



CHICAGO  
REGION  
TREES  
INITIATIVE

Our Trees.  
Our Communities.  
Our Future.

Chicago  
Wilderness



# Oak Ecosystem Recovery in the Fox River Watershed & Beyond

6<sup>th</sup> Annual Fox River Summit  
March 23, 2018

# Oaks are “foundational or “keystone” species

Over 500 species of insects live and feed on oaks

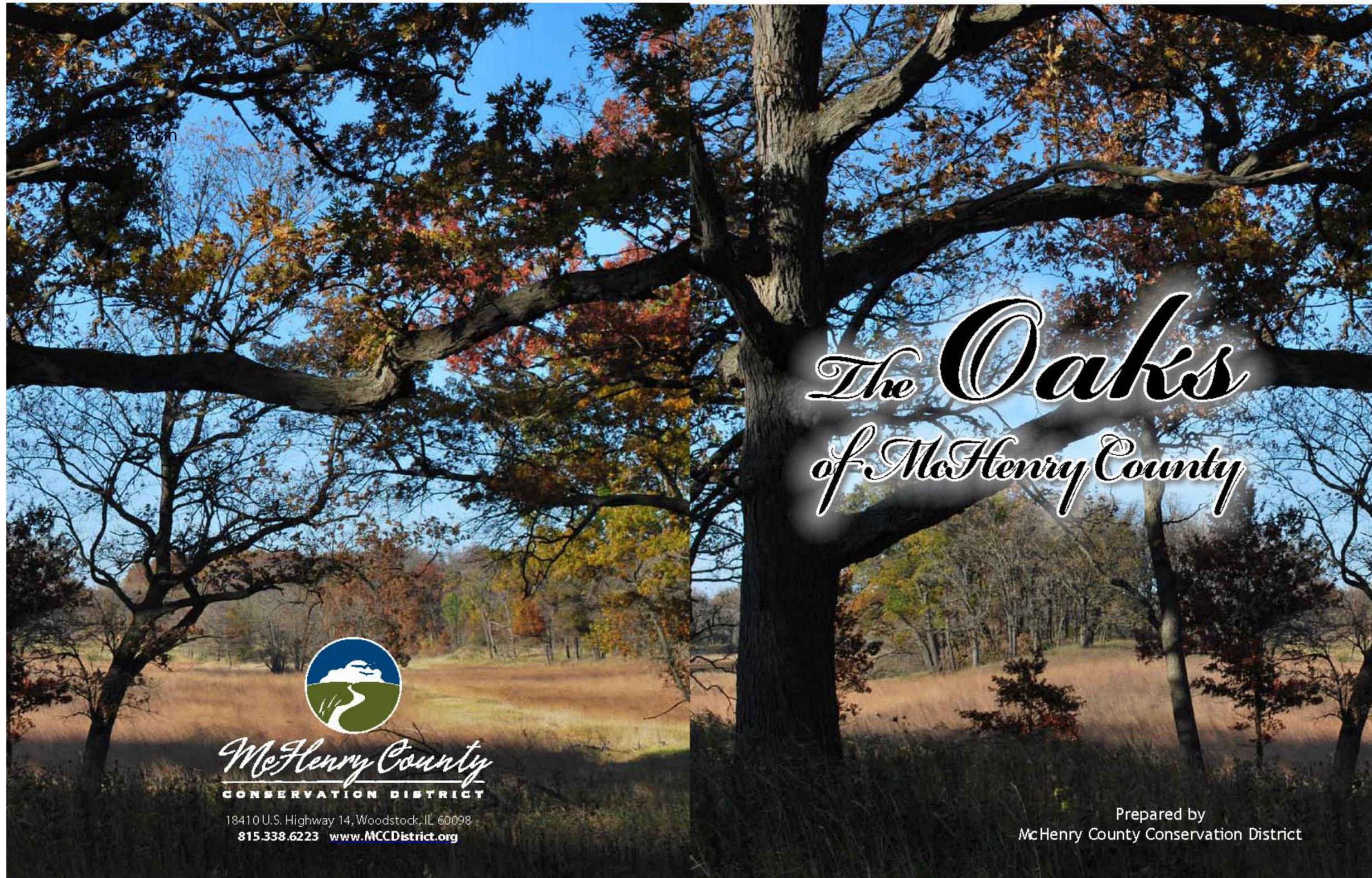
Oaks have mutualisms with hundreds of fungi

Nearly 100 bird species nest in oak ecosystems

When you create a situation where oaks will do well, so will the other native plants and animals.



# In 2007, McHenry County Conservation District completed a county-wide inventory of remnant oak ecosystems

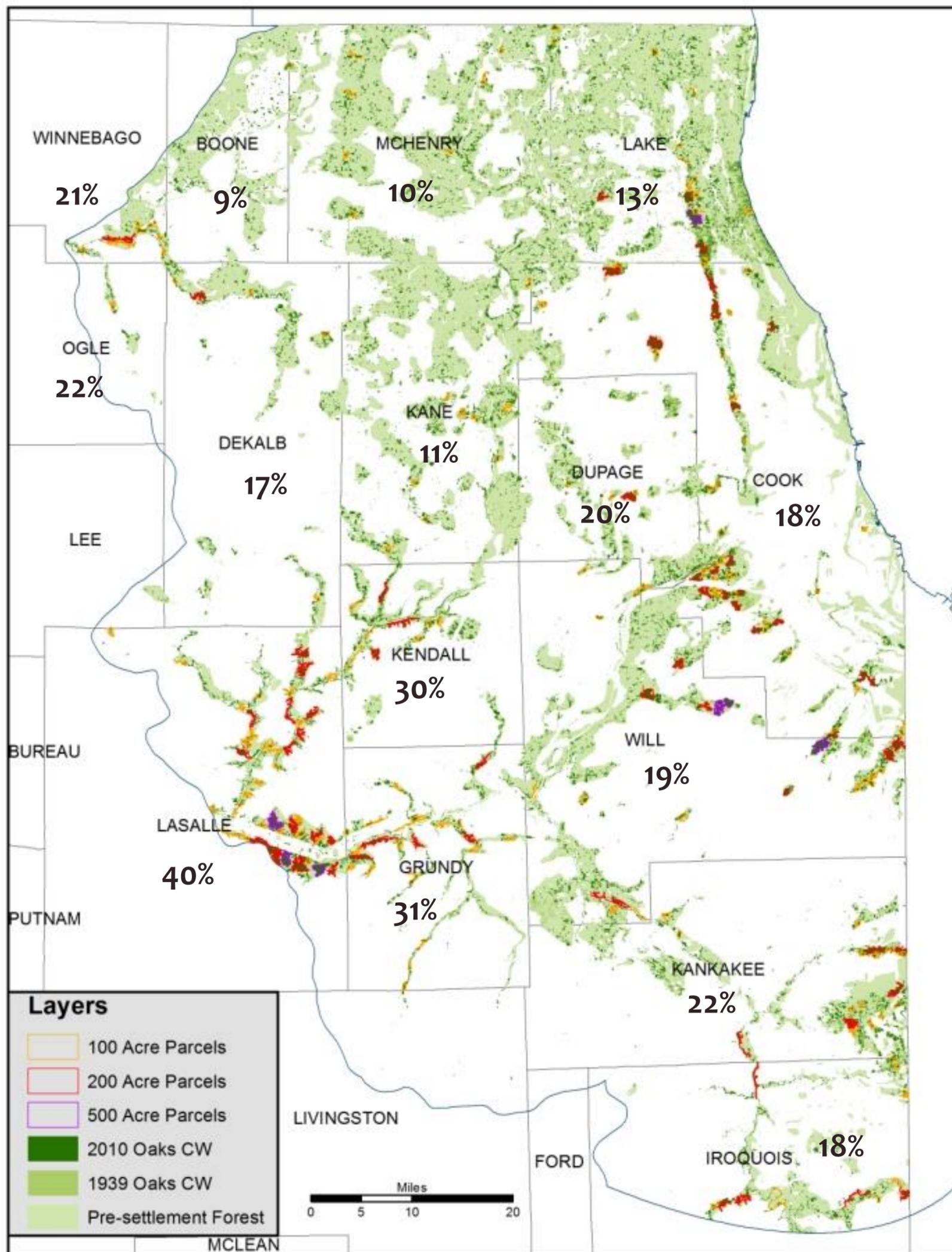


# This eventually led to an expanded analysis for Northeastern Illinois

In NE Illinois ~17% of original oak ecosystem area remains

Much was lost by 1939 - only 27% remained at that point

Highly variable across the region

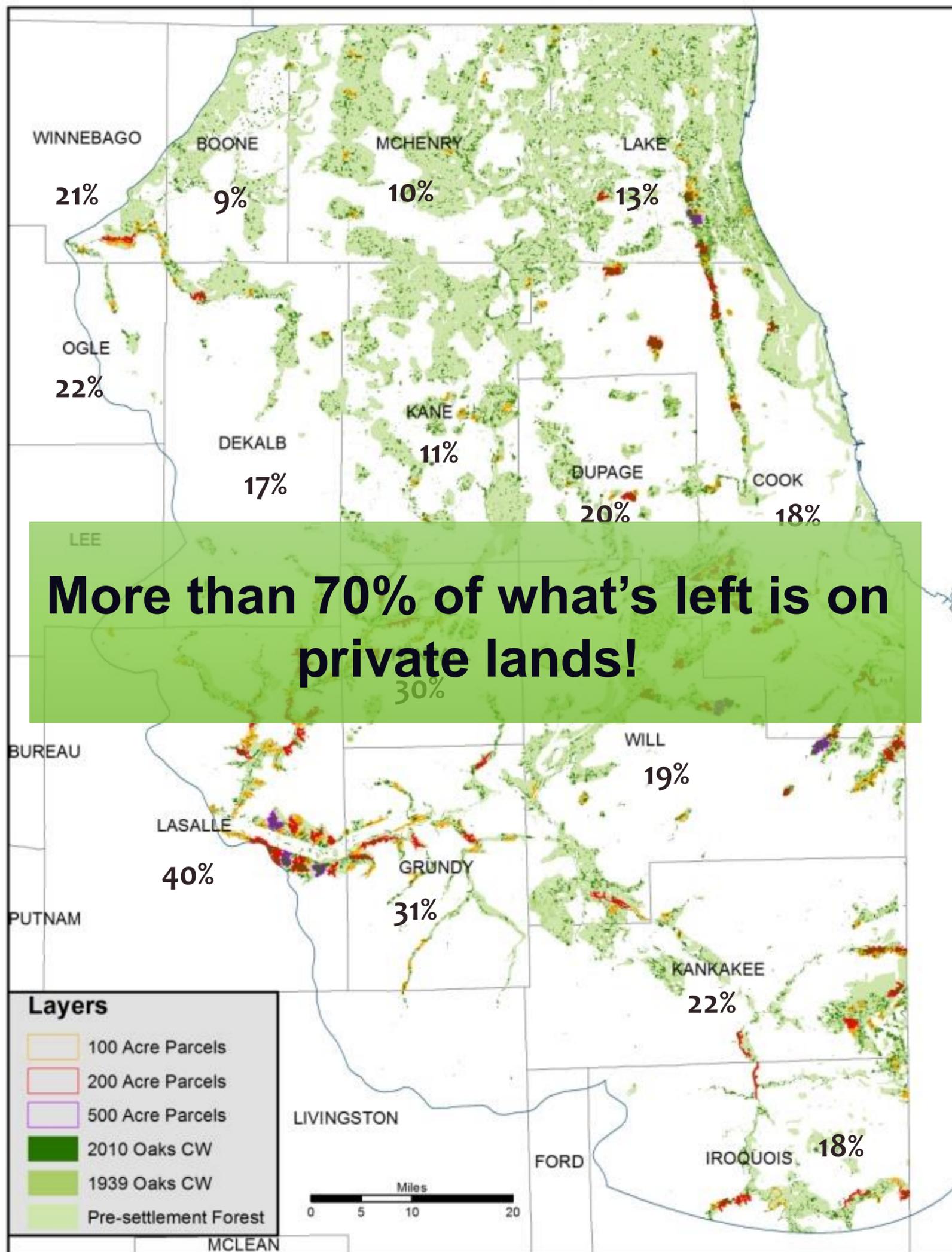


# This eventually led to an expanded analysis for Northeastern Illinois

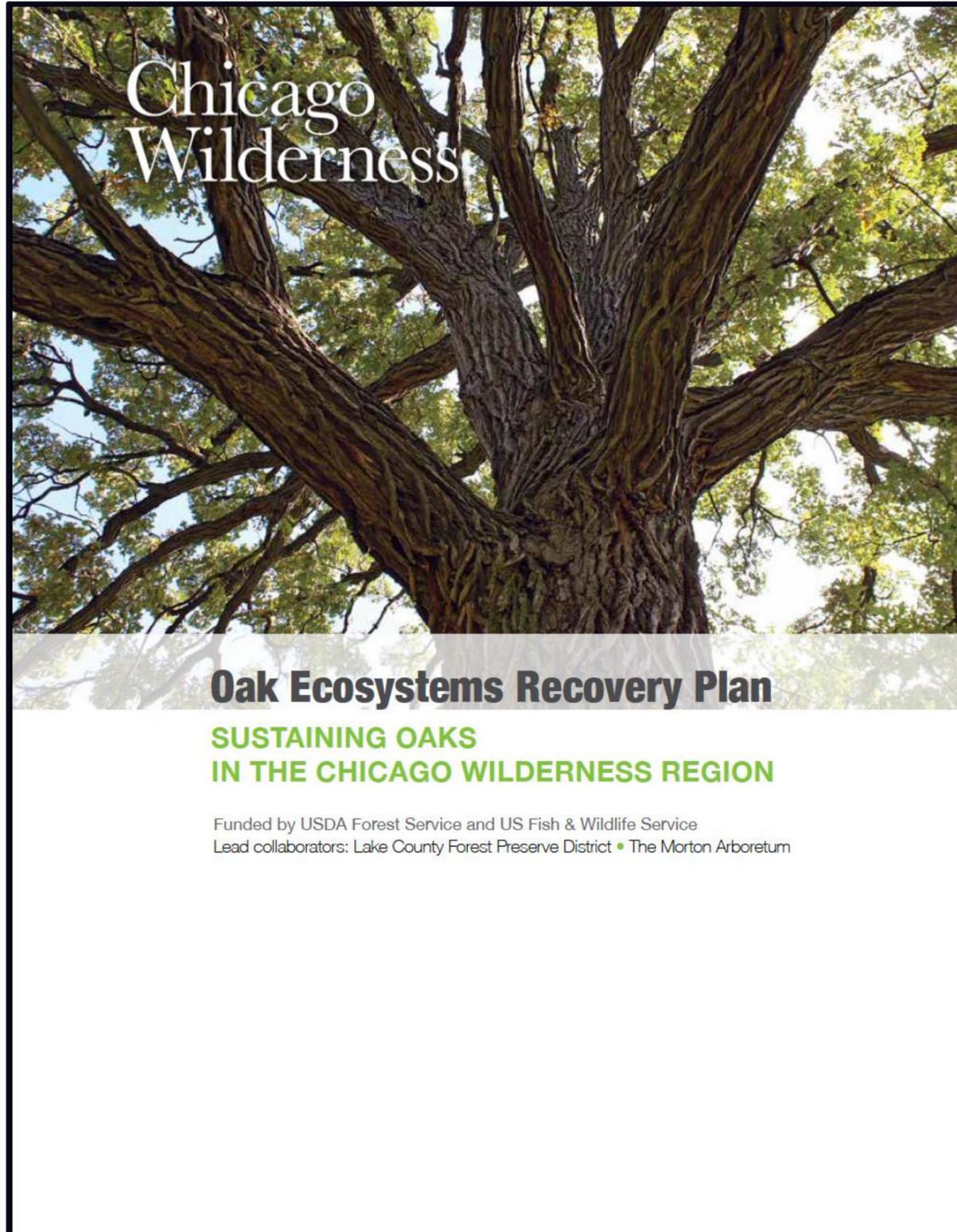
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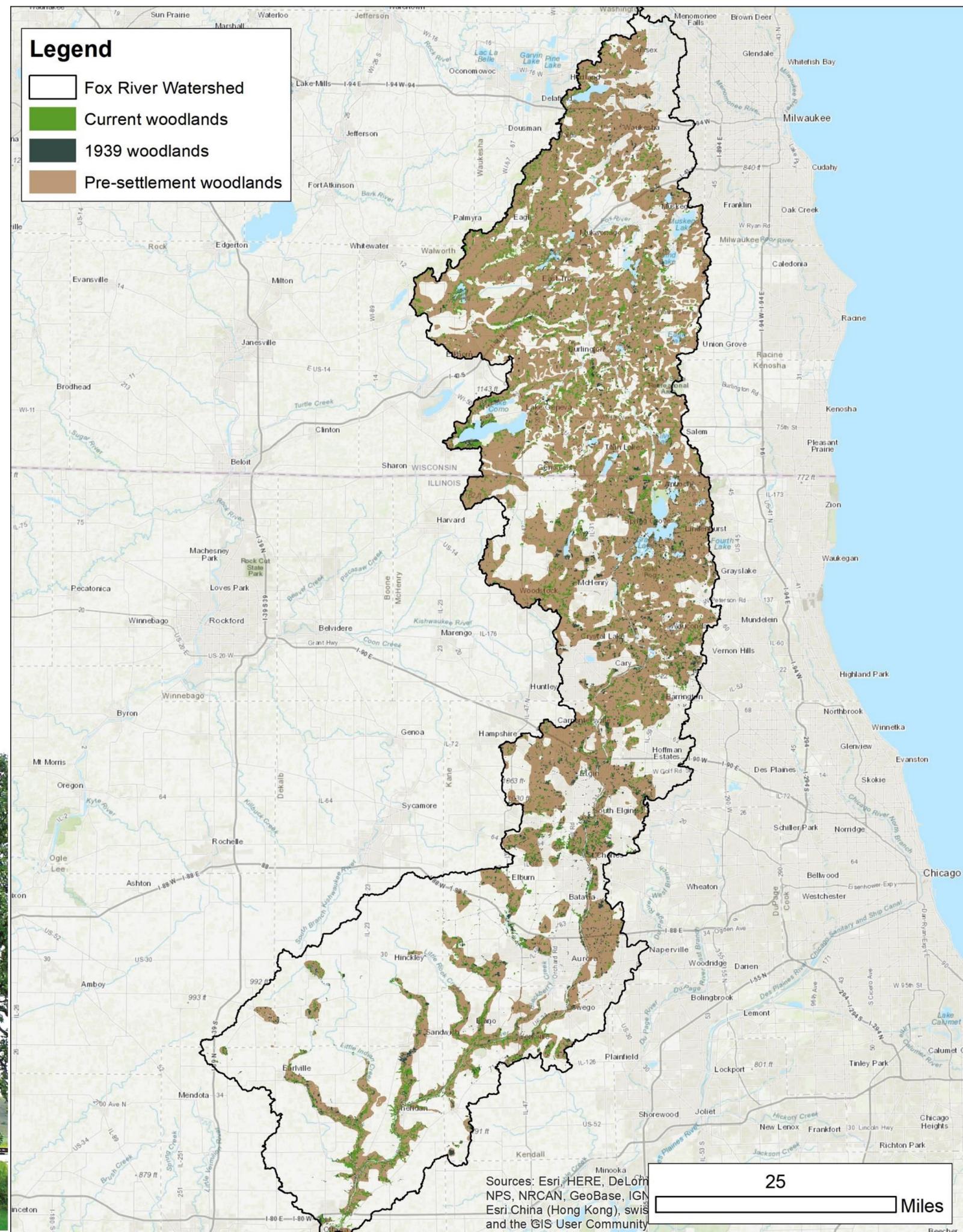
Highly variable across the region



# ...and the development of an *Oak Ecosystems Recovery Plan* for the Chicago Wilderness Region



# Remnant Oak Ecosystems in the Fox River Watershed



# Remnant Oak Ecosystem Mapping

## Data layers

- Pre-settlement vegetation patterns derived from the Public Land Survey notes of the 1800s
- Historic aerial imagery from 1930s
- Present-day aerial imagery



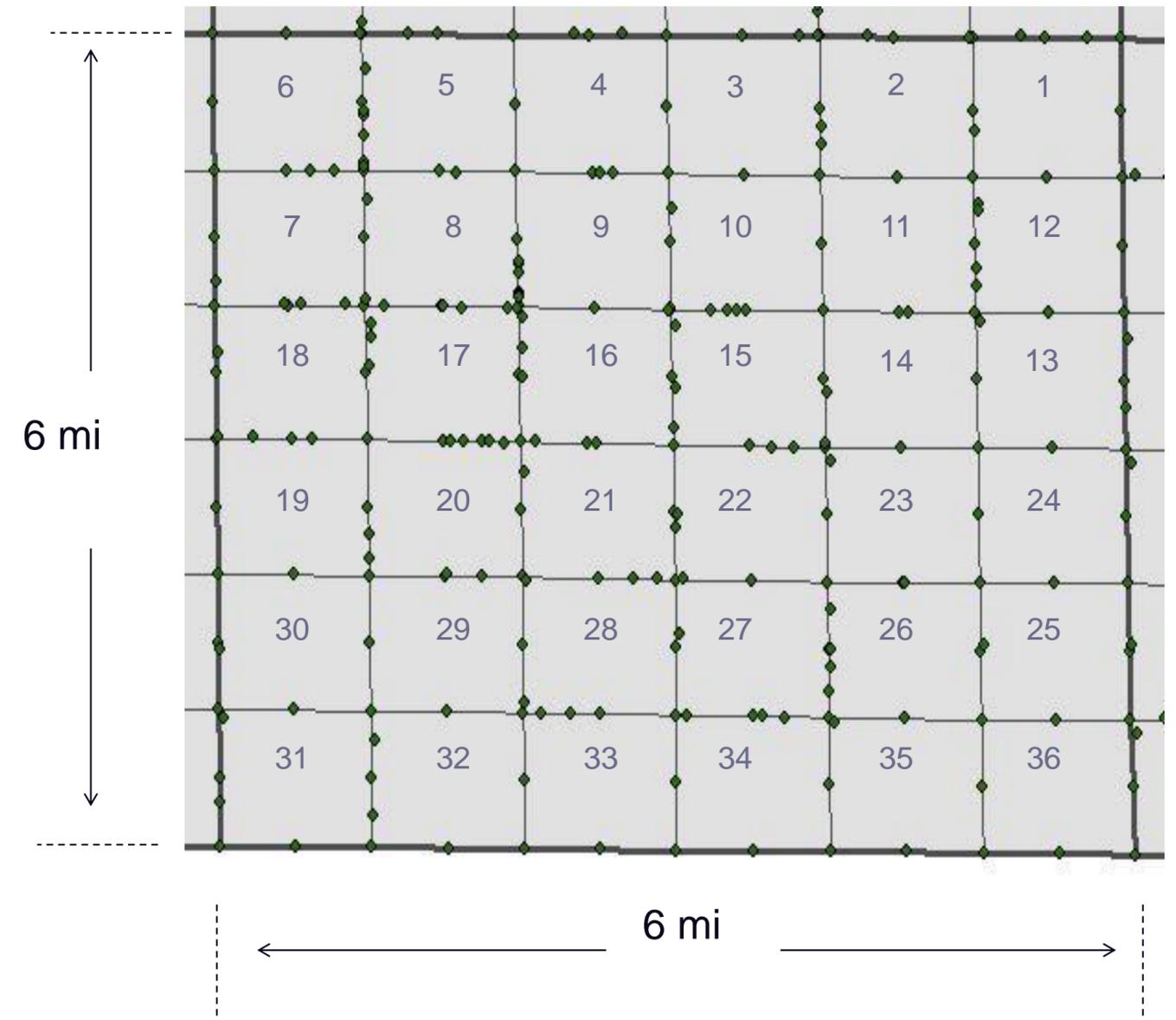
# Understanding the public land survey system (PLSS) notes from the 1800's

**Each state was systematically  
divided into townships**

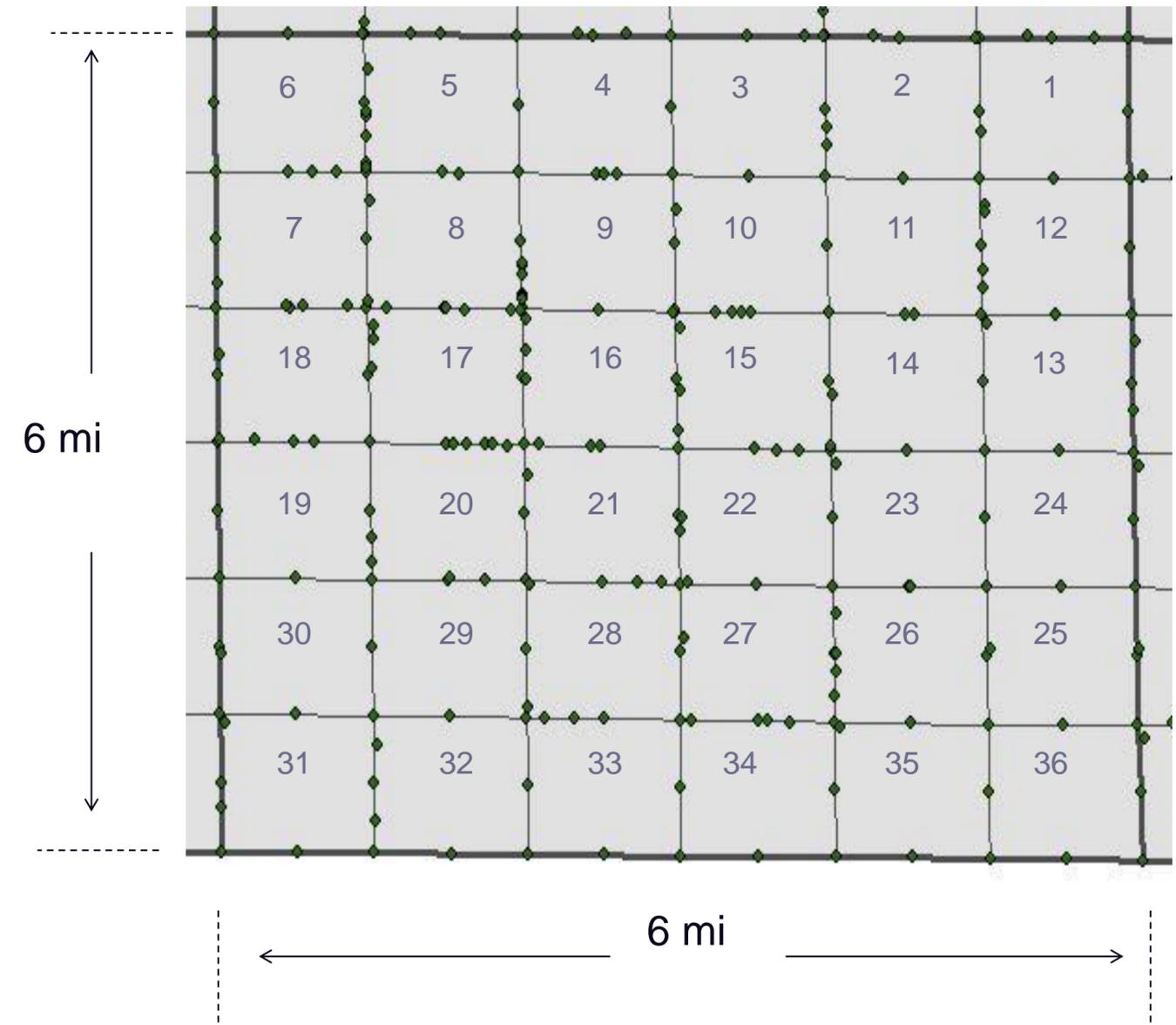
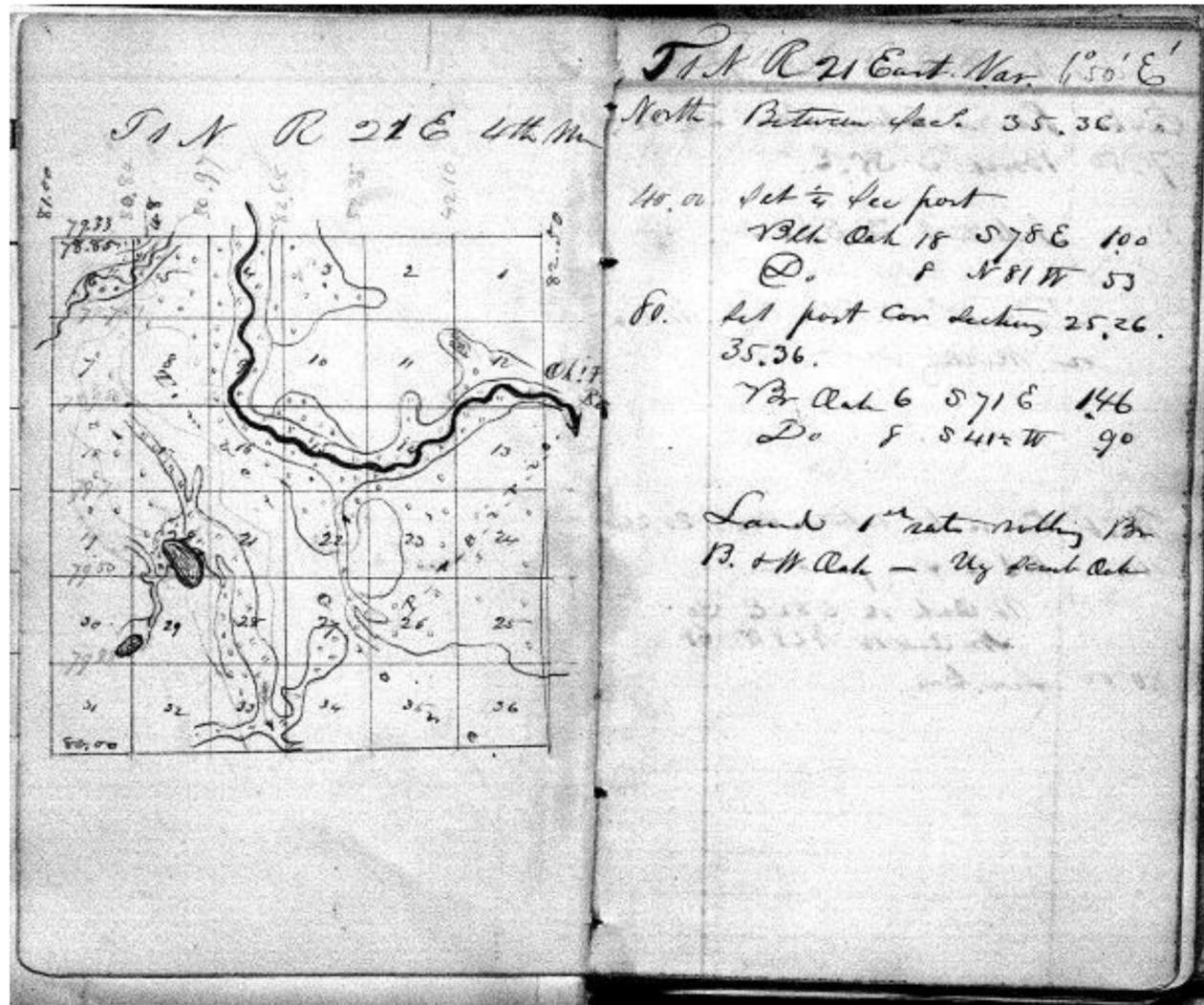
**Each township was 6 miles x 6  
miles in size**



# Understanding the public land survey system (PLSS) notes from the 1800's



# Understanding the public land survey system (PLSS) notes from the 1800's

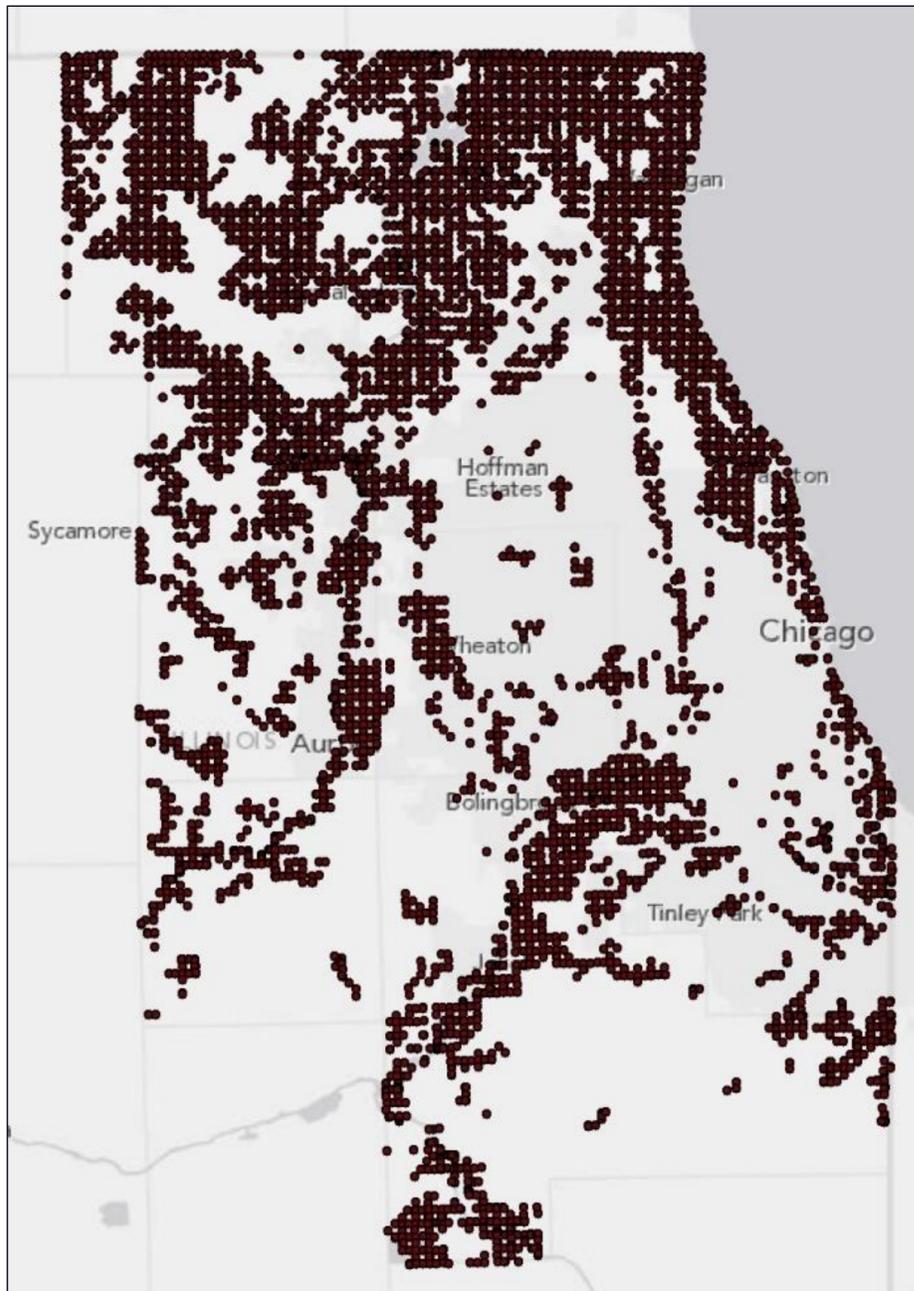


**Surveyors walked section and township lines and noted 2-4 “bearing” or “witness” trees at each section corner and mid-point between corners**

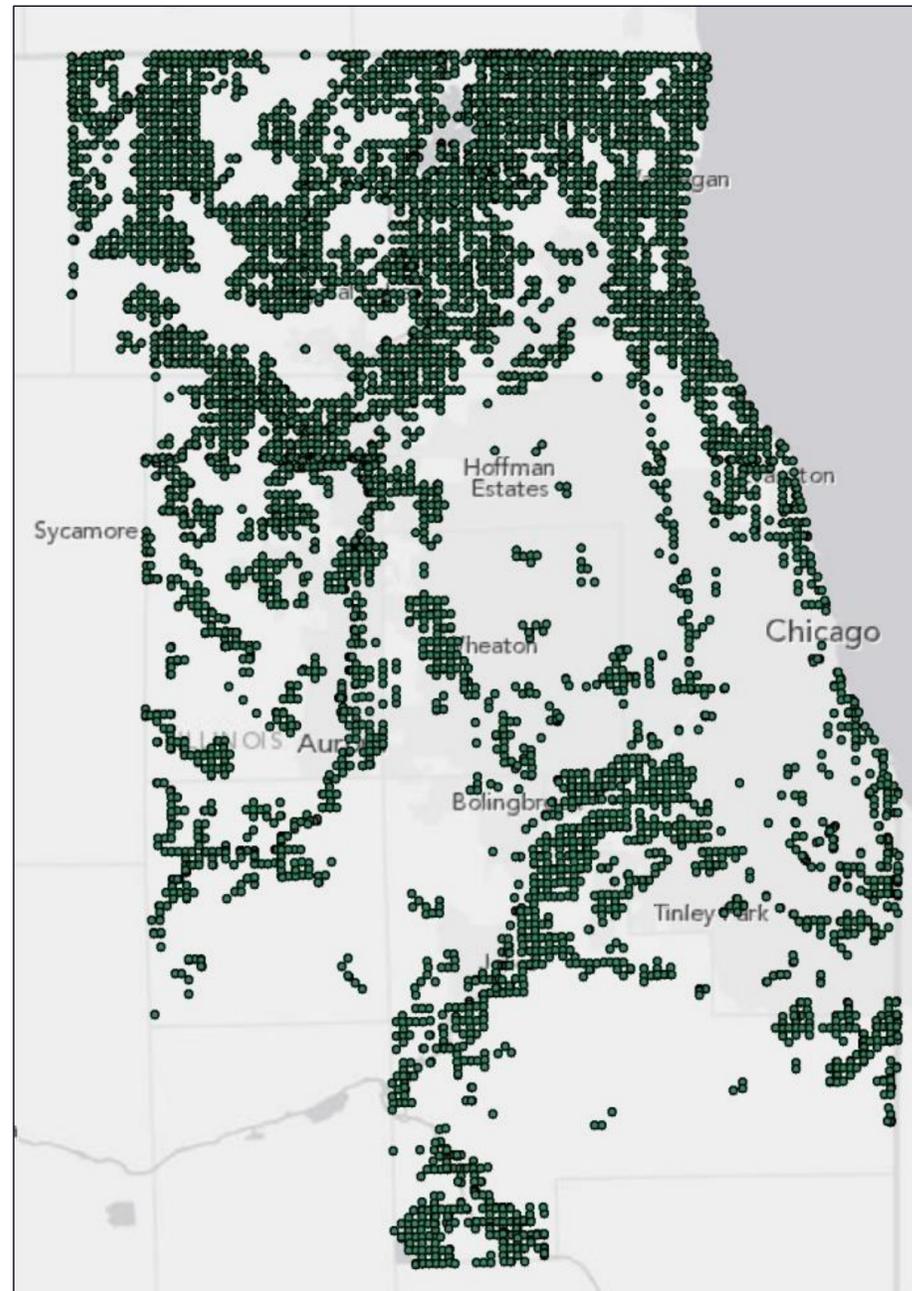
**They also noted other trees and features encountered along section lines**

# Oaks dominated a large majority of wooded ecosystems in the original landscape – 1830's

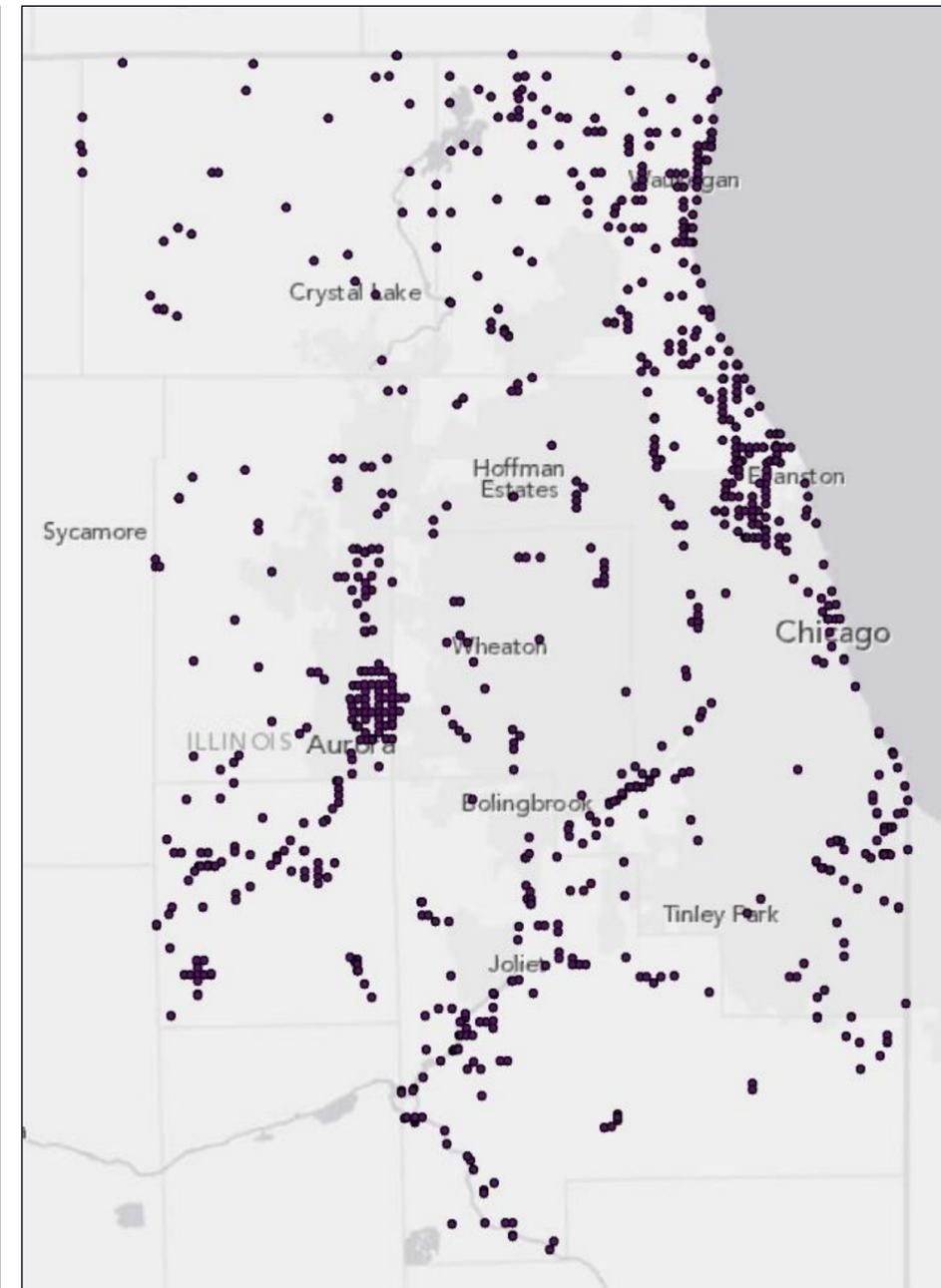
All Trees



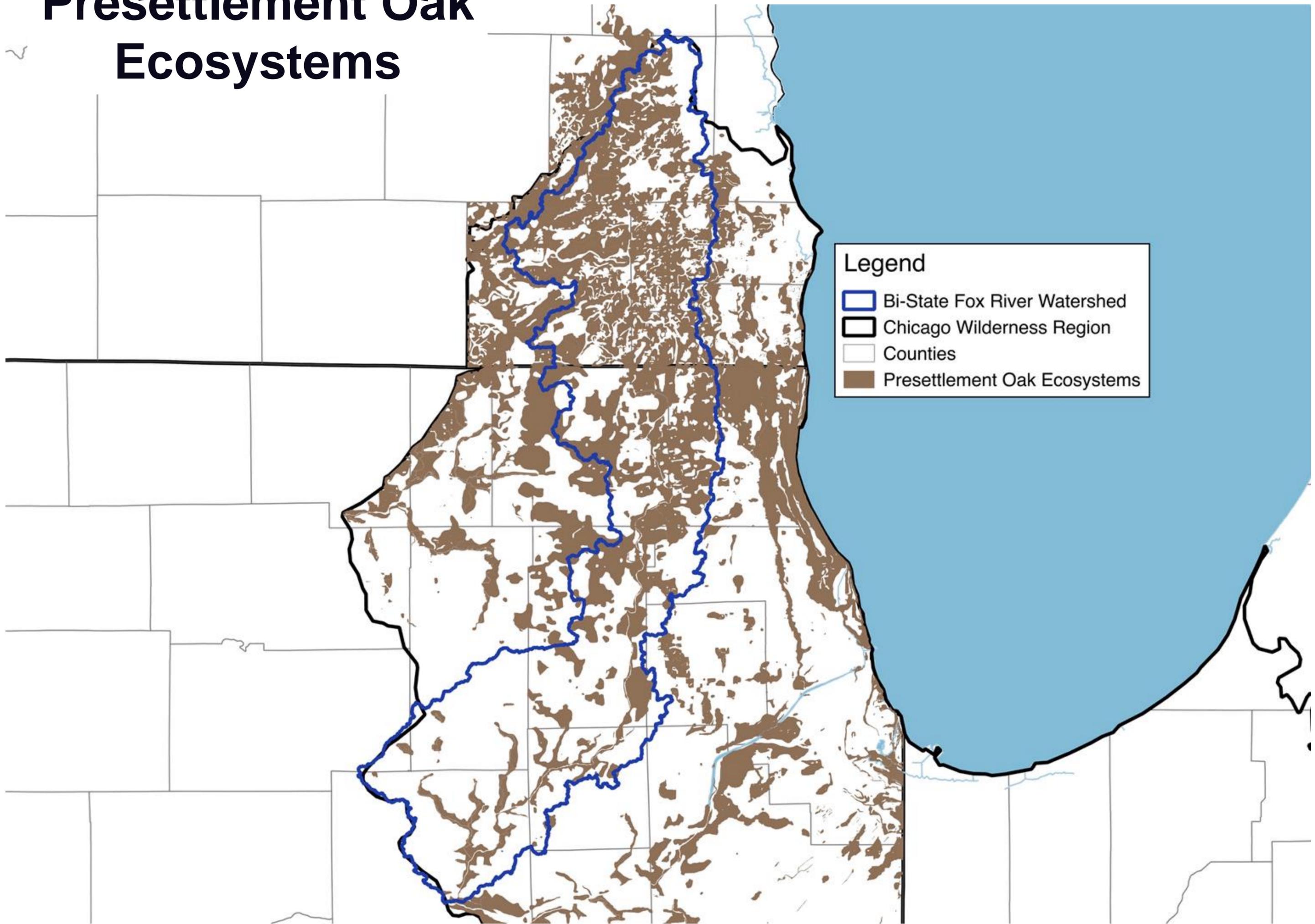
Oaks



Non-oaks



# Presettlement Oak Ecosystems



# Historic aerial imagery from 1930s



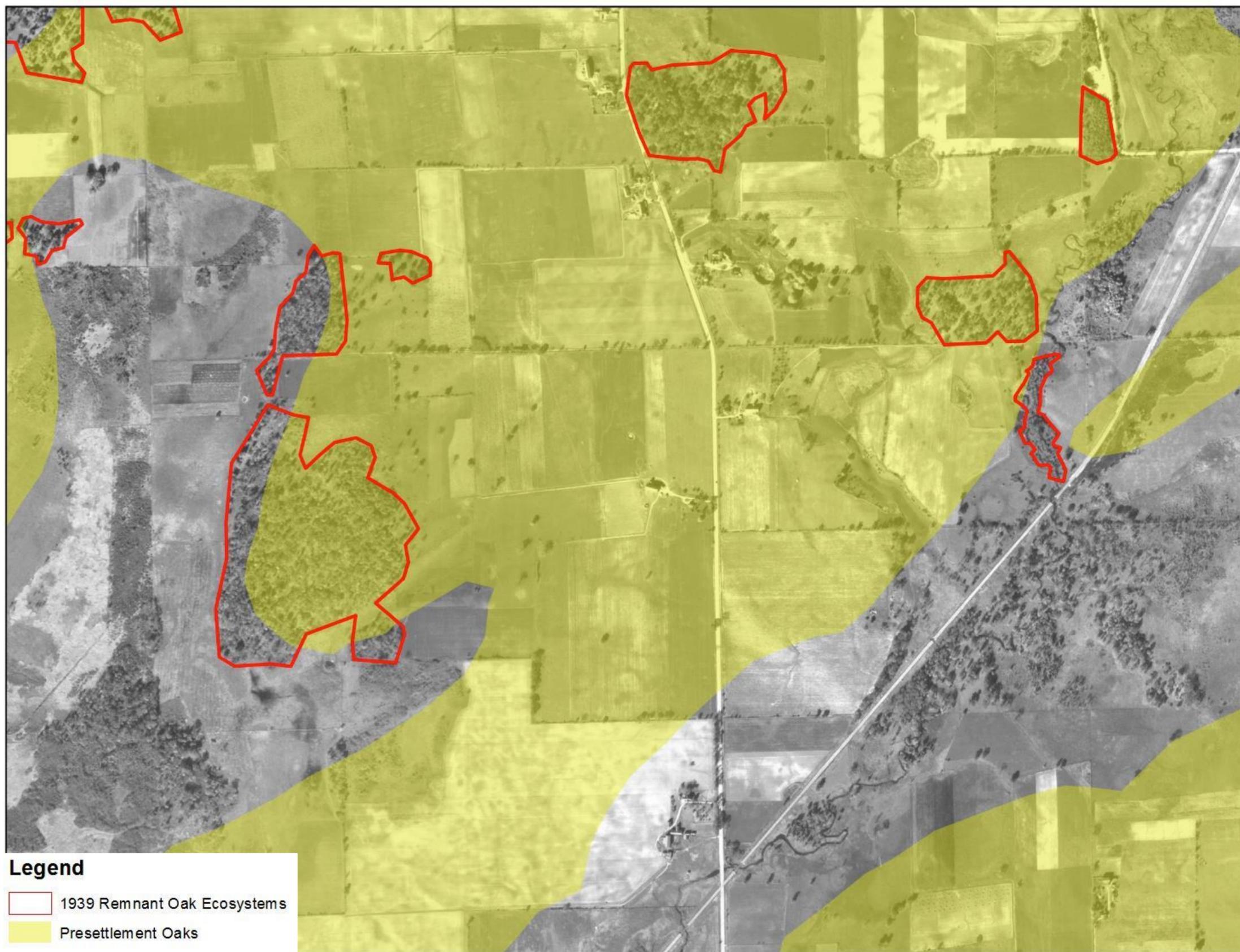
# Mapping 1930's Oak Ecosystems



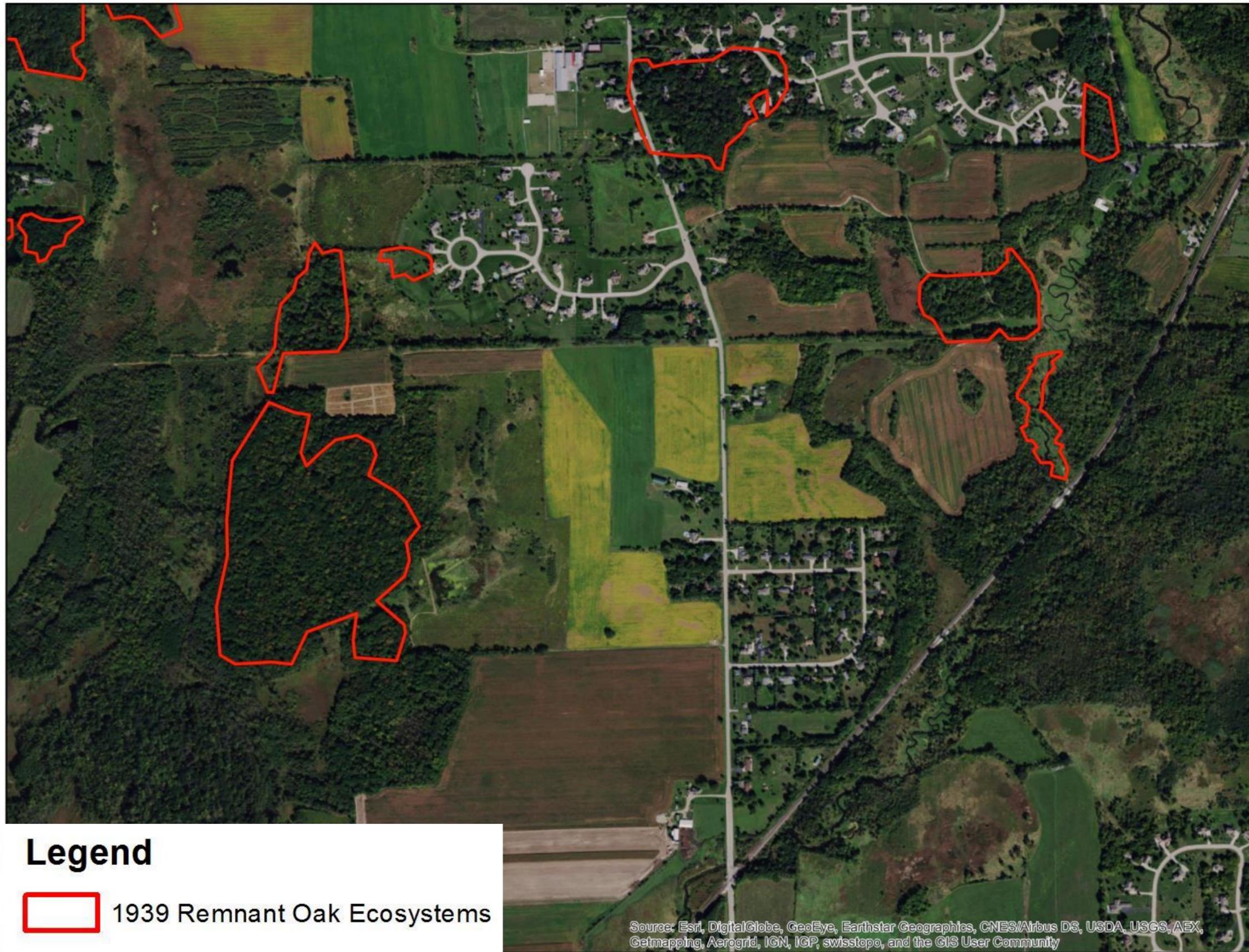
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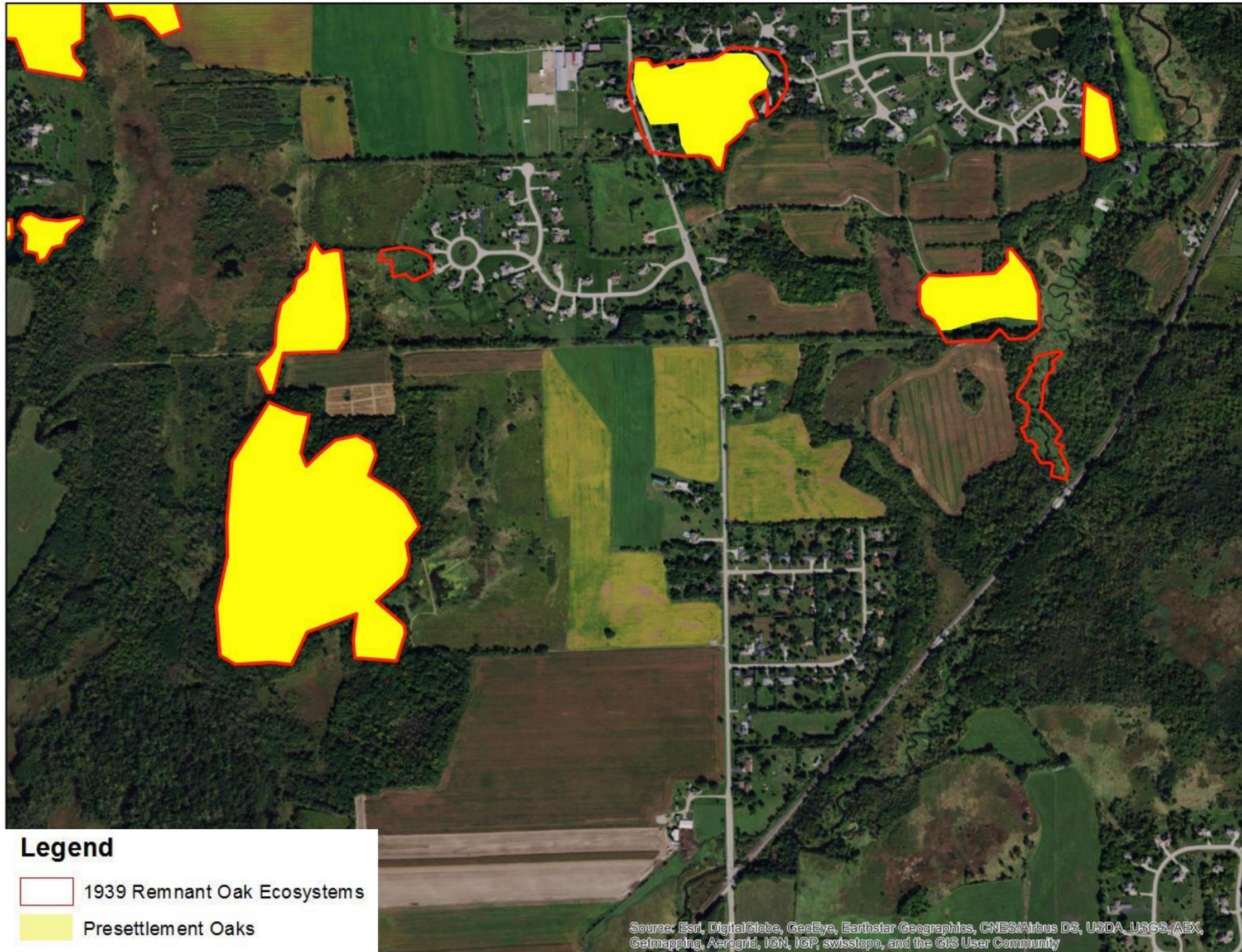
# Mapping Present day remnant oak ecosystems



# Mapping Present day remnant oak ecosystems



# Mapping 1930's Oak Ecosystems



# Presettlement Oak Ecosystems



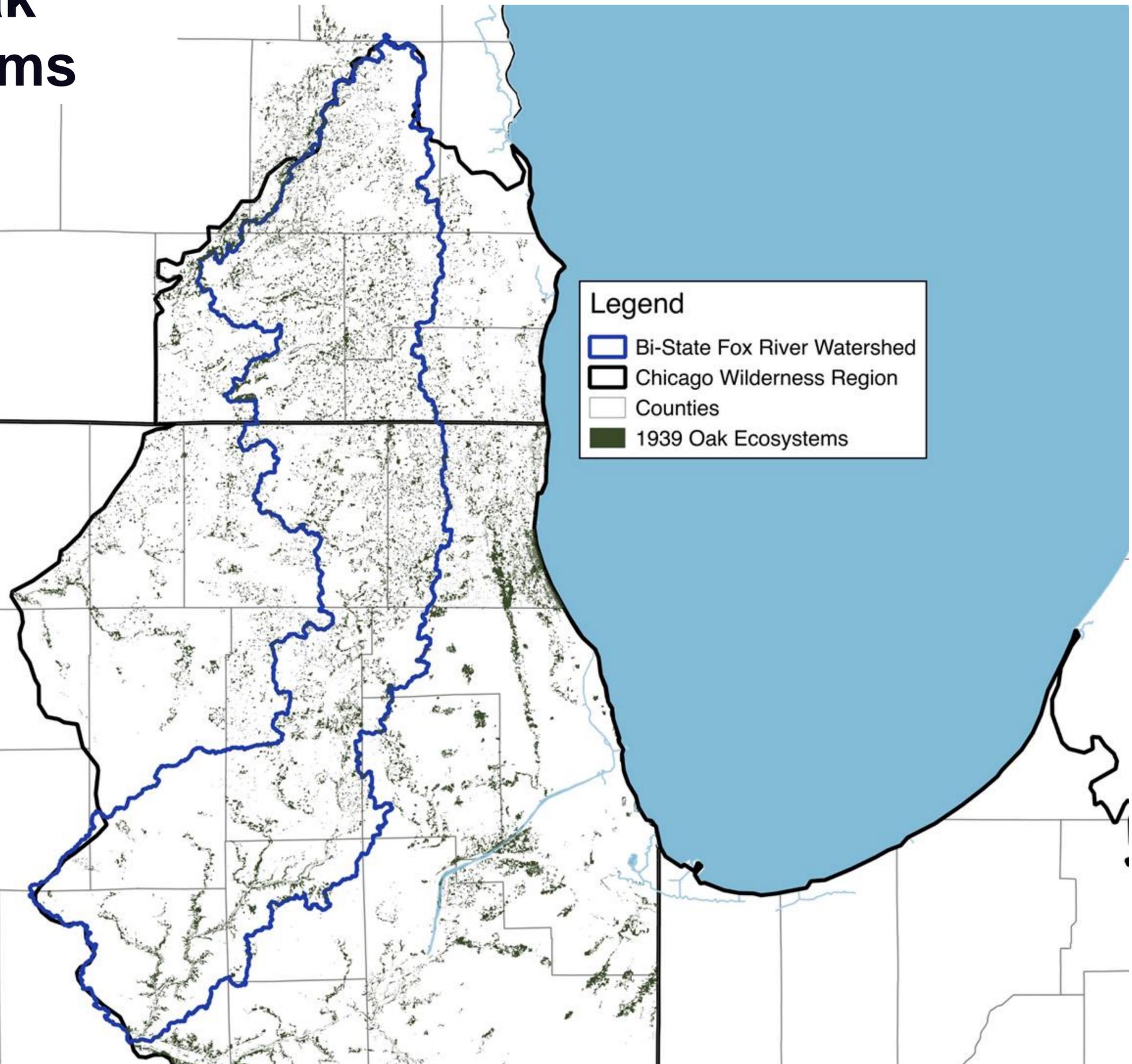
Extent of Oak Ecosystems in the Fox River Watershed in 1800s

**998,430 acres**

# 1939 Oak Ecosystems

Extent of Oak Ecosystems in the Fox River Watershed in 1939

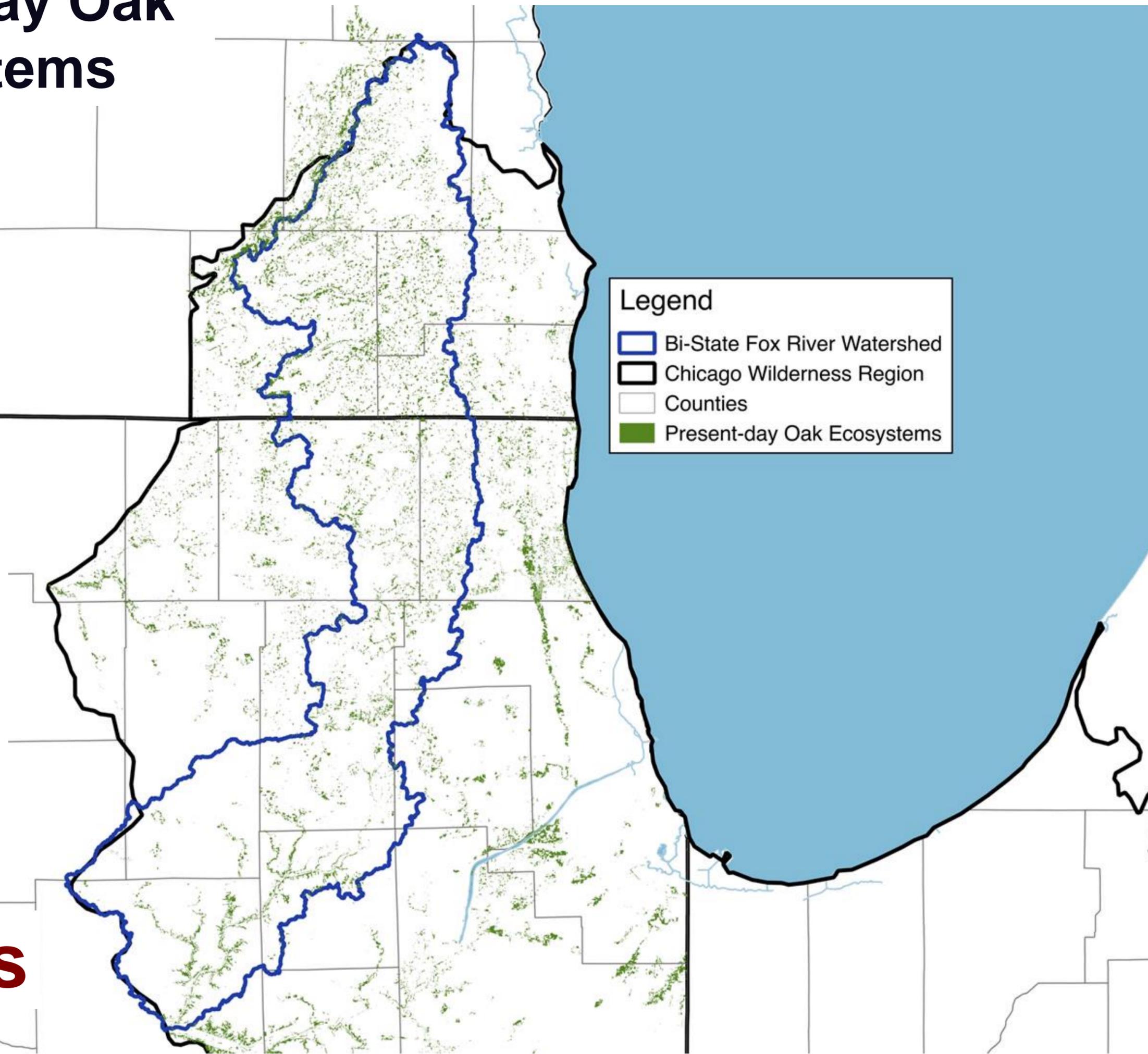
**141,634 acres**



**Legend**

- Bi-State Fox River Watershed
- Chicago Wilderness Region
- Counties
- 1939 Oak Ecosystems

# Present-day Oak Ecosystems

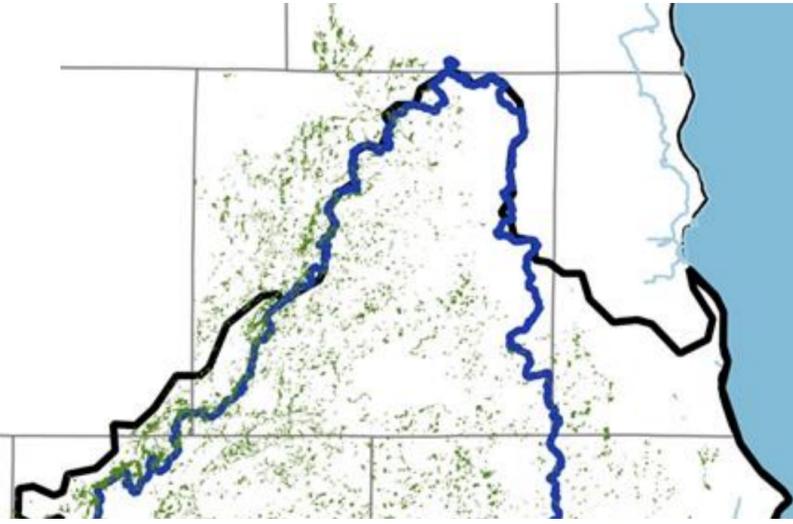


Extent of Oak Ecosystems in the Fox River Watershed in present-day

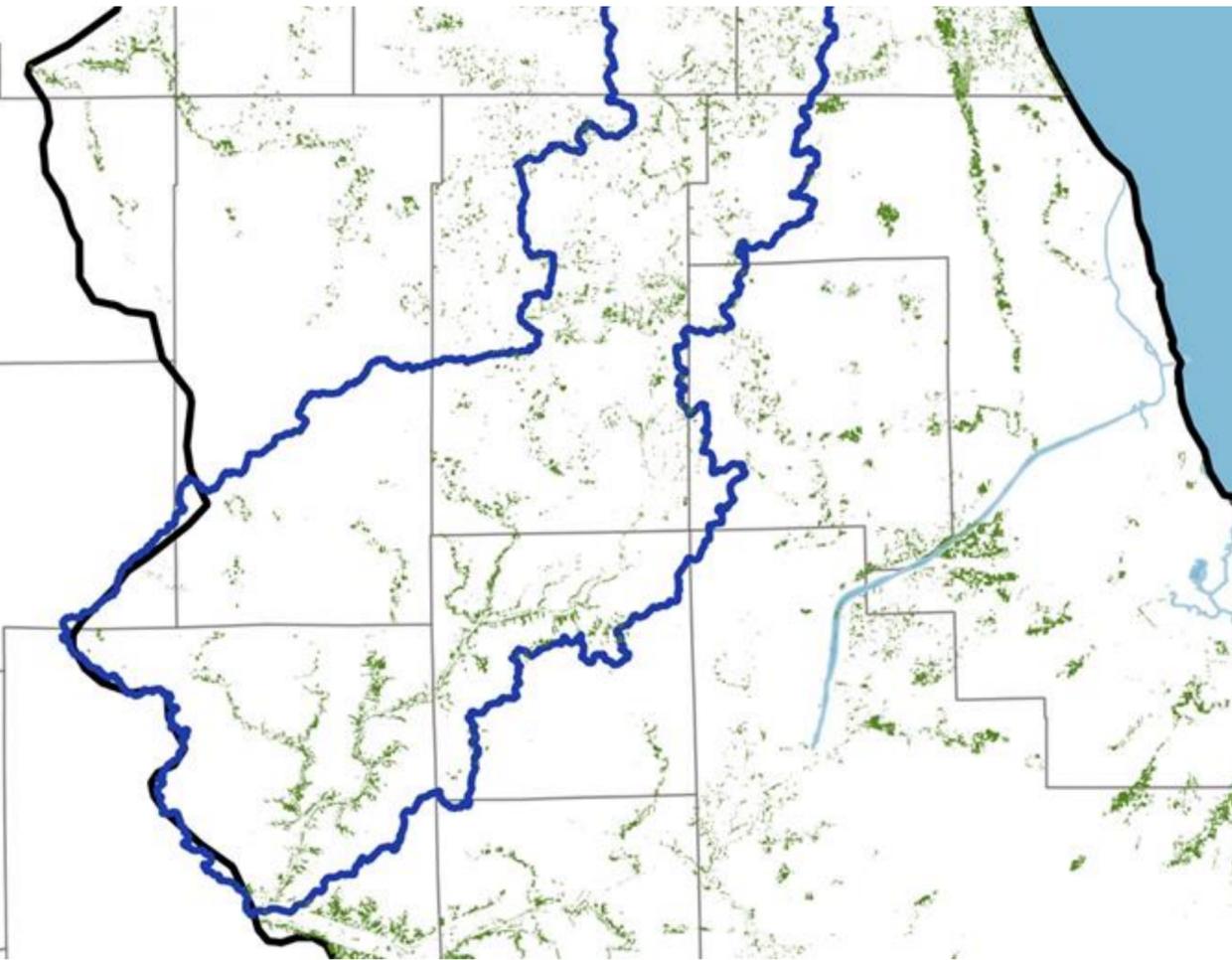
**96,579 acres**

**90% loss**

# Present-day Oak Ecosystems



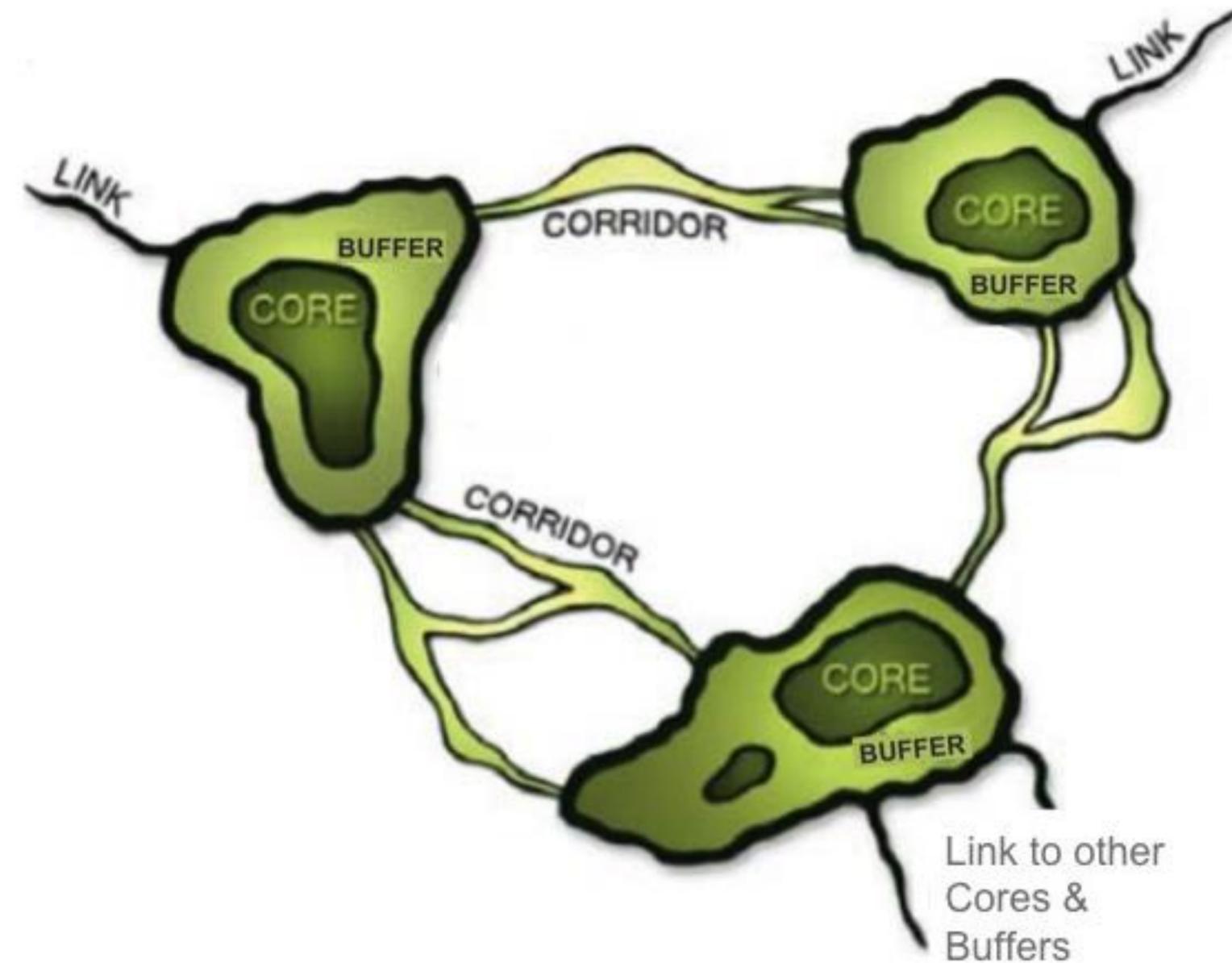
**More than 90% of oak ecosystems left in the Fox River Watershed are on private lands**



A photograph of a residential street lined with large, mature trees. The trees have dense foliage, with some showing early autumn colors. A utility pole with several wires is visible in the center. A car is parked on the street in the distance. The sky is overcast and grey. The text is overlaid in the lower half of the image.

**Where are the best opportunities to buffer, expand, and re-connect our remaining remnants?**

# We need to identify important opportunity areas for oak ecosystem recovery



The *Oak Ecosystem Recovery Plan* calls for a system of woodland complexes comprised of:

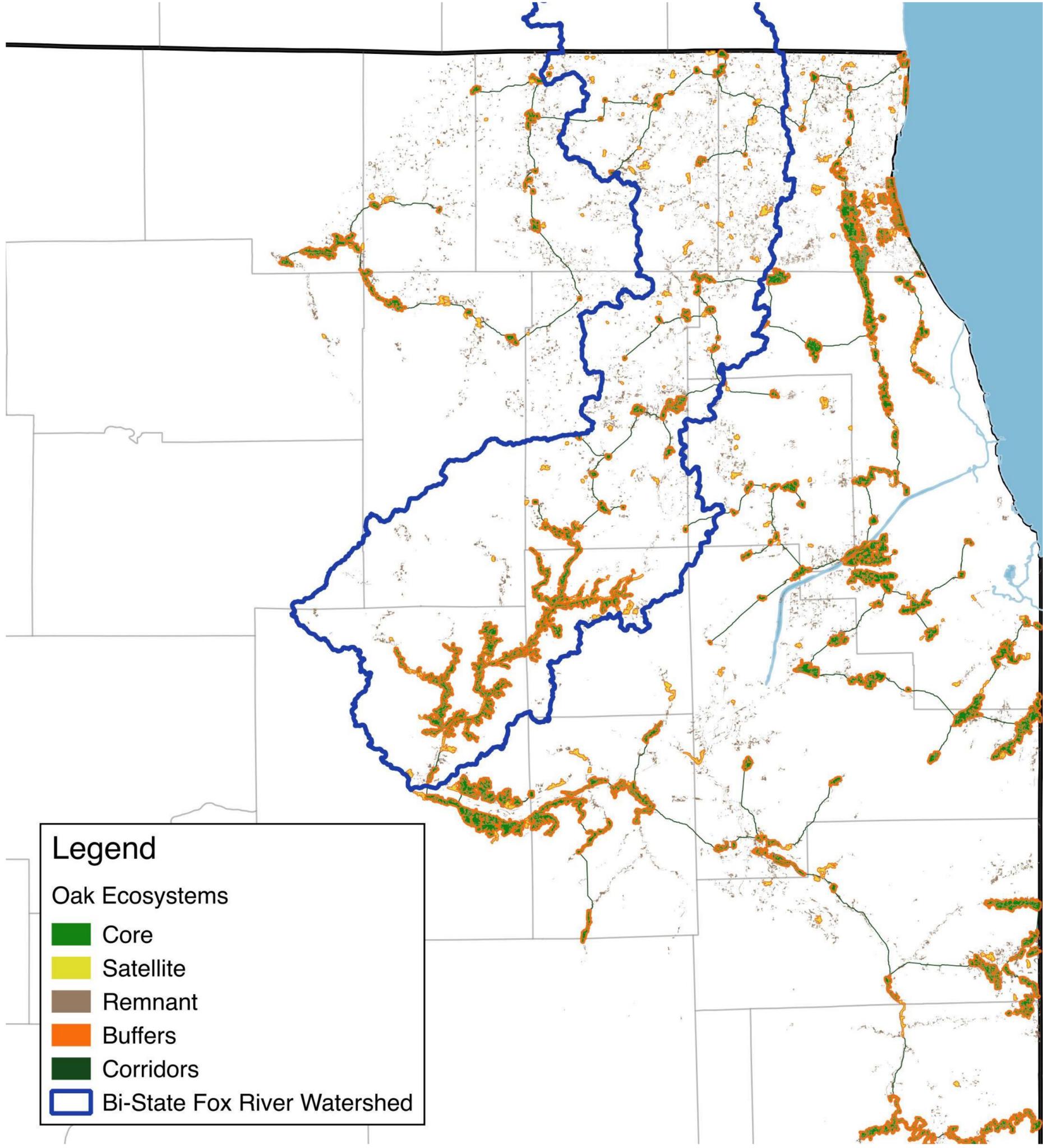
Cores: Higher quality, remnant ecosystems

Buffers & Corridors: Lower quality natural areas, reclaimed ecosystems, and urban / residential plantings



**Legend**

- Present-day Oak Ecosystems
- Bi-State Fox River Watershed



**Legend**

Oak Ecosystems

- Core
- Satellite
- Remnant
- Buffers
- Corridors

Bi-State Fox River Watershed



# Private Landowner Education & Engagement



## BEST MANAGEMENT PRACTICES

### OAK ECOSYSTEM RESTORATION, REGENERATION, AND MAINTENANCE



## Invasive Woody Plant Replacement List



### Why replace buckthorn and honeysuckle in your yard?

Woody invasive plants, such as common and glossy buckthorn (*Rhamnus cathartica* and *Rhamnus frangula*) or Eurasian bush-honeysuckles (*Lonicera* spp.), form dense thickets and reproduce aggressively, shading out other plants and disrupting ecosystems in forest preserves and other natural areas. In woodlands, they can completely replace young trees and understory plants, including native wildflowers. Buckthorn also causes long-lasting damage to the soil and wildlife habitat where it grows.

Unfortunately, they are also commonly used in residential landscaping. This guide suggests shrubs that can be planted to replace invasive hedges or screens being removed. For advice on removal, check the Illinois Natural History Survey's guide ([www.inhs.illinois.edu/research/vmg/buckthorn/](http://www.inhs.illinois.edu/research/vmg/buckthorn/)) or hire a professional. To find a native plant nursery, check the Illinois Native Plant Society's list ([ill-inps.org/native-plant-nurseries/](http://ill-inps.org/native-plant-nurseries/)).

Do I have invasives in my yard?

**Common name:** common buckthorn and glossy buckthorn  
**Latin name:** *Rhamnus cathartica* and *Rhamnus frangula*  
**Height:** 8-25ft  
**Description:** A large shrub or small tree with glossy oval leaves that can easily be recognized in fall, when it remains green after most other leaves have fallen. Buckthorn has berries that are spread by birds. Under the Illinois Exotic Weed Act, buckthorn cannot be sold in Illinois.



From left to right: Manicured buckthorn hedge; close up of buckthorn leaves & fruit

**Common name:** Eurasian bush-honeysuckles  
**Latin name:** *Lonicera* spp.  
**Height:** 5-20ft  
**Description:** The various species of bush honeysuckles may be difficult to tell apart in the field, but all are upright, shallow-rooted shrubs that leaf out early and remain green late, deplete soil moisture and nutrients, and inhibit the growth of other plants.



Photo credit: John Hagstrom

### How to grow a screen or hedge

**Freeform screening**— Shrub species can be grown without “formal pruning” using their natural structure.

**Formal hedges**- Start with 18”-24” plants, cutting back to 6” to cause low branching. Cut off half the new growth over the next two years. Start shaping the hedge the third year, making the base broader than the top. Formal hedges must be sheared 2 or more times each year.

**Naturalistic hedges**- Informal hedges grow best when plants are kept at about 3/4 of their full size. Start with shrubs that will get a little bigger than the size of the hedge you want. Once a year, these hedges need a light overall pruning and a renewal pruning (cutting 1/3 of the older canes off at ground level).



## OAKS NEED YOUR HELP!

HOW HOMEOWNERS, LANDOWNERS, AND INDIVIDUALS CAN CREATE A BETTER FUTURE FOR OAK TREES



# Private Landowner Education & Engagement



**CHICAGO REGION TREES INITIATIVE**  
Our Trees. Our Communities. Our Future.

The Morton Arboretum  
**THE CHAMPION of TREES**



## BEST MANAGEMENT PRACTICES

**OAK ECOSYSTEM RESTORATION, REGENERATION, AND MAINTENANCE**

# OAKtober

## ASKED FOR HELP!

OWNERS, LANDOWNERS, AND LAND MANAGERS CAN CREATE A FUTURE FOR OAK TREES

**CHICAGO REGION TREES INITIATIVE**  
Our Trees. Our Communities. Our Future.



From left to right: Manicured buckthorn hedge; close up of buckthorn leaves & fruit



Photo credit: John Hagstrom

### How to grow a screen or hedge

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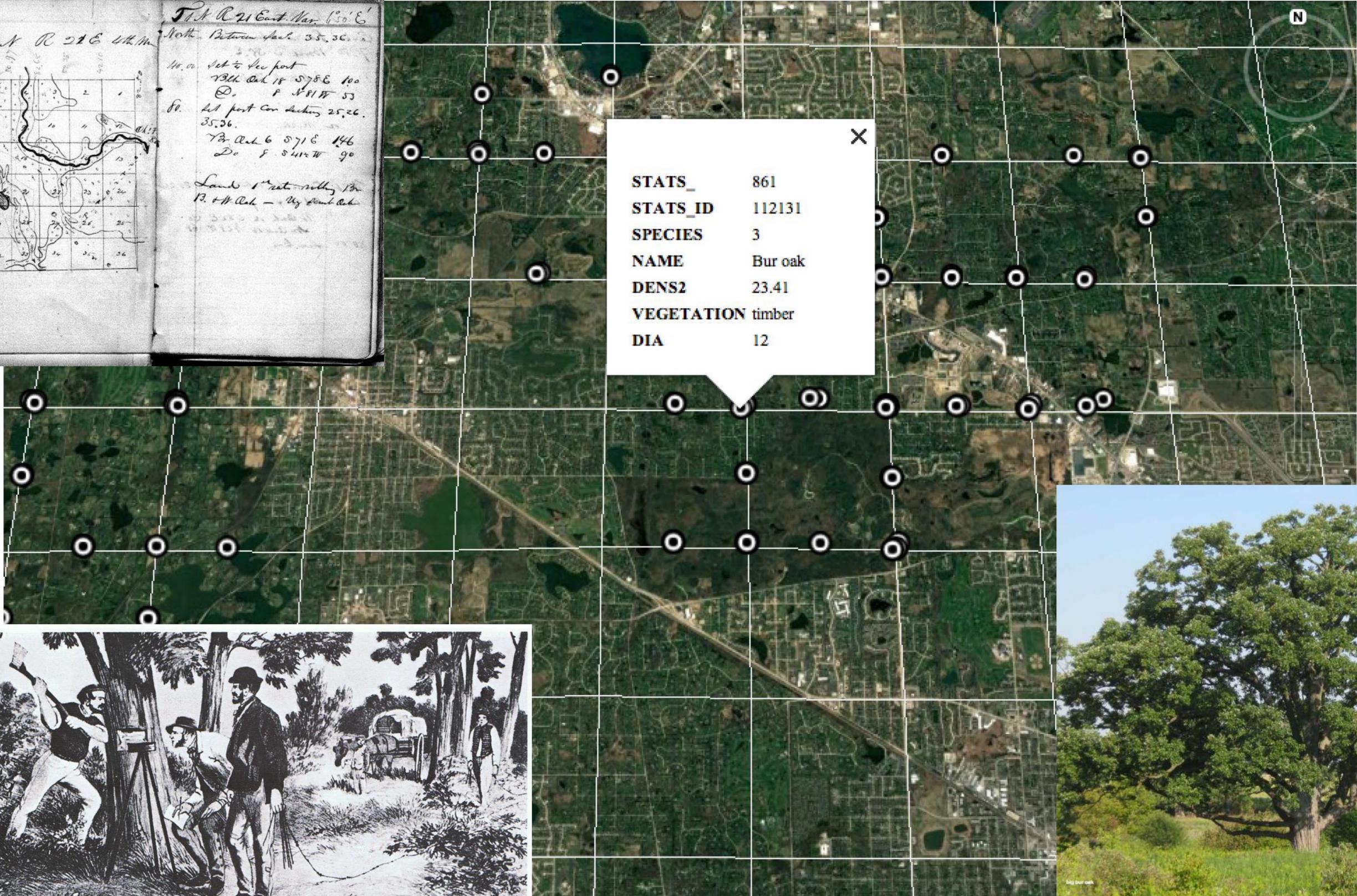
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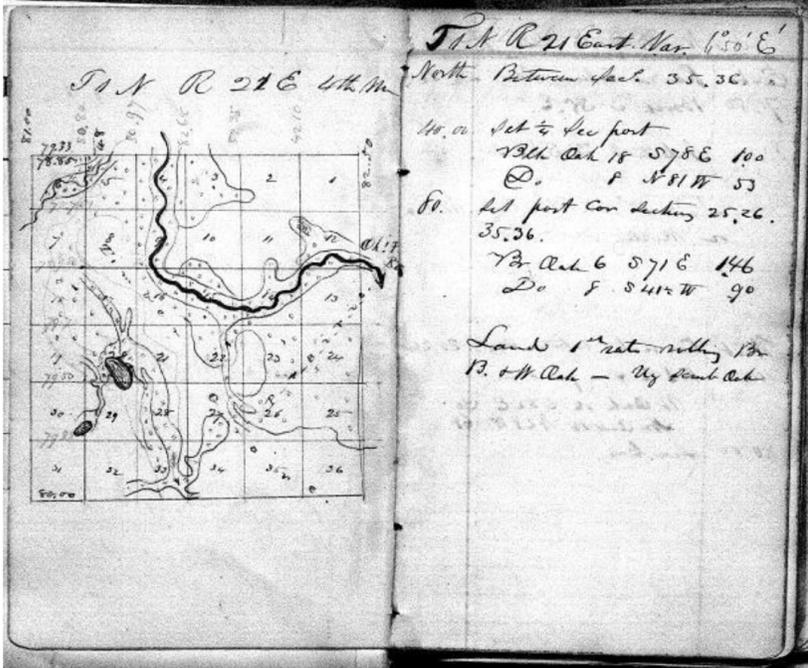
# Oaktober Citizen Science Effort

Recruiting residents to locate remaining witness trees from the 1800 Public land surveys

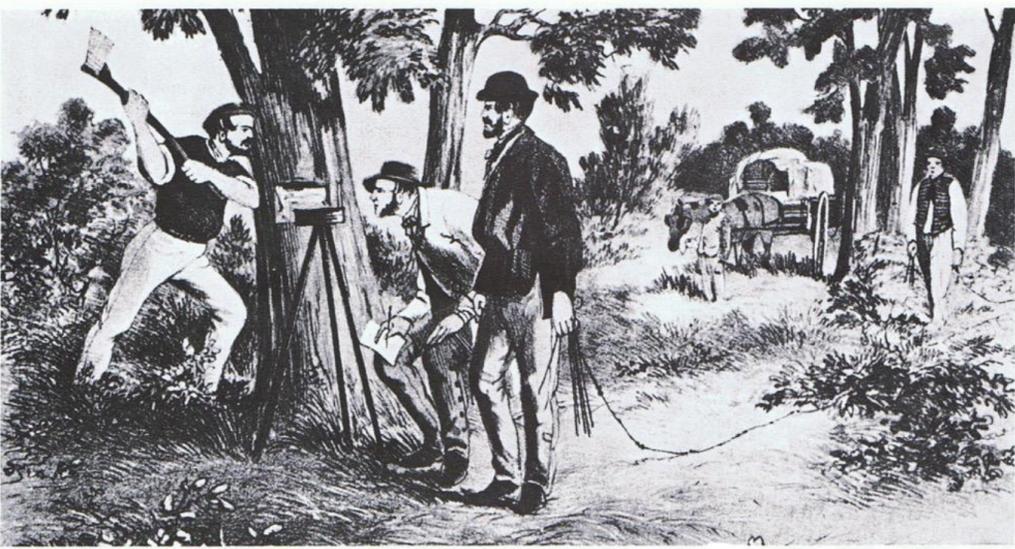
<http://chicagorti.org/WitnessTrees>

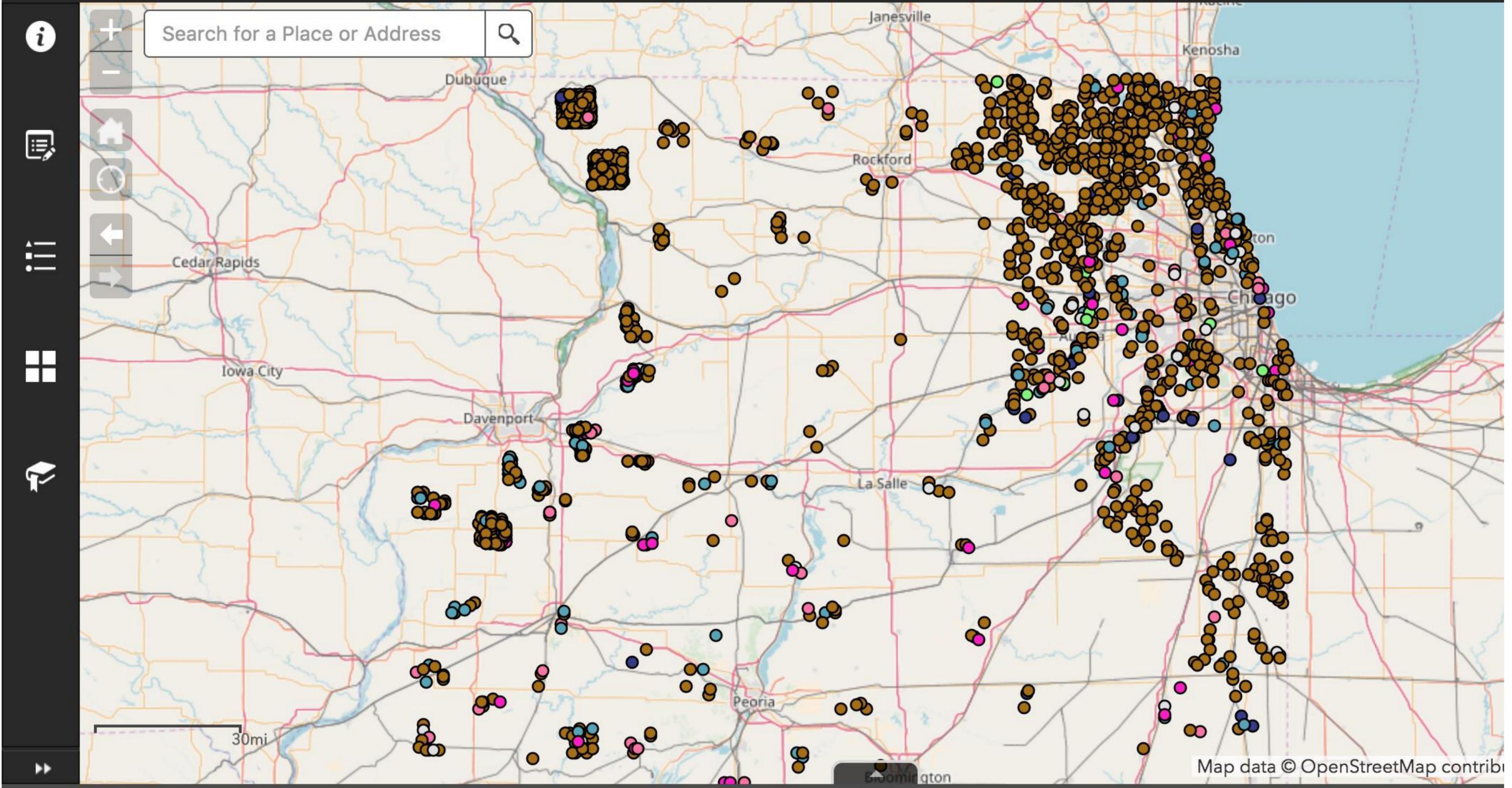


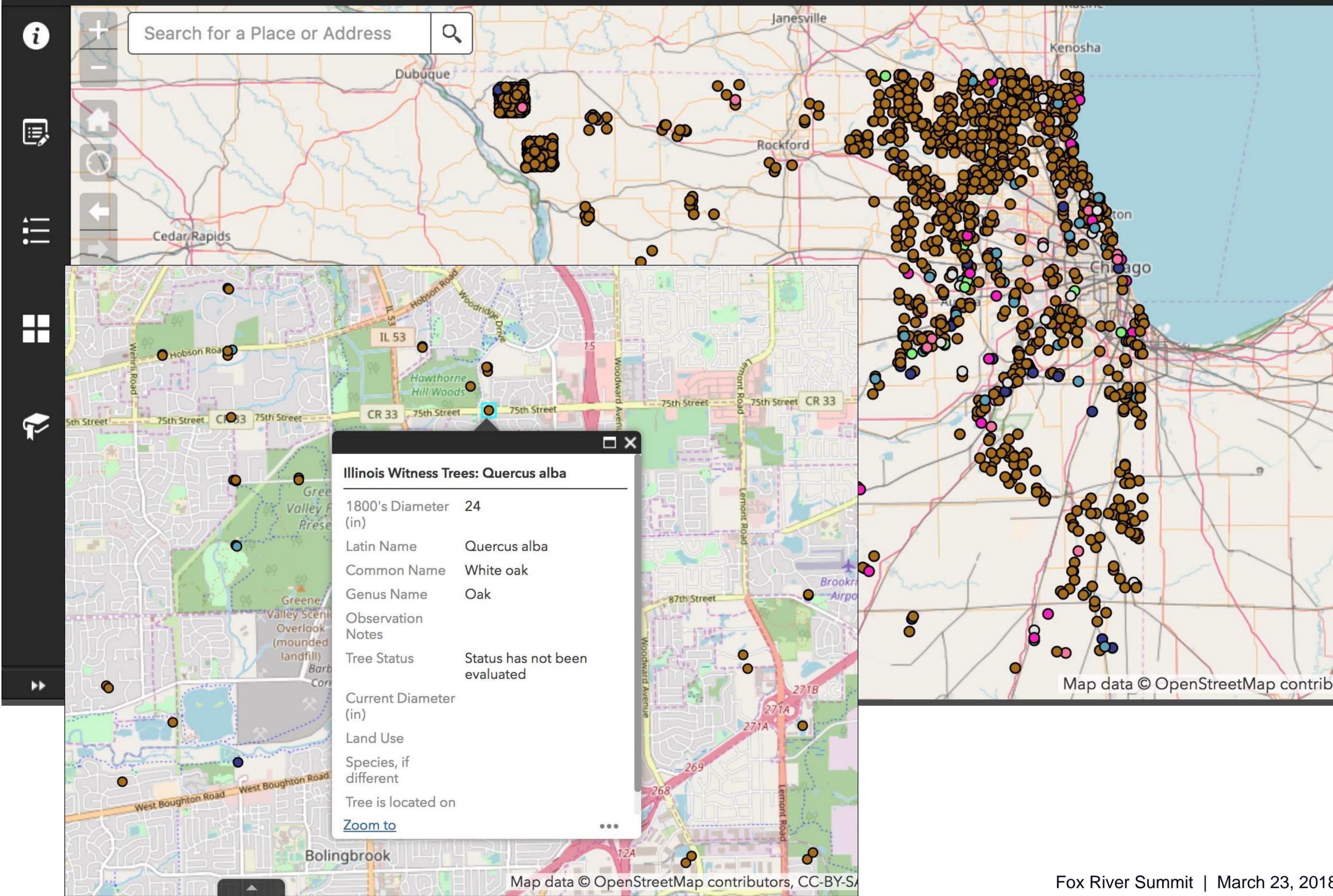
STATS_	861
STATS_ID	112131
SPECIES	3
NAME	Bur oak
DENS2	23.41
VEGETATION	timber
DIA	12



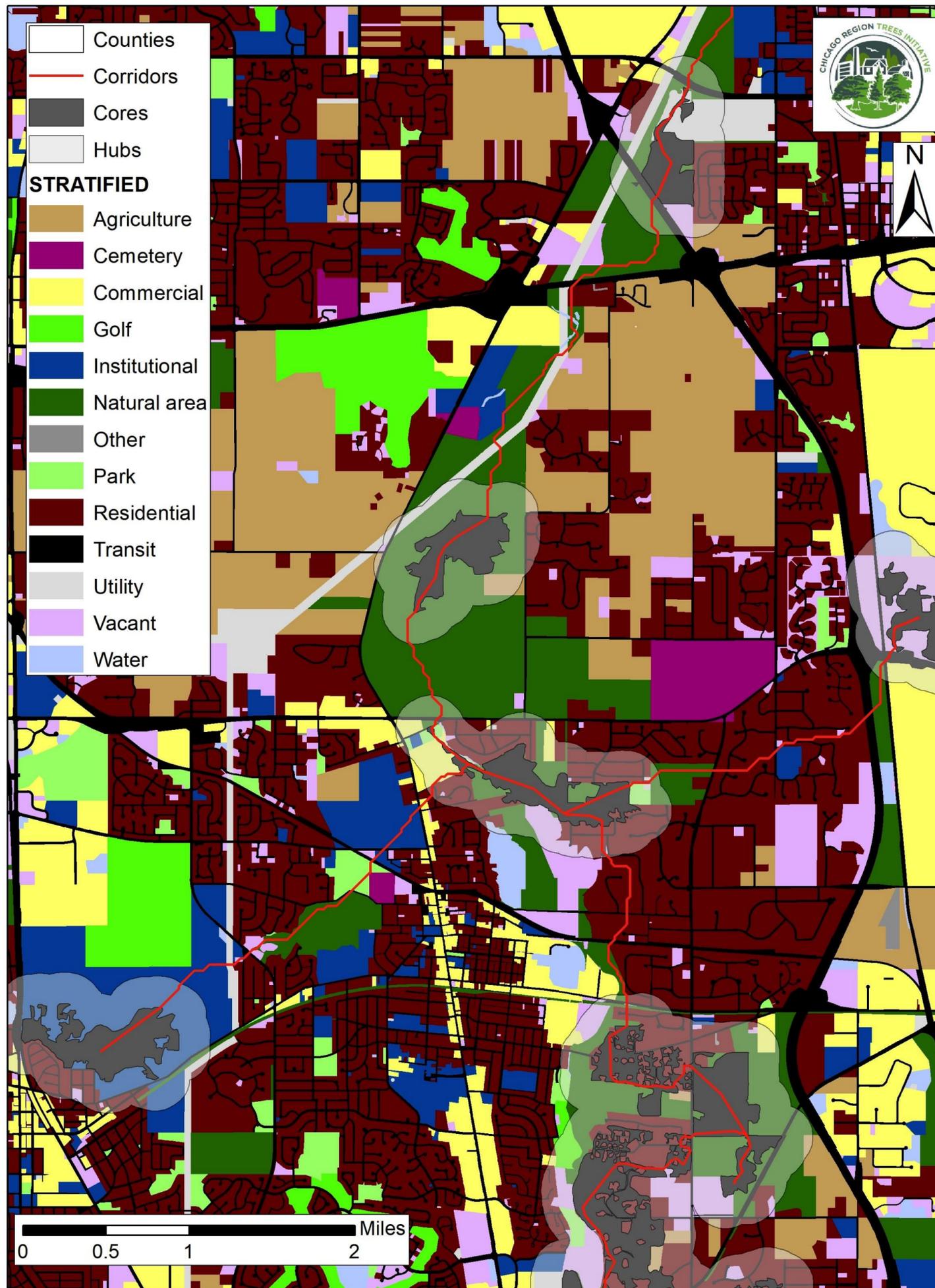
*T.N.R. 21 East. May 1850 E*  
North. Between poles 35, 36.  
14.00 Set 4 sec post  
1366 Oak 18 S 78 E 100  
Do S 81 W 53  
89. 21 post Cor. between 25, 26.  
35, 36.  
73. Oak 6 S 71 E 146  
Do S 41 W 90  
Lands 1<sup>st</sup> Nat. valley 13<sup>th</sup>  
13. + W Oak - My pencil Oak





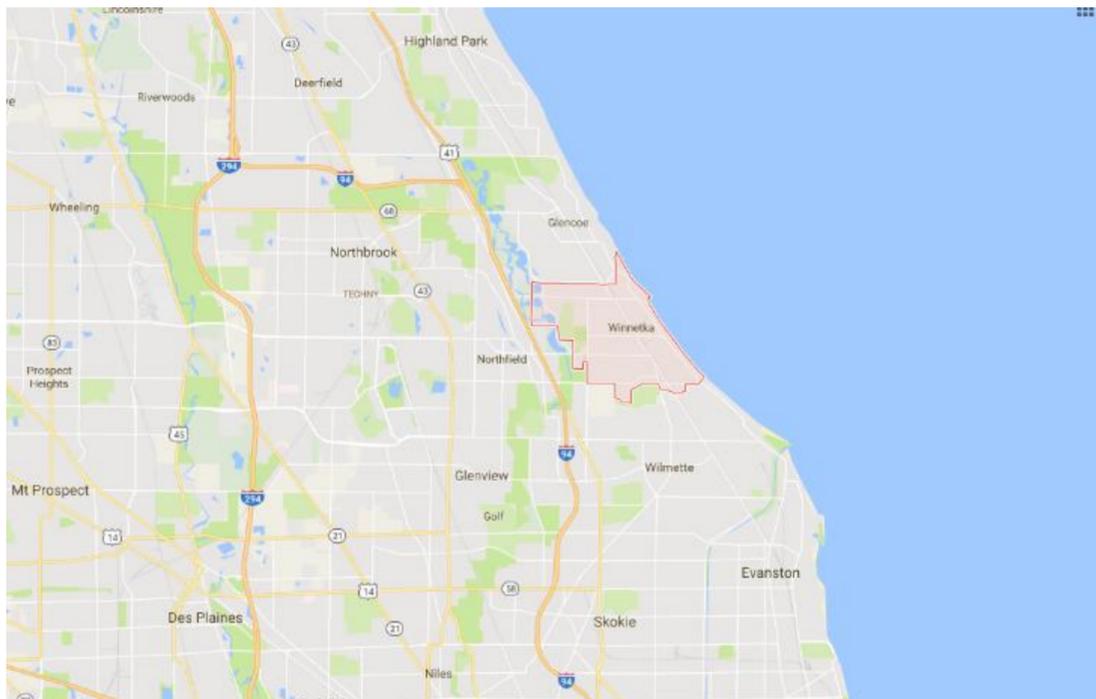






# This data can inform other efforts across the region

E.g., Crow Island Woods



## Save Crow Island Woods

Join us in protecting a threatened local treasure...

About Us Learn More What Can I Do? News Events

### Crow Island Only Remnant of Pre-Settlement Winnetka

Prior to extensive European settlement, a large portion of Winnetka and the surrounding area near Lake Michigan were covered by extensive oak woodlands and savannas, but even by the 1930s, nearly all of the larger oak ecosystems in the north shore were already gone. As these maps from Chicago Wilderness show, Crow Island Woods is the only remnant oak forest from that time.

When our children forage in Crow Island Woods during pioneer days, they are literally walking in Winnetka's only remaining forest dating back to pre-settlement times!

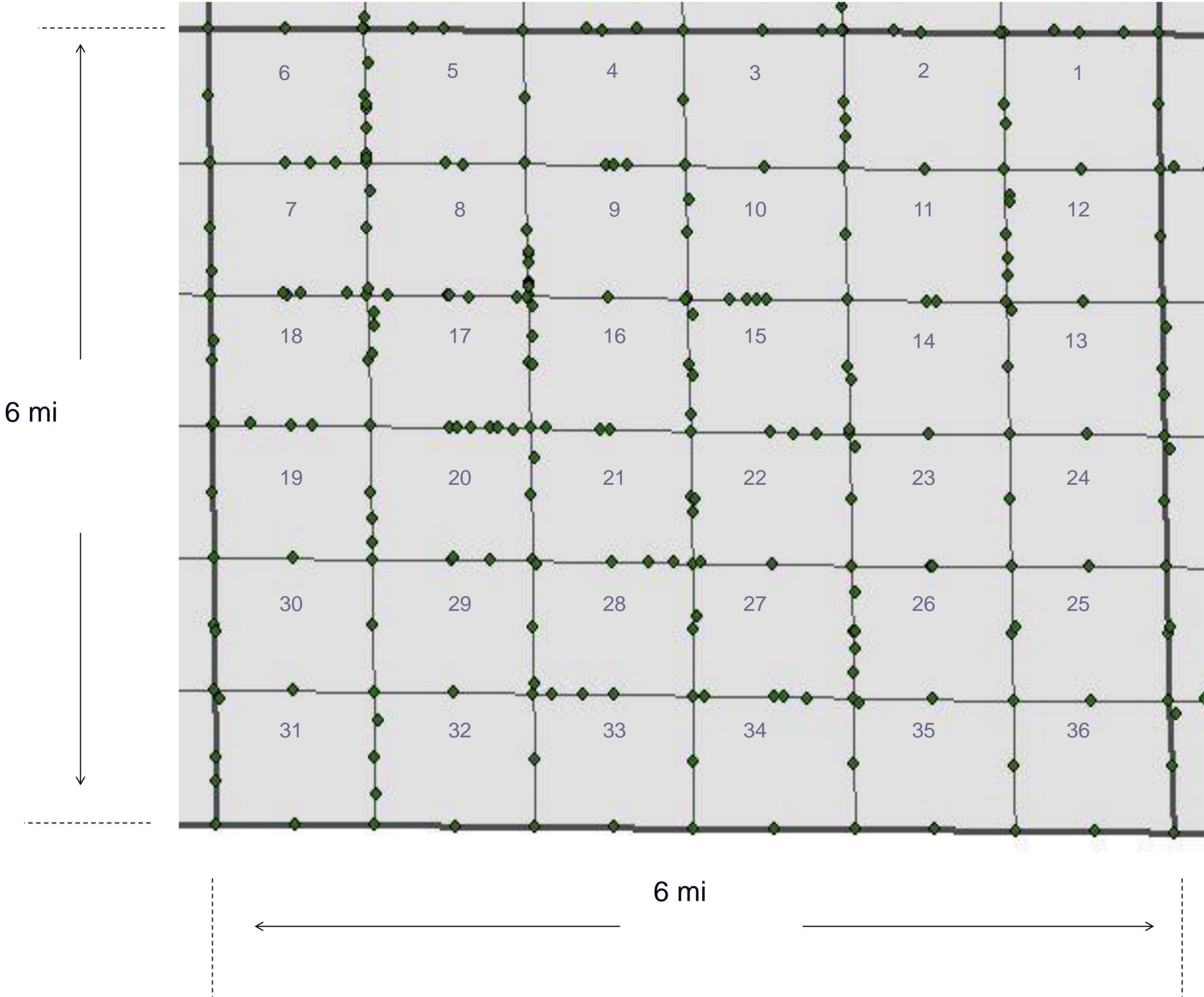
Legend

- Winnetka
- Remnant Oak Ecosystems

Crow Island is the only oak ecosystem remaining from pre-settlement days.

A slide from a presentation titled "Save Crow Island Woods". It features a dark background with white and yellow text. At the top, there is a navigation menu with links for "About Us", "Learn More", "What Can I Do?", "News", and "Events". Below the title, there is a sub-header "Crow Island Only Remnant of Pre-Settlement Winnetka". The main text explains the historical significance of the woods. Below the text is an aerial photograph of the woods, overlaid with a red outline for the city of Winnetka and yellow outlines for remnant oak ecosystems. A legend in the top right corner of the photo identifies these colors. At the bottom of the slide, there is a caption: "Crow Island is the only oak ecosystem remaining from pre-settlement days." and a set of three small white circles for navigation.

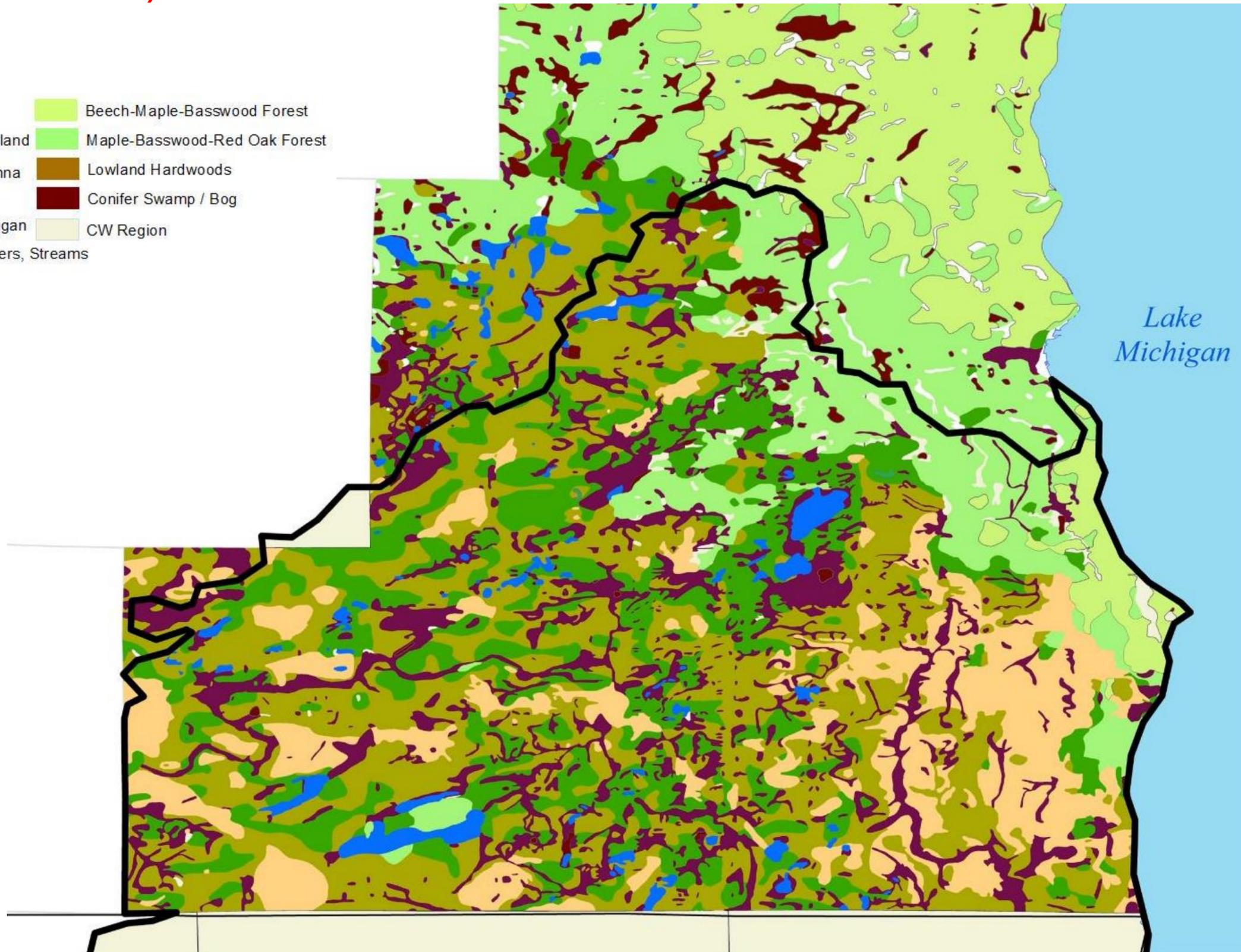
# Each township was divided into 36 sections



# SE Wisconsin Pre-settlement vegetation

Data from Southeast Wisconsin Regional Planning Commission  
(SEWRPC)

## Legend

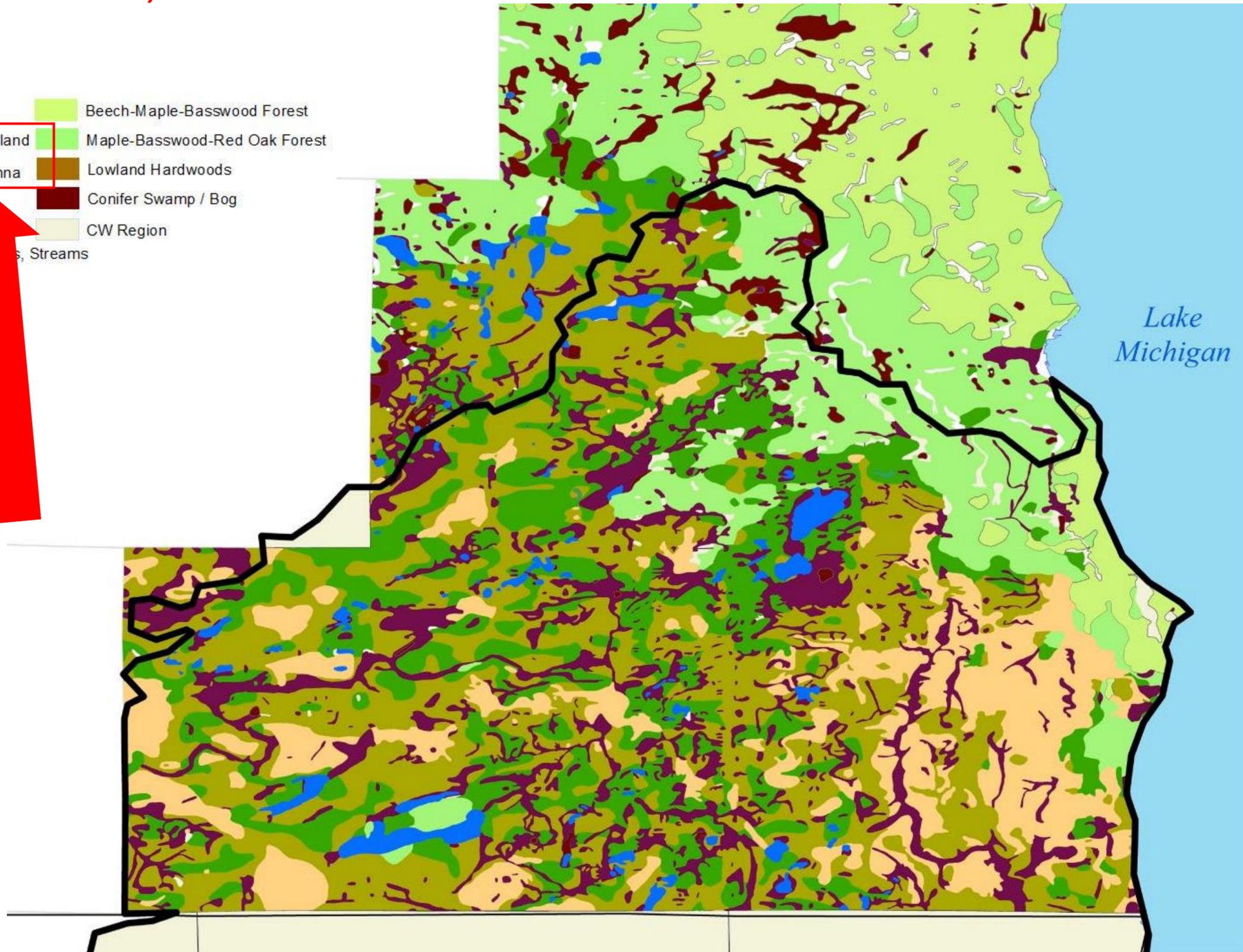


# SE Wisconsin Pre-settlement vegetation

Data from Southeast Wisconsin Regional Planning Commission  
(SEWRPC)

## Legend

 Prairie	 Beech-Maple-Basswood Forest
 Oak Woodland	 Maple-Basswood-Red Oak Forest
 Oak Savanna	 Lowland Hardwoods
 Wetland	 Conifer Swamp / Bog
 Lake	 CW Region
 Lakes, Streams, Rivers	

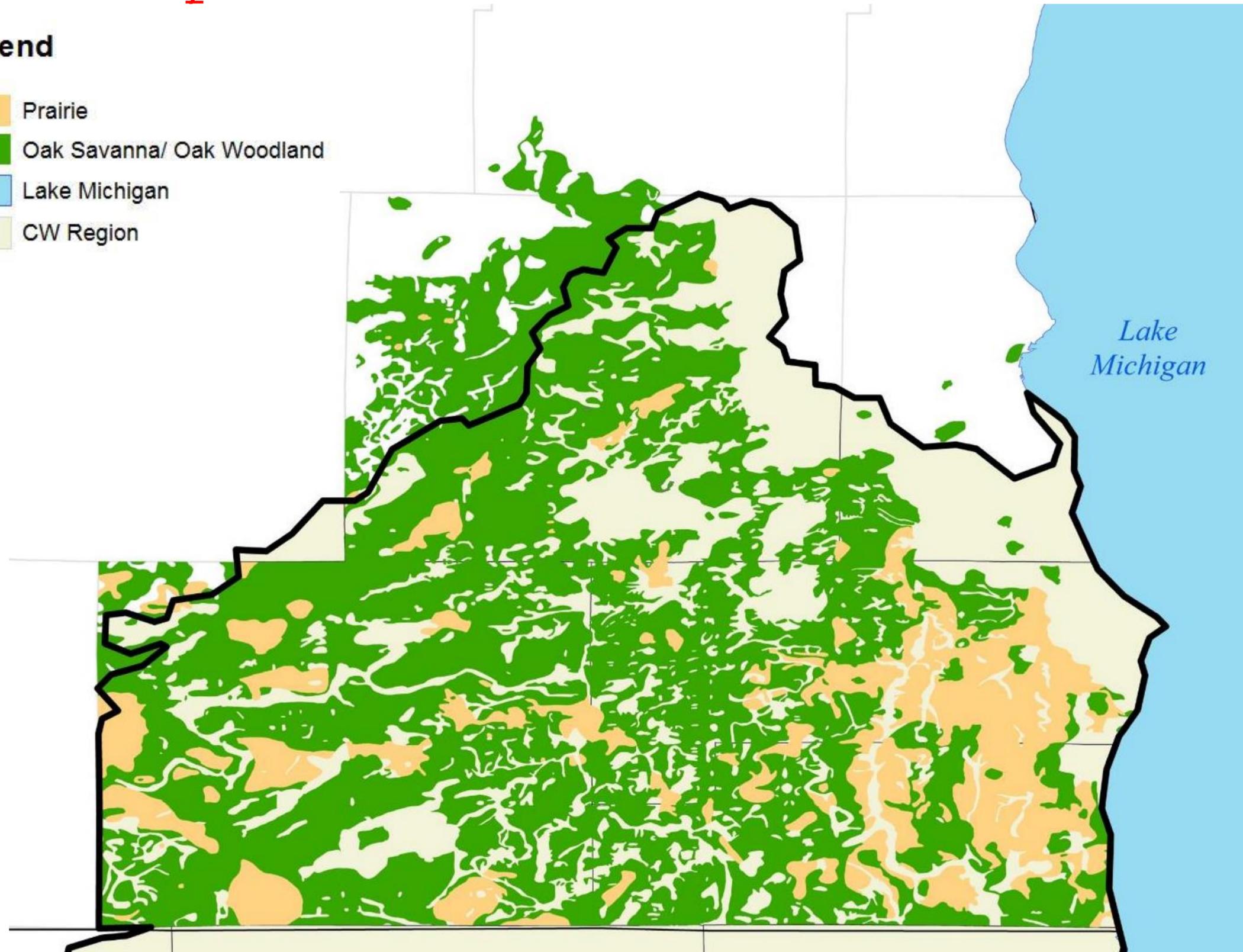


# SE Wisconsin Pre-settlement Wooded vegetation

Data from Southeast Wisconsin Regional Planning Commission  
(SEWRPC)

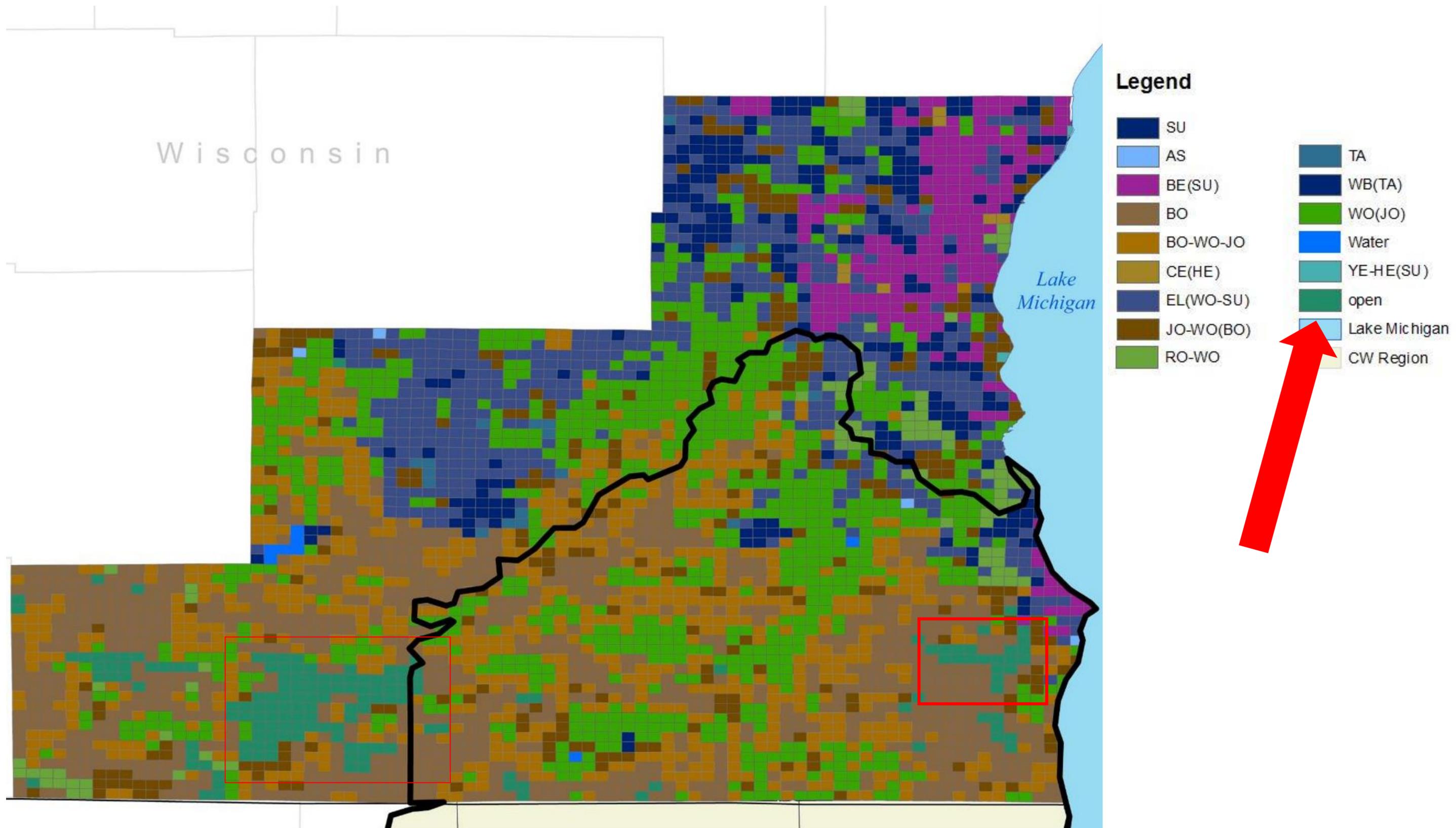
## Legend

-  Prairie
-  Oak Savanna/ Oak Woodland
-  Lake Michigan
-  CW Region



# SE Wisconsin Pre-settlement Tree Species Dominance by Section

Data from David [Mladenoff](#), University of Wisconsin - Madison



# SE Wisconsin Pre-settlement Tree Density by Section

Data from David [Mladenoff](#), University of Wisconsin - Madison

