

Indiana's *Urban Woodlots*

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“A town is saved, not more by the righteous men in it than the woods and swamps that surround it.”

—Henry David Thoreau

Historically, forests dominated the land of Indiana, covering about 85% of Indiana prior to European contact and settlement. However, now less than 25% of our forested areas remain—and more than 85% of those areas are privately owned.

Today, woodlots are dynamic, vital ecosystems in the urban and suburban landscapes of the Midwest. People own these small wooded lots in urbanized areas for a variety of reasons: timber production, firewood production, recreation, wildlife habitat, aesthetics, and alternative forest products. Many owners who keep and nurture these natural areas are motivated by powerful, noneconomic motives based primarily on aesthetics and environmental protection.

This publication gives owners of urban woodlots information they need to manage and care for these important forest areas.

A Fragmented Forest

Fewer Woodlots

While we may work hard to preserve the rainforests of the world, bulldozers in our own backyards destroy countless public and private urban woodlots and urban forest edges on a daily basis. Unfortunately, very little is being done to promote the importance of this important urban natural resource.

Urban woodlots in Indiana are declining due to:

- Development of business, residential, and industrial sites.
- Highway construction, expansion, and infrastructure repair and installation.
- Utility service and vegetation management.
- Cropland expansion.
- Planned and unplanned community growth.
- Naturally occurring storms, pests, diseases, etc.

- Lack of conservation/preservation ordinances or incentives (public or private) that encourage landowners to hold on to and care for the land.
- Owners' lack of knowledge about the resources under their care.



Each point in the list describes conditions or actions that result in forest fragmentation. Fragmentation results in serious environmental consequences, such as increases in invasive plants; reduced numbers of native plant species; illegal dumping; decreased animal species diversity; fewer understory trees; compacted soils; erosion; excessive storm water runoff; and lack of cover, food, habitat, and forest edges for wildlife.

In some areas, we lose urban woodlots and edges because ordinances address conservation measures for public and private lands—but not for existing urban woodlots. There are ordinances that address the loss of trees and the types and sizes of trees to be replaced, but not conservation measures for existing parcels of woods. The result is that the urban woodlot visible today on the drive to work or ride to school may not be there on the return trip.

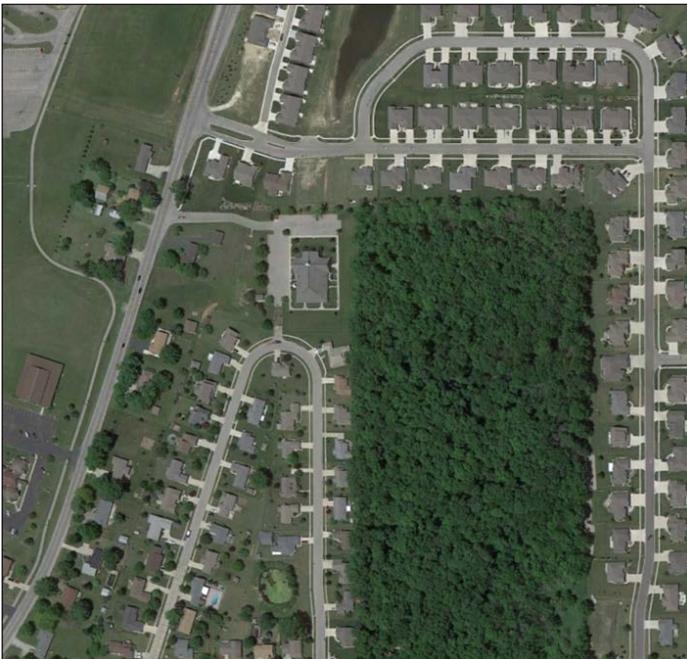
Smaller Woodlots, Less Support

Most Indiana woodland is privately held and fragmented into woodlots of 10 acres or less. In fact, the average size of an individual woodlot has steadily declined for several years.

The trees within cities and towns are valuable to both urban and rural populations. Small segments of woods or forest are capable of small-scale production of forest

products such as wood fuel, sap, and sawlogs. They are also good for recreation. However, in some areas there is limited state support and assistance for owners of woodlots under 10 acres.

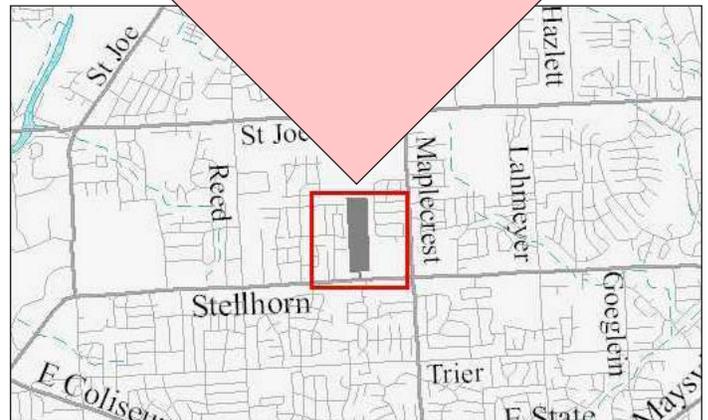
Most state support goes to owners of larger woodlots. Landowners who have 10 or more acres may qualify for the Classified Forest and Wildlands program (<http://www.in.gov/dnr/forestry/4801.htm>) through the Indiana Department of Natural Resources, Division of Forestry. District foresters throughout the state offer technical assistance and information on this and other programs available to landowners with more than 10 acres of forest, wetland, or shrub and grassland.



The Urban Edge

Many small woodlots are parts of larger tracts of land. Some very small woodlots are undeveloped pieces of subdivisions or land that isn't suitable for other uses. These undevelopable tracts of land act as buffers between housing subdivisions, managed forests, or public properties. These pieces are critical parts of the overall urban forest—a transition zone between one land use and another.

Small woodlots are dynamic ecosystems. Any transition zone where urban and rural activities overlap is changing rapidly due to human activity that greatly stresses the ecosystem. Because of this, many owners who are content with their woodlots today may not be content in the future, because they will face changing conditions over time.



Good management and stewardship will help protect and improve this dynamic environment. Adding new trees and shrubs, managing insects and diseases, harvesting products, and controlling invasive species can help preserve urban woodlots.

As the number of human inhabitants in an area increases, however, studies show that the likelihood of a woodlot remaining sustainable decreases. Many woodlot owners want to be good stewards and protect and enhance the woodlots they own. To reach their goals, they must plan and manage their woodlots carefully.



Benefits of Trees

What can make our world better and healthier? What can make a difference in our lives and our environment?

How about the perfect biological machine—trees!

We regularly plant trees along city streets or one in each yard of a new development. Isn't that enough? What is so important about an urban woodlot or forest edge?

The answer is that many trees of diverse species and age, clustered together, provide benefits the lone street or yard tree does not. Each individual tree contributes to the overall health of the urban forest. However, many trees grouped in an urban woodlot are crucial to the overall environmental health of a community.

Public and private owners of urban woodlots and edges provide an array of environmental, social, and economic benefits often called *ecosystem services*. Woodlots benefit not only the owner's property, but also the overall community. And they are on the job every day. What follows are descriptions of some of the benefits that trees provide.

Environmental Benefits

• Reduced stormwater runoff

Urbanization and unplanned, uncontrolled growth can degrade water quality. Woodlots and edges can improve water quality by reducing storm water runoff, decreasing the impact of flooding and erosion, and recharging groundwater.

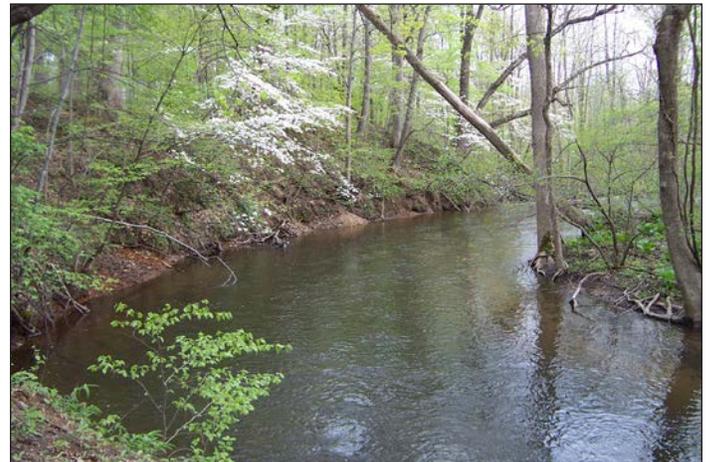
As rain falls on forested land, the erosive power of the water droplets is reduced as they descend through the tree *canopy* and strike leaves, stems, and branches. Plants, leaf litter, and other organic material covering the soil allow the rain to slowly soak into the soil instead of running across the surface, removing topsoil.

• Cleaner water, watershed improvement

Urban woodlots stabilize the soil with root systems and organic matter, slow the impact of rainfall on the soil, and prevent stream channel erosion. The spongy, porous nature of woodlot soils allows water to percolate slowly through the soil, providing more water storage capacity and recharging ground water supplies.

Woodlots can also filter water running off nearby unforested areas. As water enters the woodlot, plants and organic materials on the forest floor slow the water, catch the sediment, and allow water to percolate into the soil. This can reduce flood intensity.

Woodlots along streams not only reduce runoff, they also filter out sediment and pollutants. Certain tree species break down pollutants common in urban soils, groundwater, and runoff, including metals, pesticides, and cleaning solvents. According to the 2010 Urban Tree Canopy (UTC) report for Indiana, the state has more than 5,000 impaired stream segments. That number alone highlights the need for urban woodlots.



As human development adds water-impermeable surfaces in our communities, woodlots and tree canopies become more important as a tool to help reduce erosion and manage water.

• Improved soil

Woodlots constantly build soil as leaves fall and as plants and leaves decay and add to the soil. Trees can also be used to clean toxic compounds from the soils of abandoned industrial sites in a process called *phytoremediation*.

• Cleaner air

Urban woodlots dramatically improve air quality. Urban woodlots and forest edges efficiently intercept and collect hydrocarbons, nitrogen dioxide, carbon monoxide, and particulate matter, keeping them in the forest and out of our lungs. A large part of pollution from hydrocarbons comes from vehicular traffic and machinery.

Trees also reduce air temperatures, which, in turn, reduce the formation of temperature-dependent pollutants such as ozone. Trees improve air quality by cooling the air, storing carbon, and reducing our energy use from coal-fired power plant emissions.

Trees produce large amounts of water vapor through transpiration, taking water from the soil and moving it up the trees and out of the leaves in the form of clean water vapor added to the atmosphere. Trees can intercept particulate matter circulating in the air, providing an important air-cleaning service that improves human health by reducing respiratory irritation and illness.

So, take a deep breath driving, walking, or biking by that urban woodlot. Thank the landowner for offering cleaner air by choosing to preserve and protect an urban woodlot—and sharing clean air with the entire community.

• Reduction in carbon dioxide (CO₂)

The ability of trees to produce oxygen is well known. In addition, plants absorb carbon dioxide, store it, and utilize it for plant processes. But, that's only one way trees reduce the amount of CO₂ in the air.

Well-placed trees also help us burn less fuel and produce less CO₂. The tree canopy provides shade and reduces wind speed, which moderates the influence of high and low temperatures on people and structures. Well-placed deciduous trees shade roofs, walls, windows, sidewalks, parking areas, and roadways in summer, but allow light and heat to enter in winter. Evergreen or mixed species windbreaks reduce wind speeds in winter, which reduces the wind-chill effect, cuts heat loss from structures, and slows drifting snow.

• Wildlife habitat

Many native wildlife species depend on urban forests for at least a part of their habitat. Likewise, when wildlife and forests function together, natural predators keep rodent and insect pests in check so that trees thrive.

Urban woodlots and forested edges provide food, cover, safe corridor movement, and protection for wildlife. When those woodlots follow stream banks, they shade and cool water to help preserve a healthy habitat. Research indicates that woodlots provide adequate food and protection for some species of migrating birds as they fly between wintering and breeding grounds. A study by the Ohio Department of Natural Resources found that small urban areas enable birds to refuel and continue on their migration journey.

Psychological and Social Benefits

More than 80% of Hoosiers live in or nearby urban areas—and an urban forest may be their only experience with nature. Leaving trees and the woodlots intact or creating a development plan that preserves woodlots will enable the community to experience the benefits of nature, and possibly increase the landowner's development profits because of the environmental stewardship evidenced by the plan.

• Interaction with nature

Interaction with nature and wildlife is a basic human need. Urban woodlots bring nature home as people walk, bike, or drive and note the flight of a hawk, the song of a bird, the scurry of rabbits and squirrels, the slither of a salamander, a quick view of a coyote or fox, or a heron heading home to its rookery. These woodlots provide homes, food, and protection for a variety of land and aquatic wildlife and the plants they depend on.

• Stress reduction

Trees reduce tension and anxiety, according to researchers. To humans, a woodlot in the middle of the city or town, or on the edges of suburbia, provides a calming connection to our natural world.

Research shows that time spent in an urban woodlot or forested park lowers blood pressure, calms the heart rate, and improves health and well-being. Trees and urban woodlots are linked to reduced domestic violence and crime in populated areas. In some areas, people who have a view of trees and woodlands are more interested in going outdoors. When they go outdoors, they speak to their



neighbors, gain a sense of community, and develop an appreciation for the urban canopy.

Woodlots also reduce urban stress, because they diffuse and dampen noise pollution and serve as visual screens. Even odors may be managed through the use of woodlots and tree canopies, which reduce wind speed and intercept particles that are the source of odor transfer. Shade and windbreaks created by trees can also reduce stress on ornamental plantings under or near the tree canopy.

• Recreation

When connected with parks, schools, and parking lots, urban woodlots provide recreation and enjoyment. Urban dwellers need opportunities for solitude, reflection, exercise, leaf collecting, urban wildlife watching, and even maple syrup making! Nature lives in the urban woods.

Economic Benefits

• Reducing residential and business costs

When shade and windbreaks provided by woodlots and trees cut fuel use, they also reduce cooling and heating costs for homeowners and businesses. Shade also extends the life of paved surfaces as compared to exposed areas—and thus reduces repaving costs.

When trees build up soils, those soils are more productive and require less fertilizer or organic mulch.

Maintenance and management of urban woodlots and riparian woodlands can reduce storm runoff and the costs of handling and treating those events.

• Generating income

Woodlots can be the source of a variety of products that have economic value. In addition, many of these products represent sustainable or renewable resources that can be reproduced indefinitely with proper management. Wood products, wild edibles, herbal medicine materials, floral and decorative materials, mulch and pine straw, and a host of other products can be harvested from well-managed woodlots.

The name woodlot gives us a clue to the historic use for these lands. That is, they are where we go to get wood. Many different products are harvested from woodlots. Trees can be harvested for fuel; lumber; bark and shredded or chipped wood for mulch; wood for carving, turning, or other craft work; rails and posts for fencing; stems and branches for rustic or bent-wood furniture; wood chips for smokers and grills; and any number of other timber products.

Urban woodlot owners can justify keeping their woodlots and generate income from them with a variety of agribusiness activities done solely or in cooperation with neighbors and partners. Woodlot owners can generate income through timber management and sales; by generating urban lumber for public projects; and by selling woodchips, mulch, and firewood at a reduced cost to members of the community. Properly managed and cared for, these urban woodlots can be an economic asset to any landowner.



Trees are also a source for compounds and ingredients used in foods, medicine, and chemical applications. Sap for syrup and sugar production is collected from maple, birch, and walnut. Sassafras roots are used to make tea, and the dried, powdered leaves to make an authentic gumbo. Plant parts or extracts from many native plants are used in traditional and herbal medicines (but be careful, because many plants also contain compounds that may be harmful or fatal). Some trees and forest plants with histories of medicinal use include willow, slippery elm, birch, and sycamore.

Tasty, edible nuts come from several species of hickory including pecan, black walnut and butternut, hazelnut, chestnuts, and chinquapin oaks.



Capturing sap for syrup

Persimmons

Wild leeks

Fine fruits grow on trees and shrubs, including persimmons, cherries, paw-paws, plums, raspberries, blackberries, blueberries, gooseberries, and mulberries.

Other edibles grow under woodlot trees. Ramps, also known as wild leeks, are an early spring plant popular in rural areas and culinary circles. An educated collector can harvest a variety of mushrooms, including the highly regarded morel, from woodlots. Because some mushrooms are poisonous, anyone collecting must be able to identify the mushrooms they collect.

In some areas, there is a market for pinecones; grapevines; dried seed pods; fern fronds; evergreen foliage; and colorful berries, flowers, leaves, or branches for floral arrangements or other decorative applications. If sustainably harvested, these can be an annual crop.

For the craft person, an oddly shaped limb can become a walking stick; a burl on a tree trunk turned or carved to make a bowl; or a collection of cones, berries, and limbs or vines woven to make a wreath. Imagination is the only limit to the products that can be produced from items collected in the urban woodlot.



• Community beautification

Current research shows that a clean, green, community with urban woodlots in parks or on private lands attracts new business and residents. Trees and woodlots add to the aesthetic appeal and vitality of a community. Studies have found that residents willingly pay more in taxes and fees to avoid even a small decline in the urban forest and urban woodlots that surround their neighborhood.

Laws and Zoning

Since urban woodlots are not usually considered when local zoning regulations and ordinances are established, urban woodlot owners need to ensure their property is compliant with applicable local laws. Most municipalities encourage urban woodlots and are eager to help woodlot owners comply with any zoning or ordinance issues.



Ordinances

Tree ordinances can impact the urban woodlot. Woodlot owners should carefully review local laws for any tree ordinance that may affect ownership and management. There have been instances where an owner discovers after a timber harvest there is a fine for each removed tree. Some tree ordinances have built-in exceptions for urban woodlots, but most do not consider these fragmented areas separately. As a result, penalties could be imposed, leaving the owner frustrated and confused.

Many municipalities have weed ordinances that prohibit unmaintained vegetation exceeding a certain height (12 inches, for example)—even in urban woodlots. A normal understory in an urban woodlot would, therefore, be in violation. However, the ordinance enforcement agency is usually eager to provide an exemption to the weed ordinance for your urban woodlot. In some municipalities, a public hearing may be necessary, while others will simply provide an exemption immediately upon request. (Be certain to get the approved exemption in writing, stating the duration of the exemption.)

Zoning

Many municipalities allow a wide range of uses within each zoning class. A quick discussion with the appropriate municipal agent will determine if you need a change of zoning to accommodate the urban woodlot. Often, no changes are necessary. If a zoning change is required, urban woodlots are designated within “agricultural” or “park” zoning classes. Prior to making a change, carefully consider the modification. For example, converting from residential zoning to agricultural zoning may reduce your property taxes, but if you plan to build a home within the urban woodlot in the future, there is no guarantee the zoning authority will grant the change back to residential zoning. Instead of zone modification, some municipalities allow variances within the existing zoning to accommodate urban woodlot usage.

Neighborhood Association Covenants

If your urban woodlot is subject to neighborhood association covenants, review them to be sure you can meet your woodlot goals while remaining compliant. Many homeowners’ associations and planned neighborhoods have strict guidelines on how the property is used and maintained. Be sure to investigate the rules governing the property prior to any activity with your association, municipality, or realty board.

Nuisance Wildlife

A common and important urban woodlot goal may be to provide wildlife habitat. However, success with this goal can lead to conflicts. Almost any animal within an urban setting can at one time or another become a nuisance. Deer eat landscape plants, raccoons invade attics and garbage cans, mosquitoes attack humans and pets, woodpeckers drill into wood siding, and skunks occasionally infuse the neighborhood with their spray. It is advisable to have an understanding of how the municipality will react to complaints from neighbors about “your” wildlife. Will they view you as harboring a public nuisance or will they defend you, explaining that nature is welcome in the city environment?

Municipalities offer animal control, if the problem poses any real harm. Be proactive by requesting the city’s position regarding these matters before the first complaint. This helps ensure that you, as the woodlot owner and the city already have a prepared response that is fair to everyone impacted by the wildlife.



Public Use

People owning homes in a residential neighborhood tend to respect boundaries; they would not think of playing in someone else's yard or digging up someone's landscape plants without permission. Many people, however, do not show the same respect for an urban woodlot. If you do not want public access within the woodlot, you must adequately post the property. This makes it clear the property is privately owned and should be respected as such, and ensures prosecution of any violators, if needed. If you allow public access within the woodlot, post on the property what activities are allowed and what is not permissible. For example, many woodlot owners allow only nonconsumptive uses and only from dawn to dusk.

Liability

We live in a litigious society and owning any property results in liability, but your liability for owning an urban woodlot is not necessarily any greater than that for owning a typical home. Indiana law favors landowners of natural areas against most claims of liability (except for negligence), but you need to be fully aware of potential liability claims. You should perform regular, documented inspections around the perimeter of your urban woodlot to be sure hazardous trees are not within striking distance of targets (roads, homes, playgrounds, etc.). Whether you've opened your woodlot to the public or not, make sure any obvious risks are removed or mitigated (open pits, hazardous materials, unsafe structures, etc.). Discuss the condition and use of the urban woodlot with an insurance provider, to be sure you have adequate coverage and that you reduce financial exposure.

Protection for the Future

If urban woodlot management plans includes goals beyond the lifetime of one owner, you can guarantee that future goals are followed and met. Through deed restrictions, conservation easements, state dedicated nature preserves, or ownership by a government or conservation group, a

woodlot can remain as intended in perpetuity. Local park departments, land trusts, or tree boards can explain the options for setting up long-term protection for your urban woodlot.

Goals and Plans

The maintenance and management of your woodlot is called "stewardship." It is the desire to leave the land better than you found it. The more you know about your land and your goals for your woodlot, the better the likelihood that you'll reach those goals. Good stewards of the land manage their property to maintain or improve water quality, aesthetics, wildlife habitat, timber, recreation, soils, wetlands and other unique places, rare plants and natural communities, and forest protection.

Your Management Plan

How you manage your woodlot depends on what you want it to be and what you want from it. Owners' most common management objectives are to improve wildlife habitat, aesthetics, and recreation. Some owners use woodlots for lumber, firewood, mushroom hunting, and hunting. Keep in mind that you can successfully manage your woodlot to reach more than one objective at the same time. Regardless of your motivation, you must plan carefully. Writing a management plan helps you create a vision and determine a schedule of activities to achieve the vision. Many woodland owners benefit from involving family members in these discussions and from working with qualified foresters or arborists who can translate objectives into actions.

Below are the steps to writing and using a management plan.

1. Understand the basic principles and responsibilities of ownership. Review and recognize local regulations and the potential liabilities that affect personal resources and the community at large. (See "Laws and Zoning")
2. Determine both short-term and long-term objectives for the woodlot. These may differ significantly from those of other owners, based on your overall goals. Start by answering some basic questions.
 - Why do you own the land?
 - What do you like about it?
 - What have you noticed that you may not like about it?
 - What do you want it to produce (i.e., wildlife habitat, lumber, aesthetics, or recreation)?
 - What do you want it to look like 5, 10, and 20 years from now?

Once you've answered the questions, develop specific objectives based on your answers. Also identify actions you need to take to achieve your objectives. For example, if the management plan includes an objective of increasing wildlife habitat, determine which animals you want to encourage and how you might do that. If your objective is to do more bird watching or hunting, determine actions you might take to improve current conditions. If your objective is to manage the property for natural beauty, determine which trees you will plant to add fall color or interesting form during the growing season.

3. Assess the physical and biological characteristics of your woodland. Make sure that the land meets your objectives. Clearly identify the boundaries of your property. Mapping the boundaries or finding a scaled image of the woodlot will help you make many decisions. Once you know the boundaries, locate permanent landmarks for orientation. These may include boulders, roadways or paths, fence posts, or other structures that will not be moved or removed. Next, map the tree cover in the woodlot. There are many resources online and on portable computing devices to make the mapping process easier.



If you find the property does not meet expectations, get help to determine the options available to you to help meet your objectives.

4. Develop a written management plan. This should include a timetable for meeting your established objectives. This is your blueprint for maintaining the woodlot, based upon all of the research and review in earlier steps. Consider all components of the woodlot in conjunction with your objectives to ensure that you have a healthy, useful urban woodlot.
5. Follow the management plan to achieve your objectives. A plan is only as good as the actions that support it. Follow through on all required management activities, monitor the results, and maintain records of all activity involved with the woodlot.

Your ownership of an urban woodlot represents a commitment to stewardship. While woodlot ownership helps you fulfill personal goals, it also implies a responsibility to the community.

To help you reach your goals, you'll find a growing number of resources available for the urban woodlot owner on the Indiana Department of Natural Resources Publications and Presentations website (<http://www.in.gov/dnr/forestry/3605.htm>).

Your Stewardship Plan

In addition to a management plan, every woodlot owner should have a forest stewardship plan prepared by a professional forester or other qualified natural resources professional. [You can find a list of professional foresters working in your area online in the Directory of Professional Foresters (www.findindianaforester.org)] A good plan matches the land's capabilities with landowner objectives in a customized, working document. A stewardship plan addresses wildlife habitat, water resources, recreation, forest protection, soils, timber, wetlands, aesthetic values, cultural features, and endangered species. Use your plan to guide you as you maintain or expand your woodlot.

In addition to giving management direction, a plan is necessary for current assessment of land use. If the major objective is to produce forest products, it's important to inventory the current volume of timber and assess the land's potential for future production. A tree inventory is often part of a detailed stewardship plan.

As part of the plan, you'll need information on the location and soils found on the site. Soil and site conditions, along with local climate, determine the species of

trees and plants that will perform best over time. Soil information can also inform decisions on management of wildlife habitat, recreational development, feasibility for construction, water management, and planting. Sources for soils information include the USDA Natural Resources Conservation Service offices found in most counties across Indiana and the Web Soil Survey (<http://websoilsurvey.nrcs.usda.gov>), a Web-based soil information service that landowners can use to map their properties and collect soil information and management recommendations.

Identify any easements or rights-of-way that may limit your activities on parts of the property. Examples include easements for utilities, above and below ground, or for drainage systems that might prevent the preservation and planting of trees. These easements may be documented on the deed for your property. If not, you may consult the county Geographic Information System (GIS) or county officials to determine the location and limits imposed by easements or rights-of-way. A sample plan template is available for download at My Land Plan (www.mylandplan.org).

Some woodlots may be home to threatened or endangered species that need special management and protection practices. In some cases, activities or the timing of activities may be legally restricted to protect the species at risk, such as the Indiana brown bat. Information about endangered species in Indiana can be obtained from the Indiana DNR Division of Nature Preserves (<http://www.in.gov/dnr/naturepreserve>).

Some core principles for managing woodlots include maintaining or improving tree health, and providing conditions that encourage regeneration of native trees and plants over the long term. Trees growing in woodlots face significant competition from surrounding trees. As trees grow larger and their crowns expand, some trees will be crowded out and die or be shaded by the canopies of the fastest growing, most competitive trees. By thinning trees, you can determine which trees “win” the competition and reduce stress on those trees.

Professional foresters and consulting arborists can help landowners select which trees to remove and which trees will need more space to expand their crowns. Trees to be removed may be harvested for wood products, killed by girdling the trunk and left standing for wildlife habitat, or felled and allowed to gradually return to the soil. This choice is dictated by management objectives for the property, potential risks posed by dead trees, and operational limitations. A qualified consultant can advise

you on the best approach. An excellent resource for information about thinning and woodland improvement is the *Forest Improvement Handbook* (<http://www.extension.purdue.edu/extmedia/FNR/FNR-IDNR-414.pdf>).

One of the basic needs of woodlot trees is adequate space to expand and grow. This involves choosing to eliminate some of the lesser quality trees to provide the needed space. This process can happen naturally, but by choosing the trees and timing for thinning, you can lower the level of competition faster than would naturally happen and maintain better overall woodlot health.

Management

Forest management is the practical application of scientific, economic, and social principles to achieve forest stewardship goals and objectives. As you manage your woodlot, you'll be fighting invasive plants, managing nuisance wildlife, and pruning trees to reduce risks.



Invasive Plants

Invasive plants are a major issue in natural woodlots. Control of unwanted vegetation is an important part of woodlot management. Invasive plants can be native or exotic species that act as super-competitors and gradually crowd out desirable native species. Many invasive plants can tolerate shade, have long active growing periods, and produce lots of seed that multiply their numbers quickly. If left uncontrolled, they gradually exclude native, desirable tree and plant species from the woodlot, creating a much less diverse and sustainable woods.

Some examples of invasive plant species include Asian bush honeysuckle, tree-of-heaven, Japanese honeysuckle, Japanese barberry, autumn olive, Asian privet, winged burning bush, Norway maple, Oriental bittersweet, and Japanese stilt grass. Several of these species escaped from ornamental plantings, others are wildlife- or erosion-control plants gone bad.

If not aggressively controlled, many invasive species threaten to diminish or eliminate many valuable products and services provided by urban woodlots. The first steps toward control are scouting properties for their presence, evaluating the extent of infestation, and determining best approaches for management. Professional foresters and ecological consultants can assist landowners with this evaluation. As a landowner, you can handle some control techniques, like pulling, repeatedly cutting to prevent seeding, or spraying with herbicides. However, some infestations are best handled by professionals, who have the proper tools and materials to do the work effectively and safely. Landowners should not cut down plants like giant hogweed, due to risk of serious health issues related to toxic compounds in the plant.

A good clearinghouse of information for identification and management of invasive plants is the Midwest Invasive Plant Network (www.mipn.org). Purdue University also maintains an invasive pest site, Indiana's "Most Unwanted" Invasive Plant Pests website (<http://extension.entm.purdue.edu/CAPS/>). An herbicide application site, Indiana Select-A-Herbicide for Non-Crops (<http://btny.agriculture.purdue.edu/herbsel/indexnc.cfm>) maintained by Purdue University, provides recommendations that allow you to select appropriate herbicides for control of a variety of plants.

Wild grapevines of several species are native to Indiana woodlots and deserve special discussion for management. Grapevines can grow rapidly and cover the leafy areas of trees and shrubs. In tree crowns, they add significant weight that can increase the damage from storms or heavy rains or snows. Grapevines also provide food, cover, and nesting materials for native wildlife species.

As a landowner, you must consider your property goals when deciding how to manage grapevines. If you want to maintain and improve wildlife habitat, you should retain grapevines at edges of woodlots, along riparian areas, and in trees or shrubs not important for other goals. If healthy tree growth is your main goal, be sure to control grapevines in trees that you want to retain.

Wildlife

Wildlife is important to a healthy urban woodlot, but some wild animals become a nuisance due to imbalance in populations or when their behavior conflicts with your goals and uses of the property. Deer are one of the most challenging wildlife species to manage in urban and rural forest environments. Most landscapes no longer have populations of large predators capable of controlling deer numbers. Also, deer thrive in the fragmented landscapes we have created, resulting in very high population densities in many areas. As a result, deer over-browse woodlot, agricultural, and landscape vegetation. Deer damage to landscape and agricultural plantings causes frustration and expense for landowners. Deer damage to woodlots can decrease or eliminate desirable tree and shrub regeneration and promote dominance of invasive plants, since many of these are not favored as food by deer. In the absence of natural predators, the primary ways to control deer populations are human-caused mortality, starvation, and disease.

Automobile accidents and hunting are the primary human causes of deer mortality. Starvation is rare in Indiana deer herds, but disease kills a significant number of deer in some locations. Hunting is generally considered the least expensive way to control deer populations, but concern for public safety and acceptance make urban hunting challenging, if not impossible. Capture and relocation,



sterilization, and fertility control are other population control options, but these cost much more. Some localities aiming to economically reduce deer numbers have experimented with urban bow-hunting programs to reduce the public safety risks created by longer-range firearms. These programs may require hunters to take a doe before taking a buck (called earn-a-buck) or may allow doe-only hunting to have an optimum impact on herd growth reduction.



Risk Assessment

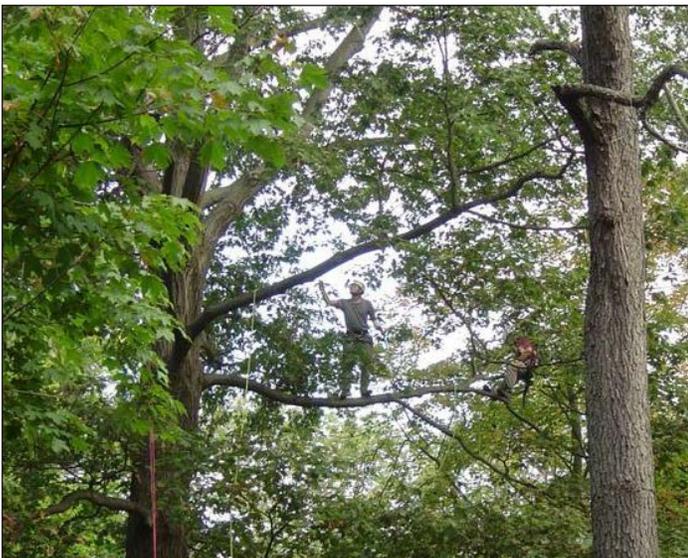
It is important to remember that you, as a property owner, have a duty to inspect and maintain your trees in a safe condition to reduce risks to those around trees on the site. You can be held liable or found negligent if your tree falls and harms people or damages property. This is why a tree risk management plan is important. As a woodlot owner, you should have a plan in place that protects you and those enjoying the many benefits the trees offer. Tree risk management begins with these basic steps:

- **Inspect your trees:** The property owner or manager must periodically inspect trees for unsafe conditions. Regular inspection compels you, as the owner or manager, to evaluate the amount of risk you are willing to assume. Through a tree risk assessment, you determine if a tree is structurally sound or has the potential for failure. Inspections show that you, as the tree owner, are actively managing your trees and could reduce your liability if a failure occurs.
- **Hire an arborist:** Trees should be inspected and assessed routinely by a qualified arborist, preferably an International Society of Arboriculture Certified Arborist. At a minimum, trees should be inspected every five years or according to the owner's risk tolerance. Another good time to inspect trees is after a storm. Look for damaged tree branches, trunks, and crowns. For more information on trees and storms see the Purdue Extension publication *Trees and Storms* (https://mdc.itap.purdue.edu/item.asp?Item_Number=FNR-FAQ-12-W).
- **Document and maintain records:** Every inspection should be recorded and kept on file for future reference. These records are important for several reasons. Past evaluations can show how a tree's health and structure has changed over the years. Also, written assessments are beneficial in liability claims and potential litigation.
- **Develop a site policy and care plan:** Every property manager should create and implement a site policy for tree risk. This includes developing a management program, an inspection process, and a plan to mitigate property risk. Routine care and scheduled maintenance for all trees is essential.
- **Mitigate tree risk:** Tree owners should make every effort to reduce risk with proper pruning and health care practices. Consider all options before deciding on removal. If possible, move or remove the target (people, property or activities that could be injured, damaged or disrupted by a tree). Perhaps reroute a trail or move a designated sitting area. Modify site conditions to improve the environment around the tree. Risk mitigation requires that you logically consider options and focus on protecting the target and, at the same time, on preserving the tree.
- **Schedule tree work:** As part of any evaluation, an arborist should note tree maintenance needs and help you plan for it. The arborist can determine the timing and priority of work needed. The work should be prioritized first for safety, then for tree health. Consider potential risk, activities around the tree, level of acceptable risk, and your needs.

It is important to understand that tree owners have a duty to inspect and maintain their trees. All property owners should take reasonable steps to protect themselves by involving a qualified consultant or certified arborist. For more information, refer to the publication, *Tree Risk Management* (<http://www.extension.purdue.edu/extmedia/FNR/FNR-475-W>).

Pruning

Occasionally you may need to prune a tree throughout its life to remove broken, dead, or dying branches. Sometimes trees need pruning to improve health or to remove a branch or limb that puts people or property at risk. However, once established, most trees need not be pruned on a regular schedule.



Safety, tree health, aesthetics, and value are the primary reasons for pruning trees. A single pruning can accomplish multiple objectives and save time. Pruning for safety removes branches that could fall and cause personal injury or property damage. Removing low branches in fire-prone areas can prevent a ground fire from climbing into the tops (crowns) of the trees.

Pruning for tree health removes diseased and insect-infested wood, thins the crown to increase airflow and reduce some pest problems, and removes poor branch architecture. Removing broken or damaged limbs encourages wound closure and prevents diseases from entering the tree. Pruning encourages trees to develop strong branch structure and reduces the likelihood of splitting during severe weather. Removing the lower limbs can improve visibility in your woods and increase the

amount of sunlight that reaches the ground, stimulating growth of wildflowers and flowering shrubs.

Pruning for value increases the amount of high-value wood products produced from individual trees. Pruning trees helps produce knot-free wood. A knot is the part of a branch that becomes incorporated within the trunk of the tree. Knots are a primary reason for loss of lumber value.

• Which trees to prune

Which trees you decide to prune will vary with your goals and objectives for the woodlot. Prune trees that pose safety issues, pose fire hazards, or will be healthier as a result of pruning. Your objectives for your woodlot will determine whether you prune trees to improve the aesthetic appearance of the woods or to increase value for wood products.

Develop a regular pruning schedule to care for trees. The early years are the most important! Prune young, established trees to:

- Improve structure for better timber values and stability
- Prevent many of the problems that require extensive repair work in mature trees
- Eliminate undesirable branches
- Improve stability against storm damage

Look for and prune out the following problems in trees, regardless of age:

- Dead or dying limbs and branches
- Sprouts growing near the base of the trunk
- Crossing and rubbing branches
- Narrow branch attachment angles and codominant branches or stems

• When to prune

When necessary, trees may be pruned at any time of the year, except when the wood is frozen. Avoid pruning living branches in times of stress, such as drought conditions.

• How to prune

There is a standard method of pruning; certain rules and procedures should be followed to obtain the best results. This involves making the proper cuts, which allows the tree to heal properly and avoid pests and decay. Following

best management practices will help insure safe, healthy trees, which will improve longevity. For more information on pruning see *Trees Need a Proper Start: Prune Them Right* (https://mdc.itap.purdue.edu/item.asp?Item_Number=FNR-FAQ-19-W). Also, consult the Forest Improvement Handbook (https://mdc.itap.purdue.edu/item.asp?Item_Number=FNR-IDNR-414).

Planting and Renewal

Tree planting is one of the best ways to renew or expand your urban woodlot. Trees will grow into open areas if there is sufficient space, soil and seed from neighboring trees. However, trees will naturally reproduce after tree harvests, storms, and wildfires. Tree planting speeds up the process and allows you to select the types of trees in the woods. Tree planting is a long-term investment that will not only benefit you, but your children, grandchildren, and, possibly, their children. Generations will enjoy and use the trees you plant.



Reviewing the Plan

It is important to take time to review your objectives and determine what you want to accomplish by planting trees. Review your stewardship plan. Be specific. Most tree plantings can have more than one objective, but try to focus on a central objective, then add plants to meet overall planning goals. Be creative. Here are a few examples of planting objectives and design considerations.

If your objective is attracting wildlife, consider:

- Increasing plant diversity that complements the surrounding landscape.
- Developing habitats that are in short supply in the area.
- Choosing trees and shrubs that are preferred food for various species, or providing cover (nesting habitat and winter thermal cover)—or both.
- Establishing travel corridors to connect separated woods.
- Creating areas of differing tree size and age.
- Planting around existing old trees with large crowns.

If your objective is enhancing aesthetics, consider:

- Planting species with desirable spring and fall colors or attractive fruit and seeds.
- Varying the location and layout of the plants.
- Using a wide variety of species, including shrubs used by wildlife.
- Planting along any hillsides.
- Randomly planting trees or using curved rows.
- Creating irregular planting edges.
- Leaving openings within the planting.
- Creating areas with differing tree sizes and ages.
- Retaining landmark trees and trees with distinct features (old trees with large crowns).

If your objective is to protect or improve water quality, consider:

- Planting trees with long life expectancy in buffer zones near streams, lakes, and wetlands to trap sediment and remove nutrients.
- Planting trees that hold their leaves over winter (oaks and beech) near streams and lakes so they feed the aquatic insects during the winter.
- Planting trees that tolerate periodic wet soils near streams and lakes.
- Planting along contours on slopes to prevent soil erosion.
- Avoiding site preparation that might increase erosion.

Choosing Trees for the Site

Determining what trees to plant in the woodlot can be confusing. One of the best recommendations is to plant native species. Native species are adapted to site conditions in your area. Matching a tree with a planting site becomes much more important when the species is not native. One of the best ways to check how trees will do on your land is to observe species growing naturally in the area.

State and private nurseries within your state are good sources of planting stock to match your local climate. Check the Indiana DNR Tree Seeding Nurseries website (<http://www.in.gov/dnr/forestry/3606.htm>) for information on Indiana tree seedling ordering.

Be careful when ordering trees from out-of-state nurseries. Be sure to check the seed source. The source of seed used to grow the trees should be no more than 100 miles from your state border. Also, check to see that the nursery is accredited and uses good production and sanitation methods to prevent introducing pests such as invasive weeds and insects into your woodlot.

Good site preparation is critical for long-term success. One prime reason to prepare is to control competition from grasses, weeds, and existing woody cover. Soil type, soil moisture, and geographic location are also important considerations. A well-prepared planting space will reduce maintenance and improve survivability.

If you are reforesting an open area, you can prepare by using mechanical methods, manual labor, chemicals, and fire. Rototilling, plowing, disking, or all of these in a 6-foot wide strip in the fall before spring planting will set back

grass sod and minimize erosion and weed seed invasion. A machete, hoe, shovel, and brush-ax can be used to remove vegetation in the area where a seedling will be planted.

Herbicides can be a safe and economical alternative to hand tools and power equipment. They also disturb soil the least, leaving the surface layer of soil, which has the most nutrients for the new trees. Success depends on your timing for application, the herbicide you select, weather conditions, and application rate. Always follow herbicide label directions.

If you are replanting or replacing trees in an existing woodlot, the preparation is much different than in an open area. Basically, you prepare as for planting a single tree; excavate the soil to accommodate the tree. The size of the hole depends upon whether the tree arrives bare-root, in a container, or balled and burlapped. Each of these has specialized instructions for handling and installation. However, the end result is similar.

Proper planting depth is critical for a tree's survival, regardless of the type of plant material. Detailed information about planting trees and shrubs for conservation purposes can be found in the publication *Planting Forest Trees and Shrubs in Indiana*, (<http://www.extension.purdue.edu/extmedia/FNR/FNR-IDNR-36.pdf>)

Watering

Water the tree for at least the first year, but don't overwater it. A newly planted tree should have adequate water for growth and survival. A thorough soaking is much better than light, frequent watering.

For the first year or two, especially after a week or so of unusually dry weather, watch trees closely for signs of moisture stress. Trees should never be allowed to go into stress. If the tree doesn't get a minimum of 1 inch of rain per week, supplemental irrigation is needed. A good rule is to provide water at the rate of 2 gallons for every inch of trunk diameter measured at 6 inches above the root crown. If leaves are wilting or scorching, irrigate the trees slowly enough to allow the water to soak into the root system and planting pit. This will encourage deeper root growth. Keep the area under the tree canopy mulched at a depth of 2 to 3 inches.

Check the soil with a soil probe, if available, for dampness and drainage. Overwatering can be just as lethal as under watering. Most importantly, a consistent watering regimen in the fall before the ground freezes is recommended to help ensure a healthy plant in the spring.



Fertilizing and Mulching

Fertilization is not recommended for newly planted trees. Depending on soil and growing conditions, fertilizer may be beneficial at a later time, after establishment. Fertilizing a stressed tree can do more harm than good for several reasons. It is important for root growth to dominate during this time, and fertilizers containing higher nitrogen ratios will stimulate top growth at the expense of roots.

Mulch the planting area any time a new tree is installed. Mulch around the tree to at least the drip line, 2 to 3 inches deep and up to, but not smothering, the trunk. Do not over-apply or mound the mulching materials. This will help keep rodent damage to a minimum. Maintain mulch levels annually, until natural leaf litter creates a suitable soil cover.

Protecting

Young trees need protection against animals, frost cracks, sunscald, and trimmers. Mice and rabbits frequently girdle small trees by chewing away the bark. Also, deer may browse the buds and new growth of developing trees. Deer may also physically damage trees by rubbing their antlers along the stems and breaking branches.

Plastic or vinyl guards are an inexpensive and easy control method. Sunscald and bark cracks occur mostly on the south and southwest sides of smooth-barked trees. Sunscald and frost cracking are caused by the sunny side of the tree expanding at a different rate than the colder, shaded side. This can cause large splits in the trunk and can occur when a young tree in a shady spot suddenly is exposed to direct sunlight. Light-colored, expanding tree guards can be used to protect the trunk from sunscald and other tree enemies. Other deterrents can be used to help keep animal damage to a minimum, but it is a challenging task with few options.

Pruning

Pruning is an important maintenance practice for early tree care. However, the only pruning required at planting is corrective pruning to remove any broken, damaged or dead branches, or suckers from the trunk. These considerations are important for the success and sustainability of the newly planted tree. The best way to prevent tree problems is to understand the concept of “right tree, right place” and install new trees using the correct planting techniques.

Refer to *Tree Installation: Process and Practices* (https://mdc.itap.purdue.edu/item.asp?Item_Number=FNR-433-W) for more information on selecting and planting trees.

Resources and Partners

Eventually, any objectives and goals for owning, maintaining, or active preservation of urban woodlands will require some assistance. This often comes in the form of partnerships. Types of partners may include one or more of the following:

- Financial partner
- Volunteer
- Professional arborist, forester, or landscape architect
- Organizational staff member
- Forestry consultant
- Local, county, and state governmental agency personnel and lawmakers
- Legal partner

Urban woodlots, whether privately or publicly owned, offer much more than aesthetic benefits. As explained previously, they offer a wide array of environmental benefits to the entire community. Some landowners (including local, county, and state governmental entities and lawmakers) may not realize how their actions affect urban woodlots until a citizen or group of citizens express their concern regarding the possible loss of tree canopy in the community. There are many creative ways to increase urban woodlot conservation.

Partnering Scenarios

Below are two scenarios that may guide those in the process of “saving an urban woodlot.”

Scenario 1

The citizens of a community have enjoyed the benefits of a private woodlot that sits at the edge of town for many years. The woodlot provides a buffer separation between the rural and urban area. It is also a boundary-line dividing two distinct towns that are each progressing towards the woodlot.

The owner of the woodlot is a private citizen and has put out the word that the land will be going up for sale in the near future. Because prospective buyers include residential and commercial developers, the owner anticipates earning a large sum of money for this property.

Local citizens form a committee comprised of representatives from local environmental groups, tree board members, tree stewards, the high school environmental club, and the local master gardeners. They visit with the landowner to explain how important the land is to the community and request that they be given an allotted time to come up with an offer. The landowner agrees to hold off on the real estate listing for 90 days.

The group has little time to accomplish their task. They begin by making a list of groups and individuals they will need to enlist to move their efforts along. While they would like to get the land donated or granted to the town, they remain realistic that this may be highly unlikely. They will need to recruit financial partners with interest and funds to help purchase the land for the community. This list may include corporate partners, town council members, the park foundation, the county community foundation, land trusts, and private philanthropic donors within the community.

They also need to know the value of the property, so they enlist the help of a real estate appraiser to do an appraisal of the land. It is possible the land may have some valuable timber on it, which could help finance management and pay back loans if the group buys the land. Based on this scenario, a consulting forester is called in to do a timber survey and to determine if timber management is a viable tool for this property. The forester, along with knowledgeable volunteers, should do a resource inventory of the site to identify unique features, characteristics, and wildlife. This information could all be used as a promotional tool to provide incentives to financial partners and to the town itself. The group, also realizing the environmental value of the land to the community, requests an urban forestry consultant. With the help of volunteers, the consultant uses the inventory information and other free available tools such as I-Tree to determine the ecological benefits of the woodlot to the community.

All of this information gathered by the professionals and volunteer partners is put into a report for the town, presented at a town council meeting, and sent to potential financial donors. The people and partners involved in this scenario could possibly become their own land trust, a local or state nature preserve, part of the town or county park system, or a nature lab for tree enthusiasts. The public woodlot established using the skills and donations of so many would definitely become a valuable natural resource available to the public.

Can such a scenario be successful? Absolutely!

In a real-life example, a private foundation with a large parcel of land located in an urban area was seeking rezoning so the land could be sold to a retail strip developer. Partners gathered, support was identified, and an ecological analysis of the site was completed. The information from the supporters and the ecological site analysis, as well as the economic value of the land, was presented to the City Council. The rezoning was denied based on the scientific studies of the area and on the well-prepared presentation of the partners and supporters involved. The land is still there—providing important ecosystem services such as wetlands, wildlife habitat, and aesthetic qualities to an important area of the city. The supporters have not yet, however, been able to find funds for the purchase of the urban woodlot parcel, and the parcel remains in peril.

Scenario 2

An urban landowner has a five-acre woodlot in need of management (removal) of two very highly invasive plant species: bush honeysuckle and garlic. The landowner realizes the need for such work, but lacks the physical ability or money to tackle the job. In this case, volunteers may be willing to pitch in their services to help maintain the woodlot. Volunteers might include:

- Boy and Girl Scouts working on merit badges.
- Tree Stewards requiring volunteer hours for their certification and who realize how important each woodlot is to a community.
- Professional arborists who need continuing education credits to maintain their International Society of Arboriculture (ISA) certification.
- Local utility service providers willing to deploy their crews as a day-of-service project.
- Master Naturalists seeking to earn their required service hours.

Environmental interest groups such as Tree Stewards and working tree professionals such as Certified Arborists can train others to identify plants that need to be removed, teach others how to remove and dispose of the plants, and teach proper tree care. Perhaps with landowner involvement and strong volunteer help, the urban woodlot will take on a new look and, in a few years, be a healthy resource for the landowner and the community.

In most urban areas, urban woodlot conservation and preservation is going to be difficult due to the intense demand on urban land for economic development. Some

communities offer incentives to residential and commercial developers to retain a certain number of wooded acres in new developments. While these may be private and not open to the public, they still provide valuable environmental and aesthetic services to the community, and, when all other attempts fail, citizens could request that community leaders and lawmakers preserve the urban woodlot in a more formal, legal manner.

Is there an example of real-life success similar to the scenario above? Most certainly.

A landowner wanted to improve and reforest a woodlot on the edge of town. Money was not available to complete the work necessary, but the care and love of the community for the parcel was strong. Residents had many fond memories associated with the woodlot. A call went out for volunteers, seedlings were purchased, and the landowner provided tools—along with lots of food and fun. That day resulted in the creation of a forest on the edge of town and memories that folks still recall of that planting day—and of the landowner who cared enough to ask the community to help expand and improve her woodlot for a community to enjoy.



Potential Partners

Potential partners are grouped by type of assistance.

Financial

- Corporate donors
- Corporate grant foundations
- Utility service providers
- Utility grant foundations
- State governmental agencies

- USDA Forest Service grants
- Land trusts
- City and county park boards
- County community foundations
- Environmental grant foundations

Technical

- Soil and Water Conservation Districts
- Cooperative Extension Services from land-grant institutions
- Natural Resources Conservation Service
- Land trusts
- Consulting arborists
- Consulting foresters
- International Society of Arboriculture
- State governmental agencies
- Department of Natural Resources
- Urban foresters
- USDA Forest Service
- i-Tree, Davey Resource Group

Volunteer

- Girl and Boy Scouts of America
- School environmental groups
- Local beautification/enhancement committees
- Tree Boards, Commissions
- Indiana Urban Forest Council
- Indiana Arborist Association
- Tree Stewards
- State, county, and local green groups
- Land trusts

Advice and Expertise

- Indiana Department of Natural Resources Community and Urban Forestry
- Purdue Cooperative Extension Service
- Department of Forestry and Natural Resources, Purdue University
- Indiana Urban Forestry Council
- Indiana Arborist Association
- City Forester or City Arborist (nearest the woodlot)
- Indiana Native Plant and Wildflower Society (INPAWS)
- Indiana Forestry and Woodlands Owners Association

Conclusion

The information in this publication is meant to make woodlot ownership and management less intimidating, to improve or enhance your experience, and to help you reap your woodlot's many benefits. The most important aspect of ownership is to enjoy nature and take pride in the contribution you are making to a cleaner, more attractive environment.

Urban woodlots are an essential environmental component of any community's natural resources. They provide benefits for everyone: wildlife habitat, improved human health, visual interest, and numerous recreational opportunities. They can be focal points for development, adding interest and value to commercial and residential properties. Preserving and managing these small, urban woodlots is vital.

Regardless of the level of management, every woodlot owner has an underlying responsibility to inspect and maintain the property for the safety of others. This is the most basic of management practices and will always be a critical consideration. However, it isn't always possible or necessary to actively maintain your woodlot. Your management plan may be as simple as leaving it alone!

Glossary

Canopy—a layer or multiple layers of branches and foliage at the top or crown of a forest's trees; the portion of the tree with foliage from the lowest branch to the topmost part of the tree (often used synonymously with crown); also, the collection of several to many crowns of different trees

Carbon dioxide (CO₂)—a compound consisting of one carbon and two oxygen molecules; a component in photosynthesis necessary for plant life (Carbon dioxide has become overly abundant in the atmosphere due to human and natural activities and is considered a major air pollutant.)

Carbon sequestration—technologies that can greatly reduce CO₂ emissions from automobiles, coal-fired power plants, and industrial sources (Trees are one of the most efficient carbon storage banks. Trees use carbon and will continue to be a natural carbon sink for as long as it is alive and growing or the wood products produced from them do not decay or burn. It releases carbon when it begins to decay or is burned.)

Diversity—the variety and abundance of different types of organisms, including trees, which are found in a particular area (All forms of forestry and nature conservation benefit from multiple tree species and, thus, provide a greater diversity of ecosystem services.)

Ecosystem—a complex relationship among the living resources, habitats, and residents of an area and nonliving components, including plants, animals, inhabitants, microorganisms, water, sunlight, soil, and people; the interaction of biotic and abiotic components within a defined area

Ecosystem services—the benefits people provided from ecosystems within the natural environment (including provisioning services such as food and water; regulating services such as flood and climate control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services such as nutrient and water cycling that maintain the conditions for life on Earth)

Edge—the more or less defined boundary between two or more land-use types, e.g., a field adjacent to a wooded area or the boundary of different management styles within a natural system

Environmental—of or relating to the natural world and the impact of human activity on its condition (The environment is a complex of physical, chemical, and biotic factors, including climate, soil, and living things, that act upon an organism or an ecological community and ultimately determine its form and survival.)

Fragmentation—the process by which a landscape is broken into small islands of forest within a mosaic of other forms of land use or ownership (Fragmentation is a concern because of the effect of noncontiguous forest cover on connectivity and the movement and dispersal of animals in the landscape.)

Habitat—a place where an organism or a biological population normally lives or occurs, including the place or environment where a plant or animal naturally or normally lives and grows

Phytoremediation—the use of green plants, including trees, to remove pollutants from the environment or render them harmless; a process that can include cleanup of soil, water, and air using trees natural, biological filters

Private land—land that is owned by individuals or corporate entities, not by any form of government

Public land—land that is owned by federal, state, county, or local form of government

Urban—characterized by higher population density in a built environment that includes human features in comparison to the areas surrounding it (Urban areas may be cities, towns or communities, but the term is not commonly extended to rural areas.)

Urban forest—a collection of trees that grows within a city, town, or populated area; in a wider sense, any kind of vegetation growing in and around the built environment; wooded areas broadly including city or town parks, street trees, landscaped boulevards, public gardens, greenways, river corridors, wetlands, nature preserves, natural areas, shelter belts of trees and working trees at industrial brownfield sites

Urban tree canopy (UTC)—the leaves, stems, and branches of all public and private trees within the community's forest as viewed from above; the sum total of all trees located in an urban setting

Urban woodlot—a contiguous acre or more where trees and associated plants dominate the landscape within densely populated areas (private or public land that provides multiple benefits to a community); typically, a segment of a woodland or forest capable of small-scale production of forest products as well as recreational uses (Distinguishing characteristics of an urban woodlot are that the parcel size or quality of wood does not generally justify full-scale commercial harvesting, so many woodlots are privately owned.)

Urbanization—the shift from a rural to an urban society that involves an increase in the density of people in an area and that typically results in a change of livelihoods, land use, health, and natural resources

Save the Woodlots

The urban tree canopy is decreasing rapidly in our state. As urban woodlots disappear, important urban natural resources go with it. Clean air, clean water, clean soil, wildlife, migratory bird refuges, and aquatic habitat—all suffer without urban woodlots. This loss is significant and affects watersheds. Development takes its toll, as do pests and disease. In fact, twice as many woodlots are lost to development as are lost to all invasive pests combined. Public and private urban woodlot owners and prospective owners can reverse this trend and make our communities healthier.

When we lose urban woodlots, forest edges, and the wetlands that are with them, we lose part of ourselves; we lose our connection to the natural systems that have governed humans since the beginning of our time.

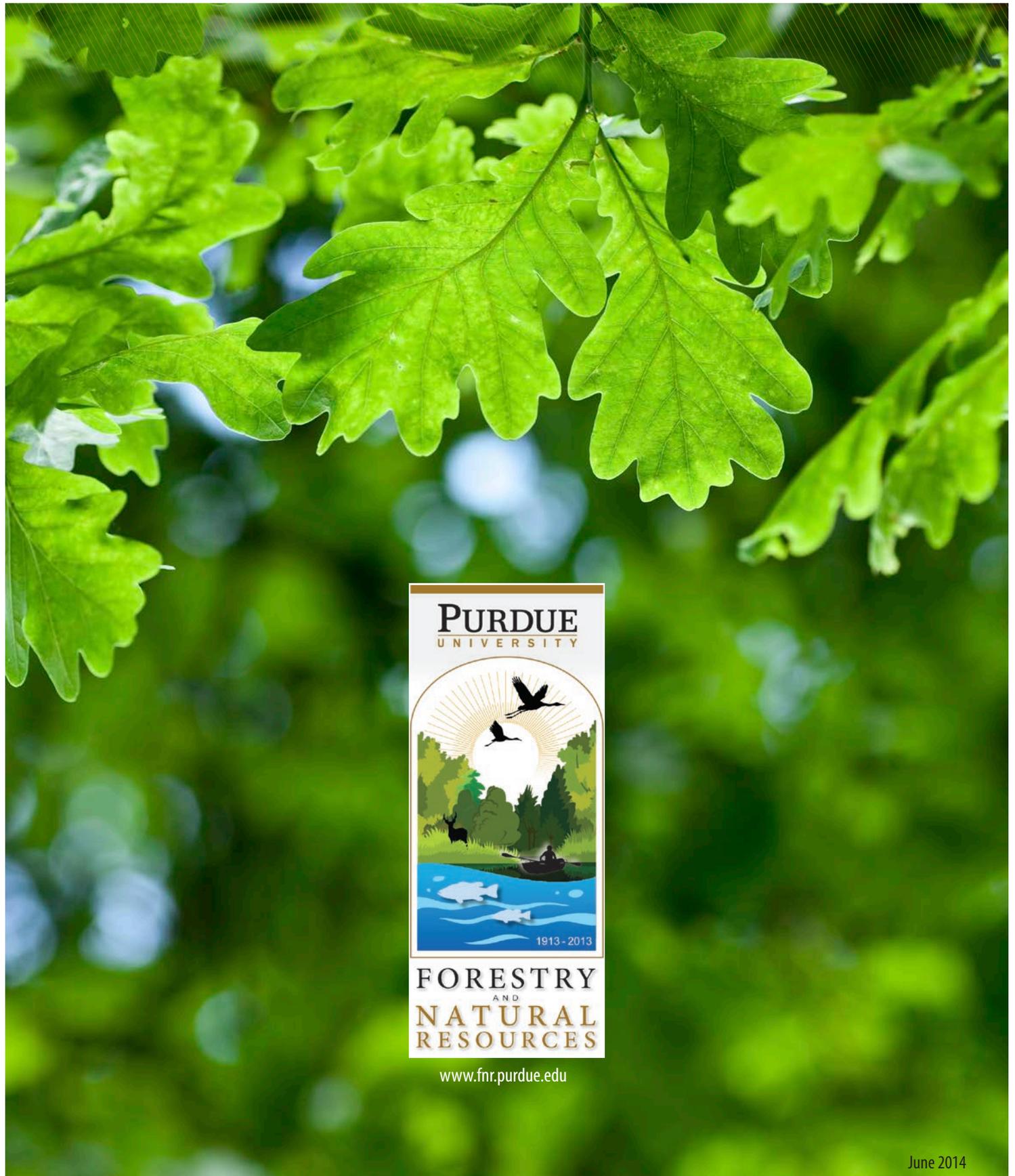
We simply—lose.



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