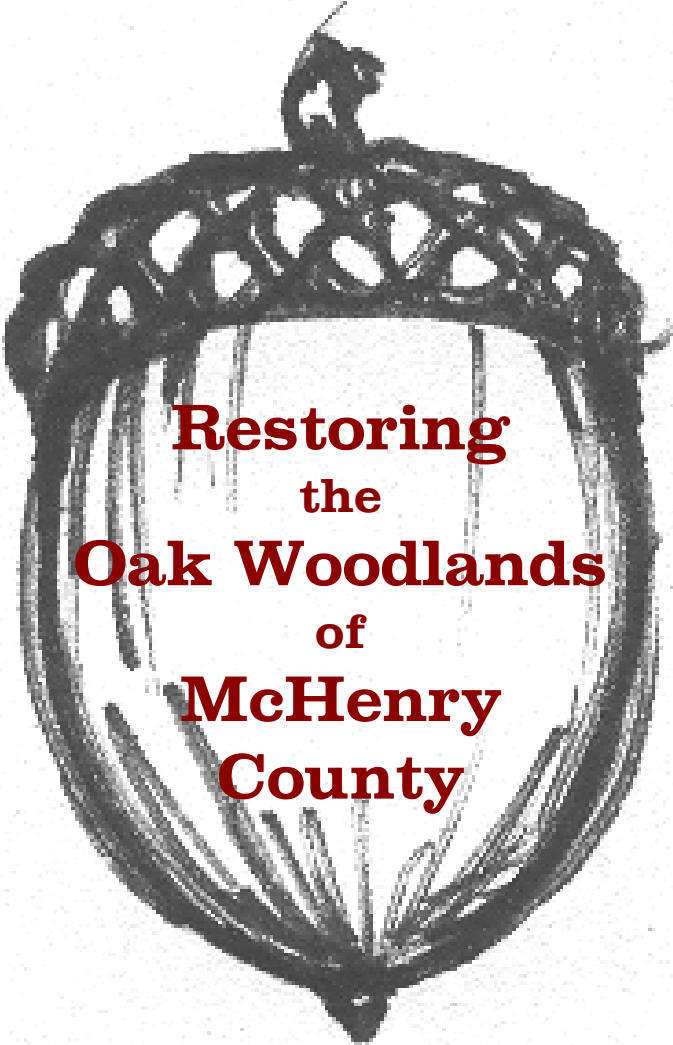


*“He who owns a veteran bur oak owns more than a tree.
He owns a historical library, and a reserved seat in the theater
of evolution. To the discerning eye, his farm is labeled
with the badge and symbol of the prairie war.”*

~ Aldo Leopold



**Restoring
the
Oak Woodlands
of
McHenry
County**

Woodlands—on hearing the word, many of us are transported back to a particular time and place of childhood. Your woodland might have covered the rolling hills of a small corner of McHenry County with spreading oaks and towering hickories. Or it might have been a stand of wild plums and hawthorns in the heart of town, stretching over what would later become four or five house lots.

Regardless of the kind of woodland, it was magical. When you stepped off the bluegrass lawn and into the woods on a spring day, you crossed over to another world. As children, we knew that woodlands provided solace on some days and a playground on others. We also knew them to be spots of singular beauty. In other words, woodlands were a place set apart from other places...and so for many of us they remain.

This booklet introduces the topic of oak woodland health and is directed at those who own woodlands to enjoy their beauty and tranquility, to protect nature and biological diversity, and to conserve wildlife habitat. It is especially aimed at those for whom woodland ownership evokes a stewardship response.

This is not a comprehensive management guide. Rather, we offer a few stewardship options for a handful of the most commonly faced management issues. Addressing these issues can be a first step to the return of woodland health.

| Table of Contents | Page |
|---|-------------|
| Value of McHenry County's Oak Woodlands | 1 |
| Getting to know your Woodland | 2 |
| Some Stewardship Options | 3 |
| Recognizing and Controlling Invasive Plants | 4 |
| Filling in the Gaps | 9 |
| The Special Case of Oaks | 9 |
| Other Local Woodland Problems to Note | 11 |
| Limiting Damage from Livestock and Deer | 12 |
| Avoiding Further Fragmentation of Woodlands | 13 |
| Permanently Protecting your Woodland | 15 |
| Resources | 16 |

The extent and health of McHenry County’s oak/hickory woodlands has been greatly diminished. Development, logging and grazing have compromised both the structure (layers) and composition (species makeup) of woodlands. The canopy and understory layers often are blended, and there may be a profusion of invasive species in the shrub and herbaceous layers.

One significant change in local oak woodlands is the decrease in the number of young oaks to replace those that have been removed through harvesting, old age or disease. Unlike shade-loving species such as maple or basswood, oak seedlings and saplings require abundant sunlight. As our woodlands become more dense with shade-tolerant trees, less and less sunlight reaches the woodland floor. With the loss of oaks—McHenry County’s most prominent and important hardwood tree—from the species mix in our woodlands, the look, feel and function of those natural communities change dramatically.

Value of McHenry County’s Oak Woodlands

Historically, woodlands have provided shelter and a host of forest products such as lumber, fuel, fencing material, railroad ties, trestle timbers and telephone poles. Though woodlands were essential to settlement, they were at the same time viewed as an impediment by Euro-American newcomers. On encountering woodlands, their first response was to clear the trees, remove the stumps, and create cropland.

Woodlands furnish food and habitat for a variety of wildlife. Those of us who enjoy the company of wildlife, or who appreciate wildlife as a source of food or income, certainly value forest communities. The beauty of woodlands is a source of inspiration for writers and painters. Others think of woodlands as a place of renewal for care-worn souls—a sanctuary of sorts.

In addition to these more obvious, enduring values of woodlands, healthy forests function as important biological systems. These benefits—also referred to as “environmental services”—may go unnoticed, and therefore unappreciated, but are far too critical to

dismiss. Among them are the ability of woodlands to deliver these benefits:

- Erosion Control—Woodlands intercept rainfall and slow runoff.
- Groundwater Recharge—Runoff that has been slowed is more readily absorbed by the soil or taken up by trees and transpired into the atmosphere and is therefore less likely to overwhelm local streams and other water bodies.
- Air and Water Purification—Woody and herbaceous plants take up water-borne minerals and nutrients through their roots and remove pollutants from the air through their leaves.
- Carbon Storage—Woodland plants convert atmospheric carbon dioxide to biomass through photosynthesis; trees are especially important in the long-term storage of carbon as woody tissue, helping to reduce or slow the build-up of carbon dioxide in the atmosphere.

Woodlands function best when all the parts—the distinct layers composed primarily of diverse native species—are in place. Stewardship that maintains or improves the health of the woodland over the long run will maintain or improve the overall health of the woods. Woodland health in turn ensures the continuation of woodland products we appreciate: namely wood, wildlife, aesthetics and recreation.



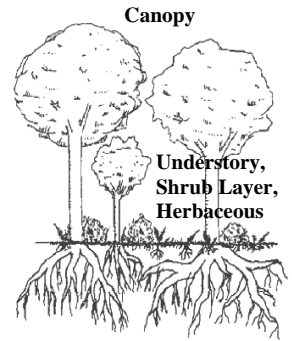
Getting to Know Your Woodland

The first step in caring for your woodland is becoming aware of what you have. A walk through your woodland with a trusted professional, a knowledgeable amateur, or a plant identification guide is a good way to start. Take notes or photos or make

drawings of what you find. The tree, shrub, and herbaceous species provide clues to the type of woodland you have.

A woodland is a biological community made up of compatible woody and herbaceous plants, animals and an array of soil life. Trees are the dominant element of a woodland community.

Each woodland community contains species in the canopy, understory, shrub layer and herbaceous layers that are particular to that community—as well as species that are widely distributed. By recognizing species and learning about the environmental conditions specific to your woods, you will be able to classify your woodland. The most common type of woodland found in McHenry County is the Oak-Hickory woods or savanna.



While you are taking stock of the type of woodland you have, you also might consider these additional questions:

- Are there exotic or invasive species in the woodland? What kind and to what degree?
- Does the woodland include four distinct woodland layers: canopy, understory, shrub and herbaceous?
- Is there evidence of damage from wildlife or livestock?
- Is your woodland part of a larger wooded area or is it a smaller, isolated woodland?

Many woodland owners think they are doing a good thing by “letting it go natural” and not doing any management. This is not a good option if you want a healthy oak woodland. Doing nothing allows invasive species to take over, eventually overwhelming the oak ecosystem.

Some Stewardship Options

Woodlands are biological communities made up of compatible woody and herbaceous plants, animals, and an array of soil life. Naturally, you as a woodland owner are a member of this community as well. The stewardship options we’ve suggested here are ways for you to become an even more active participant.

The relationships over time among plants, animals, soils, climate and topography—combined with the actions of previous woodland users or owners—have made your woodland what it is today. The stewardship choices you now make can maintain or improve the health of your woodland “for those who follow.”

Because this booklet is not meant to be a comprehensive management guide or manual on woodland restoration, there are a number of stewardship options that aren't discussed. There also are many additional forestry references in addition to the partial list provided in the back of this booklet.

The goal of woodland stewardship is to maintain or improve woodland health. As you become better acquainted with your woodland, you might detect signs of past disturbance. Invasive plants, gaps in woodland composition and structure, deer and livestock damage, and habitat fragmentation signal disturbance and all can threaten woodland health.

Below are several stewardship options to counter these threats. These stewardship tools also can have the effect of protecting the associated values of woodland aesthetics, biological diversity, and wildlife habitat. For additional management suggestions, contact us or visit ConserveMC.org. TLC has a variety of online resources and educational programs geared toward oak woodland stewardship. You may also enjoy learning with and from others who share your interests and concerns.

Recognizing and Controlling Invasive Plants

Plants found where they do not naturally occur are considered non-native. If they also grow and spread rapidly, allowing them to establish over large areas and displace native vegetation, they are termed invasive. Ironically, many invasive plants found their way to McHenry County's woodlands after being introduced as species that were thought to be desirable because of their ornamental or conservation and wildlife values. Invasive species thrive in part because of the absence of natural controls, such as insect pests or disease, in their new habitats.

Conservation biologists consider invasion by exotic species, along with habitat destruction, to be the two great destroyers of biodiversity worldwide. Some of the known effects of invasives are:

- Increased pressure on threatened and endangered species and their habitats.

- Loss of native sources of food and shelter important to local insects, birds, and other wildlife.
- Alteration of ecological processes, such as the suppression of tree seedlings needed to regenerate a woodland.

The invasive plant species that most threaten the health of our woodlands are garlic mustard, buckthorn, multiflora rose, and honey-suckle. These species can invade any woodland community. Both mechanical and chemical methods can help control these invasives. Often the best approach is to employ more than one method. The aim here is to improve the understory habitat for native tree seedlings, shrubs, and native herbaceous vegetation.

Garlic Mustard (*Alliaria petiolata*)

This herb was used in cooking by early settlers who brought it from Europe. Its leaves and stems have a distinct garlicky odor when crushed.



First-year plants feature a clump or rosette of scallop-shaped leaves. Mature plants, from 12 to 48 inches, have tiny, white flowers and slender fruit capsules that produce pepper-like seeds. Growth starts early in the spring,

rapidly producing a dense cover that shades out tree seedlings and early native wildflowers—like bloodroot and trillium. The seeds are carried on the feet of humans and animals, animal fur, moving water, clothing and equipment.

Garlic mustard is found throughout the county. The key to control is getting an early start before plants become widespread. Garlic mustard forms many seeds that can remain alive in the soil for as long as five years, allowing the species to quickly dominate the woodland floor. Control methods, therefore, have to be repeated, and annual monitoring is necessary.

CONTROL METHODS

The main objective is to keep second year plants from flowering and producing seeds with a mower or weed-whip. Pulling, cutting and use of herbicides are options. Hand-pulling is a good option when infestation is light and there also are desirable native species present. Pull when soil is moist, grasping low and firmly on the plant in order to remove entire root system. Pulled plants should be bagged and removed from the site, especially if flowers—with seeds in the making—are present.

Stem cutting may be preferred for larger infestations. This can be done through much of the spring. Cut stems as close to the ground as possible. If flowers or seed pods are present, bag clipped stalks and remove from the site. With mature pods, use care to avoid scattering the seed.

The herbicide, glyphosate (i.e. Roundup) is effective for very heavy infestations where the risk to native plant species is minimal. Glyphosate is quickly inactivated in soil and has no residual effects, but it will kill any plant it contacts, so extreme care must be taken to direct the herbicide and limit drift. This herbicide can be applied any time of year on green plants as long as the temperature is above 50 degrees Fahrenheit and no rain is expected for 8 hours. Early spring or late fall applications are less likely to harm desirable native plants.

Common Buckthorn (*Rhamnus cathartica*)



Common buckthorn originated in Eurasia and was introduced to N. America as an ornamental plant in the 1800s. Considered a tall shrub or small tree, it can grow up to 25 feet and 10 inches in diameter. Buckthorn bears

round, black berries. Its leaves have tiny teeth on the margins and twigs often end in thorns. Under the Illinois Exotic Weed Act, exotic buckthorns cannot be sold in Illinois.

CONTROL METHODS

Studies have demonstrated that applying glyphosate herbicide to the cut stems of buckthorn is effective in killing invasive buckthorn patches. Follow-up treatments are necessary, however. Others have reported good results in applying triclopyr herbicide (i.e. Garlon) to cut stems both between late May and October and during the winter months.

Cut stems with a hand lopper or small chain saw. Apply herbicide to the freshly-cut surface. By adding blue or red dye to the herbicide solution, you'll be able to see which stumps you've treated.

Multiflora Rose (*Rosa multiflora*)

This plant was brought to the United States from Japan in 1866 for use as a rootstock for ornamental roses. Later, it was promoted for use in controlling soil erosion and as a “living fence” benefiting wildlife as a shelter and food source. It occurs statewide and is classified as a noxious weed because its rampant, tenacious growth in



pastures disrupts cattle grazing. Multiflora rose, like buckthorn, can form impenetrable thickets that exclude more desirable native plant species.

This rose is a dense, spreading shrub with curved thorns and wide, arching stems. Clusters of small, white flowers appear in the spring followed by small, hard, red fruits (hips). Birds eat the fruit and spread the seeds. A multiflora rose plant annually may produce 1,000,000 seeds, which can remain viable in the soil for up to 20 years.

CONTROL METHODS

Mechanical and chemical methods are the most widely used for managing this invasive plant. Frequent, repeated cutting or mowing (3-6 times during the growing season for 2 to 4 years) is one option. To minimize disturbance in high-quality natural areas, cutting of individual plants is preferable to mowing. Application of glyphosate herbicide to

freshly-cut stems may be the most effective method of control, especially if the chemical is used late in the growing season.

Honeysuckle (*Lonicera japonica*)

This Eurasian shrub was introduced to North America as an ornamental in 1752. Relatively shade-tolerant, it occurs in forest edges and in woodlands that have been grazed or otherwise disturbed.



Exotic honeysuckles are stout, erect shrubs growing 3 to 10 feet tall. They have smooth, bluish-green leaves, pairs of fragrant, pink to red, tubular flowers, and yellow, orange or red

berries. Honeysuckle grows in dense thickets, shading out more desirable native, understory plants, such as woodland wildflowers and young trees.

CONTROL METHODS

Hand pull seedlings and small plants in lightly-infested areas, taking care to limit disturbance to soil.

In shaded woodland habitat, where exotic honeysuckle tends to be less resilient, repeated clipping of the stems to ground level during the growing season may be effective. *However, if cut only once and left to grow, exotic honeysuckle often will form stands that are more vigorous than they were prior to cutting.*

Herbicide application will provide more effective control. In established stands, cut stems to the ground and apply glyphosate to the cut surface.

Controlling invasives in your woodland requires a long-term commitment, including annual monitoring and repeating treatments as needed. Invasives can overwhelm and displace existing vegetation with stunning speed and tenacity.

Use pesticides wisely: always read the entire pesticide label carefully, follow all mixing and application instructions, and wear all recommended personal protective gear and clothing.

Filling in the Gaps

As you become more familiar with your woodland you may sense that something is missing. There may be gaps in the structure of the woodland—the canopy, understory, shrub and herbaceous layers may not all be present. Or desirable native species may be lacking from the community.

If desirable native species are lacking, you can help speed recovery by planting native trees, shrubs and herbaceous plants. The type of community your woodland represents will guide your decisions on what species are appropriate to plant. A look at a similar, neighboring woodland can provide ideas on species to include as well.

The Special Case of Oaks

One increasing gap in local woodlands is the decline in the natural regeneration of oaks. Oaks regenerate from stump sprouts and from acorns, but neither avenue consistently provides numerous, viable sprouts or seedlings. In addition, most woodlands provide too much shade for sprouts or seedlings to thrive. Some of the stewardship options to counter this regeneration problem, in addition to planting oak seedlings in open areas, include:

- Controlling less desirable trees and shrubs that provide too much shade;
- Selectively harvesting groups of trees or heavily thinning to provide more sunlight to seedlings; and
- Marking and protecting young oaks.

The decline in oak regeneration was brought on in part by the suppression of fire during European settlement. Prior to settlement, Native Americans used fire for a variety of reasons—to promote fruit and berry production, to ready sites for crop planting, to enhance hunting success by concentrating game, and more. These generally were periodic, low-intensity surface fires ignited in the spring or fall. The thick bark of mature oaks and the stump-sprouting ability of oak seedlings and saplings enabled them to withstand these fires. Less fire resistant species did not survive, allowing oaks to become dominant. The continued suppression of fire has led to dense stands of fire-sensitive, shade-tolerant trees at the expense of oak regeneration.

TLC is reintroducing and teaching woodland landowners about prescribed burns to encourage oak regeneration, to control invasive



plants, and to enhance the growth of desirable grasses and herbaceous plants. In some instances, you may want to consider prescribed burns as a stewardship option.

Whether you encourage oak regeneration by controlling individual trees or shrubs, by harvesting groups or a large area of trees, or by burning—or if you simply choose to do nothing—your woodland will continue to change. These changes—whether natural or induced by humans—will affect woodland aesthetics as well as function. If you need help developing a management plan, contact us!

While we’re speaking of gaps—one last suggestion—don’t make unnecessary gaps in the canopy by removing dead trees. If left standing, they provide food and shelter for many birds, insects and mammals.

Other Local Woodland Problems to Note:

Oak Wilt

Accurate diagnosis of oak wilt is essential before costly control efforts begin. Foresters, arborists, or pathologists experienced with oak wilt can often diagnose the problem in the field and help property owners develop a plan to limit damage to other trees. Properly sampling suspect trees and culturing in a qualified laboratory may be necessary in some cases.

The oak wilt fungus moves from tree to tree in two ways: transported underground through the roots or overland by insect vectors.

Local spread of oak wilt: Most new tree infections occur as a result of the fungus moving from an infected tree to a nearby healthy tree through connected root systems, a process called "local spread." The roots of trees in each oak group commonly graft to roots of other trees in the same group, forming a continuous underground network. When one tree in a group becomes infected and dies, the fungus spreads through the connected root systems, killing more trees and creating an "infection center."

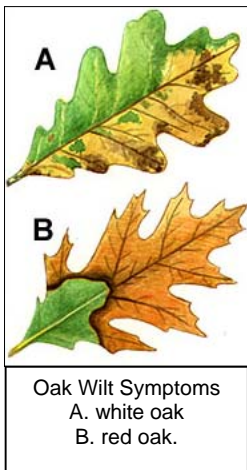
Root grafts do not commonly occur between trees of different species groups, although exceptions occur. Usually a mix of species in a given location will slow local spread and limit the impact of the disease.

Depending upon soil type and the mix of tree species in a forest or yard, infection of healthy trees through root grafts can occur at some distance (up to 100 feet or more) from an infected tree. Sandy soils are conducive to the formation of widespread root systems, increasing the likelihood of root grafts occurring farther away from a diseased tree. Some oak species, including northern pin oak, often grow in large groups of similar-aged trees that share a common root system. Such situations can lead to rapid expansion of oak wilt if even one tree in the group becomes infected.

White Oaks: White oaks usually die slowly, one branch at a time, over

a period of one to many years. Wilting and death of leaves on individual branches occur in a similar fashion to the disease in red oaks, but usually progresses much more slowly. Affected leaves exhibit a pattern of discoloration similar to that seen in red oaks, with discoloration proceeding from the margins to the base, sometimes interrupted by the leaf veins. Brown streaking in the outer growth rings is often readily apparent even to an untrained observer in infected white oaks and bur oaks, but may be missing.

Red Oaks: Oak wilt is usually identified in red oaks by the symptoms of rapid leaf discoloration and wilting. Often the initial symptom is a subtle off-green color shift that may be visible in the upper portion of the tree crown. This symptom is apparent in the northern part of the disease range in late June to early July. Shortly after this initial color shift, the leaves begin to wilt from the top of the crown downward. As the disease progresses, individual leaves quickly discolor, taking on a "bronzed" appearance. The discoloration progresses around the margins of the leaf from the tip to the base. The progressing discoloration may be interrupted by the leaf veins, as shown in the white oak leaf in Fig. A, or may affect the entire upper portion of the leaf, as shown in the red oak leaf in Fig. B.



Leaves are cast rapidly as the infection progresses. Commonly, infected trees are almost entirely defoliated within a few weeks of symptom onset. Fallen leaves usually are brown at the tips and margins, and sometimes green at the base and along the lower veins. Trees are often killed in groups or disease "centers," when infection occurs through grafted roots. Infected red oaks should be cut down and all debris removed as soon as possible.

Limiting Damage from Livestock and Deer

Historically, landowners have used oak woodlands for grazing land. While this controls invasive shrubs like buckthorn and honeysuckle, livestock nearly always harm woodland health by:

- Damaging flowering plants of the woodland floor;
- Opening the woodland floor to invasives;
- Decreasing tree and shrub reproduction (cattle are especially fond of oak seedlings and saplings); and
- Increasing the effects of stress and disease on trees.

Grazing further degrades woodland health by compacting the soil and increasing erosion. Often, a landowner’s most important stewardship tool is to fence livestock out of his or her woodland.

Deer, especially in the numbers present across the county today, have a similar impact on woodland health. Deer browse woody plants and also herbaceous plants, fruits, and berries. Antler rubbing by bucks in the fall can damage or even kill individual trees.



If deer damage is a concern, do not invite deer to your woodland by putting out salt or by planting special crop mixes intended to entice deer. Other more complicated and expensive control methods are excluding deer with high or electrified fence, frightening them away with exploders, or repelling them with commercial products. We recommend caging new shrubs and trees for at least the first three years.

One way to control deer damage is to allow some deer hunting in your woodland. Aside from coyotes, which will prey on fawns, deer have few natural predators in McHenry County.

Avoiding Further Fragmentation of Woodlands

The miles and miles of almost undisturbed timber present at the time of Euro-American settlement are long gone. Five to twenty-five acre woodlands now are the rule and tracts of larger than one-hundred acres are the exception. The cutting up, or fragmentation, of McHenry County’s woodlands began with the conversion of timbered tracts to farms, towns, railroads, and roads and continues today as new housing developments, utilities, and more roads spring up in what remains of our oak woodlands.

As woodlands are carved up into smaller and smaller pieces, the amount of habitat obviously decreases. In addition, more of what previously had been the interior of the woodland is exposed as an “edge.” Conditions along this new edge are more extreme—sunnier, hotter, drier, colder, and windier. These changed conditions can be detrimental to existing plant, animal, insect, and soil life, altering both the physical character of the woodland and its functions as a community.

In much of the Midwest, one of the effects of fragmentation has been a serious decline in the population of Neotropical migrant bird species. These birds—some familiar like the Baltimore Oriole and Barn Swallow, others perhaps less so like the Loggerhead Shrike and Kentucky Warbler—winter south of the U.S.-Mexican border and migrate north to nest. A decline in both the quantity and quality of habitat—in this case the fragmentation of woodlands—is partly responsible for the threat to Neotropical migrants’ populations. Fragmentation can have similar effects on other wildlife.

You can help curtail fragmentation by:

- Preserving unbroken, interior woodlands and limiting disturbances, such as house and road building, to already disturbed or fragmented areas;
- Minimizing edge by keeping your buildings clustered and near the road, rather than spreading out across a larger area;
- Maintaining the maximum amount of habitat with the least amount of edge by encouraging circular- or square-shaped tracts rather than long, narrow ones; and
- Filling in the larger gaps in your woodland by planting appropriate native trees and shrubs.

To go one step further, you could work with neighbors to link your woodlands by planting native trees and shrubs appropriate to your woodland community.

Permanently Protecting Your Woodland

Finally, you might consider protecting your woodland beyond your lifetime.

Landowners who want to permanently protect natural areas—whether it's a woodland, wetland, prairie, or other wild place—have a variety of options from which to choose. Options for protection range from conservation easements to outright sale of land to a conservation organization. You can choose to retain ownership of your woodland, pass it on to others, or create a public area. Many protection options provide landowners with compensation and/or tax benefits.

Like other kinds of management choices, these options can be used alone or in combination to satisfy your wishes for the land as well as your personal financial needs. Your advisors and The Land Conservancy of McHenry County can help you develop a personalized plan that best suits your land and meets your needs.

**For more information on protection options,
visit The Land Conservancy's website at
www.ConserveMC.org
or call 815-337-9502**

“Few are altogether deaf to the preaching of trees, their sermons on the mountains go to our hearts; and if people in general could be got into the woods, even for once, to hear the trees speak for themselves, all difficulties in the way of forest preservation would vanish.”

~ John Muir, Conservationist, 1838-1914

Resources

Good references to consider as you get to know your woodland include the following:

Land Management Practices—Morton Arboretum

<http://www.mortonarb.org/woodland-restoration/land-managers.html>

Oak Savannas-Characteristics, Restoration and Long-Term Management:

<http://oaksavannas.org/>

Invasive Species Photo Gallery—IDNR:

<https://www.dnr.illinois.gov/education/Pages/ExoticHerbaceous.aspx>

Invasive Species Information—USDA:

<https://www.invasivespeciesinfo.gov/species-type>

Oak Wilt—University of IL Extension:

<https://web.extension.illinois.edu/hortanswers/detailproblem.cfm?PathogenID=281>

Find Local, Certified Arborists: International Society of Arboriculture:

<https://www.treesaregood.org/findanarborist>

The Davey Tree Expert Co. 866-205-5828

www.Davey.com

For more detailed information or for a confidential consultation on how you can take care of the land you own, contact:



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