are not common. The dependable frost free season is between two and three months. The rainfall is entirely adequate for forest growth, because of its even distribution, and the low evaporation rate.

Summary of Plot Census Work

In all, I recorded 49 pair of breeding birds. This should be a conservative figure, for I counted no wandering families of birds, and yet unquestionably some were from my territory. I saw a family of two very young Downy Woodpeckers (Dendrocoptes pubescens), a family of three Hairy Woodpeckers (Dendrocoptes villosus), and three families of Chickadees. In an evening count from the hill I counted six Nighthawks

(Chordeiles minor) feeding and courting over my territory. For this reason I feel the two nests I found represented only a portion of the Nighthawks in my area. I observed Cowbirds (Molothrus ater) in the area, but feel they were less common than usual. Perhaps the heavy cover of bracken (Pteridium latiusculum) acted as a protective cover for such ground nesting birds as the Hermit Thrush (Hylocichla guttata), and the Oven-bird (Seiurus aurocapillus). Out of ten nests on my study plot only one was parasitized. The parasitized nest was that of the Red-eyed Vireo (Vireo olivaceus) which lacked the protection of the bracken.

In comparing my data with that of Douglas James done in the same area in 1947 there is a marked difference in results. I recorded 14 breeding species, and 49 breeding pair. Douglas James recorded 13 breeding species, and 28 breeding pair. For easy comparison the number of species and number of breeding pair per hundred acres will be listed for several papers done in this immediate area.

Research Worker	Year	Location	No. Species	No. breeding birds/100acres
Elizabeth Vandegrift and Louise Ritsema	1946	Hill back of Biological Sta.	20	65
Virginia L. Garst	1944	Aspen area between Bryants and Station	30	53
Douglas James	1947	49 acre tract south of the Station	13	28
Robert Whiting	1949	49 acre tract south of the station	14	49

The aspen area studied by Elizabeth Vandegrift and Louise Ritsema, which duplicated in part the area studied by Virginia Garst, was a younger aspen association than the area studied by Mr. James and myself. As such their area carries a higher percentage of aspens, and a lower percentage of associated trees. If it is true that a pure aspen area carries a low in bird population, then their area should show a lower population figure than those of either Mr. James or mine. The fact that the figures do not follow this line of reasoning does not mean it is incorrect, but merely shows the trouble that that ensues when the area studied is not uniform. These first two areas studied were located in back of the station in an aspen forest that is cut up with roads, fire lanes, fields, and small bogs. Thus, the area shows a strong edge effect, which hides the small number of birds actually found in the almost pure stands of young aspens. On the same basis the higher percentage of associated trees and lesser percentage of aspens in the more mature aspen association studied by Mr. James and myself should yield more birds per acre. For this reason I feel Mr. James figures are too low, while mine come more closely to illustrating this point.

Field Notes and Ecology of Breeding Birds

Ruffed Grouse (*Bonasa umbellus*) A Ruffed Grouse female was quite regularly flushed in the northwest section of my plot. When first seen, June 23, she had a family of five, and when last seen on July 16, the brood was still intact. Growth in this short space of time was from chick size to slightly better than quail size. The action of the female was most interesting. When the first chick was flushed, she would come charging through the brush tail and wings spread and her small ruff erect, but the moment she spied me she would drop her feathers and sneak off through the bracken. At other times she would attempt to attract attention by hopping to some conspicuous limb and clucking hen-like, usually well within a 15 to 20 foot range.

Mourning Dove (*Zenaidura macroura*). July 11, 1949 I discovered a Mourning Dove's nest. The nest was some eight feet off the ground in the crotch of a young northern red oak, (*Quercus borealis*). The nest was six inches in thickness with only a shallow depression in the top. The material was largely oak twigs woven together loosely. A few strands of grass and weed fibers lined the hollow depression. On the whole it was a very well-built nest for this species. At the time of discovery the nest contained two eggs. On July 16, when I showed the class the nest, one egg was broken. Even though one egg remained the nest was deserted. July 17 the last egg disappeared, probably

removed by the predator that originally broke up the nest. The presence of a Mourning Dove's nest (see Map C, Appendix) between posts 7A and 7G is not unusual for this area shows the edge effect of the small field about 100 feet away in the northeast section. The nesting was also encouraged by the very open nature of the aspen-red oak association found here.

Whip-poor-will (Caprimulgus vociferus). June 30, 1949. In the evening while cutting out brush, I was finally forced to stop because it was too dark. As I started to leave the woods around 9:30, I heard a Whip-poor-will call and so walked in the direction of the song. Suddenly, almost on the edge of my plot, I flushed a female from the ground. She drooped her wings and tail in a display of injury feigning. Feeling certain I had found a nest, I marked the spot and then began my search. All through my search the female circled me alternately injury-feigning and resting on a low branch. Darkness halted my search. The following morning I returned to the area and hunted without success. Then completing my plot I checked again, flushing the bird only a few feet from the place I had discovered her the night before. Once again the same performance was repeated, and once again I failed to find either nest or young. On July 6 I flushed both birds, but further search revealed only that the birds had roosted in this immediate area for some time. This was indicated by the amount of droppings in the area.

This spot was only 220 feet from the edge of the field that runs up to A5 on the southern boundary of my plot. In all instances the flushed birds were remarkably tame, never flying more than 10 or 15 feet at a time. The male spread his tail, displaying the broad bands of white to perfection.

Nighthawk (Chordeiles minor). I located two nests of this species, but feel I missed several especially on the open ground on the side of the hill in the northeast section. Both nests found were on the edge of my property, one on the south side (see Nest Map C in Appendix) between posts 2A and 3A, the other between stakes 1D and 1E on the west side. I discovered the southern nest first on July 11, 1949. I flushed the bird and so found the nest. The nest on the ground consisted of a single large-toothed aspen leaf (Populus grandidentata) on which were two eggs. The bird in injury feigning would fly with her tail at almost right angles, lighting from 6 to 10 feet away. She would drag both wings on the ground, flashing the conspicuous wing spots to attract attention. This is the bird that performed so well for the class on July 16, 1949. On July 23, 1949 the eggs hatched and the very gray, downy young were found five feet from the nest that afternoon. The second nest was found July 22, 1949 and contained but one egg. This nest was in a slight hollow that was filled with leaves and five feet from the base of the nearest tree. This single egg hatched at 2:00 P.M. August 5, 1949. ¹Forbush

¹Forbush, E. H., 1925 - 1929 Birds of Massachusetts and other New-England States. Three volumes. Massachusetts Department of Agriculture, Boston. P.306

gives the incubation period as 16 days with one brood a year. Both nests I found were under incubation at least twelve days. Thus, in both instances, I had located the nest shortly after incubation began.

I was especially surprised to find that the Night-hawks flew all morning, and during the first week the mechanical sound of the wing which is a characteristic part of the courtship performance of this species was to be heard all over the plot but more especially over the open area of the hill and along the southern boundary. By the end of the second week territories were established and nesting commenced. With the advent of nesting the wing song began to decline. This song is created by flying high, then diving head first with wings partially closed.¹ On nearing the ground the wings are spread, turning the bird upwards and causing the primaries to vibrate with a loud zooming sound that carries well. In one evening, from the vantage point of the hill in the northeast corner, I counted six males performing over my plot.

Wood Pewee (Contopus virens). July 16, 1949 the class found a Wood-Pewee's nest on a horizontal limb of a northern oak some 14 feet from the ground. The nest was a statant type consisting of rootlets, bark, plant fibers, lined with plant down and covered on the outside with lichens. This lichen cover tended to camouflage the nest making it appear as a knot on the limb. July 17 both birds were working on the nest in the morning and July 23, 1949

¹Forbush, E.H., 1925 - 1929 Birds of Massachusetts and other New England States. Three volumes. Massachusetts Department of Agriculture, Boston. P. 308

the nest was almost completely destroyed by some predator, perhaps a Red Squirrel (Tamiasciurus hudsonicus) frequently observed in that area. There were three singing males in my plot. All three territories were found where oaks were common and the woods more open, permitting the fly-catcher type feeding. The pewees in my area were late in nesting and it wasn't until the first of July that the song became a regular occurrence on my morning trips.

Purple Martin (Progne subis). The Purple Martins did not appear over my tract until the colony at the Biological Station was through nesting. I first heard the martins on July 16, 1949 and from then on, on any sunny day you could hear the martins chattering as they fed.

Blue Jay (Cyanocitta cristata). There were two areas on my plot in which I could usually find a scolding Blue Jay. One was located on the north side of the tract and the other on the south side. Both were in areas of small pine growth. I found one ^{old} stick nest in a young red pine (Pinus resinosa) about eight feet up. I also observed two Blue Jays in noisy pursuit of a Great Horned Owl (Bubo virginianus). I also believe that Blue Jays are inclined to wander, for I have isolated records of birds scattered over the plot. One would expect to find Blue Jays in this territory with such an abundance of pines in which to nest and insects, beechnuts and acorns for food.

Black-capped Chickadee (Parus atricapillus). It is possible that there were nesting chickadees on my plot. However, the limited amount of dead standing timber leads me to believe that any chickadees seen were birds from Reese's Bog to the south. On two separate occasions I observed flocks of young chickadees being fed. I also noticed that most of the time the birds were feeding on pine, oak or maple. They fed very little on aspens.

Robin (Turdus migratorius). I found one Robin nest in my plot between posts 1E and 1F about ten feet up in a small red pine. This typical Robin's nest picqued my curiosity as to just where the Robin got the mud for the nest. Until one day in camp I observed a Robin picking up clay that had been placed in the road to bind the sand. The nest first observed contained three young, half-grown birds on June 30, 1949. The birds left the nest on July 7. The nest was so near my path that I flushed the bird twice each trip coming and going. The female never got very excited, merely flew off and waited until I would leave. The robins in my plot numbered six pair, and all were associated with the more open aspen-oak and aspen-pine associations. No Robins were recorded in the dense central growth of aspen-maple.

Hermit Thrush (Hylocichla guttata). I recorded more Hermit Thrush songs than any other bird except for the

ubiquitous Oven-bird. The bird was the third most common nesting bird on my territory, and yet, so well were the nests concealed beneath the Pteridium latiusculum I never located a single one. The song period lasted most of the morning ending earlier on the hot sunny days than on the cooler cloudy days. The period of evening song was longer than most of the other birds in my plot. There were five breeding pairs to my knowledge on my territory. Four were found in the lightly stocked aspen-pine and aspen-oak associations. (See Vegetation Map B in Appendix). The one pair found in the more dense section were found along the edge of a small clearing and not in the dense aspen-maple forest itself. In three of the five territories the male bird selected as his favorite song perch the tallest pine in the area. I believe it could be said that the Hermit Thrush has definitely taken to the more open aspen associations in northern Michigan and is probably, therefore, far more common today than during the sub-climax conifer stage. Apparently, the aspen-pine association is a good one with material for lining the nest in the form of pine needles and an abundance of insect food. The song of the Hermit Thrush never becomes dull, but it can be most deceiving. Usually loud and clear, at times the bird will sing in full view only a few feet away and yet sound as if he were in a completely different section.

Cedar Waxwing (Bombycilla cedrorum). My study area contained two breeding pair of Cedar Waxwings. Of this I am certain for I observed both pair either nest building or brooding the young. The first nest was located June 23, 1949, but was in what evidently proved to be a poor position. After seven days of work in which the nest was only half-completed, it was abandoned. The limb on which the nest was placed had a strong slant and ^{this} could easily have been a factor in the abandonment of this nest.

The second nest was located July 13, 1949 between posts 1E and 2E. This nest was situated near the top of a small red maple (Acer rubrum) about 26 feet off the ground. The nest was a large one, almost a foot in depth with much straw and sticks. The young were much in evidence when I found the nest and on July 17, 1949 the nest was empty. The nest on the hill was close to the field with its pin cherry trees (Prunus pennsylvanica) and serviceberries (Amelanchier canadensis). Perhaps it was the edge effect of the fire lane that brought the second pair so far from a more open area. The song of the Cedar Waxwing does not carry well and is difficult to hear if there is the slightest wind rustling the populus leaves.

Red-eyed Vireo (Vireo olivaceus). This was the second most common bird in my area. I recorded it in song some 58 times. The one nest I found I located because the male was singing but four feet away from the nest itself. The nest was located in a small paper birch (Betula alba paperifera) some 12 feet from the ground, suspended between

the fork of two small branches, a perfect cup-shaped nest about five inches deep and covered with strips of white paper birch on the outside. The strips were held in place by spider webs. At the time I found the nest, I didn't have time to check it, but on July 16, 1949, Harrison B. Tordoff climbed to the nest and found two young Red-eyed Vireos, a Cowbird and one unhatched egg. On July 22 the nest was deserted. I'm certain it was destroyed or deserted because the birds were too small to have left the nest. The location of the nest in a paper birch was of interest, for in this region Miss Kathryn Graves found 14 out of 15 nests in maple, and the abundance of maple on my tract would indicate ample nest sites for a considerably larger Red-eyed Vireo population than was recorded. Usually I recorded singing males in the large-toothed aspen (Populus grandidentata) and frequently found them feeding there.

Pine Warbler (Dendroica pinus) I recorded two pairs of breeding Pine Warblers, and both territories coincided with areas of mature pine. (See Maps B and C in Appendix). On June 30, I observed a pair of Pine Warblers feeding an immature Cowbird (Molothrus ater). The male bird, or at least the brighter of the two, circled me injury feigning some times as close as six feet. The population of Pine Warblers should increase within the next 15 years as the present crop of young pines mature. This is the only warbler I recorded other than the Oven-bird. After the first week in July, the Pine Warblers were apparently

through nesting, for the singing males were seldom heard after that.

Oven-bird (Seiurus aurocapillus). This was by far the most common nesting bird in my study area. I recorded 14 singing males within my plot, and found one nest. The bracken (Pteridium latiusculum) as it comes up in the Spring pushes up a dome-shaped nest of leaves. These make ideal nesting sites for the Oven-bird and also make nest hunting difficult. On July 13, 1949 I located an Oven-bird's nest between stakes 4A and 4B (See Map A and B in Appendix). The nest consisted of an arched dome 6 inches tall and 9 inches in diameter. The dome was made up of bracken and large-tooted aspen leaves. The nest itself was a hollow in the ground lined with grass and some pine needles. The tunnel-like entrance was on the north side of the nest and the nest contained three eggs, much spotted, the spots ranging from brown to reddish purple. I spotted the nest when I observed the female running along the ground below the bracken. After having run some 20 feet, she began a high twittering note, different from the common chip, to attract my attention, injury feigning all the time. At 45 feet she ascended to the lowest branch of a maple shoot and began to chip excitedly using the chip with which I was already so familiar. Following the path taken by the bird, I traced it back and at 48 feet from the maple shoot found the nest. On subsequent days when I would flush her, she would merely leave the nest and disappear. July 16 the eggs hatched and July 25 the young left the nest, just 10

days after the eggs had hatched. Like so many ground nesting birds, little time was spent in the nest. On July 17 I caught a young Oven-bird near post G5. The young bird was quite gray about the head as compared to the adult. There was no color in the crown except for two dark streaks. The tail was over an inch long and it flew well. Both birds were in attendance scolding and injury feigning all the time I held the young bird. Of no ecological value, but a most pleasant surprise to me, was the observation from the hill one evening of the evening song of the Oven-bird. The bird flew into the air with a flood of warbler-like song, then dropped to the earth with almost closed wings. If it hadn't uttered the familiar teacher song as it lit, I would still have been wondering just what it was.

The excellent nesting sites, protection of the bracken, and abundance of food accounts for the high number of Oven-birds. I recorded 14 pairs of breeding birds as against eight pairs recorded by Douglas James in 1947. I cannot but hazard the guess that the more numerous trips that I made would account in part for the higher population figure I achieved.

Cowbird (Molothrus ater). I need mention the Cowbird only briefly, having already discussed it elsewhere. The bird was not common in my area, and the very fact that out of 10 nests located, only one was parasitized, is ample evidence of this fact. I recorded its voice 10 times and saw the bird on several occasions. I had two examples of parasitism: one in the case of the Red-eyed Vireo's nest

and the second, my observation of the Pine Warbler feeding a young Cowbird.

Scarlet Tanager (Piranga olivacea). There were two Scarlet Tanager territories on my plot. One on the south side and the other cutting over the center fire lane. I suspected that the nest hung out over the fire lane and spent much time trying to locate it, but to no avail. On July 4, 1949 I observed a female feeding for 20 minutes, during which time she fed continuously in large-toothed aspens. Later in the summer, I frequently observed paired birds feeding together.

Vesper Sparrow (Pooecetes gramineus). On the first trip I found a Vesper Sparrow nest in the field on top of the hill in the northeast corner. The nest was on an almost direct line between posts 8H and 8G. Thereafter, each day I would walk within 10 feet of the nest, check to see if she was incubating the eggs, then circle the nest without disturbing her. Not once in the 10 half days spent on the plot, as well as during frequent trips to check nests, did I hear the male bird sing. The female uses her two white outer tail feathers most effectively in injury feigning, covering the ground with amazing speed for so small a bird. The nest itself was a hollow in the ground lined with grass and covered over with bracken leaves giving almost a dome effect. The nest was clean, well-built, and had beautiful symmetry.

July 4 the eggs hatched. On July 6 I found three birds in the nest. By July 11 the one remaining young

-23-

was fully feathered with a half-inch tail. On July 14 I found the nest deserted. The female, still injury feigning, attempted to lead me from the vicinity of the nest. This was the last time I saw the Vesper Sparrows.

I did not add this bird to my list of breeding birds or count it in because, strictly speaking, it is a field bird and was nesting in a field. I also excluded the last two and one-half sections in the southeast corner because they were open fields.

Conclusion

In all my field work and all this summer's work, I have only found one nest in an aspen tree. That was a Hairy Woodpecker (Dendrocopus villosus), whose nest was in a live large-toothed aspen some 20 feet from the ground. Apparently, the slippery limbs -- and how I hate to have to climb this tree for that reason -- coupled with its very brittle nature precludes it as a nesting site. Old aspens make excellent sites for hole-nesting birds, but these were burned and only now are a few of the mature trees dying. Ten more years should produce many favorable nesting sites for hole-nesting species, especially the woodpeckers.

Only 14 different species of breeding birds were recorded, including the Cowbird and the Mourning Dove. The Mourning Dove was present only as the result of the edge influence of the northeast field. This leaves only 12 typical woodland nesting birds, and of these the Ruffed Grouse, Whip-poor-will, Nighthawk, Hermit Thrush, and Ovenbird are ground nesting species. This cuts the figure to seven tree nesting birds, and of these seven, as far as I know through reading and field work, not one has been recorded nesting in an aspen.

Thus the aspen itself is of no real importance as a nesting site, but serves as a feeding area or singing perch. Since pure stands of aspen are short-lived, the secondary tree or tree associated with it takes on added significance. Early in my study of this area it became evident that certain species are more common in one aspen association than in

another. The Red-eyed Vireo is most common in the aspen-maple section of the plot while the Wood Pewee is most abundant in oak-aspen areas and the Blue Jay and Pine Warbler most common in the pine-aspen areas.

Openness or density of tree growth are important ecological factors. The Hermit Thrush, Nighthawk, Whip-poor-will and Wood Pewee prefer the more open stands where the light floods the forest floor. Even the woods-loving Scarlet Tanager prefers a nest hanging over a clearing. The Red-eyed Vireo and Oven-bird, on the other hand, preferred the more heavily wooded areas.

As growth continues and the forest becomes more dense, birds such as the Nighthawk, Whip-poor-will and Hermit Thrush will either disappear or come to exhibit a so-called edge effect.

The post-breeding season influx of certain species from the nearby more heavily populated spruce bog is probably the result of population pressure rather than a shortage of food. The presence of a Great Horned Owl was probably a matter of feeding and my area was a part of his extensive territory. Ruffed Grouse, Red Squirrels, and Chipmunks (Tamias striatus) are all good owl food.

As the pine increases, the chances are good that more warblers will be found in this area as well as Purple Finches and other conifer-dwelling species.

This area will show a gradual increase in number of species and number of paired birds. Thus, it is only natural that my findings should be greater than those of

Douglas James in the summer of 1947. However, I feel the difference is too great for the short period of time involved, and that probably some place between the two figures would be a more accurate report. Mr. James' figures were based on too few field trips to accurately determine all the breeding birds. For example, he did not find any Nighthawk or Whip-poor-will nests. Yet I am certain that many birds used this rather extensive area for from the vantage point of the hill one could easily count 10 Nighthawks in the air at one time, the number on the ground being only a matter of conjecture.

Just where I went astray, if I did, I honestly can't figure out. I would like to check my results by doing the tract another year to check my own reports. But if I were to do this, I would want much more time for nest hunting. I also would like, if at all possible, to start at least by the middle of June. An ecological problem of this nature can be a fascinating thing for it constantly opens up a great number of study possibilities, each of which could be a problem in itself.

The essential discrepancy between Mr. James' results and mine was with the number of Oven-birds and the number of other ground nesting birds located.¹ Dr. Harry Hann, in a study made in an oak-maple association near Coldwater, Michigan, recorded variation in territory from 0.5 to 4.5 acres with an average of three acres per feeding bird. My average territory proved to be 3.5 acres. Perhaps some error occurred due to the shifting in the singing territory

¹ Hann, Harry W. :1937, "Life History of the Oven-bird in Southern Michigan, Wilson Bulletin, 49: 151

as mentioned by Dr. Hann. "When the nesting site is chosen, the territory usually undergoes some change, due to shifting of the center of interest from the male's favorite singing place to the region of the nest. There is little change after this unless later nests are built. Subsequent nests are usually built well within the territory, but in one instance one was built at the border within a few meters of an earlier nest which belonged to a neighboring pair. There was no friction here, however, since the nests were not occupied at the same time." ¹

For further comparison of population concentrations with other studies in aspen associations, and for comparison of aspen associations with other associations see Chart I in the Appendix.

Thus, my work, along with the work of others, clearly shows that aspen associations have the lowest breeding bird population of any of the woodland associations. It is also shown that any increase in an aspen area is due to the secondary influence of incoming plants which will eventually climax the aspen. It is also clearly shown that the composition of the bird population varies with each specific type of association.

¹ Hann, Harry W. : 1937, "Life History of the Oven-bird in Southern Michigan, Wilson Bulletin, 49:145-237.

BIBLIOGRAPHY

- Cadbury, Joseph, and Cruickshank, Allan D.
1942 Breeding-bird census, climax red-white spruce forest. Audubon Magazine, Sec. 2, No. 142: 32
- Compton, James B.
1914 The birds of the Douglas Lake Region.
Wilson Bulletin, 89: 173-180
- Garst, Virginia L.
1944 An Ecological Study of Breeding Birds in a Sandy Upland Aspen Association. Unpublished paper University of Michigan Biological Station.
- Gates, Frank C.
1926 Plant succession about Douglas Lake, Cheboygan County, Michigan. The Bot. Gazette 72. No.2;
- Forbush, E. H.
1925 - 1929 Birds of Massachusetts and other New England States. Three volumes. Massachusetts Department of Agriculture, Boston.
- Hann, Harry W.
1937 Life History of the Oven-bird in Southern Michigan
Wilson Bulletin, 49: 145-237
- Hickey, Joseph J.
1943 A guide to bird watching
Oxford University Press, New York, New York
- Hofslund, Persning
1946 The bird population of a beech-maple hardwood forest.
Unpublished paper University of Michigan Biological Station
- Kendeigh, S. Charles
1946 Breeding birds of the beech-maple hemlock community
Ecology 27: 226-244

1947 Bird population studies in the coniferous forest biome during a spruce budworm outbreak.
Dept. of Lands and Forests, Ont. Canada, Div. of research, Biol., Bul. 1.
- Prescott, E. W.
1946 A population study of birds of a pine community.
Unpublished paper University of Michigan Biological Station.
- Riggs, Austin Fox, II.
1946 A study of the birds of Reese's bog.
unpublished paper University of Michigan Biological Station
- Roberts, T.S.
1932 The Birds of Minnesota. Two volumes
University of Minnesota Press, Minneapolis

Saunders, Aretas A.

1936 Ecology of the birds of Quaker Run Valley,
Allegheny State Park, New York. N.Y. State
Museum Handbook 16.

Vandegrift, Elizabeth, and Ritsema, Louise

1946. Breeding population of a mature aspen area.
Unpublished paper University of Michigan
Biological Station

Whiting

A P P E N D I X

UNIVERSITY OF MICHIGAN BIOLOGICAL STATION

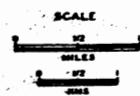
AND DEMONSTRATION FOREST

CHEBOYGAN AND EMMET COUNTIES, MICH.

MAP A.

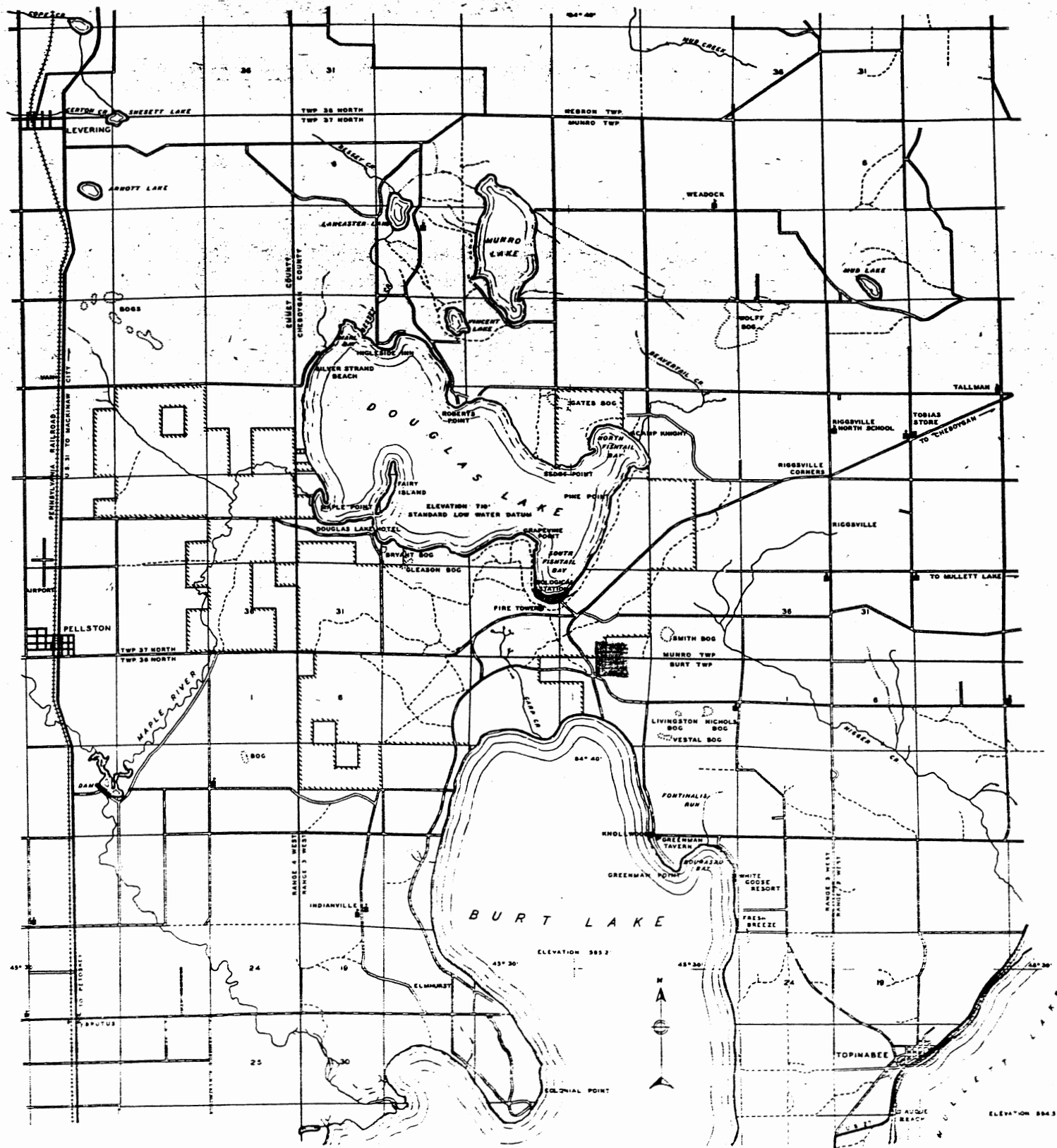
LEGEND

- CHURCH
- SCHOOLHOUSE
- BOUNDARY OF UNIV. LANDS
- RAILROAD

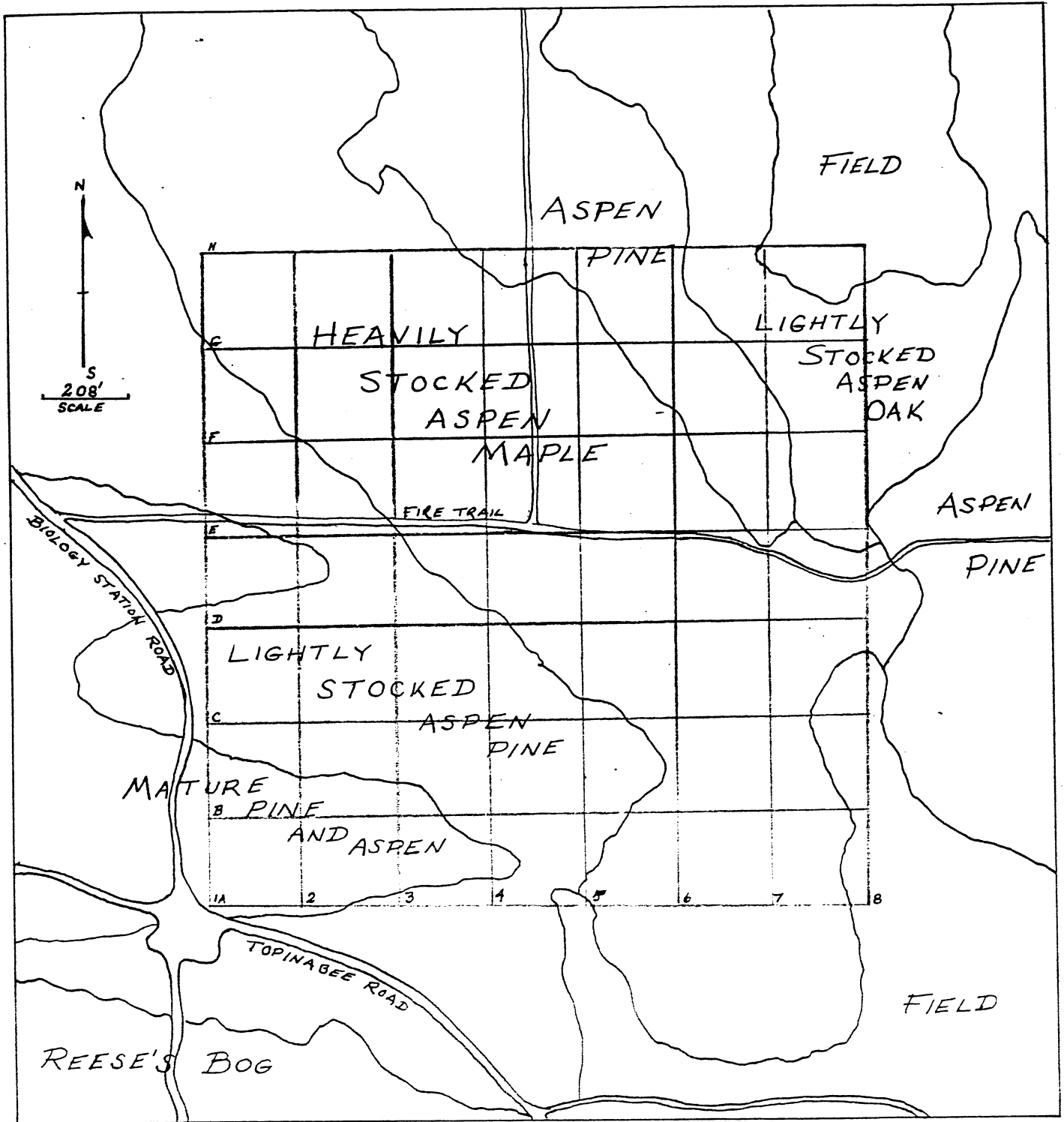


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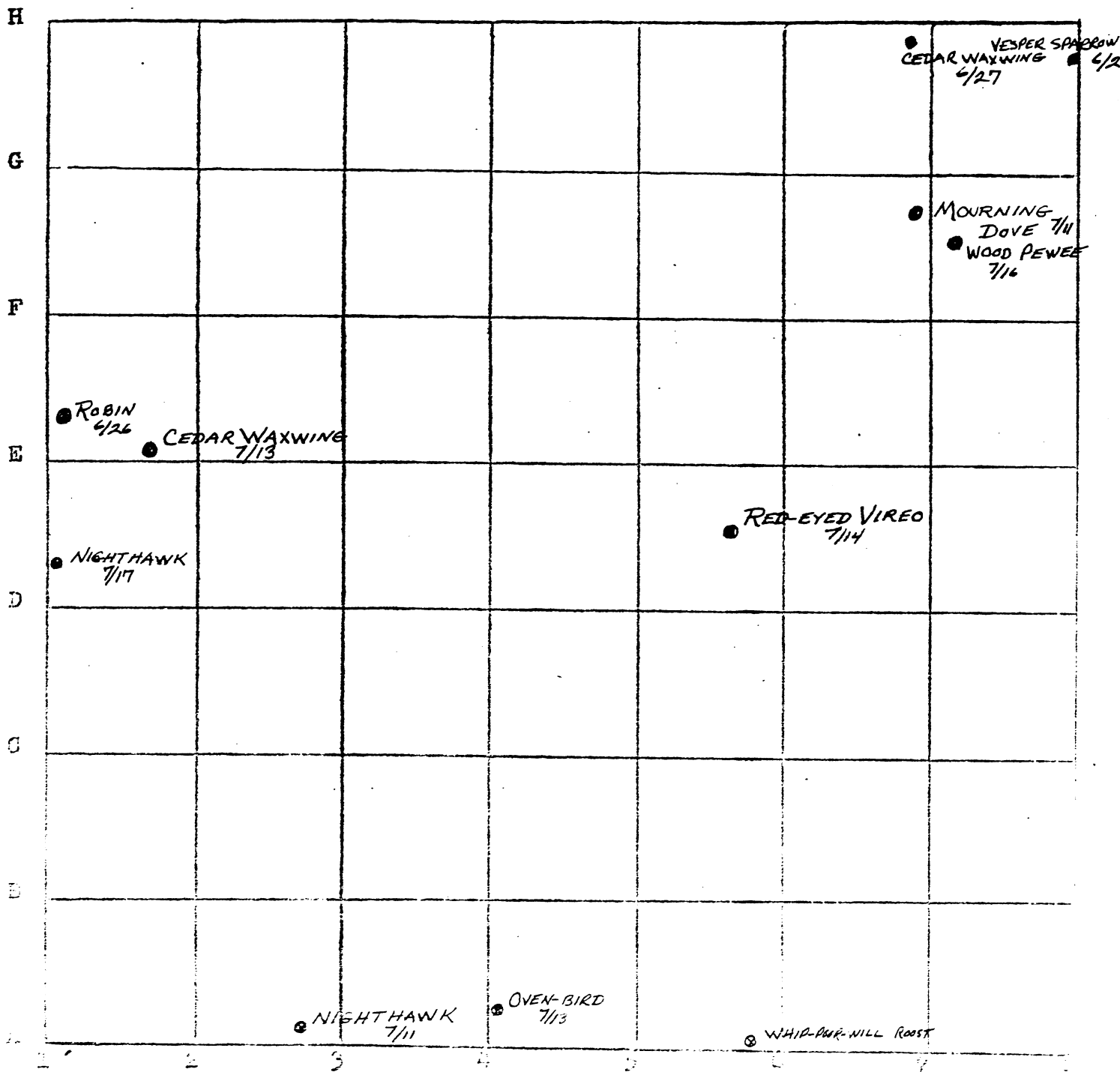
- PAVED HIGHWAY
- GRAVELLED ROAD
- GRADED ROAD
- UNIMPROVED ROAD
- TRUCK TRAIL



MAP B.
LOCATIONAL AND VEGETATIONAL
OF STUDY PLOT



NEST LOCATION MAP C.



KEY

A List of Fifteen Breeding Bird

This list includes two Cow birds and a Vesper

Sparrow.

Bird	No. Breeding Birds on my plot	No. Breeding Birds per 100 acres
Ruffed Grouse	1	2
Mourning Dove	1	2
Whip-poor-will	1	2
Nighthawk	2	4
Wood Pewee	2	4
Blue Jay	2	4
Robin	6	12
Hermit Thrush	5	10
Cedar Waxwing	2	4
Red-eyed Vireo	6	12
Pine Warbler	2	4
Oven-bird	14	28
Cowbird	2	4
Scarlet Tanager	2	4
Vesper Sparrow	<u>1</u>	<u>2</u>
Totals	49	98

* Note the Vesper Sparrow was included in the territory although strictly speaking the bird was in the small field in the northeast corner of the tract. The two and one half sections in the southeast of the tract were omitted from the census because of the much greater area of field therein.

-3-

Birds listed as to frequency of observation

<u>Species</u>	Number of observations
Oven bird	139
Hermit Thrush	60
Red-eyed Vireo	58
Robin	45
Wood Pewee	22
Black-capped Chickadee	12
Cowbird	10
Mourning Dove	8
Blue Jay	8
Scarlet Tanager	8
Pine Warbler	8
Cedar Waxwing	8
Nighthawk	6
Ruffed Grouse	6
Flicker	5
Vesper Sparrow	4
Whip-poor-will	4
Purple Finch	2
Crested Flycatcher	2
Chipping Sparrow	2
Goldfinch	2
Hairy Woodpecker	1
Downy Woodpecker	1
Black-billed Cuckoo	1
Great Horned Owl	1
Ring-billed Gull	1

Check List of Species Observed

1. Ruffed Grouse (Bonasa umbellus)
2. Ring-billed Gull (Larus delawarensis)
3. Mourning Dove (Zenaidura macroura)
4. Black-billed Cuckoo (Coccyzus erythrophthalmus)
5. Great Horned Owl (Bubo virginianus)
6. Whip-poor-will (Caprimulgus vociferous)
7. Nighthawk (Chordeiles minor)
8. Flicker (Colaptes auratus)
9. Hairy Woodpecker (Dendrocopus villosus)
10. Downy Woodpecker (Dendrocopus pubescens)
11. Crested Flycatcher (Myiarchus crinitus)
12. Wood Pewee (Contopus virens)
13. Purple Martin (Progne subis)
14. Blue Jay (Cyanocitta cristata)
15. Black-capped Chickadee (Parus atricapillus)
16. Robin (Turdus migratorius)
17. Hermit Thrush (Hylocichla guttata)
18. Cedar Waxwing (Bombycilla cedrorum)
19. Red-eyed Vireo (Vireo olivaceus)
20. Pine Warbler (Dendroica pinus)
21. Oven-bird (Seiurus aurocapillus)
22. Cowbird (Molothrus ater)
23. Scarlet Tanager (Piranga olivacea)
24. Vesper Sparrow (Pooecetes gramineus)
25. Chipping Sparrow (Spizella passerina)

Meteorological Summary Cheboygan, Michigan
U.S. Weather Bureau Figures

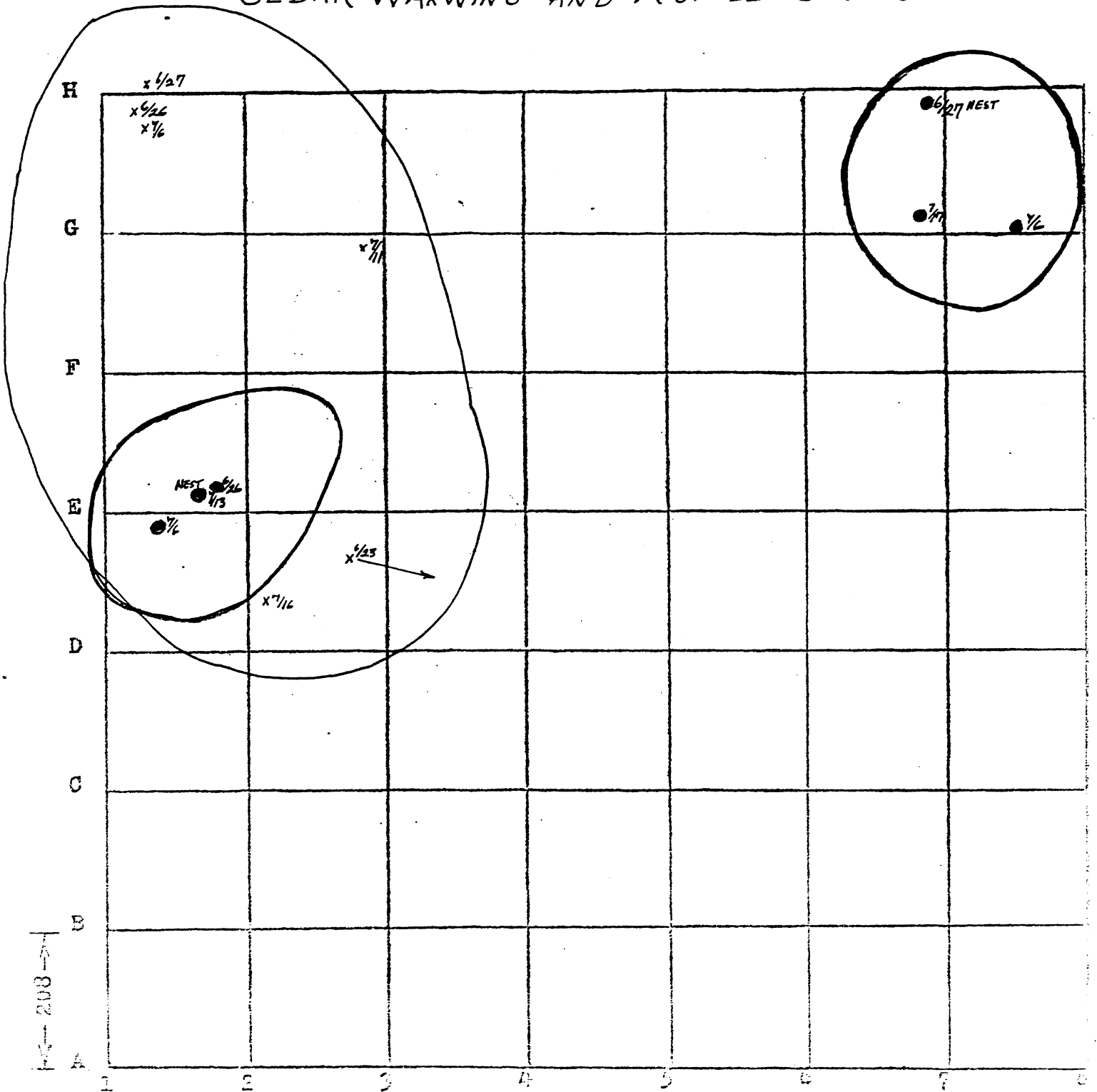
Temperature F°

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
Absolute Mean	59	51	72	86	89	95	101	95	95	89	73	59
Mean	19	16	25	39	50	61	66	65	60	48	35	23
Absolute Minimum	-20	-38	-22	-2	17	28	33	35	25	15	-6	-18
Wind (Prevailing wind direction)	NW	NW	NW	NW	NW	NW	NW	NW	SW	SY	NW	SW
Precipitation (Total yearly precipitation 28.57 inches)	1.70	1.38	1.90	1.79	3.10	1.85	3.10	2.97	2.92	2.50	2.49	1.93
Number of days with precipitation	9	7	6	7	8	7	8	9	8	8	9	9
Snowfall in inches	15.6	13.6	9.0	2.3	0.7	-	-	-	-	0.7	6.6	12.0

Weather Data for time spent in the Field

Date of Field Trip	Temperature	Wind
June 23, 1949	60 - 66° F	Moderately strong wind and rain
June 26, 1949	70 - 74	Moderate wind
June 27, 1949	64 - 76	Strong wind
June 30, 1949	72 - 78	Light Wind
July 4, 1949	70 - 76	Moderate to strong wind rain in the night
July 6, 1949	62 - 68	Moderate to strong wind rain in the night
July 11, 1949	58 - 70	Light wind
July 13, 1949	64 - 72	Light wind
July 14, 1949	60 - 74	Light wind
July 17, 1949	68 - 80	Light wind

CEDAR WAXWING AND RUFFED GROUSE



203

KEY

—* CEDAR WAXWING (BOMBYCILLA CEDRORUM)

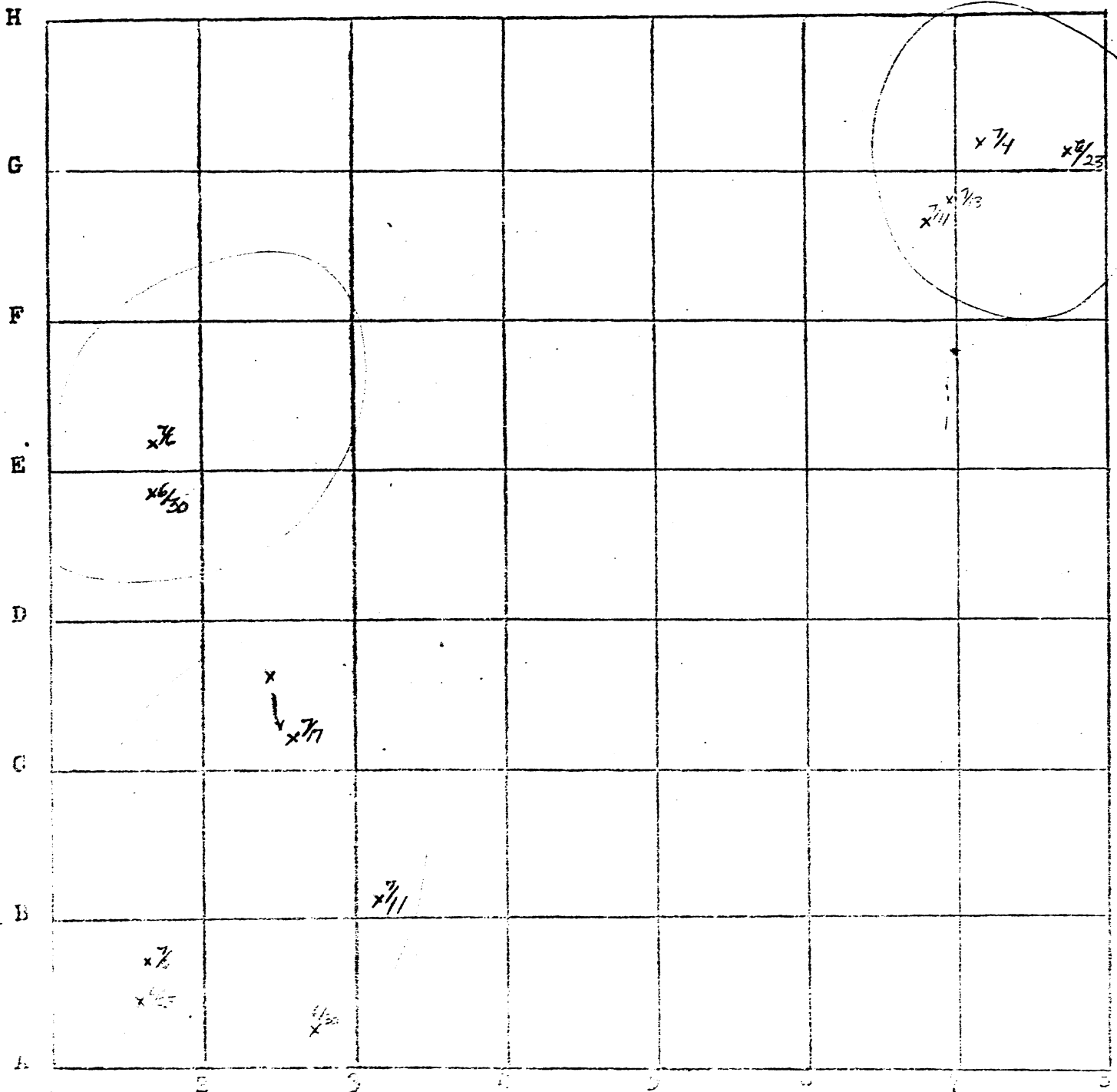
—● BREEDING PAIR = 2

—x RUFFED GROUSE (BONASA UMBELLUS)

—● BREEDING PAIR = 1

W

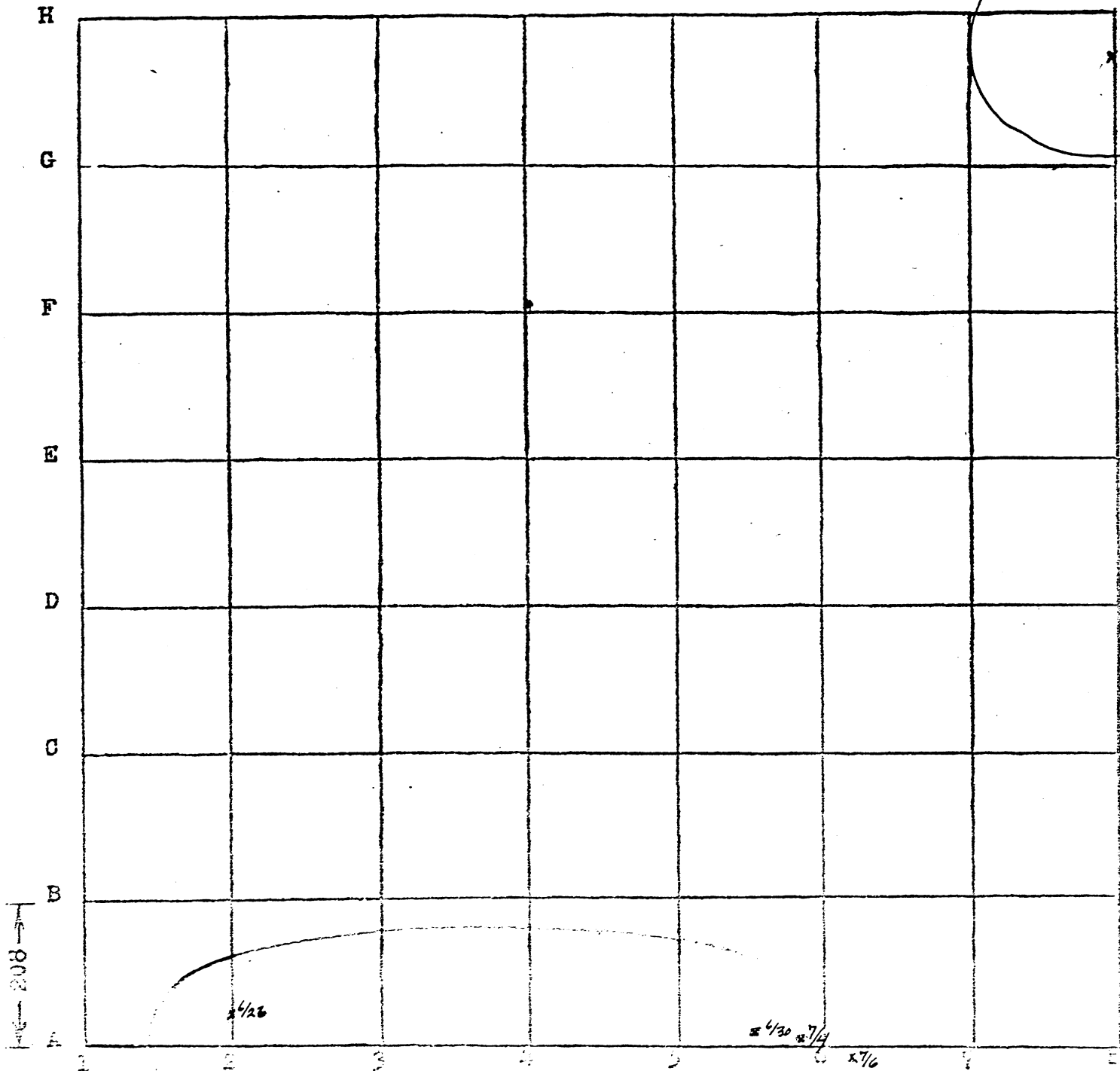
PINE WARBLER AND MOURNING DOVE



KEY

- ☒ PINE WARBLER (*Dendroica pinus*) BREEDING PAIR 2
- ☒ MOURNING DOVE (*Zenaidura macroura*) BREEDING PAIR 1

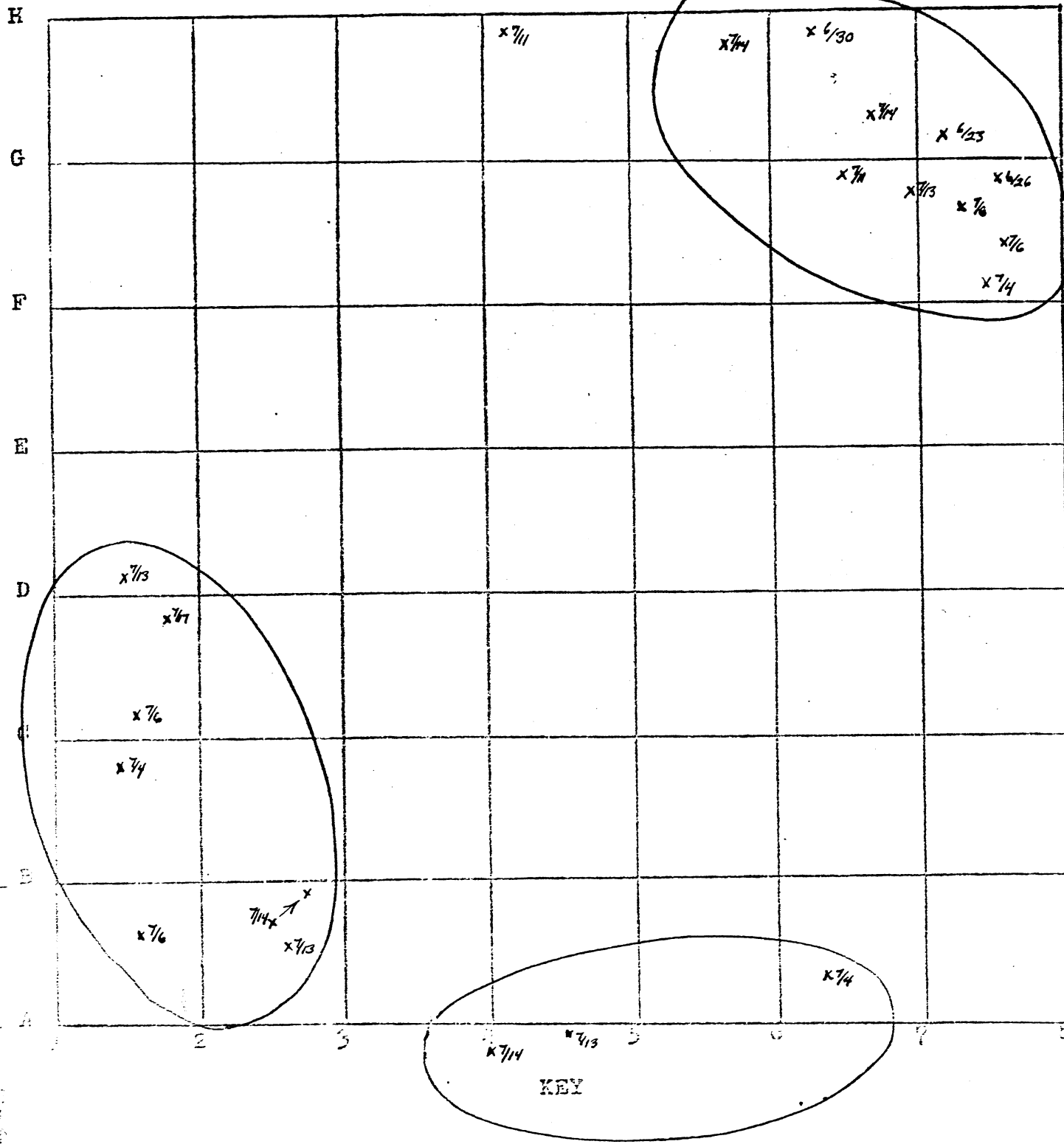
VESPER SPARROW AND WHIP-POOR-WILL



KEY

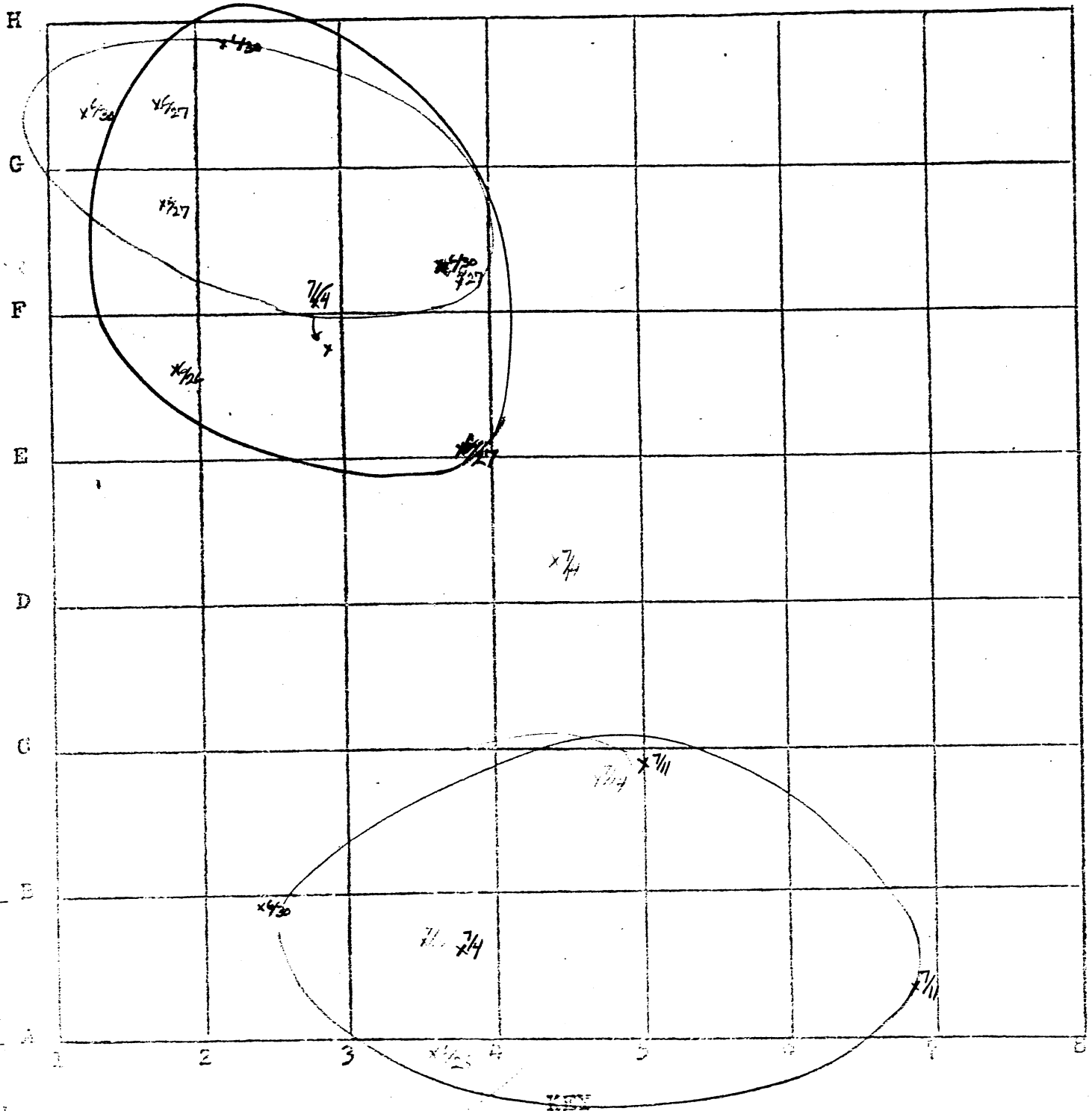
- x WHIP-POOR-WILL (CAPRIMULGUS VOCIFERUS) BREEDING PAIR 1
- x VESPER SPARROW (POECCETES GRAMINEUS) BREEDING PAIR 1

WOOD PEWEE CONTOPUS VIRENS



ESSENE PAIR = 2

BLUE JAY AND SCARLET Tanager

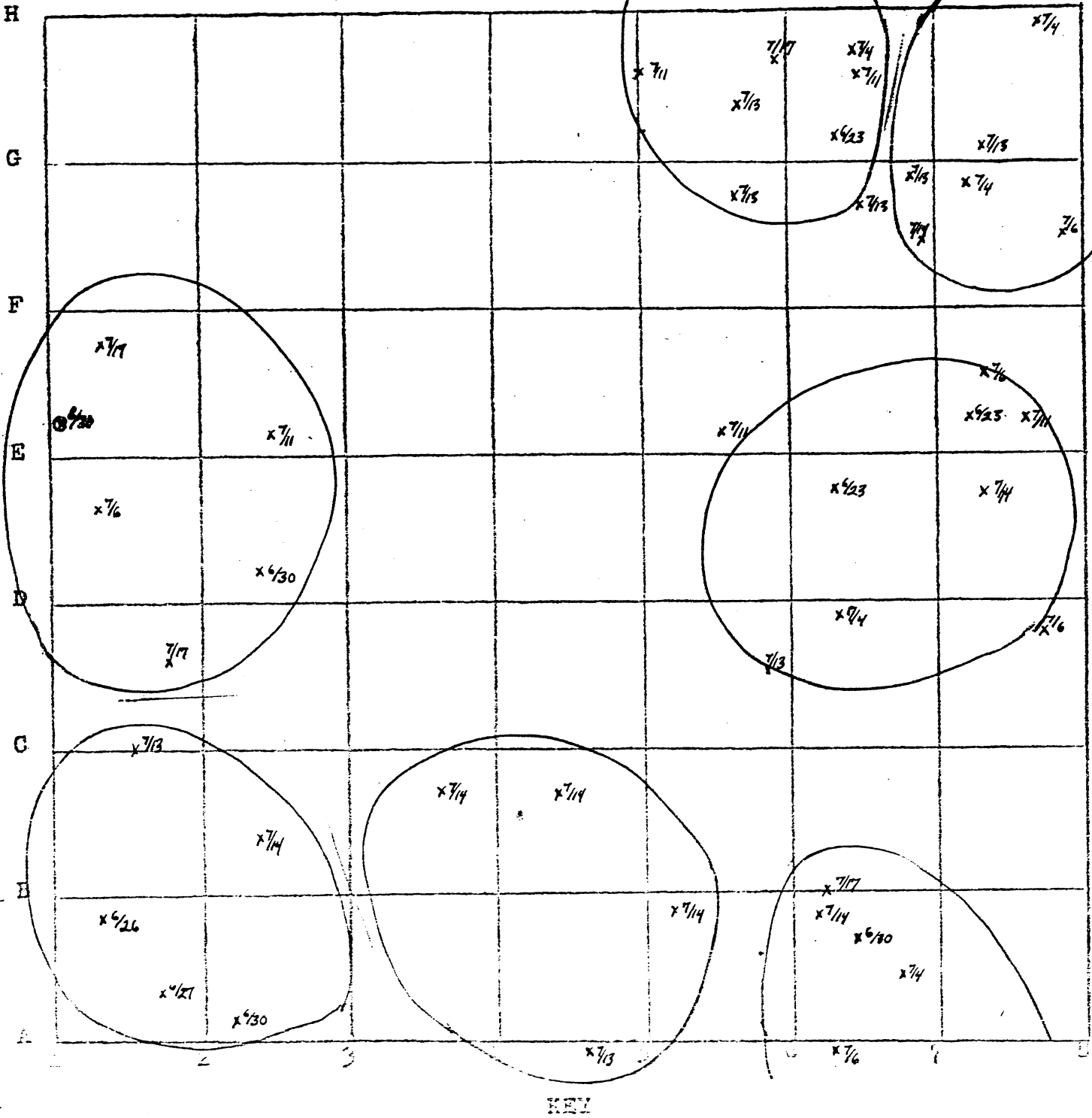


BLUE JAY (*Cyanocitta cristata*) BREEDING BIRDS = 2
 SCARLET Tanager (*Piranga olivacea*) BREEDING BIRDS = 2

-18-

ROBIN

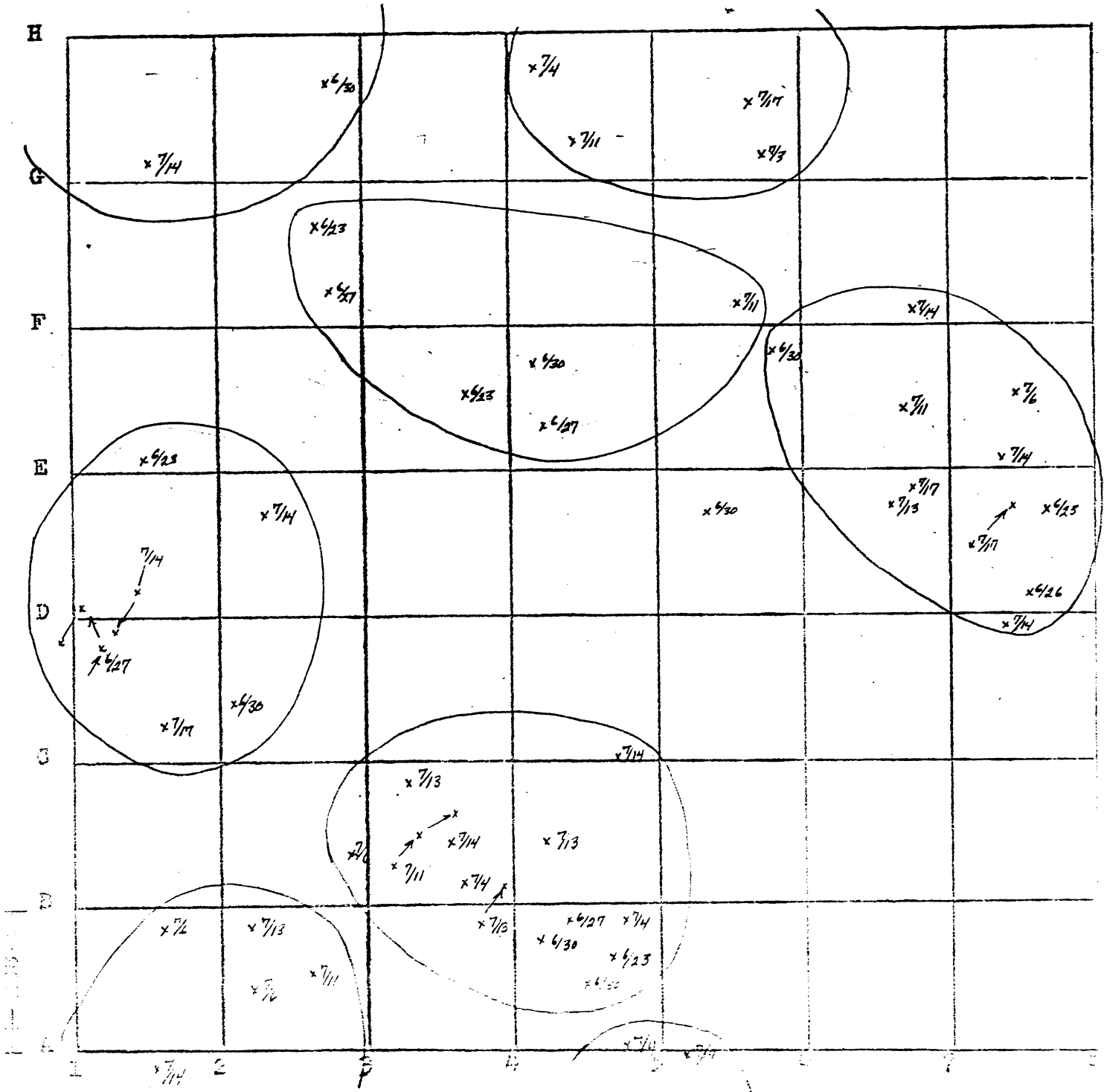
Turdus migratorius



BREEDING BIRDS = 6

HERMIT THRUSH

Hylocichla gutta faxoni

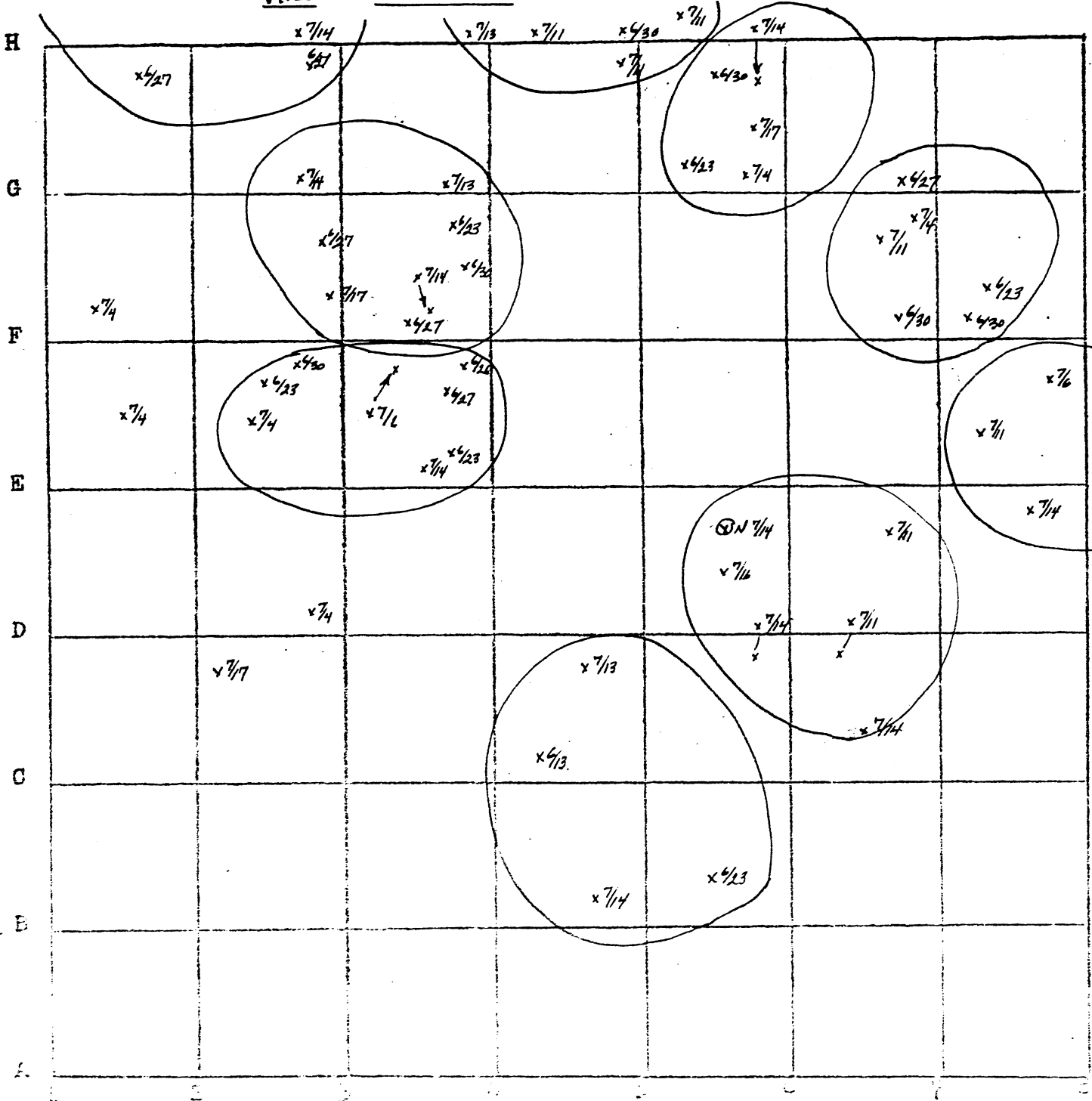


KEY

BREEDING PAIR = 5

RED-EYED VIREO

Vireo olivaceus

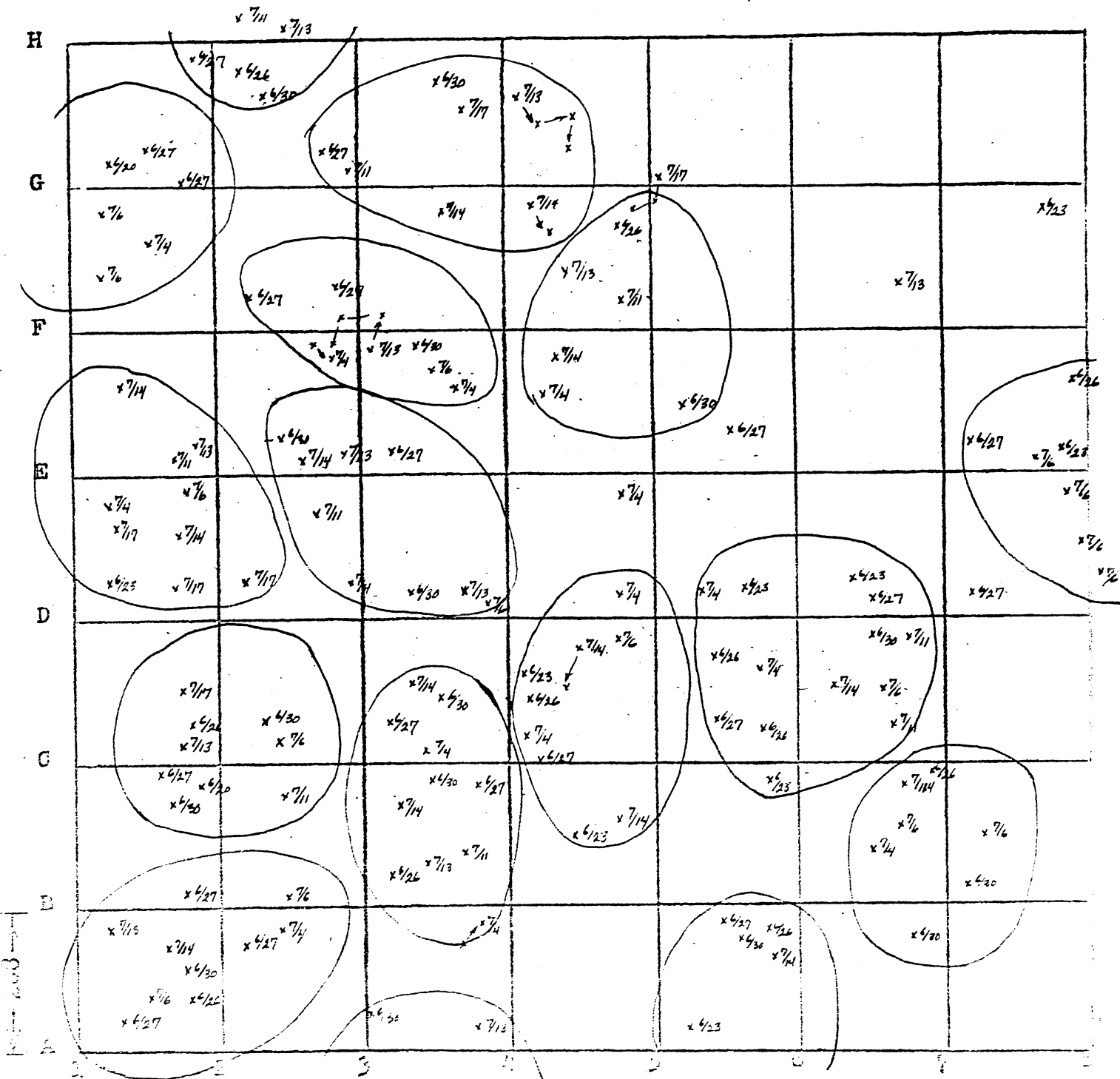


1872

Breeding pair - 6

OVEN-BIRD

Seiurus aurocapillus



KEY

BREEDING PAIR = 14

A Comparative Study of Ecological Associations

Investigator	Habitat	Locality	No. of Species	No. of breeding pair per acre
Saunders, Aretas A. 1936	Meadow	Allegany State Park New York	6	47
	Field	"	1	9
	Aspen	"	14	40
Garst, Virginia 1944	Aspen	Cheboygan Co., Michigan	30	59
Vandegrift, Elizabeth 1946 and Louise Ritsema	Aspen	Cheboygan Co., Michigan	20	65
James, Douglas 1947	Aspen	Cheboygan Co., Michigan	13	56
Whiting, Robert A. 1949	Aspen	Cheboygan Co., Michigan	14	98
Riggs, Austin Fox, II. 1946	Aspen, cedar, and balsam	Cheboygan Co., Michigan	26	148
Hofslund, Pershing 1946	Beech-maple	Cheboygan Co., Michigan	33	156
Prescott, Kenneth W. 1946	Pine	Emmet Co., Michigan	25	87
Riggs, Austin Fox, II. 1946	Cedar-balsm	Cheboygan, Co., Michigan	26	148
Kendeigh, S. Charles 1946	Spruce-fir	Black Sturgeon Lake, Canada during an outbreak of the spruce budworm.	42	319

Date June 23, 1949

Time 7:15 AM - 12:00 Noon

Weather - Moderately Strong Wind - Rain at 11:00 AM.
Temperature 60-65°F - Sky overcast

H					x19	x21	23
G					x20	x22	x24 x25
F		x5	x8				x26 x27 x28
E	x4	x6	x11				x29 x30 x31
D	x3	x7	x9 x10 x12				x32
C				x36 x37	x16	x35 x18 x17	
B				x33	x34	x51	
A	x1	x2		x13	x14		
1A	2	3	38	4	5	6	7

- | | | |
|-------------------|-----------------------------------|-------------------|
| 1. R.V. | 13. H.T. | 25. Mourning Dove |
| 2. Pine Warbler | 14. O.B. | 26. O.B. |
| 3. O.B. | 15. O.B. | 27. R.V. |
| 4. H.T. | 16. O.B. | 28. Cowbird |
| 5. H.T. | 17. O.B. | 29. Robin |
| 6. R.V. | 18. Robin | 30. Cowbird |
| 7. Ruffed Grouse | 19. Purple Finch | 31. O.B. |
| 8. R.V. | 20. R.V. | 32. H.T. |
| 9. H.T. | 21. Cowbird | 33. O.B. |
| 10. Ruffed Grouse | 22. Robin | 34. R.V. |
| 11. R.V. | 23. Vesper Sp. [#] Nests | 35. Starling |
| 12. Cowbird | 24. House Wren | 36. O.B. |
| | | 37. R.V. |
| | | 38. H.T. |