THE ORIGINAL VEGETATION

OF

KANE COUNTY, ILLINOIS

by

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CONTENTS

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Chapter I

To the early settlers of the midwest the original forest was often considered an obstacle to farming. Timber had to be cut and stumps removed prior to planting crops and laying out pastures. It is only recently, more than a century later, that mankind is learning that in co-operation with, and not disregard of, nature and natural law is contained the key to continual harmonious relations between man and the land.

Thus it is that interest in the dynamics of vegetation increases steadily. It is because of this interest - and a belief in the value of it - that one is lead to the study of the original, the so-called 'virgin' vegetation. But in the midwest much of the original vegetation has been destroyed and nearly all thoroughly disturbed, necessitating the use of several methods of reconstruction in order to accurately depict what grew prior to the advent of civilization. Such reconstructions can be accomplished in several ways. Bromley (1935) lists the following:

A. Prehistoric
   1. Macrofossil evidence (fossil trees and plants)
   2. Laminated clays
   3. Fossil pollen

B. Historic
   1. Records of early travelers
   2. Local histories
   3. Contemporary writings
   4. Early surveyor's records

It is also possible to reconstruct vegetational history

in part by present-day patterns of distribution and the ecology of both species and communities. This is made possible by the occurrence of relicts of former vegetation, which may remain unchanged, when the conditions necessary for their survival stay the same, in local situations long after general conditions throughout the area have been altered. This is perhaps the oldest and most obvious method of vegetative reconstruction and one that is frequently used to supplement several of the aforementioned systems (Gleason, 1922).

The method of reconstruction used as the basis of this paper is that involving an interpolation of the early surveyor's records. Some comparison with existing vegetation has been necessary, and is used to verify occurrence of certain tree species.

Chapter II

History and Purpose

The Ordinance of May 20, 1785 authorized the use of the rectangular system of public land survey for the then unsurveyed territories of this country. The ascribed purposes of the Ordinance were first, to facilitate the settlement of the virgin territories to the west, and, second, to provide some income for the impoverished treasury through public auction of these lands (Stewart, 1935). In addition to the legislative purposes, several objectives of the survey were outlined by the original instructions:

1. To ascertain the suitability of the land for agriculture.
2. To discover and meander navigable streams.
3. To aid the discovery of natural resources, including mineral deposits, timber, soil types and so on.

The net result of the fulfillment of these objectives was a brief land-resource inventory. Such data become important today because the early surveyor noted such factors in his field notes as swift streams, scrubby forest, areas of former forest fires, wind throws, rocky soil, steep cliffs, and so on. Using these notes in conjunction with the survey data provide the present investigator with some valuable footnotes to the landscape at that time.

Survey Procedure

Several modifications of the original procedure were made from time to time, although such changes did not

materially affect the results obtained. Special instructions were issued in 1834 which applied to Illinois and Missouri. It was under these instructions that Kane County was surveyed between the years 1837 and 1841.

Details of procedure, well described by Dodds, et al (1943), are not considered in this paper. However, a basic summary of the method is requisite to an interpretation of the data.

The basic unit of subdivision was the mile square section, containing 640 acres. Subdivision proceeded from the township, typically a square unit six miles on a side, which was divided into thirty-six sections. The survey proceeded along the section lines - and on these lines only - so that the final result was that the township was covered with a grid of squares. All data were obtained from section lines, as the surveyor did not even enter the interior of a section except when meandering a lake or navigable river.

It was at the intersection of these lines, or section corners, that the surveyors set stakes and recorded bearing, or witness, trees. Bearing tree is the term used to designate trees which were blazed and described in the notes by recording the species, diameter and distance and direction from the corner, this information serving as an aid to relocation of the section corners. The term witness tree, is often used interchangeably with the former. Usually four trees, when available, one from each section, were described at each section corner. In addition, two bearing trees were marked and noted at the midway point between section corners, the quarter

corner. Other trees described include: line trees, all trees intersected by the section lines, and river bank trees, noted when the section line encountered a river. These then were the types of trees described in Kane County. Summarization of these trees is made in Table 1.

Other valuable data were included in the notes. The boundary between forest and prairie was accurately depicted by such phrases as "entered forest, 31 chains" or "small grove, 14 chains." The transition border between forest and prairie was seldom overlooked. Swamp boundaries, lake borders and stream and river banks were set down in similar fashion.

The instructions of 1834, in setting forth the details for survey procedure in the states of Illinois and Missouri, directed the surveyor to make summary notations of the vegetation, topography and soils of the region every half-mile. Such notations, however, were not included in the duplicate records at the recorder's office.[1] I have been unable to discover the reason for this omission.

A vegetative map of the county, as well as maps of individual townships, was, however, on file together with the surveyor's notes. The original county map prepared by the surveyor is reproduced in Figure 1 by the line of dashes which represents the boundary between forest and prairie.

1. Duplicates of the original survey notes for counties in Illinois (and Michigan) are on file at the county recorder's office, located at the county seat in the respective counties. The original notes are kept at the state capitals.

Modifications by the author based upon the notes themselves are shown by the dotted line.

The survey notes of the county provide a regular sampling of the forest flora as it existed at that time. As noted by Bourdo (1954), these notes are written on the spot, by a previously determined plan, and provide a suitable basis for both quantitative and qualitative analysis of the original vegetation.

Shortcomings

Use of the survey notes for vegetative reconstructions requires discretion, for the surveys themselves were subject to certain limitations and irregularities. Overlooking such anomalies could result in serious errors in the interpretation of the survey notes. Below are enumerated several of the more important considerations.

1. The coverage was incomplete. The interior of sections went unsurveyed and, consequently, such features as small groves of trees in prairie areas were not recorded.
2. The surveyor was not a botanist. Although he had a woodsman's working knowledge of many plants, he was subject to mistaken identification and did not specify particular species in certain genera.
3. The survey was occasionally subject to fraud. Bouchard (1946) notes that several times the "government has been furnished with the field notes of a survey executed in the comparative comfort of a tent rather than upon the ground." Such, however, was not

the case in Kane county.

4. Various considerations influenced the selection of particular bearing trees. Bourdo (1954) states that

> "there can be little question that the selection of bearing trees was not strictly random . . . When two or more trees were equally handy, it is inevitable that some preference should dictate the one that was picked . . . the question, therefore, is not whether bias was present, but whether it was important."

Bourdo found it almost impossible to demonstrate species preference and concluded that it was not significant. He felt that differences in bias between individual surveyors would largely cancel effects produced by the other, and final results would remain largely unaffected.[2]

Such a conclusion cannot be transposed directly to Kane County, for the tree species are different. Scribing the witness trees necessitated a clean blaze through the bark. Trees with thick or hard bark, such as bur oak and hickory, may well have been discriminated against in favor of white oak, with its softer bark. Thus white oak might not have been chosen in a strict random fashion and might thus appear proportionally more prevalent. It is doubtful that any such bias had a large effect on final results; nevertheless, it is well to hold this point in mind.

Certainly there was preference as to choice of diameter classes. There was definite prejudice against small trees because of the blaze requirement, which could hardly be made

2. Bourdo's investigation took place in the Upper Peninsula of Michigan.

on a tree less than six inches in diameter. In addition, the surveyors were directed to choose trees with an eye to lasting qualities. This may have had the effect of discouraging choice of such shorter-lived species as cottonwood.

The apparent lack of uniformity with regard to diameter estimation (Table 1) shown by the surveyor is understandable in view of human reaction to such procedure. Although provided with a measuring tape, his zest to get his job done resulted in ocular estimation of such diameters, and he quite naturally favored even numbers and such common integers as 12, 18 and 24. This does not necessarily imply that his estimate was careless. It is human and probably less subject to error to say "18 inches" rather than "17 inches" or "19 inches" for one cannot really distinguish such differences with much certainty. This avoids a false sense of accuracy or pretension thereto.

The disparity between such classes as 18 inches and 19 inches can be partially eliminated by lumping the odd classes with the adjacent even classes. This procedure has been used in the preparation of Table 1. The irregularities of the curve produced by plotting such "overloaded" diameter classes on a graph can be eliminated by averaging neighboring classes and plotting these points in a median curve. The resultant curve will then closely conform to existing conditions.

In summation, certain factors must be considered when interpreting original survey notes. Limitations are imposed both by the procedure used in the original survey and by the

individual surveyors. Complete reliance on the survey notes alone, or misinterpretation of such data, can result in erroneous conclusions.

Another difficulty imposed by the survey method is the use of common names when referring to trees. This requires care in transfer of or reference to the scientific name of a species in order to avoid "misidentification" of the surveyor's description. In the use of "generic" common names, present knowledge must narrow the field of possibilities to those now known to be present.

Chapter III

The selection of Kane County for this project was made because of its location in the transition region between Transeau's (1935) 'Prairie Peninsula' and the forested regions. It was felt that such a study would be interesting, not only from a botanical standpoint - to see if new light could be shed on the "prairie problem," - but also from a conservation point-of-view, correlating original vegetation with historical land use, development and present-day management. In view of time limitations, work on this latter point has not been possible.

My findings in this study are indicated in the following pages.

Individual Species

The first step after transcription of the original notes into usable form was the determination of certain questionable species. Summary of this process is made in Table 2. Reasoning behind the determination is made below.

The oaks. Four species were listed by the surveyors. Three of these, bur oak (*Quercus macrocarpa*)[3], white oak (*Q. alba*) and red oak (*Q. rubra*) provided over 90 percent of the total number of trees noted. Their prominence today makes their identification unquestionable. Other oaks, however, may have been included under their classification. Miller and Tehon (1929) list black oak and chinquapin oak as occurring in the county, and Pepoon (1927) lists many

3. Scientific names used correspond with those in *Gray's Manual of Botany* (Fernald, 1950).

other oaks found in the Chicago area, including swamp white oak. If such trees were lumped with bur, white and red oaks, the proportion was undoubtedly very small.

The other oak recorded, "P. Oak," or pin oak I have interpreted as Hill's oak (Q. ellipsoidalis). This tree is common to the region and is found on both dry sterile soils as well as "moister sandy situations" (Miller and Tehon, 1929). It is doubtful that this tree represents Q. palustris, since this species is rare in the region, although recorded in neighboring Cook County by Pepoon (1927).

Sugar. The next most abundant entry was the name then in vogue for sugar maple (Acer saccharum). Black maple (A. nigrum), is also recognized as being common to the region.[4] This species is a close relative of sugar maple and interbreeding often results in a wide range of gradations which render identification difficult. The term obviously applies to both species.

Hickory. Two species are common to the area, the shagbark (Carya ovata) and the bitternut (C. cordiformis). The former was probably the most common and is now found on dry morainal regions. The bitternut is common in rich woodlands.

Ash. This name applies to several species, but white ash (Fraxinus americana) is the most common in the area and is found in moist woodlands and flood plains. Other species include red ash (F. pennsylvanica) uncommon in the area;

4. Floyd Swink related this to me in a personal communication, October 18, 1954. Mr. Swink is a prominent authority on the local flora and has recently written "A Key to the Flowering Plants of the Chicago Region."

green ash (F. p. subintegerrima) which is also uncommon; blue ash (F. quadrangulata) rare in the region; and black ash (F. nigra) only rarely an inhabitant of wet woodlands and swamps.

Elm. This term refers mainly to American elm (Ulmus americana), a tree attaining large proportions and a common inhabitant of damp woodlands and flood plains. The slippery elm (U. rubra), a smaller tree, is also found in the county and is undoubtedly included by the term. The rock elm (U. thomasi) is found infrequently in the region.

Walnut. The black walnut (Juglans nigra) is quite common in the county, and the butternut (J. cinerea), though not as prevalent, could be included by the term.

Other species. Little trouble was encountered in deciding the correct species implied by the remainder of the common names. The 10-12 inch poplars were presumably cottonwoods, while the terms "Haw" and "R. Haw" probably refer to Crataegus mollis.[5] Two willows are found in the county which reach the size recorded, the black willow (Salix nigra), and the peach-leaved willow (S. amygdaloides) (Pepoon, 1927). The willow recorded must be either of these.

Forest-Prairie Map

This map (Figure 1) portrays both that included with the original notes and the modifications thereto by the author. These modifications represent differences between the surveyor's map and a totally independent one which I

5. Personal communication from Mr. E. L. Kammerer, Arboriculturist, Morton Arboretum, Lisle, Illinois, dated November 18, 1954.

created from the original notes. Where differences resulted, I rechecked the notes and also the soils map to confirm these differences. I believe the dotted lines represent corrections and refinements and portray actual conditions more accurately, as the surveyor's notes are more to be depended on than his summary sketch map.

Construction of the map was not difficult. The survey notes indicated the type of vegetation at each section and quarter section corner. If forested, witness trees were recorded. If the corner was in the prairie, a post was placed in a mound and so noted (with two quarts of charcoal buried beneath the post as a more permanent marker). In addition, as the surveyors traversed a section line, they recorded the exact distance from the preceding corner that they passed out of the forest into the prairie (or vice versa). Thus, by merely connecting these transition points one created a fairly accurate map of the vegetation as it existed at that time. Accuracy, however, diminished directly in proportion to the distance from the section line, since the interior of the section was not traversed, and forest boundaries were drawn in by inspection. For this reason the degree of refinement in the interior of the sections of the map is limited. As has been noted earlier, small forest groves in the interior of a section would not be shown on such a map. As will be demonstrated later, this difficulty can be partially resolved by use of the soils map.

Vegetative Types

Reference is given throughout the paper to two types of

vegetation, prairie and forest.

Prairie refers to a graminoid type of vegetation, locally dominated by several species of grasses and generally by big and little bluestem.[6] The most striking feature of the prairie, according to early observers, was its treelessness.

The forest, dominated by various species, occurred as moist woodlands along rivers and streams, or as groves of varying dimensions, the so-called "oak openings" (Stout, 1944).[7] Although stand density decreases at the periphery, there was characteristically an abrupt transition between forest and prairie. It was often only a matter of a few steps between the two.

Most of the forest composition of the county fits the Bur Oak Type (Type 42, Eastern) described by the Society of American Foresters (1954). They describe this type as one in which "bur oak is pure or predominant" with associates including northern pin oak, northern red oak, white oak and others.

In Kane County, white oak is the most abundant associate of bur oak. Together these trees form over 90 percent of the trees recorded in five of the townships and over 80 percent in six of them (Table 3).

The Bur Oak Type is further described by the Society as a "pioneer type on the edge of the prairies being gradually succeeded by northern pin oak (Quercus ellipsoidalis)." The

6. The reader is referred to Sampson (1921) for a detailed botanical account of the prairie of Illinois.

7. Peattie (1939) also describes oak openings as groves of widely spaced bur oaks with large arching branches and with prairie plants growing beneath.

successional stage indicated by the latter statement has not been borne out by my findings in this county. I believe that actual conditions here are more accurately depicted by Braun (1950). She places this area in an oak-hickory forest region and classifies the type as one in which bur oak is dominant or co-dominant with white oak. This is exactly the condition found in Kane County, and I would conclude that the Bur Oak or Bur Oak-White Oak Type represents the climax forest at the prairie-forest ecotone. The particular role of white oak in this relationship has been impossible to ascertain from this study. It apparently expresses a greater degree of mesophytism than bur oak, for it is much more prevalent than the latter in the "Big Woods" area.[8] Whether white oak is succeeding bur oak, or whether there is any successional relationship between the two, I have been unable to demonstrate.

Due to the homogeneous nature of the forest over most of the county I have made no attempt to classify and map separate forest types. More heterogeneity does occur along the river, but its floodplain is extremely narrow and difficult to define in view of the scale of the survey data. While witness trees were recorded at the intersection of the section lines and the river, yet the next recorded trees may have been one-half mile distant, well above the flood plain, and the designation of a different forest type would have, as a basis, only a small number of trees.

8. This is the name given to the wooded area east of the river in Tiers 38 and 39 North, R8E. The area is now largely occupied by the city of Aurora.

The Big Woods area does portray a more mesophytic forest type (than the Bur Oak Type) and covers a substantial area. In overall numbers, this forest is dominated by white oak, with sugar maple, bur oak and red oak remaining important constituents. Such a forest type generally resembles that described by Braun (1950). Here she describes the more mesophytic white oak-sugar maple admixture of this region. The Big Woods area, however, covers several sections (several thousand acres), and it would be illusory to classify this as a homogeneous forest type in view of the heterogeneous topography and drainage which produce, as is shown by the species maps, localization of individual species.

I have concluded that the Big Woods forest area is more mesophytic than the Bur Oak Type predominating over most of the county, and that here represented are several localized sub-types. The survey data are not refined enough to actually pin-point such sub-types, however.

Chapter IV

Geology

Kane County was directly affected by all of the major glaciations of the Pleistocene; consequently, several prominent morainal systems dissect the county. One would expect that the hilly morainal areas would favor forests while the more level outwash regions would encourage prairie formation.

In an effort to be as accurate as possible, I consulted the most recent glacial map of the region with Dr. James Zumberge.[9] Together, we were unable to visualize any such generalizations as indicated above. There was apparently no correlation between the morainal boundaries and the prairie-forest border. The border crossed the morainal system almost indiscriminantly so that some moraines were forested and some were in prairie. I came to the conclusion that geological formations exerted little decisive influence on the vegetation, and that any relation thereto was due to combined effects produced by other factors.

Parent Material

Different basic materials, laid down by the retreating glaciers, most certainly had an effect upon the vegetation which first gained a foothold. I was interested in discovering the influence this original material retained at the time

9. This unpublished map of the region was prepared by the Illinois Geological Survey in connection with a Pleistocene field conference in 1953, attended by Dr. James Zumberge, geologist, University of Michigan.

of the survey.

For this reason I consulted an unpublished and tentative map of the 'Parent Material' of the county in use by the Soil Conservation Service.[10] This map divides this material into three categories.

1. Soils with loess coverings. This includes largely till materials of various types covered with up to four feet of wind blown loess. Much of this material is found in the hilly and morainic areas of the county.
2. Outwash soils. These soils were laid down by rapid melt water immediately after glacial retreat and are characteristic of more level topography.
3. Alluvium. This is a recent deposit made by slow waters and is largely confined to the river valley.

The outwash and loess types of parent material supported both prairie and forest vegetation in varying amounts. Loess soils were the more extensive of the two, but both occurred throughout the county. I have concluded that any influence originally exerted by the parent material has largely disappeared by the time of the survey. Concentration of the forest to the northern half of the county is not due to any differences in parent material but to other factors.

One point should be mentioned as regards the Big Woods area. The subsoil here is loess over silty clay loam, the largest such area in the county. The presence of clay, in

10. Made available to me by Mr. Raymond Newberry, Soil Conservation Service Soil Scientist, DeKalb, Illinois.

view of its moisture holding capacities, would explain the existence of a more mesophytic type of forest, such as has been recorded.

Soils

In mapping the soils of Kane County, four individual soil types have been used as a basis.

a. Upland prairie soils. This type covers 44.49 percent of the area of the county, is dark brown-black in color, contains a high organic matter content (averaging over 6 percent), and originally supported a graminoid type of vegetation.

b. Upland timber soils. This soil type covers 29.48 percent of the county, is yellow-grey in color, low in organic matter content (1.6-3.2 percent), and originally supported the forest type of vegetation.

c. Terrace soils. This type occurs largely along streams and represents deposits from former swollen glacial streams. They are brown, contain an average organic matter content of 4 percent, and, prior to cultivation, supported prairie vegetation. Such may have been due in part to their level nature. The type occupies only 4 percent of the county.

d. Swamp and bottomland soils. This type varies from peats to black-mixed loam and occupies about 18 percent of the county. Black-mixed loam covers over 13 percent of the county and supports both prairie and forest. It is found most commonly along stream bottoms.

The boundaries of the two major soil types found in the county, the prairie and timber soils, correspond almost exactly with the prairie-timber border on the original vegetation map (Figure 1). This does not mean that the soils have favored or restricted a vegetative type, for the soil differences have resulted from the effects of the vegetation which grew thereon. Such differences as color and organic content result from vegetative influence over many years, dark brown or black soils with high organic content being common to the grassland type of vegetation. Recent advances by forest on grassland result in a gradation between the two soil types varying with the time involved. Where forest exists upon prairie soils one may assume that insufficient time has elapsed for modification of the soil and that a recent forest advance is indicated.

The correlation between the two types of soils and their respective vegetative types is so close as to enable one to refine the vegetation map by the more highly refined soils map. I have, however, limited such use to verifying my corrections of the original map, such as those in T42N R8E. The soils map also indicated patches of timber soils corresponding to the small groves I have mapped in sections 12 and 13, T39N R8E.

Although my investigation of the soil-vegetation complex has been more cursory than complete, I have concluded that the vegetation has influenced formation of soil types to a marked degree, while influence of the soil upon the vegetation has been overridden by other factors, such as topography, drainage,

and so on.

Climate

As evidenced by the vegetation, the climate in the county is amenable to both grassland and forest. Climate exerts a dominant force on vegetation and determines the final pattern by such factors as rainfall, temperature, rainfall pattern, humidity and precipitation-evaporation ratios. The latter factor has been ascribed much importance by Transeau (1935) as regards its influence on prairie formation and maintenance. The overall climate of Kane County is generally uniform. It is the variations caused by ravines, hills, standing water and the like which weight the ecological balance in the favor of one type of vegetation over another. The influence of ravines in favoring forest formation is well known (Shimek, 1948), while the favorability of southwest slopes on prairie existence has been witnessed by the author in the region.

These "small area" climates and microclimates exert profound influence upon vegetation, but measurement of such clamates has not been attempted in connection with this problem. Indeed, little is known of the influence of these factors over the entire region.

Topography

This geographical feature of the land exerts marked influence upon temperature, humidity and wind - and therefore climate - and also drainage, thereby affecting soils and soil moisture. Such features often radically influence the vegeta-

tion.

Detailed study of the topography of the county, both difficult and arduous, has not been attempted. Nevertheless, by plotting the vegetation upon detailed topographic maps of the various quadrangles, some interesting generalities are indicated.

1. The river bluffs, where gradients are steep, are almost invariably forested. Where these gradients lessen the prairie often extends to the river border.
2. The northern half of the county is more highly dissected by hills and ravines than the southern half. This pattern corresponds to the vegetation distribution pattern, the northern area being more heavily forested than the gently rolling southern portion.
3. The prairie patches in T42N Ranges 7 and 8 West prevail over flat areas.
4. Forest patches generally cling to stream beds. This is especially noticeable in the south. This phenomenon could be aided both by the protection from searing winds offered by ravines, and by the protection from fire thereby afforded.
5. The east side of the river is more heavily forested than the west side, although topographic differences are not perceivable.

These generalizations are by no means universal within the county. The prairie often extends over steep hills while the forest often occupies level terrain. Other anomalies can

be found, but as a rule the above generalities hold true.

Fire

The extent of the effect of prairie fires on the existence and maintenance of the prairie has been debated for some time. Presumably started by Indians or lightning, such fires, fanned by the hot and steady westerlies, swept rapidly eastward in the dry seasons. These fires certainly had some effect on the vegetation (Curtis and Partch, 1948), but the extent of such influence is not clear (Shimek, 1948 and Transeau, 1935).

Extensive prairie fires would tend to promote prairie vegetation on the western borders of such obstacles as streams, lakes, and rivers. Such a condition is found to be generally true in the southern part of the county where the forest is more abundant on the eastern banks of the streams. The same holds true with regard to the Fox River. Evidence in this county is favorable to the theory that fire exhibited some influence upon prairie distribution.

The evidence is far from conclusive, however. First of all, the area is too small to dispute the claim of coincidence. Secondly, these streams and the river may have been acting as a wind break and not just a fire break. Such protection from the searing westerlies would favor forest establishment upon the leeward side more than on the windward.[11]

One can see that I have forwarded no startling new explanations for prairie dominance in a region capable of forest growth. I do feel that no one reason will explain

11. The leeward side is less subject to desiccation and seedling mortality.

such dominance, for a network of many factors is acting upon the vegetation simultaneously. These factors overlap to varying degrees, to that deficiency of one, such as rainfall, can be counterbalanced by an abundance of another, such as clayey soil. The final determining factor may differ in each situation.

Chapter V

Limitations

I visualize three main limitations to the subsequent value and applicability of this study.

1. The reconstruction presented is not as precise as would be useful, primarily because of the limitations of the original survey data. This method has limited the degree to which the vegetation could be reconstructed.
2. It is not within the scope of this study to verify conclusions and study existing vegetation. Field work would, of course, enable one to substantiate original species claims (Table 2), compare present stands with original vegetation, and study the importance and relations of other factors, such as soil and topography.
3. A study of one county does not permit generalizations over the entire region. The small areal size of this county (with respect to the Prairie Peninsula) limits the validity of generalizations made therefrom, for this county may exhibit exceptions to the general rule.

It is hoped that the above brief list of limitations will aid the orientation of future studies in this or similar areas.

Scientific Value

Knowledge of the past vegetation can be a tool for all

sciences involved with the relations of plants, land or water. The value of the relatively recent reconstructions by the original survey method has yet to be realized in view of the paucity in numbers and recent completion of such reconstructions.

These studies transcend general interest. Possessed with a picture of the original vegetation, the ecologist, by comparison of this picture with existing floral remnants, can depict plant succession through the years accurately. In addition, knowledge of the former vegetative pattern frequently sheds light on the problems of both plant and animal distribution and migration, providing further aid to the biological sciences.

Considerable value may ensue to the non-biological sciences. The hydrologist may have a basis on which to gage stream flow interpretations, or reasons behind changes in water levels and purity. The geologist may add to his array of clues pertaining to glacial activity. He may also be afforded with explanations of soil genesis. In Kane County the soils directly reflect the former vegetative character. The difference in organic content between forest and prairie soils is of interest, not only to the soil scientist, but the micro-biologist and plant physiologist as well. Vegetation, as a part of past history, is of interest to all historians, from archeologists to paleobotanists.

I hesitate to specify what I feel the future specific scientific value of this study to be. It certainly repre-

sents only one small piece in the puzzle of accumulated knowledge, and one never knows its possible usefulness.

Applied Value

The reconstruction of original vegetation from survey data does possess an immediate and practical value, in addition to theoretical applications. The information gleaned from such a study may explain to the forester, for example, the origin of much of the poplar forest in the lake states. He can visualize the results of past cutting methods upon present stand composition. The student of wildlife, or even fisheries, may obtain valuable data as to former ecological relationships among animals, as well as fish.

A knowledge of the prior vegetative pattern is invaluable to the student of land use. For example, in Kane County, land formerly occupied by prairie yields ninety or more bushels of corn annually, while former forested land may produce only sixty bushels.[12] The relation between past vegetation and present crop yields would be obscured but for such studies. Yet, not knowing this, and fearful of the unfamiliar prairie (and prairie fires), early settlers often picked forested sites for their homesteads, bypassing the better prairie farmland. Similarly, Cain (unpublished)[13] found in Ogemaw County, Michigan, that farming has succeeded only in areas formerly occupied by hardwoods, as opposed to

12. In conversation, September, 1954, with the Soil Conservation Service, Geneva, Illinois.

13. Professor Stanley A. Cain, Chairman, Department of Conservation, University of Michigan.

coniferous areas, unsuccessfully exploited for farming. Original vegetation exerted a tremendous influence on early land development and land use, and such influence remains prominent to this day.

Thus, in conclusion, although I question the immediate impact of this study, yet I do believe that it is a contribution to scientific knowledge, and, as such, possesses value. Application of this technique to similar areas must be governed by individual circumstances, but certainly the possibility should be explored.

Table 1. Summary of Individual Witness Tree Data as Recorded in the Original Land Survey Kane County, Illinois

2 inch diam. classes / SPECIES	4 & 5	6 & 7	8 & 9	10 & 11	12 & 13	14 & 15	16 & 17	18 & 19	20	22	24	26	28	30	36	40	48	Total	% of Total	Basal Area	% Basal Area
Bur Oak	3	28	82	180	301	101	70	219	153	6	120	1	6	63	4	4	1	1342	63.81	2102.58	61.91
White Oak	-	5	12	37	70	26	21	71	91	5	60	-	1	38	6	3	-	446	21.21	922.51	27.16
Red Oak	1	2	10	10	17	4	3	14	7	1	5	-	-	-	-	-	-	74	3.52	89.60	2.64
Sugar Maple	-	1	5	7	24	3	2	3	5	-	7	-	-	2	-	-	-	59	2.82	78.62	2.32
Hickory	-	2	2	11	17	1	1	3	2	-	2	-	-	-	-	-	-	41	1.95	38.85	1.14
Ash	-	1	2	8	17	2	-	4	-	-	4	-	-	1	-	-	-	39	1.85	45.29	1.33
Elm	-	-	1	4	4	3	3	2	-	-	4	-	-	2	-	-	-	23	1.09	38.99	1.15
Ironwood	-	2	1	17	3	-	-	-	-	-	-	-	-	-	-	-	-	23	1.09	12.37	.36
Basswood	-	-	1	2	10	1	2	5	-	-	-	-	-	-	-	-	-	21	1.00	21.99	.65
Black Walnut	-	1	-	-	3	2	-	2	2	-	2	-	-	-	-	-	-	12	.57	22.97	.68
Cherry	-	-	1	-	3	-	1	-	-	-	-	-	-	-	-	-	-	5	.24	4.10	.12
Pin Oak	-	-	-	-	1	-	-	2	2	-	-	-	-	-	-	-	-	5	.24	8.68	.25
Hawthorn	-	-	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-	3	.14	1.88	.06
Poplar	-	-	1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	3	.14	1.92	.06
Maple	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	2	.09	1.09	.03
Hackberry	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	.09	.89	.03
Cottonwood	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	.05	1.40	.04
Sycamore	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	.05	1.77	.05
Willow	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	.05	.54	.02
																	Total	2103	100.00	3396.04	100.00

Table 2. Species Identification from Original Notations

Original Entry	Common Name	Scientific Name (Fernald, 1950)
B. Oak	bur oak	Quercus macrocarpa Michx.
W. Oak	white oak	Q. alba L.
R. Oak	red oak	Q. rubra L.
P. Oak	northern pin or Hill's	Q. ellipsoidalis E. J. Hill
Sugar	sugar maple black maple	Acer saccharum Marsh. A. nigrum Michx.
Hickory	shagbark h. bitternut h.	Carya ovata (Mill.) K. Koch C. cordiformis (Wang.) K. Koch
Ash	white ash red ash green ash black ash blue ash	Fraxinus americana L. F. pennsylvanica Marsh. F. p. var. subintegerrima (Vahl) Fern. F. nigra Marsh. F. quadrangulata Michx.
Elm	american elm red elm cork elm	Ulmus americana L. U. rubra Muhl. U. thomasi Sarg.
Ironwood	ironwood	Ostrya virginiana (Mill.) K. Koch
Lynn	basswood	Tila americana L.
Walnut	black walnut butternut	Juglans nigra L. J. cinerea L.
Cherry	black cherry	Prunus serotina Ehrh.
Haw R. Haw	hawthorn red haw	Crataegus mollis Scheele " " "
Poplar	cottonwood	Populus deltoides Marsh.
Maple	silver maple	Acer saccharinum L.
Hackberry	hackberry	Celtis occidentalis L.
Cot	cottonwood	Populus deltoides Marsh.
Sycamore	sycamore	Platanus occidentalis L.
Will	black willow peach-leaved	Salix nigra Marsh. S. amygdaloides Anderss.

Table 3. Tree Distribution and Percentage of Land Forested by Township

		R6E		R7E		R8E	
	Species	Number	Percent	Number	Percent	Number	Percent
T42N	Bur oak	184	91.1	254	94.8	164	80.4
	W. oak	18	8.9	12	4.5	30	14.7
	Others	0	0.0	2	.7	10	4.9
	Total	202	100.0	268	100.0	204	100.0
	Percent Forested		49.		75.		54.
T41N	Bur oak	103	83.1	99	74.4	122	72.2
	W. oak	18	8.1	24	18.0	22	13.0
	Others	3	8.8	10	7.6	25	14.8
	Total	124	100.0	133	100.0	169	100.0
	Percent Forested		44.		50.		48.
T40N	Bur oak	64	66.7	46	52.9	65	36.5
	W. oak	22	22.9	30	34.5	61	34.3
	Others	10	10.4	11	12.6	52	29.2
	Total	96	100.0	87	100.0	178	100.0
	Percent Forested		26.		29.		47.
T39N	Bur oak	30	78.9	23	35.9	58	33.5
	W. oak	3	7.9	32	50.0	45	26.0
	Others	5	13.2	9	14.1	70	40.5
	Total	38	100.0	64	100.0	173	100.0
	Percent Forested		13.		22.		31.
T38N	Bur oak	90	70.9	17	35.4	23	12.3
	W. oak	24	18.9	15	31.3	80	42.8
	Others	13	10.2	16	33.3	84	44.9
	Total	127	100.0	48	100.0	187	100.0
	Percent Forested		33.		15.		39.

Total Percent Forested - 38.3

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KANE COUNTY, ILLINOIS

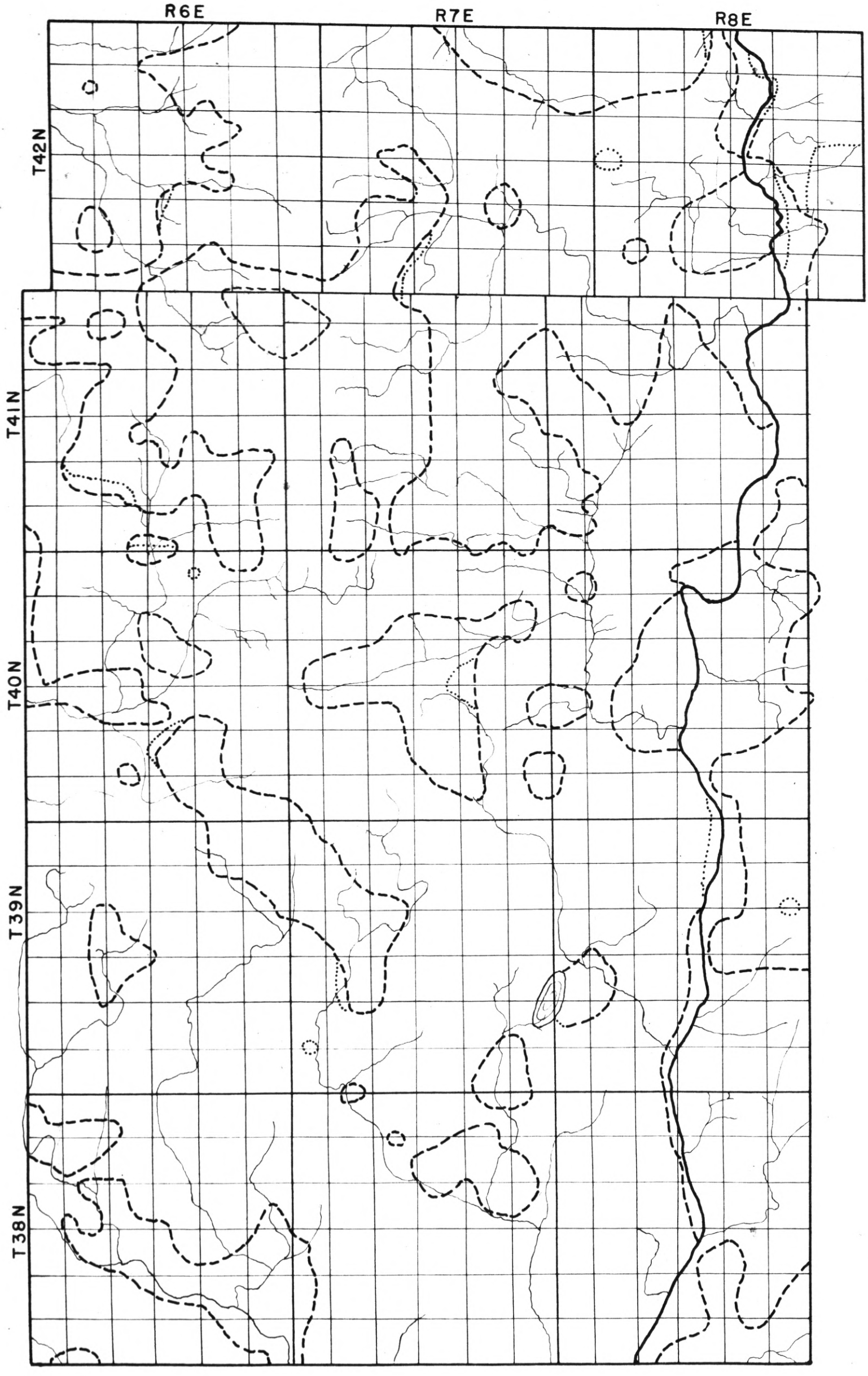

Fig. 1

Original Forest-Prairie Boundary

---- Copy of original map

..... Author's modifications

KANE COUNTY, ILLINOIS

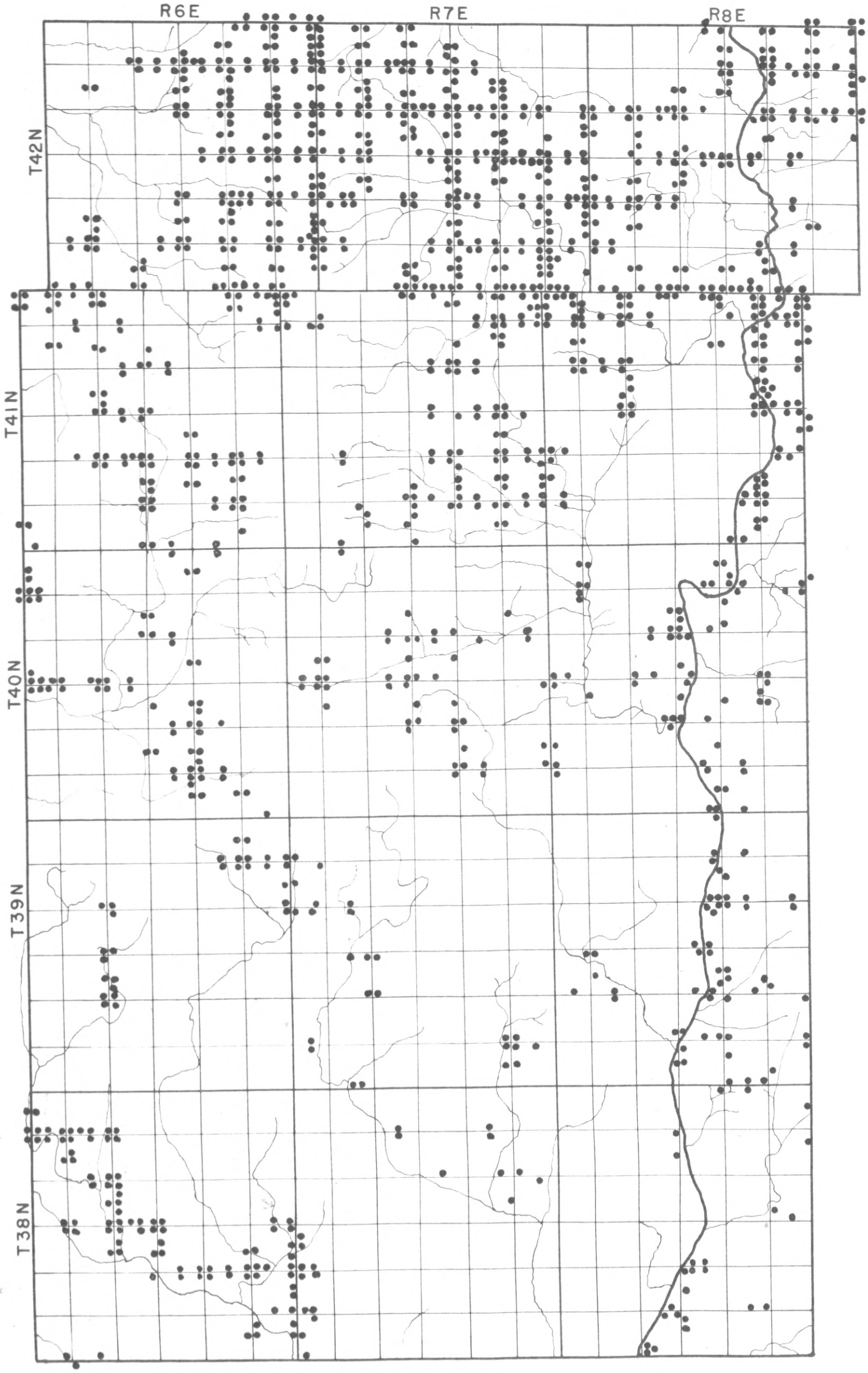

Fig. 2

Distribution of Bur Oak

KANE COUNTY, ILLINOIS

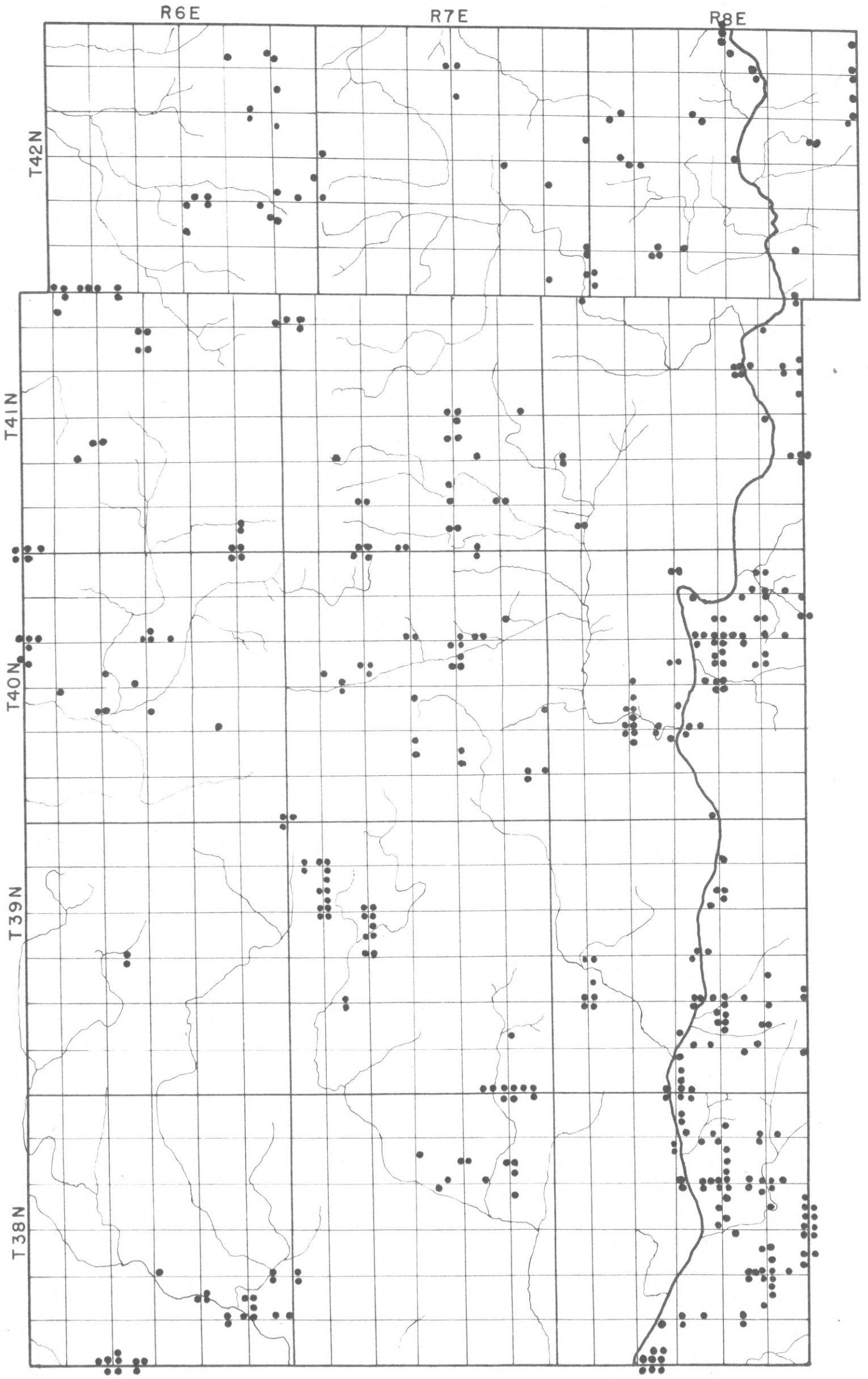

Fig. 3

Distribution of White Oak

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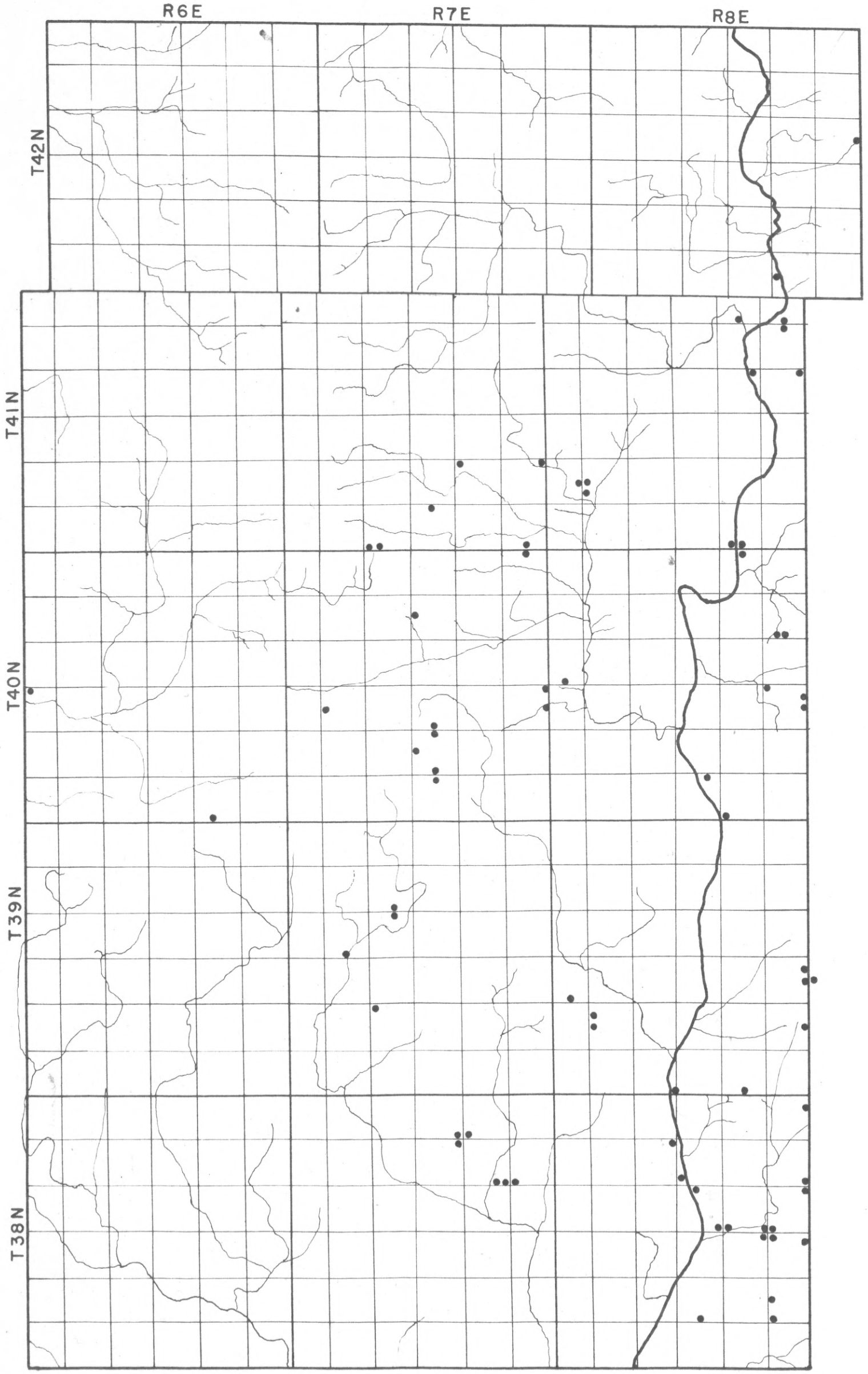


Fig. 4

Distribution of Red Oak

KANE COUNTY, ILLINOIS

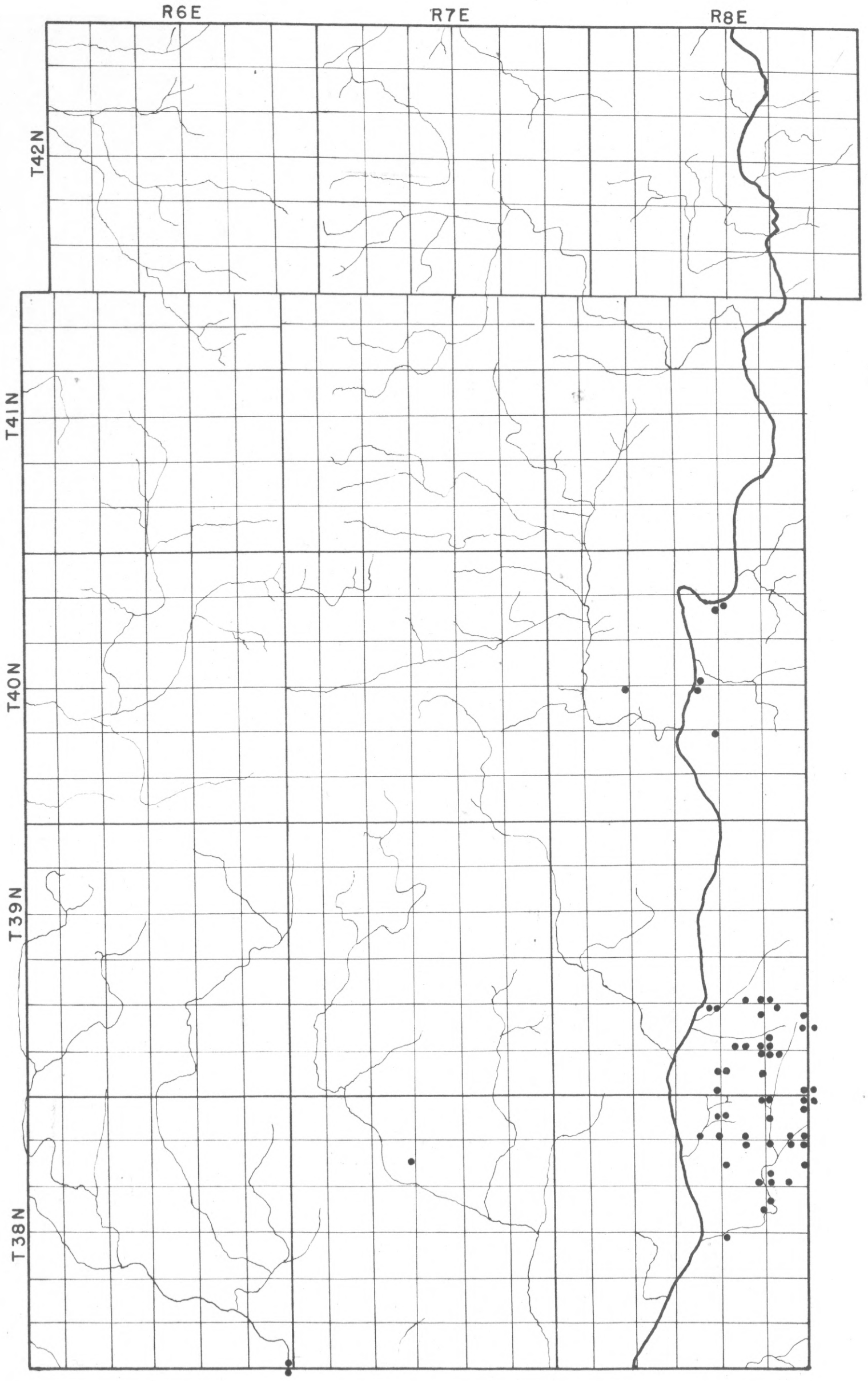


Fig. 5

Distribution of Sugar Maple

KANE COUNTY, ILLINOIS

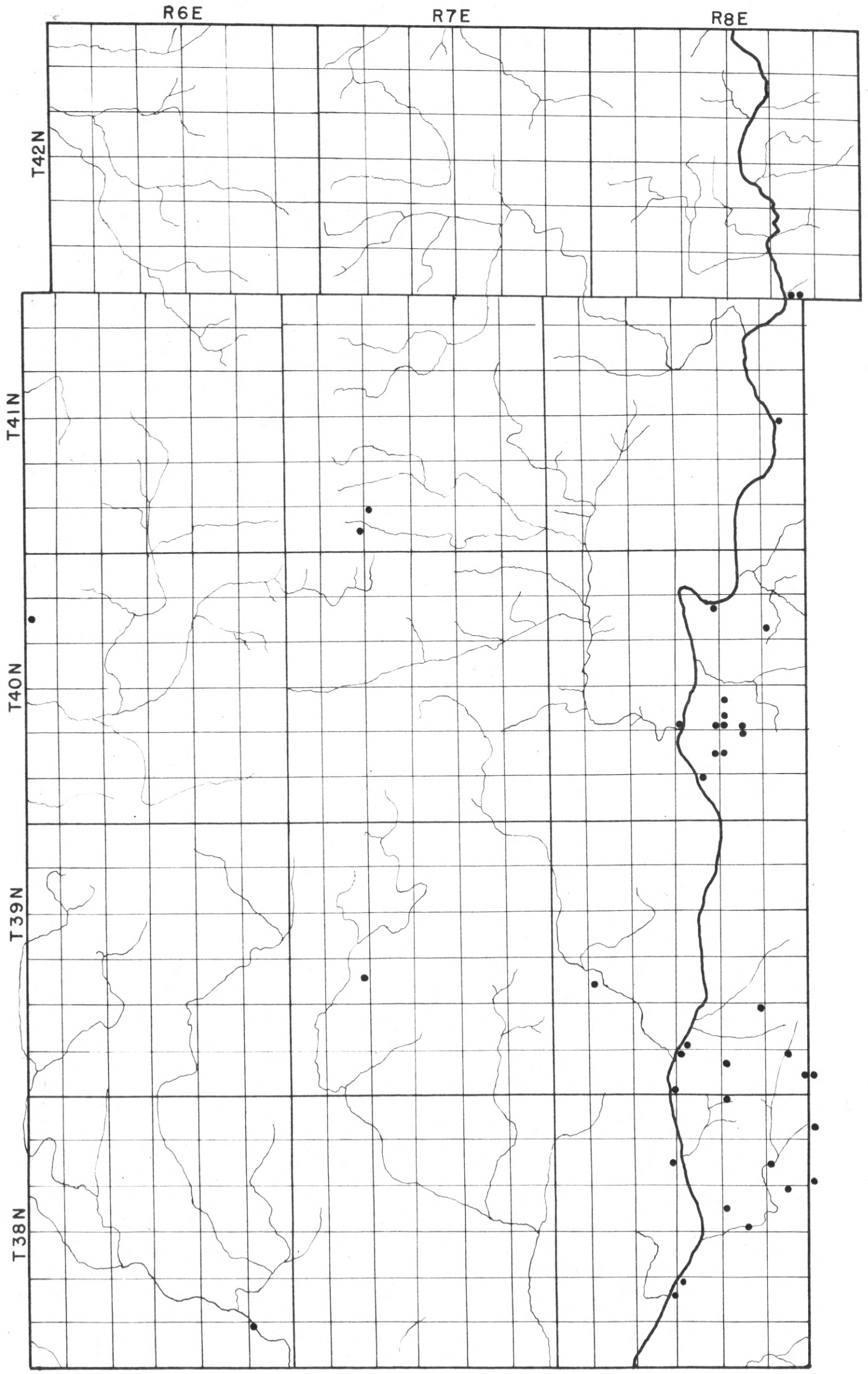


Fig. 6

Distribution of Ash

KANE COUNTY, ILLINOIS

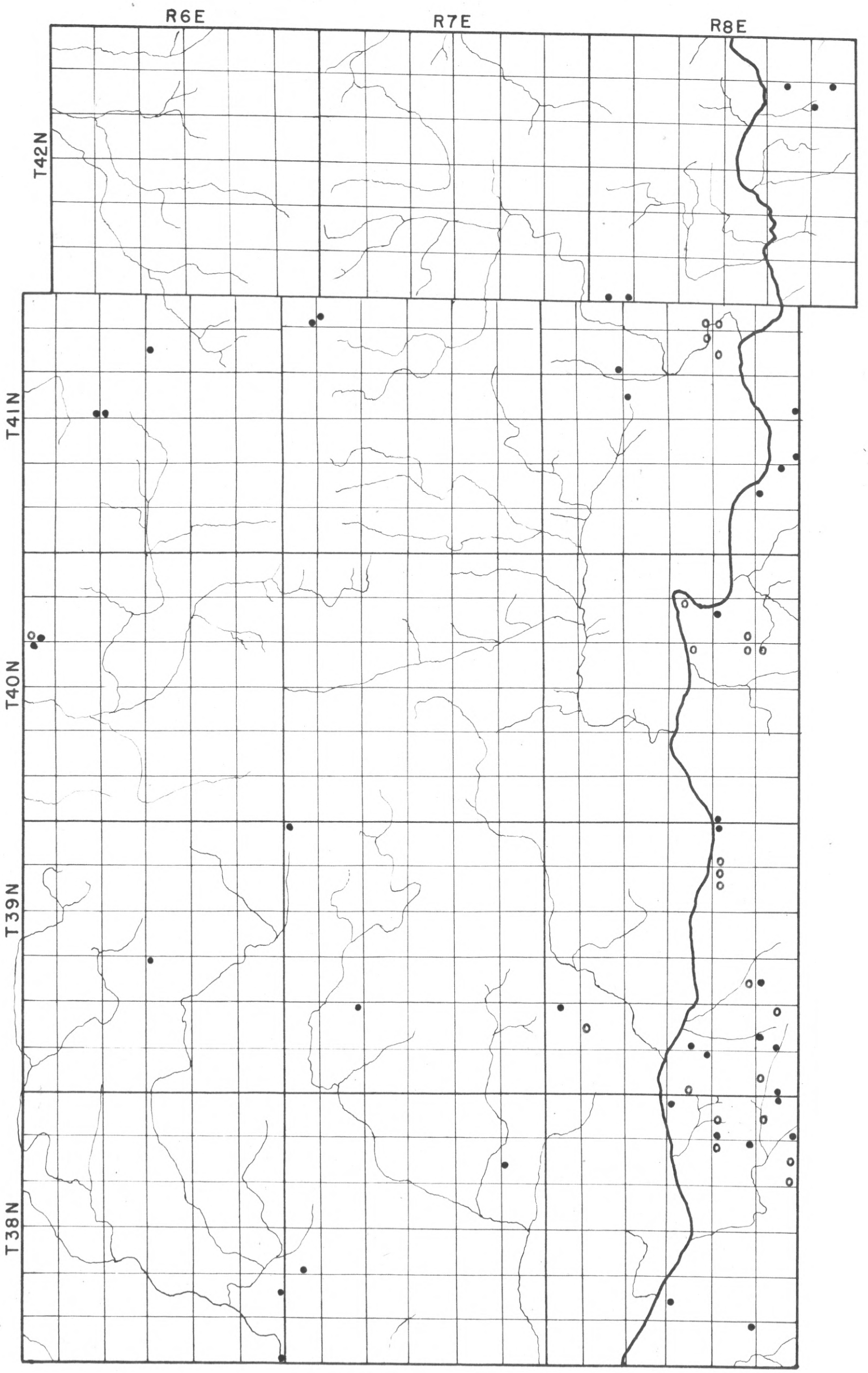


Fig. 7

Distribution of Hickory and Ironwood

● Hickory

o Ironwood

KANE COUNTY, ILLINOIS

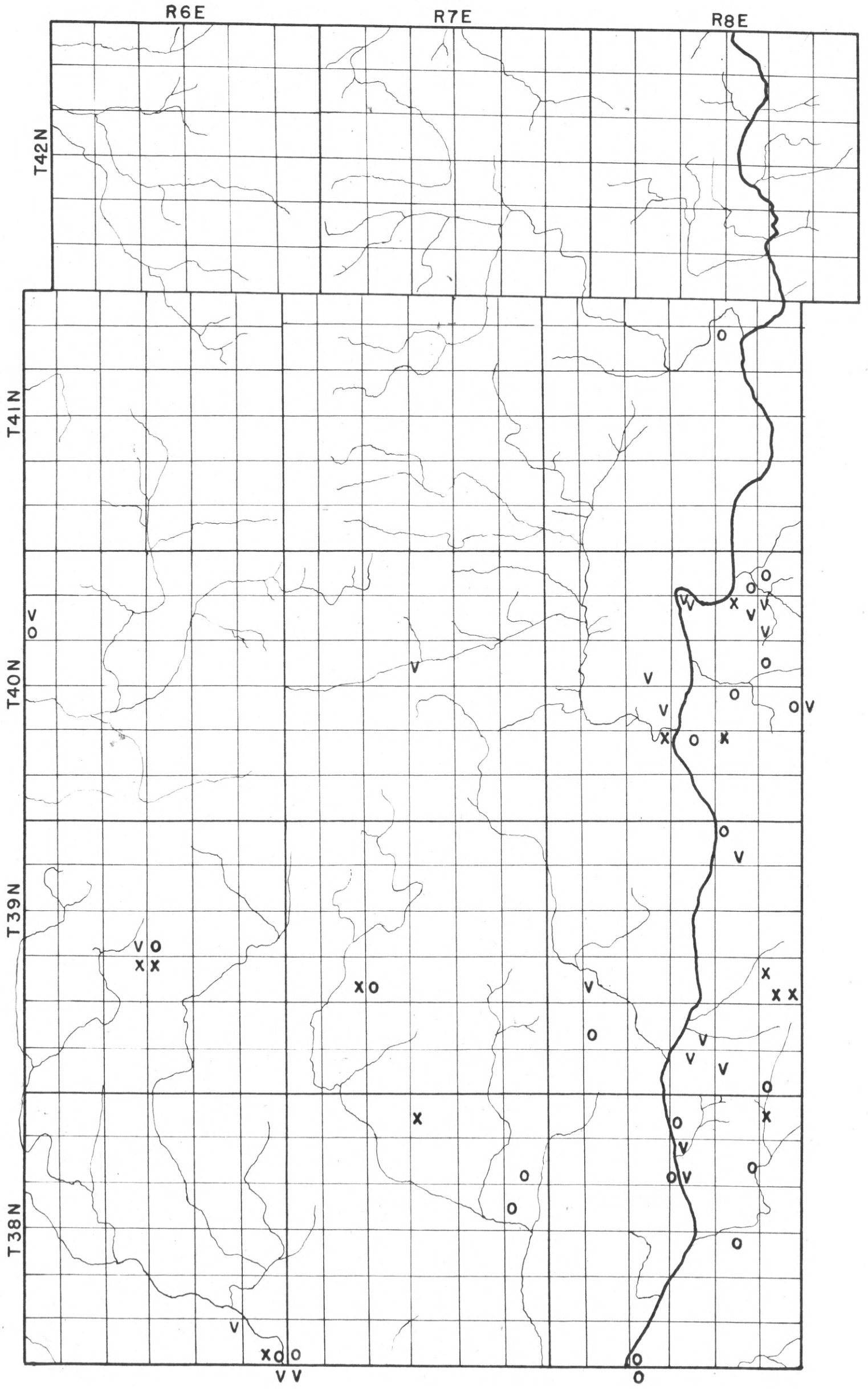
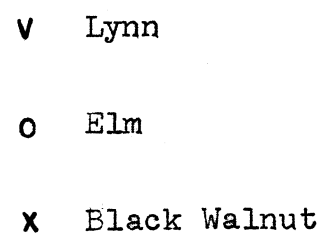


Fig. 8

Distribution of Lynn (Basswood), Elm and Black Walnut



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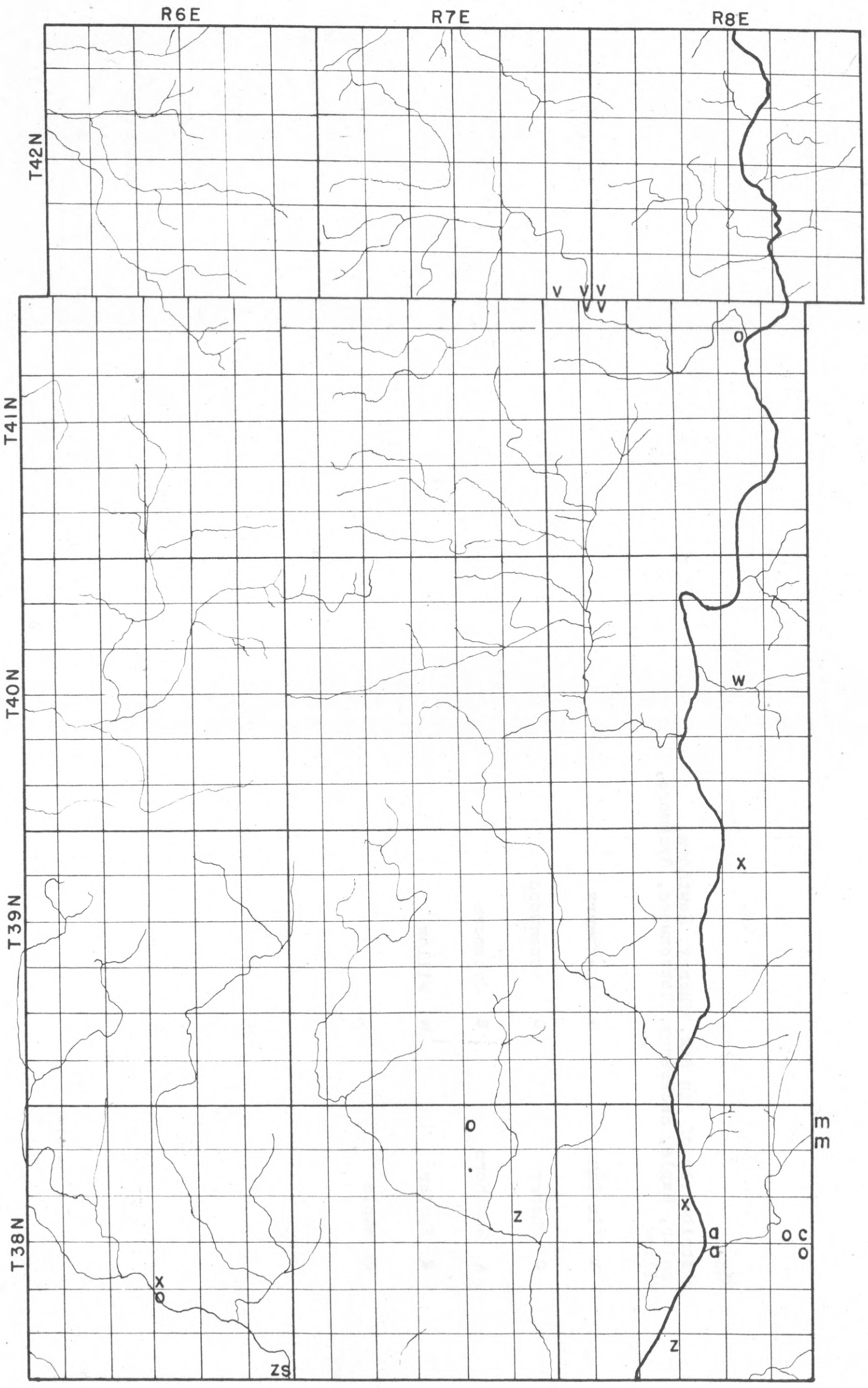

Fig. 9

Distribution of Pin Oak, Cherry, Hawthorn, Poplar, Maple, Hackberry, Cottonwood, Sycamore, Willow

v	Pin Oak	a	Hackberry
o	Cherry	c	Cottonwood
x	Hawthorn	s	Sycamore
z	Poplar	w	Willow
m	Maple		