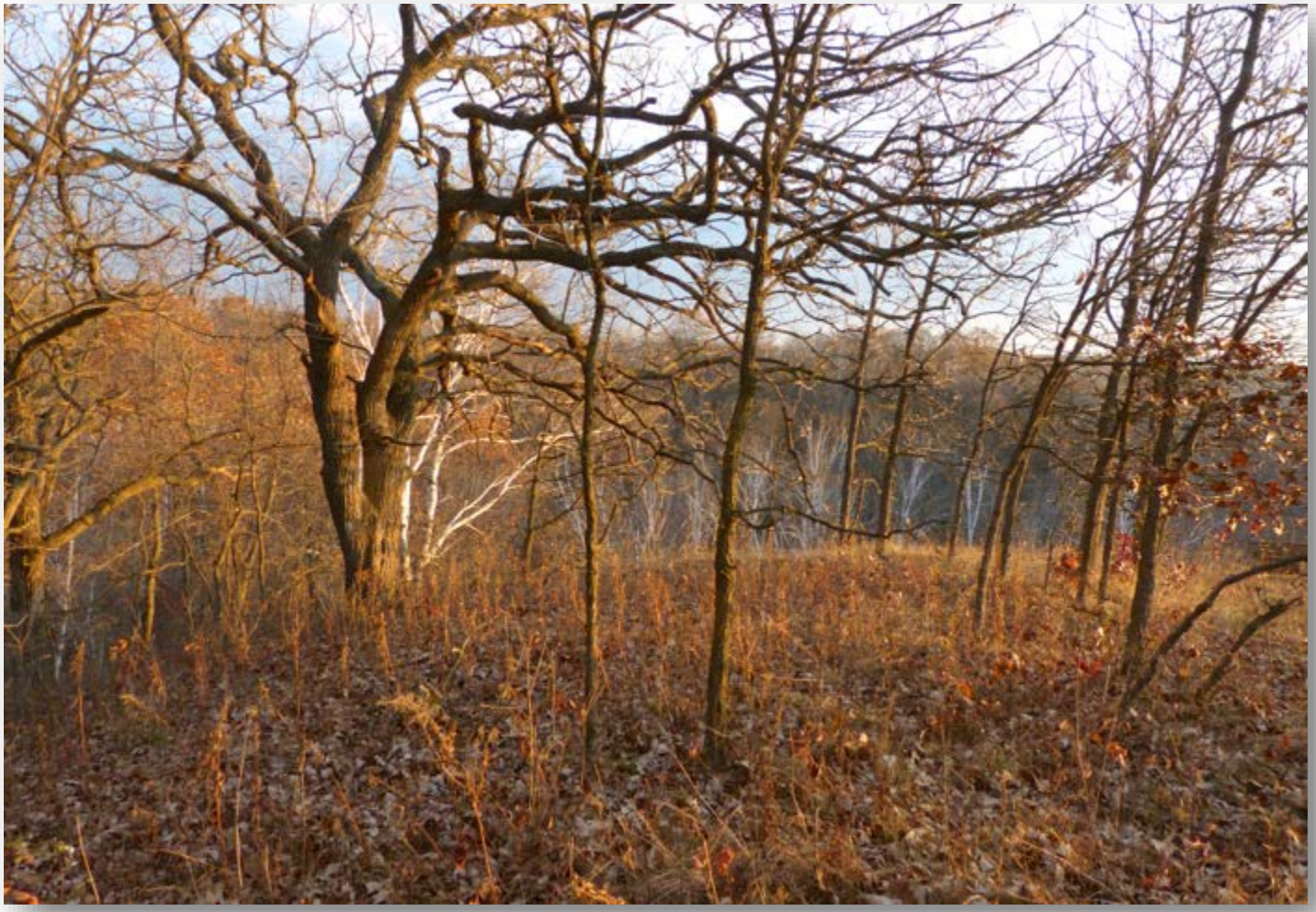
The Natives are Restless: Impact of Oak Restoration on the Flora and Fauna of Illinois



Woodlands are highly variable in overstory structure – ***the presence of an open understory and a rich herbaceous layer are diagnostic*** for this natural community.

Woodlands are fire maintained ***disturbance dependent*** natural communities.

Beneficial disturbance regimes afford the light and free-to-grow condition that oaks need to maintain dominance within a natural community.

So What is a Woodland?

Think, park-like and pleasing; widely spaced trees and rich ground flora.

So What is a Forest?

Think, closed canopy interspersed with shade tolerant sub-canopy trees, shrubs, vines, and forbs.

Forests have a rich assemblage of spring ephemeral forbs, shade tolerant sedges, grasses, ferns.

Woodland

"Woodlands are highly variable natural communities with a canopy of trees ranging from 30 to 100 percent closure with a sparse understory (or midstory) and a dense ground flora rich in forbs, grasses, and sedges." (Adopted from Nelson 2005.)

Today's dry-mesic woodlands historically contained a more open understory due to frequent fires.

Woodlands occupy less fertile soil types as well as characteristically drier aspects and landscape stations. Forests, conversely, develop in richer environments.

Often referred to as “Open Woodland”; woodlands, and all the rich flora associated with them, do much better when plenty of light gets to the forest floor.

One unmistakable indicator of open woodlands are “wolf trees” – gnarled, venerable, twisted canopy trees with spreading crowns and lower branches; a clue to the trees prior open grown condition.

"originally more or less open with an abundant growth of grass covering the ground ... all the western and southern portions of the county were grass covered, open timberlands" (Krusekop et al 1921.)

Woodlands support a forb-rich, grassy (graminoid) ground cover which is present all growing season - different than forested natural communities which have a more ephemeral ground cover.

Woodlands are all about Oaks!

Oaks dominate most woodlands but oak-hickory and oak-pine midwestern woodland communities are prevalent.

Maximum longevities of dominant tree species may range from 200 – 400 years.

Woodlands are fire adapted natural communities as are the flora and fauna that occupy these timbered lands .

Specific species of oaks are particularly well adapted to compartmentalize fire damage.

Non-typical Forests.

Open woodland communities were categorized in many ways historically one of the most common was the term: ***barrens****.*

The historical record gives us clues as to what presettlement natural communities once were and what disturbance factors influenced these areas.

That record may include government land office notes, fire scar/dendrochronological records, historic accounts, and other public records.

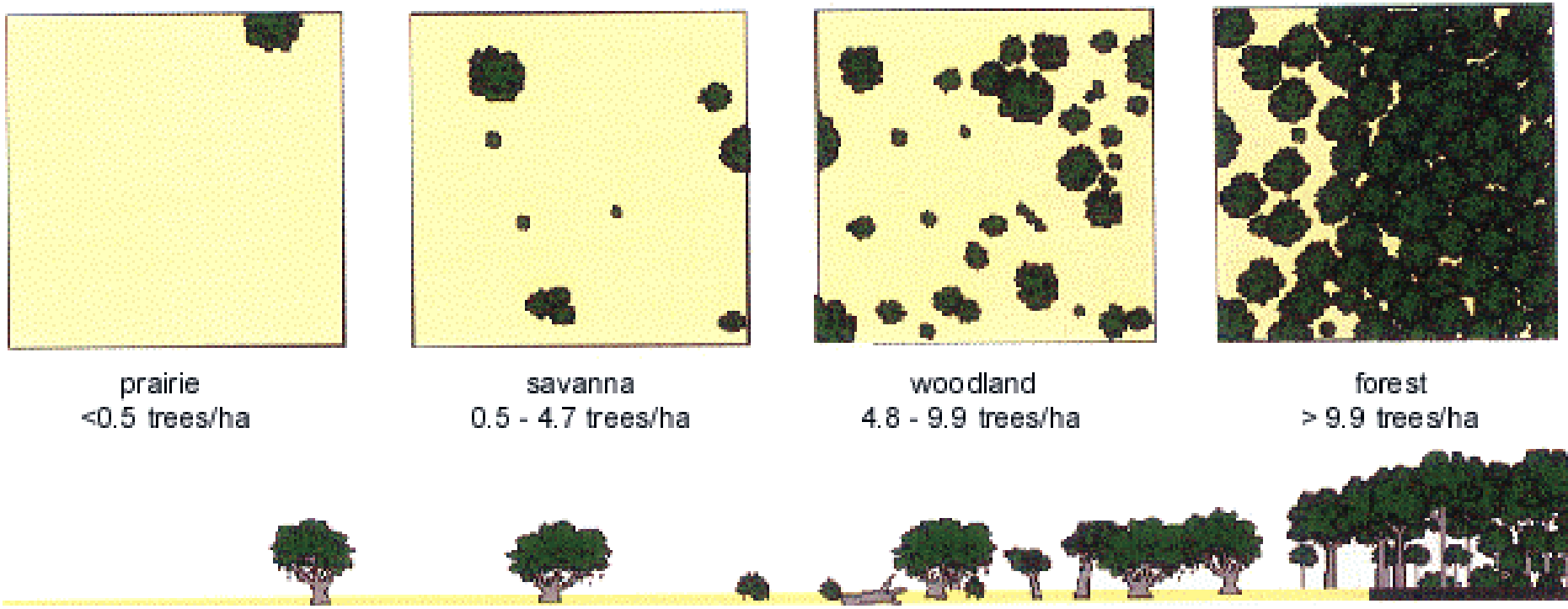
Non-typical forests were described in many ways. Barrens, balds, prairies, savanna, long grass, glades, “oak openings”, “this mile tall grass”, “rocky, rolling, oak timber” and many other personal descriptions were very prevalent in historic survey notebooks.

The surveyors rarely used the phrase “open woods” but in their notes the openness can be measured by the unusual distances from section corners to witness trees.

"Barrens" was used in referring to a variety of grass-brush-timber mixtures. Some land in Perry County was "sparsely wooded with Black jack, Post Oak, and Black Hickory – forming what are oak openings or barrens" (Shumard 1873)

Most commonly, "barrens" indicated stunted or large trees, usually scattered, but including considerable grass

"Some portions ... Partake more or less of the character of prairie lands, the trees being so scattering as to cause a dense growth of tall grass over the high country, and along slopes"



During presettlement times, surface fires occurred every 2 to 24 years with an average fire return interval of about 6 years (Guyette and Cutter 1991).

Periodic “fire-free” intervals of 10-20 years permitted sporadic recruitment of oaks and hickories into the overstory (Johnson 1992).

Fires are variable. Fire intensity, rate of spread, the continuity of the fire front , the season of burning, and many other abiotic and biotic factors determine pyrodiversity.

Historic fires were very pyro-diverse. Historic fires acted in intact natural communities, often over vast landscapes, and through varying (and cyclic) climatic and seasonal weather conditions.

As stewards of woodlands we should strive for as much pyrodiversity as we can attain within the confines of contemporary limitations.

So What is a Woodland?

- Woodlands are fire adapted.
- Trees tend to be open-grown with spreading crowns; “Wolf Trees.”
- Distinctive abundant ground flora due to open canopy and ample available sunlight
- Ground flora tends to be grasses, sedges, legumes, and fall blooming forbs (as opposed to spring ephemerals; more prevalent in forested natural communities)
- Woodlands and Barrens occupy drier landscape positions; governed by slope, aspect, soils, and weather/climatic factors
- Flatwoods communities are considered a woodland type with unique soil characteristics; a fragipan or claypan is a slowly permeable subsoil horizon that ponds water during wet periods.

How do we restore woodlands?

- Look for indicators of what once was.
- "Is this woodland recoverable?"
- "Will management be successful here?"
- "Would I or Could I use prescribed fire on this timber stand?"
- "Will I be able to reenter the stand regularly to conduct management?"
- "What silvicultural methods should I consider to manage this woodland?"
- "What are my longterm goals for this stand? For this land?"

Woodlands are characteristically overstocked in the Midwest.

Timber Stand Improvement (TSI) or thinnings are utilized to reduce the population of trees to more closely match a healthy stand density and composition. Tree species are removed to promote those that belong in woodland settings.

Thinnings allow for sunlight to penetrate to the forest floor. This disturbance stimulates plant growth which means food and cover for many species of wildlife and an opportunity to grow for native plants.

Thinnings may be non-commercial projects or they may employ timber sales to reduce the stand density.

Modified Crop Tree Management

Freedom to Grow Rating

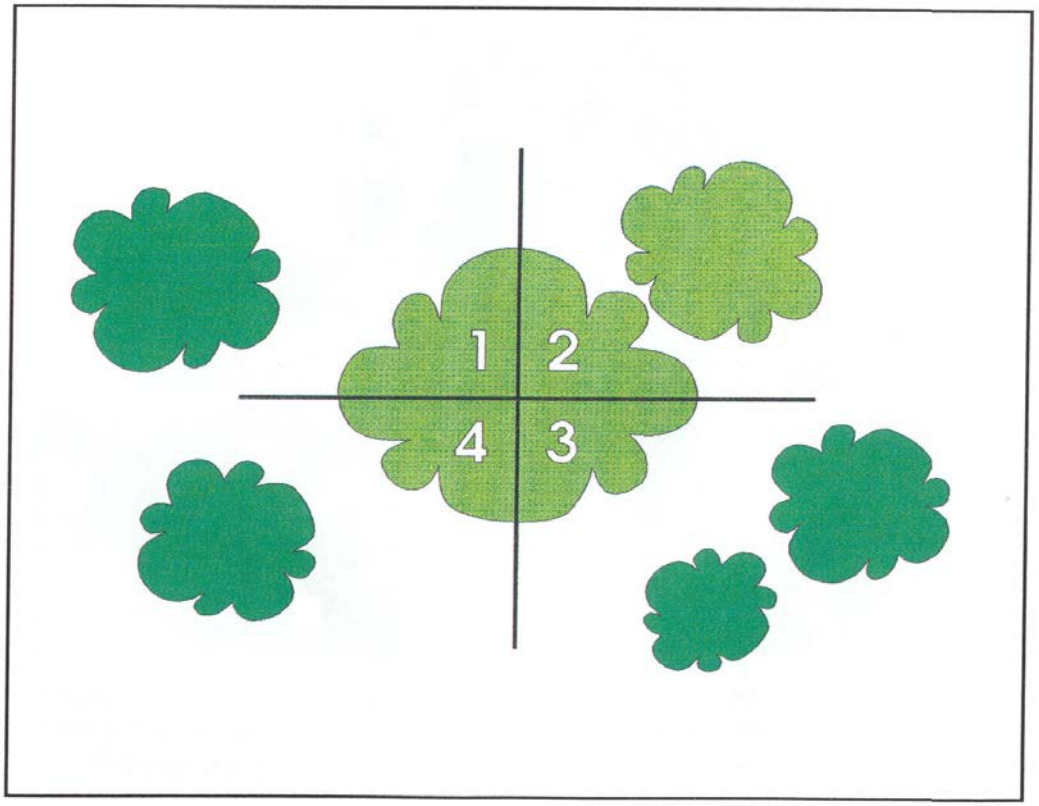
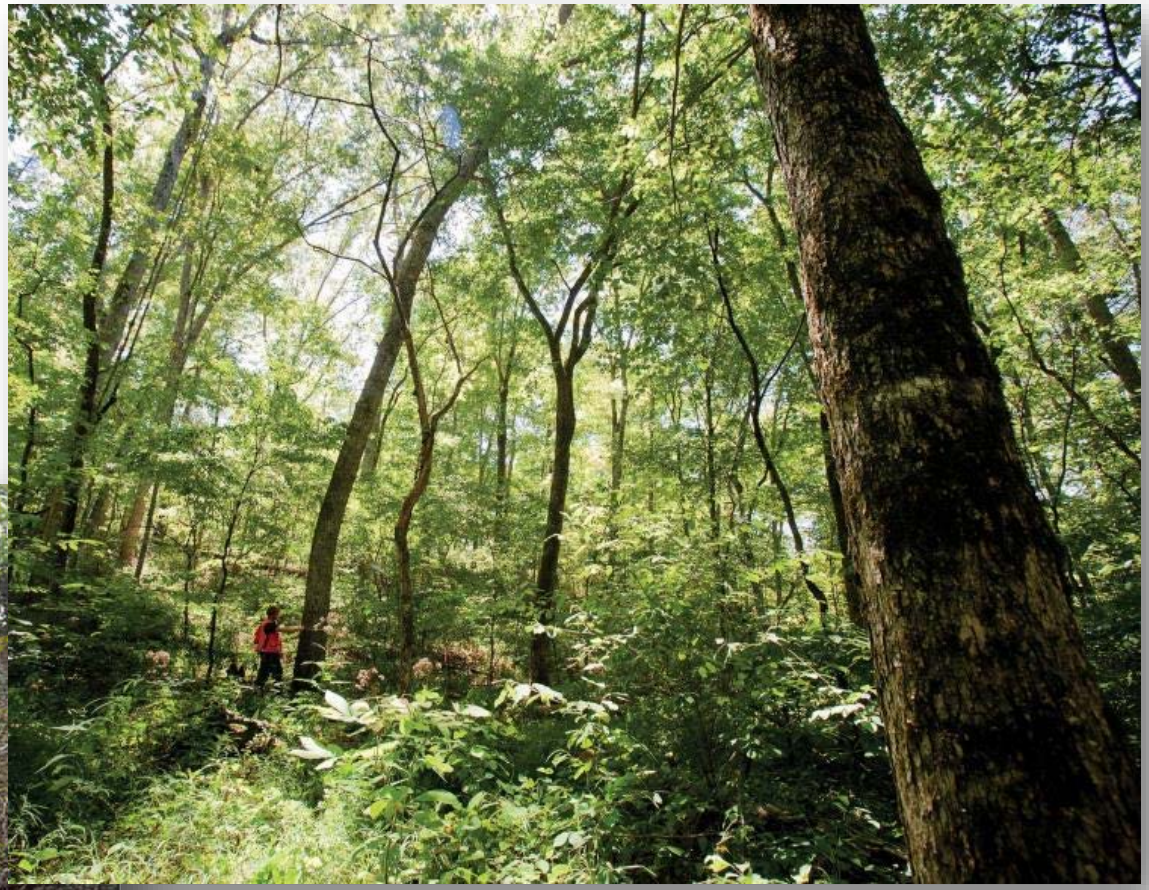


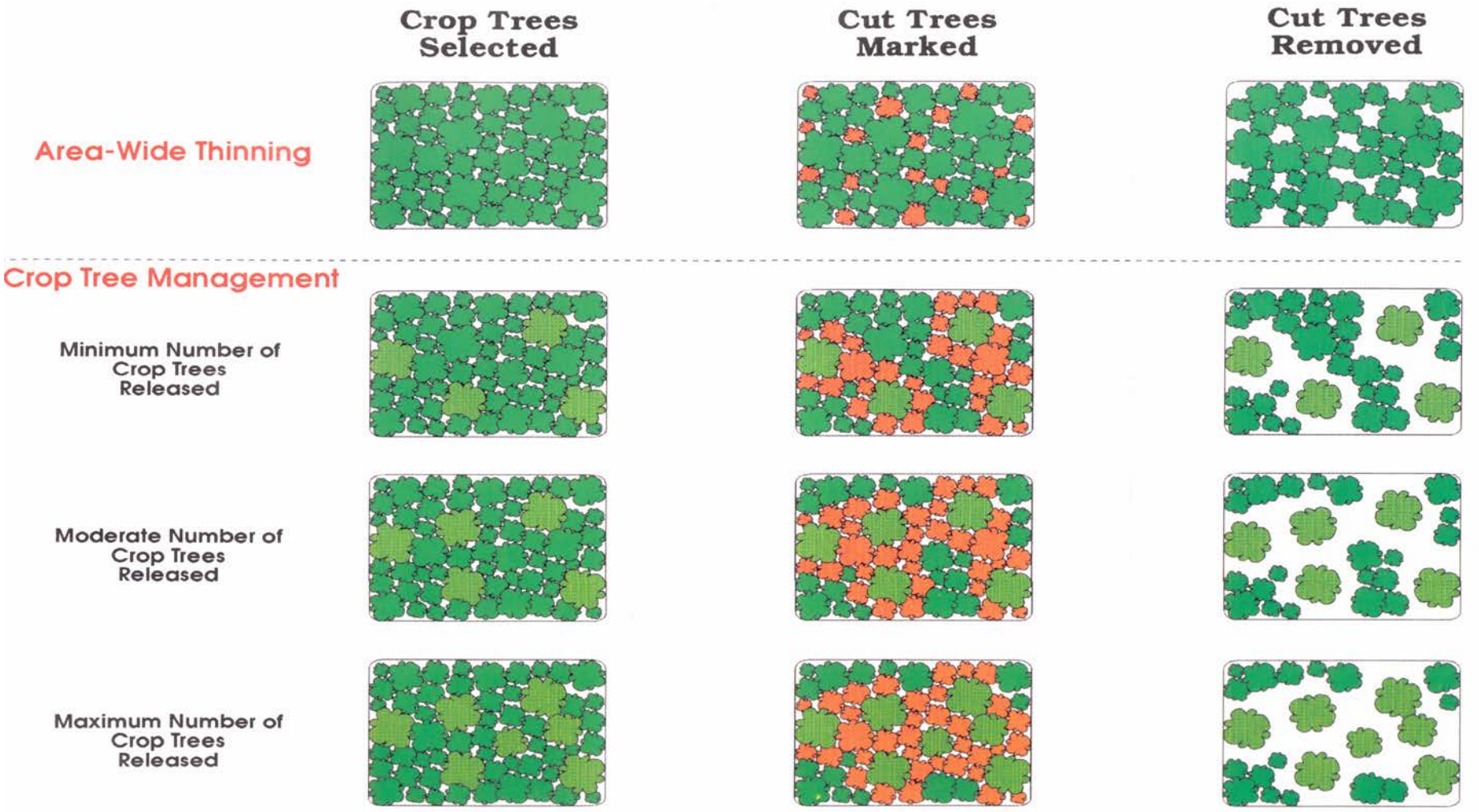
Figure 5. *The crop tree crown in the center of this illustration has been separated into four quadrants, or sides. A free-to-grow rating is determined by evaluating each side for competition from neighboring crowns. This crop tree is free to grow on three sides.*

When conducting crop tree management for woodlands:

- Remove cull, suppressed, and inferior undesirable trees; favor species that prefer drier habitats
- Remove competing trees
- 30-40 per acre
- Soft mast and hard mast
- Den trees
- Snag trees
- Tree species diversity



Crop Tree Release



Managing Woodlands for Natives and People

Maintaining healthy woodlands promote populations of game species; a more resilient and rich flora, and a diverse native fauna.

The native flora and fauna of (natural communities) i.e. woodlands, can provide recreational and health benefits to all ages.

What goals do you have for your woodlands? Managing oak natural communities involves careful considerations.

Restless Natives

Many native Illinois plants and animals call oak natural communities home. Restorations promote the recovery of native species and improve the health of Illinois timbered lands.

There are many species that thrive in woodlands and are themselves woodland indicators.

These are just a few of those….

Mammals

Disturbance regimes that maintain woodlands encourage beneficial changes in the native flora (structure and density) which equates to more available insects, small mammals, and the predators that utilize those specific prey resources.

Take the time to be observant in your woods. Use new tools to learn about the wildlife out there.

Eastern Chipmunk

Snag trees, wolf trees, down woody debris, and an abundance of acorns, native seeds, and mast are good for chipmunks!

And what is good for chipmunks is certainly good for timber rattlers!

Timber Rattlesnake

There are several Illinois reptiles that are characteristic of oak woodland natural communities.

Herpetiles….

Allowing more light to reach the “forest” floor provides a drier environment with more suitable basking areas.

Coarse woody debris from silvicultural treatments provide habitats for secretive herpetiles and refuge for small mammals.

Ringneck Snake

Worm Snake

Five-lined Skink

Broadheaded Skink

Wood Frog

Eastern Narrowmouth Toad

Many semi-fossorial herpetiles and those reptiles and amphibians that use trees and down woody material flourish in managed oak communities.

Woodland natural communities may support from 15 to 20 herpetile species.

Gray Treefrog

Bats!

Dead standing snags, hollow den trees, and trees with shaggy or scaly bark are important to Illinois wildlife. This Indiana bat approves of this roost.

This comfortable Red Bat is at rest in a freshly fallen Post Oak leaf “bed”.

Dumb Mammals

Managing woodlands will improve mammal populations. And everyone will be happy!

A healthy woodland may support of over 20 species of mammals.

Not all woodland species are specialists, in fact, many of them are generalist species that are very adaptable.

When conducting management actions to promote woodlands remember that there are considerations that one may not want to overlook.

- Down woody debris
- Tree mortality (not always bad)
- Existing snags and dens
- Wind thrown trees
- Soft mast trees
- Trees with unique features
- Old legacy trees that would call you “Sonny”.

… and Birds.

Eastern Screech Owl

Cuck-wills Widow

Whipoorwill

Nightjars (whipoorwills and chuck-wills-widows) prefer open woodland communities. Timbered lands that they can fly through and forage for insects are important for this organism's life history.

Red-headed Woodpecker

Several woodpecker species are experiencing significant declines – woodlands provide much needed habitat.

The Central Hardwood Joint Venture identifies several woodland priority bird species that are experiencing population declines

Forest-Woodland Priority Species	Continental Concern	Regional Concern
Red-cockaded Woodpecker* (extirpated)	Y	Y
Brown-headed Nuthatch*	Y	Y
Cerulean Warbler	Y	Y
Swainson's Warbler	Y	Y
Bachman's Sparrow*	Y	Y
American Woodcock	Y	Y
Red-headed Woodpecker	Y	Y
Wood Thrush	Y	Y
Worm-eating Warbler	Y	Y
Kentucky Warbler	Y	Y
Ruffed Grouse		Y
Yellow-billed Cuckoo		Y
Whip-poor-will		Y
Northern Flicker		Y
Eastern Wood-Pewee		Y
Blue-gray Gnatcatcher		Y

* denotes pine woodland specialists

Eastern Wood-Pewee

Species in the greatest need of conservation attention typically have some combination of relatively small ranges, small population sizes, declining trends, and reliance on threatened or already degraded habitats.

Blue-gray Gnatcatcher

Great Crested Flycatcher

Scarlet Tanager

Wood Thrush

Woodlands are known to support over 40 species of breeding birds and are notably important for migratory species.

Yellow-billed Cuckoo


Yellow-breasted Chat
© Danny Brown

Lepidopterans!

Giant Swallowtail

There are even insects that are considered open woodland indicator species. Some of them notably showy!

Hoary Edge Skipper

Pink-striped Oakworm Moth

Baltimore Checkerspot

Lepidopterans are closely associated with host plants. Hoary edge skipper utilizes desmodiums (pea family), Pink-striped Oakworm utilizes oaks, and Baltimore checkerspot is dependent on false foxglove and turtlehead.

Mourning Cloak

Wood Nymph

Insect diversity in woodlands is notably species rich with species of katydids, leafhoppers, and grasshoppers well represented.

Woodland Indicator Plants

There are a suite of native Illinois plants that call oak natural communities home, some of these plants are indicators of woodland natural communities.

These are just a few of those….

Farkleberry, Vacinium arboreum

New Jersey Tea,
Ceanothus americanus

Aromatic sumac, *Rhus aromatica*

American Hazelnut, *Corylus americana*

Woodlands at times have a limited shrub layer, due to fire regimes, but there are shrubs that flourish in between disturbance events.

Large Flowered False Foxglove, *Aureolaria grandiflora*

Culver's Root, *Veronicastrum virginicum*

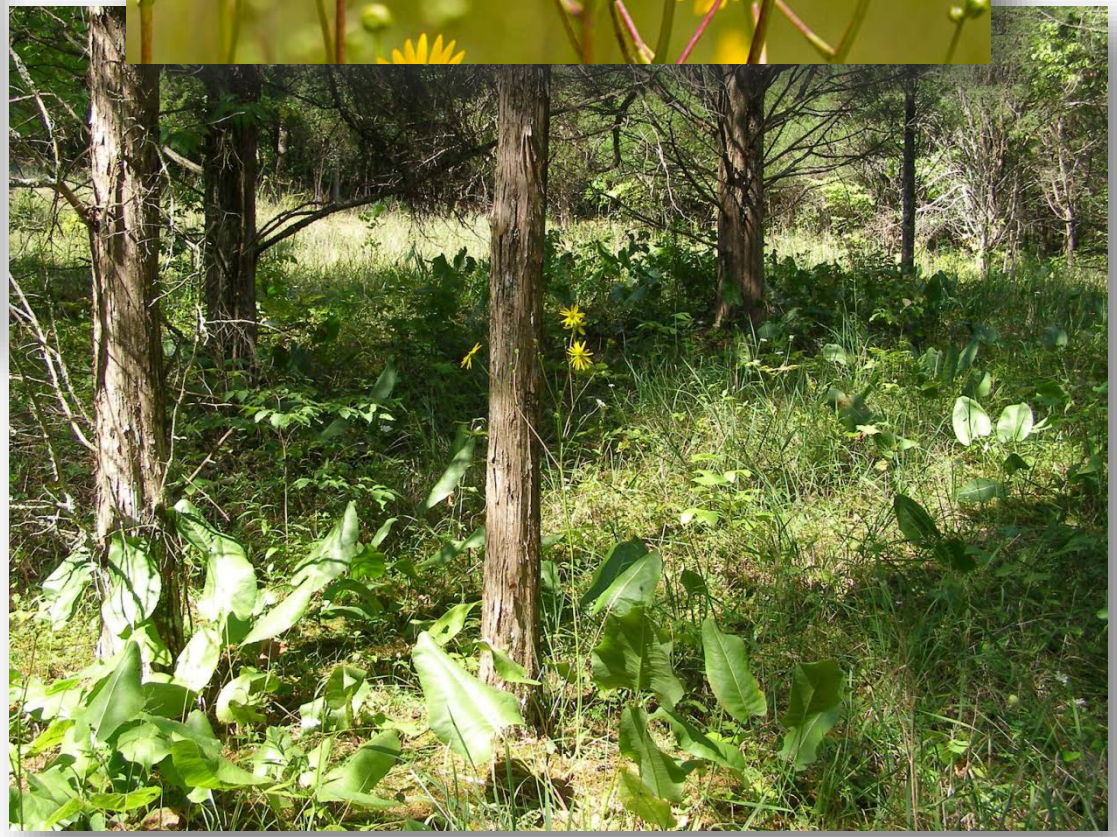
Woodland flora varies from woody species, to semi-shrubby flowering plants, to true herbaceous varieties. Large flowered false foxglove prefers rocky xeric openings and Culver's root favors a woodland edge.

Starry Campion, *Silene stellata*

Left: Slender Mountain Mint, *Pycnanthemum tenuifolium*

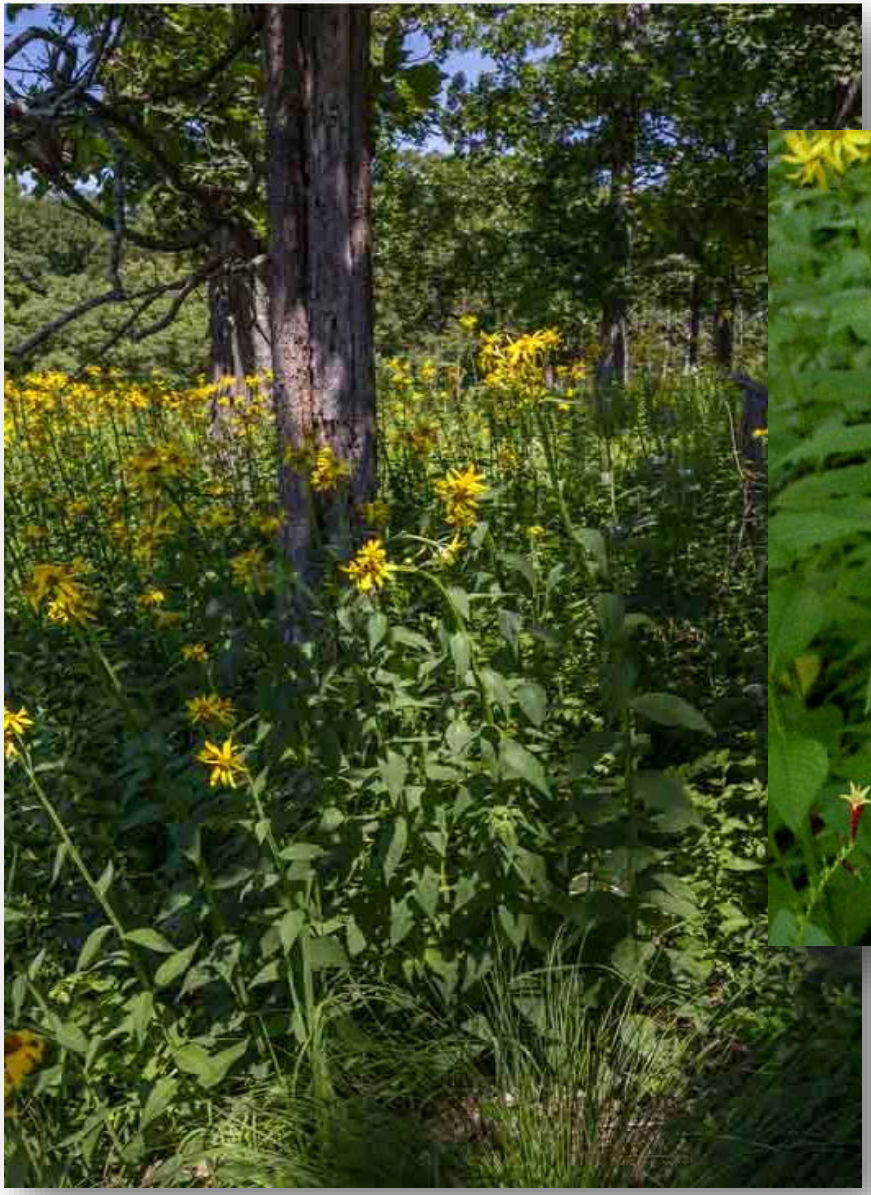
Below: Bottlebrush Grass, *Elymus hystrix*

Clockwise: Bristly Sunflower, Dotted Blazing Star, Blue-Stemmed Goldenrod, Wild Quinine, Sampson's Snakeroot



Prairie Dock, Silphium terebinthinacium

Deep rooted “prairie perennials are often indicators of historic open woodland communities.



Wingstem (Yellow Crownbeard), *Verbesina helianthoides*

A healthy 100 acre woodland may support upwards of 200 native plant species.

Hoary Puccoon, *Lithospermum canescens*

Clockwise from bottom left: Woodland Aster (*A. anomalus*), Climbing Milkweed (*Matelea decipiens*), Woodland Bee Balm (*Monarda bradburiana*), Dittany (*Cunila origanoides*)

Clockwise from top left:
Butterfly Pea (*Clitoria mariana*),
Shooting Star (*Dodecatheon meadia*),
Indian Physic (*Porteranthus stipulatus*)

Managing your woodland communities benefits a surprising diversity of organisms. From Eastern Wild Turkeys to Shooting Stars to Giant Swallowtails

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Contact Information:

Bob Gillespie
Natural Resources Coordinator
Prairie Ridge State Natural Area
4295 N. 1000th Ave.
Newton, IL 62448
Email: robert.gillespie@illinois.gov

O: 618/ 783-2685
C: 618/ 406-1181