

CONSERVATION GUIDEBOOK

A Resource for Southeastern Wisconsin Land and Landscape Management.



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Developed By The University of Wisconsin Milwaukee School of Architecture and Urban Planning, Applied Planning Workshop.

MMSD FRESH COAST RESOURCE CENTER | MILWAUKEE, WI



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FRESH COAST RESOURCE CENTER MISSION

The Milwaukee Metropolitan Sewerage District (MMSD) protects public health and the environment through world-class, cost-effective water resource management, leadership, and partnership. With a commitment towards stewardship, integrity, quality, collaboration, diversity, and innovation, MMSD works to provide water reclamation and flood management services to 28 communities in the Greater Milwaukee Area.

In 2017, MMSD created the **Fresh Coast Resource Center (FCRC)** to empower people, homeowners, businesses, nonprofits, and government to take an active role in protecting our most precious natural resource: water. The FCRC was created to assist the community by providing inspiration, education, and tools needed to create successful green infrastructure projects. In the Spring of 2021, at the request of the FCRC, University of Wisconsin Milwaukee Urban Planning graduate students in the Applied Planning Workshop created this guidebook to provide guidance on best practices to sustainably manage open space.



GUIDEBOOK GOALS AND OBJECTIVES

This Guidebook aims to serve as a resource for open space caretakers on land management and best practices in Southeastern Wisconsin.

- Present land management information in a way that is simple and easy to follow for someone without a conservation background.
- Identify and explain different types of open spaces and land management techniques.
- Provide useful resources for both public and private land management.
- Promote management practices that conserve open space by improving biodiversity, stormwater management, and climate resiliency.
- Offer information on the costs and benefits of different management practices.
- Promote the use of conservation tools, like covenants, that place conditions and restrictions regarding landscaping and common open space in long term management plans and bylaws.

How to Use This Guide:

MMSD's conservation guidebook serves as the starting point for individuals and groups interested in learning about preserving open space, but wanting to create a management plan for their open space. The guidebook is broken down into multiple sections for ease of use. Interactive links will be provided throughout the Guidebook for additional information on various topics and management methods.



IMPORTANCE OF CONSERVING OPEN SPACE

Conservation of open space is a topic that is gaining momentum with landowners, local governments, and outdoor enthusiasts. As the region's population grows and our landscape becomes more urbanized, existing open spaces face increasing pressure to provide essential services for wildlife, economic growth, and outdoor recreation opportunities. Conservation of open space in both urban and rural areas protects culturally sensitive landscapes, community aesthetics, and promotes resilience to climate change.

The impacts of climate change threaten open spaces and strain their ability to perform essential functions. Conservation strategies can mitigate the impacts of climate change by promoting biodiversity, decreasing concentrations of carbon dioxide (CO₂) in the atmosphere, and reducing frequency and severity of extreme flooding. Without properly managing and conserving open

spaces, Southeastern Wisconsin's urban and rural communities are more susceptible to the negative impacts of climate change, such as increased instances of drought and extreme flooding events.

MMSD has recognized the need for a beginner-level tool to provide guidance for open space caretakers. This guidebook is intended to introduce users like homeowner associations, local land management groups (not affiliated with land trusts), and developers to best management practices for open spaces in Southeastern Wisconsin. This Guidebook will also provide information on the many benefits of open space and why these spaces should be preserved.



BENEFITS OF CONSERVING OPEN SPACE

There are many benefits to conserving open space. The ecological, economic, and aesthetic benefits are relevant to both urban and rural open spaces.¹

- Conserving land provides environmental benefits critical to sustaining the health of any community.
- Conserving land helps fight climate change.
- Conserving land provides habitats to bees, butterflies, birds, and wildlife.
- Land conservation is often less expensive for local governments than development.
- Open space increases property values and desirability of cities and towns.
- Outdoor recreation, tourism, and agriculture bring economic value to an area.
- Parks and recreation are linked to improved quality of life and crime prevention.
- Open space conservation is an integral aspect of planning for a sustainable city.

Effectively managing open spaces means putting the right tools into the right hands. The managers of open spaces vary as widely as open spaces vary themselves. Hence, different types of owners require different sets of knowledge and resources. Whether a space is large or small, publicly owned or privately owned, the people who manage the open space need access to resources and guidance that will enable them to protect and improve the natural land that they own for years to come.

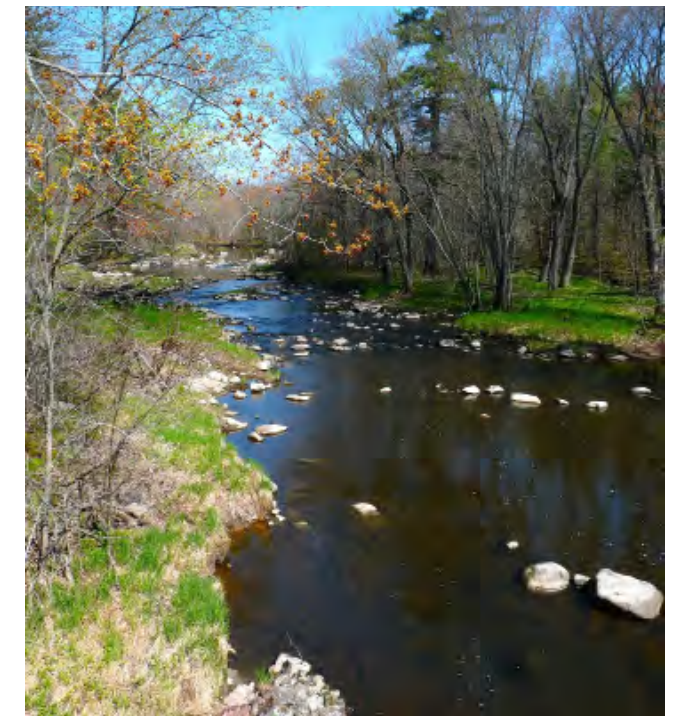


Photo by David Mark from Pixabay

TYPES OF OPEN SPACE

THIS GUIDEBOOK FOCUSES ON CONSERVATION TECHNIQUES FOR OPEN SPACES MANAGED BY RESIDENTS, DEVELOPERS, AND MUNICIPAL ENTITIES. THESE TYPES OF SPACE INCLUDE FIELDS, WOODLANDS, PARKS, MUNICIPAL PROPERTIES (SUCH AS VACANT LOTS AND DPW YARDS), RIPARIAN AREAS, FLOODPLAINS, AND TRAILS. THIS SECTION OUTLINES THESE VARIOUS OPEN SPACES AND THEIR CHARACTERISTICS, USES, ECOLOGICAL BENEFITS, AND ANY ASSOCIATED CHALLENGES.



Photo by David Mark from Pixabay

Description

Fields are characterized as open spaces that lack trees. They are most commonly made up of grasses, low shrubs, mono-culture stands of nonindigenous species, or native plants. In Wisconsin, fields occur in a wide variety of sizes, soil types, and terrains.

Much of the fields in southeastern Wisconsin are man-made open spaces such as hayfields, pastures, row crops, and other agricultural habitats often located where native prairieland had previously been. The reduction in native prairies across Wisconsin has been detrimental to the native grassland plants, with less than 0.5% of the original species remaining.²

Uses

Fields in southeastern Wisconsin are used for a wide range of purposes including agriculture, recreation, and wildlife habitat.

Ecological Role

Fields provide important habitats for the native grassland mammals, birds, and some reptiles. They are also often a buffer between developed areas and protected areas, such as wetlands.

Common Challenges

While man-made grasslands do still provide some important habitats, as the remaining native prairies are converted to row crop agriculture, there is negative impact on the native animal populations of southeastern Wisconsin.

Another major challenge with southeastern Wisconsin fields is that, left unattended and unmanaged, they are often overrun with invasive species.³



Description

Woodlands are open spaces composed primarily of trees and woody vegetation. Wisconsin woodlands are located mainly along ridges, lakes, streams, and wetlands and cover almost half the state.⁴ In Southeastern Wisconsin, these woodlands are primarily hardwood trees, such as oaks, maples, and ash.

Uses

Woodlands in Southeastern Wisconsin are mostly used for recreation, firewood supply, and natural habitat.

Ecological Role

When preserved, Wisconsin woodlands help prevent runoff into lakes and streams and provide important wildlife habitats for native species.

Common Challenges

A few key challenges are often seen in southeastern Wisconsin woodlands. These include the fragmentation of wooded areas, the spread of invasive species, and the restriction of natural disturbances such as flooding and fires which cause an unnaturally dense growth of low-growing trees and shrubs in the understory that restricts light and the growth of new trees.⁵



Description

Wisconsin parks range in size from less than an acre to more than 600 acres. Parks are both publicly and privately owned and offer a range of outdoor recreational activities including, hiking, picnicking, fishing, and outdoor sports. Their locations often overlap with flood lands and environmental corridors.⁷

Uses

Parks are used for a variety of recreational activities and are important for improving quality of life for surrounding communities. Parks have been shown to bring economic, social, environmental, and health benefits by increasing the tax base, providing opportunities for exercise, and preserving greenspaces.

Ecological Role

Parks provide clean air and water, protect open space and wildlife habitats, and reduce stormwater runoff. They also ensure long term conservation of natural areas.⁶

Common Challenges

The most common challenge with local parks is insufficient funding for operation, maintenance, and other costs.⁸ Other challenges associated with these spaces include inequitable access, public safety while using parks, and lack of available space for the creation of new parks.⁹

MUNICIPAL PROPERTIES



Description

Municipal properties include any land owned and maintained by the municipal government, including vacant lots, DPW yards, and open lands. These properties vary in size and are utilized in many ways, from basic upkeep to community gardens or parks. Some municipal-owned parcels are a result of foreclosures and are often marketed for future development.¹⁰

Uses

Municipal properties are used for a wide range of activities, from storage to outdoor recreational areas. Their use is often dependent on the neighborhood and the municipality that manages them.

Contact your local government for more information on the use of municipal open spaces in your community.

Common Challenges

Depending on the use, municipal properties can face the same challenges as other types of open spaces such as parks and fields.

RIPARIAN AREAS

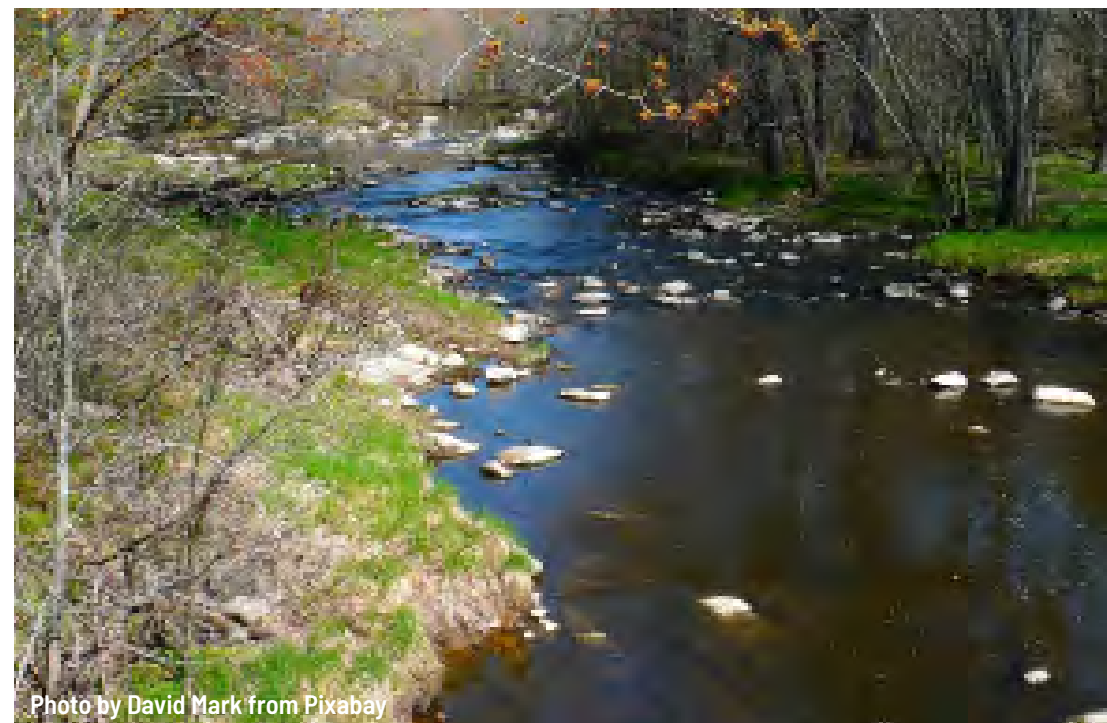


Photo by David Mark from Pixabay

Description

Riparian areas are the zones along water bodies that link the land and the water ecosystems. Riparian ecosystems generally compose a minor proportion of the landscape. Typically, however, they are more diverse in plant and animal life than adjacent upland areas.¹² Cover types range widely from grasslands and prairies to wetlands and spring pools.¹³

Uses

Riparian areas are often important for their recreation and scenic values. They are used for activities such as hunting, fishing, boating, swimming, hiking, camping, picnicking and birdwatching.

Ecological Role

Riparian areas help regulate water quality by filtering out pollutants from stormwater runoff and are important habitats for many species. They supply food, cover, and water for a large diversity of animals, and serve as migration routes and connectors between habitats.¹¹

Common Challenges

Because riparian areas often are relatively small areas and occur in conjunction with watercourses, they are vulnerable to severe alteration. They are susceptible to non-point source pollution such as sediment, invasive plant species, pesticides, and excessive nutrient such as nitrogen and phosphorous that reduce the oxygen in water bodies.¹⁴



Photo by David Mark from Pixabay

Description

Floodplains are land near water bodies at risk of flooding during a flood. The state of Wisconsin requires communities to regulate and manage floodplains above the minimum federal standards set by the National Flood Insurance Program. While each community may have unique regulations for floodplain management and development, many allow non-structural and recreational uses.^{15 16}

Uses

The main purpose of a floodplain is to store and convey high waters. MMSD has a number of flood management sites where modifications have been made to better handle flooding problems and reduce the chance of future issues. These flood management sites are used for reducing the risk of flooding and prevent expensive water damage to homes near floodplains.

Ecological Role

Natural floodplains are important for wildlife habitats, wetlands, and groundwater infiltration.

Common Challenges

Depending on the land cover, floodplains may face similar management challenges as grasslands, woodlands, and riparian areas. Building and filling in natural floodplain areas in Wisconsin can disrupt the drainage and the natural habitats as well as create future flooding problems.¹⁷



Description

Wisconsin trails are both paved or unpaved, typically owned and maintained by public entities (county or municipality), and most often open to the public. Many trails run within greenways or along water bodies.

Uses

The main uses of trails are for recreational purposes such as walking, biking, and horseback riding.

Ecological Role

Trails serve a significant role in conservation of habitats in that they provide links between fragmented natural areas, increasing the range and land available to native animal species. The natural areas around trails improve air quality and protect water quality by filtering nutrients, pesticides, and sediment from runoff.¹⁸

For help identifying your open spaces and for more information on the ecological role it plays contact the FCRC at (414) 225-2222 or by visting their website at freshcoastguardians.com/contact

END USERS

THIS GUIDEBOOK IS INTENDED TO BE USED AS A STARTING POINT FOR RESIDENTS, DEVELOPERS, OR ORGANIZATIONS JUST BEGINNING TO USE CONSERVATION PRACTICES TO MANAGE OPEN SPACE. IT IS NOT MEANT FOR PROFESSIONAL LAND TRUSTS OR LANDSCAPE MANAGERS.

EFFECTIVELY MANAGING OPEN SPACES MEANS PUTTING THE RIGHT TOOLS INTO THE RIGHT HANDS. THE MANAGERS OF OPEN SPACES VARY AS WIDELY AS OPEN SPACES VARY THEMSELVES. HENCE, DIFFERENT TYPES OF OWNERS REQUIRE DIFFERENT SETS OF KNOWLEDGE AND RESOURCES. WHETHER A SPACE IS LARGE OR SMALL, PUBLICLY OWNED OR PRIVATELY OWNED, THE PEOPLE WHO MANAGE THE OPEN SPACE NEED ACCESS TO RESOURCES AND GUIDANCE THAT WILL ENABLE THEM TO PROTECT AND IMPROVE THE NATURAL LAND THAT THEY OWN FOR YEARS TO COME.



TYPES OF RESIDENTIAL OPEN SPACE

Neighborhood Parks:

Description: A neighborhood park is a landscaped area, which provides primarily passive recreational opportunities to the residents of an entire neighborhood.¹⁹

Management: It is much easier, cheaper and more sustainable to manage a neighborhood park as a natural landscape instead of a “designed landscape”.²⁰ Designed landscapes often include turfgrass which requires mowing, irrigation and fertilizer. This can cost the owner a significant amount of money while also degrading the environment. Natural landscapes with native vegetation provide built-in flooding control while also improving biodiversity and water quality.

Floodplains:

Description: A floodplain is a mostly flat area of land next to a river or stream, stretching from its banks to the outer valley walls, which experiences flooding during times of high discharge.

Management: Floodplains are best managed and protected using green infrastructure, open space preservation, and stormwater management. These practices not only protect the natural function of flood plains but also minimize flooding and its impact on property and infrastructure.²¹

Industrial Parks:

Description: Industrial parks are areas that are zoned and planned for the purpose of industrial development.

Management: When possible, owners of industrial parks should take steps towards transitioning to become a Conservation Industrial Park, which balances human uses and needs with environmental protection.²² This includes:

- Prioritizing the incorporation of native plants and natural stormwater management systems in site designs and landscaping.²³
- Maintenance practices that minimize the use of pollutants and fossil fuels
- Benefits from these practices: money and energy savings, healthier employees, natural resource protection and better community relations

WHERE SHOULD I START?

Get advice from local organizations:

- **Urban Ecology Center (UEC):** The UEC offers advice and workshops to the community on various subjects, including conservation and ecological land management. Use them as a resource or volunteer to learn practical skills like invasive species removal, erosion mitigation, and native species planting.
- **Nature Preserves:** Because the mission of nature preserves is to conserve and restore natural areas, open spaces, and water, they are likely to provide you with free advice on what conservation practices to pursue on your land.
- **Land trusts:** By becoming a member of your local land trust, or by simply contacting the organization, you can get access to resources and advice from knowledgeable professionals who know the land and the best ways to protect and manage it.

Why manage my open space?

There are aesthetic, environmental, and economic benefits to managing open space on your property.

Environmental Benefits:

- Preserve cultural landscapes
- Maintain habitat connections
- Increase biodiversity

Aesthetic Benefits:

- Improve ecosystem and plant health, attracting diverse insects and animal life.
- Increase in variety of color and life are ecologically important and visually pleasing.

Economic Benefits:

- Protecting environmental amenities can raise the value of your property and of the surrounding land.
- Taxes paid on open space usually generate tax revenue in excess of the cost spent on maintenance services.²⁴

Choose an ecofriendly company

- Check out the Fresh Coast Resource Center's Green Vendor page.
- Listen for the use of these ecological products:²⁶
 - Insecticidal soap
 - Horticultural oil
 - NEEM
 - Bacillus thuringiensis
 - Compost tea
 - Beneficial nematodes
 - Low nitrogen fertilizer
 - Electric chainsaws, mowers, etc.
- When speaking with a company about a plan for your site, listen for these terms:²⁵
 - Soil tests
 - Site analysis
 - Integrated pest management
 - Compost as soil amendment
 - Endophytically enhanced grass seed
 - Mulches of leaf mold or compost
 - Low impact solutions
 - Least toxic pesticides
 - Exotic invasive plants

START SMALL SCALE

Make a plan for your site. Call the FCRC for help designing your plan.

Take simple steps to manage stormwater on your property.²⁷

- Add plants or trees to areas where runoff collects to help absorb water and filter out pollutants.
- Choose permeable materials for walkways, patios and driveways. Less expensive materials include aggregate base, gravel and mulch.
- Cover bare soil, which is poor at absorbing water, with mulch or ground cover to slowdown stormwater runoff.
- Dig a shallow trench at the base of sloping land or alongside a driveway or patio to slow down and direct runoff.²⁸



CONSERVATION GUIDEBOOK

- Install a rain garden:²⁹
 - » Check out the FCRC's Rain Garden **How-To Manual** for detailed instructions
 - » **Select a site:** rain gardens are usually most effective near the house, catching roof runoff, or farther out on the lawn to collect water runoff from the roof. The site should be at least 10 ft from the house, not covering a septic system, in partial or full sun, and on a flatter part of your yard.
 - » **Size selection:** a rain garden can be almost any size, but make sure that you pick the right size for your budget and site type.
 - » **Dig:** Before beginning, call the Digger's Hotline (1-800-242-8511). While digging your garden to the depth that fits your site, heap soil around 3 sides of the rain garden.
 - » **Plant:** Select plants with a well-established root system that fit with your site type. Plan out where you will place different plants. Dig a hole twice as wide as the plant and level the crown of the plant with the soil grade. Pat down and apply mulch for the first two seasons.
 - » **Maintain:** Consistently weed the garden for the first couple of years, making sure to pull out the root of each weed. Each spring, cut back decaying/torn plants and trim tall plants back to 6 to 8 inches. Remove standing water.

Incorporate native plants into your existing landscaping:

- Contact the FCRC for assistance.
- Identify native Wisconsin perennials that fit your site conditions. Check out MMSD's rain garden plant sale every June.
- Switch out turf for native plants, which require little maintenance and help to better absorb and filter runoff.

For assistance or more information contact the FCRC at (414) 225-2222 or by visiting their website at freshcoastguardians.com/contact

HOA'S or ORGANIZATIONS MANAGING SHARED SPACES

WHERE SHOULD I START?

If your HOA board is not already managing shared open space in your subdivision, or not managing it well, bring this up at the next board meeting.

- Propose a conservation plan. Refer to municipal provisions requiring HOA maintenance to help underscore the importance of having a plan.
- Start a conservation subcommittee. This can help ease the burden on the HOA board and put tools in the hands of residents with an active interest and/or knowledge of conservation practices.

Why manage shared open space?

There are many advantages to managing open spaces via a Homeowner's Association, for residents in a subdivision as well as the broader public.

- Improved natural area quality and biodiversity leads to increased property values.
- Improved ecological maintenance of shared HOA spaces can reduce stormwater runoff and improve water quality in the area.
- Open space management promotes recreational opportunities and conserves energy by reducing the need to restore environmentally sensitive areas.³⁰

Challenges

Managing shared space means increased administrative tasks to determine who, when and how open space will be managed.

- Suggestion: delegate the administration of open space management tasks to a conservation committee or group of interested and committed residents.
- Avoid gaps in management by ensuring that the roles and mission of the committee are clear and in writing. When residents move or leave the committee, a transition plan would help shift responsibilities and minimize gaps in management.

Effectively managing open space requires conservation knowledge.

- Suggestion: To increase interest in and minimize misinformation on conservation, subscribe to and distribute the FCRC or UEC newsletter to interested residents.
- Bring in a conservation expert from one of these agencies to run a conservation workshop.

Long-term financial commitments must be made in order to implement a management plan to ensure continuity.³¹

- Suggestion: Set aside a budget for the conservation committee. Be transparent about percentage of HOA fees going towards conservation.

Why consider conservation for new developments:

There are many benefits associated with development companies that use conservation practices throughout every phase of their projects.

- Environmental benefits: improve water and air quality.
- Aesthetic benefits: Beautify and green your site, increasing customer and employee wellbeing.
- Economic benefits: Save money on energy and materials.

WHERE SHOULD I START?

- **Check out the Fresh Coast Resource Center's website geared specifically at developers and private businesses.**
- **Choose sustainable products.**
- **Consider the following during new construction:**³²
 - » Retain as much of the pre-existing landscape as possible (soil, rocks, vegetation, wetlands, contours).
 - » Leave as much of the existing topsoil as possible, ensuring that when new soil is brought in, that it is "certified" weed free. Use natural fertilizer and mulch to enhance soil and native plant growth.
 - » Create larger continuous habitat area by connecting new landscaping elements with native vegetation.
 - » Install green infrastructure and natural storm management systems to minimize flooding and improve environmental and cost-effectiveness.
 - » Where possible, avoid starting construction projects on or near wetlands.
 - » Use Integrated Pest Management (IPM) strategies, an ecological approach to pest control that protects plants, instead of chemical pesticides.
 - » Limit the use of impermeable materials for surfaces like roads, paved trails and parking lots. Instead, consider porous pavement, mulch and gravel.
 - » Implement green building practices such as recycled wall/ceiling panels, low-flow toilets, renewable sources for lighting and HVAC.
 - » Use turf only in areas that are essential to recreation. Where possible, replace turf with native plants, which is much easier to maintain once established and has many environmental benefits.
 - » Use native plants and trees in riparian buffers around any water bodies, enhancing water quality and the aesthetic value.

ENVIRONMENTAL COMPONENTS

THIS SECTION ADDRESSES THE ECOLOGICAL VARIABLES ASSOCIATED WITH LAND MANAGEMENT. THIS INCLUDES THE COMPONENTS THAT CAN INFLUENCE EFFECTIVENESS OF MANAGEMENT, AS WELL AS THE UNINTENDED OUTCOMES OF COMMON LAND MANAGEMENT TECHNIQUES. THESE ENVIRONMENTAL COMPONENTS CAN INFLUENCE THE COST, ECOSYSTEM HEALTH, AND HUMAN HEALTH OF THE LAND BEING MANAGED AND THE SURROUNDING AREAS.

STORMWATER AND FLOODING

Urban and suburban areas tend to experience more flooding than rural areas due to the concentration of non-porous surfaces in cities. Buildings, roads, sidewalks, and parking lots all increase runoff from stormwater and contribute to flooding. This runoff increases environmental contamination and erosion. Stormwater runoff washes excess nutrients from fertilizers, pet waste, pesticides, and other pollutants into waterways, further impacting water quality. Milwaukee has



a combined sewer system that channels sewage, stormwater, and industrial wastewater to treatment facilities to be treated before being added back into the water system. When precipitation exceeds the capacity of treatment centers, sewage and runoff may be released, untreated or partially treated, into Lake Michigan.³³ In 2020 alone, over 2 billion gallons of overflow was released into Lake Michigan. By slowing the movement of rainwater, cities can reduce sewer overflows, avoid flooding, and help protect their environment.

Flooding can cause damage to property and the city's infrastructure while disrupting ecosystem processes and contributing to the spread of disease. For land managers, stormwater can erode their land, drown their plants, carry pesticides far from where they were used, and reduce the effectiveness of management practices addressing other issues. When movement of water is slowed through soil and vegetation, natural filtration can take place before the water is carried into rivers and lakes. Ways that this can be accomplished include landscaping with plants with deeper roots (which can also reduce erosion by holding the soil in place), planning for water accumulation in controlled areas, or replacing hard surfaces with porous alternatives.



PESTICIDES

The EPA defines a pesticide as any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest; intended for use as a plant regulator, defoliant, or desiccant; or any nitrogen stabilizer.³⁵ Pesticide is a broad term referring to insecticides, fungicides, rodenticides, herbicides, disinfectants, and more. While pesticides can help limit the spread of disease, increase crop yield in agriculture, and benefit garden care, every chemical has a toxic dose.

Most pesticides fall into one of six chemical families, each of which tends to have predictable health effects on humans.³⁴ Some pesticides contain “persistent organic pollutants”, which are compounds that degrade slowly and can accumulate in organisms throughout the environment, even those that did not come into direct contact with the original pesticide. These pollutants can pass through different levels of the food chain and accumulate in organisms far from where they were initially applied.

DDT

One of the most infamous persistent organic pollutants is an organochlorine called DDT, which was widely used as a pesticide beginning in the 1940s. DDT was effective in reducing the spread of diseases such as malaria, but the following decades led to unforeseen repercussions, including the decline of some species of raptors in the US, leading to the publication of Marine Biologist Rachel Carson’s *Silent Spring*.³⁶ DDT is now banned for agricultural use worldwide, but DDT and its metabolites are still found in every organism on the planet.³⁷ DDT affects different organisms differently, but as an organochlorine, it can cause long term disruption to the central nervous system of humans.

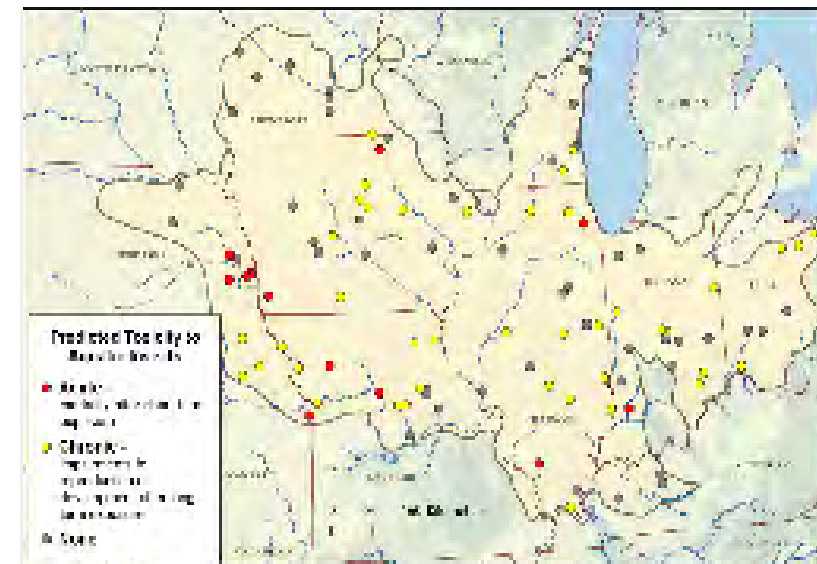


Photo taken by Isabel Gunderson

Chemical Family	Health Effects on Humans
Organophosphates	Long-term disruption of peripheral nervous system
Carbamates	Short-term disruption of peripheral nervous system
Organochlorines	Long-term disruption to central nervous system
Pyrethroids	Irritate eyes, skin, and respiratory tract
Thiocarbamates	Irritate eyes, skin, and respiratory tract
Paraquate	Irritate skin, upper respiratory tract, potential lung and kidney failure if blood stream is entered

Pesticides can be carried into water bodies by stormwater and may contaminate surrounding areas and groundwater based on the method of application and the characteristics of the site. They can negatively impact native species, reduce biodiversity, kill pets, and make people sick. To mitigate the risk of pesticide contamination to wildlife, the

EPA recommends keeping pesticides away from water systems (sewers, storm drains, gutters, etc) and leaving a buffer of untreated vegetation between treated areas and areas where wildlife may be present, as well as being attention to timing of pesticide treatment.³⁸ For example, insecticides should not be used during the day when bees may be active.



Predicted Toxicity to Aquatic Insects in Streams Tested for Pesticides in Midwestern States (USGS).

INVASIVE SPECIES

An invasive species is an organism that may cause harm when introduced to an area where it is not native. To be considered an invasive species, an organism must overcome a geographical barrier, be able to survive and reproduce in the new setting, spread relatively quickly, and cause negative effects that outweigh any beneficial effects. An invasive species can be a plant, animal, fungus, or bacteria



Garlic Mustard

and “negative effects” includes economic or environmental harm or harm to human health.⁶ Whether a species is considered invasive is context-specific: an organism could live in multiple areas where it is not native and be considered invasive only in certain areas based on the harm it causes.

Southeastern Wisconsin is the primary gateway for invasive species to the rest of the state and must contend with aquatic, terrestrial, and wetland invasive species

Types of Harm:

Economic:

Property damage, property value, reduce business opportunities (tourism, wild game), depleting natural resources, reduce availability of forage plants for livestock, infrastructure damage, reduce aesthetic value of land, killing native species used in landscaping

Environment:

Displace native species, reduce biodiversity, increase erosion, increase frequency/intensity of wildfires, disrupt multiple levels of food chain through competition and predation, change chemical composition of soil, worsen flooding, physical changes to environment

Human health:

Increase the spread of disease, reduce availability of drinking water, toxicity from ingestion, and injury from contact

due to traffic from interstate road travel and traffic through the port of Milwaukee. Species can be brought into new areas by humans and could spread rapidly due to lack of natural predation or competition and impact the native ecosystem or human wellbeing.

Common Invasive Plants in Southeastern Wisconsin

The Invasive Plants Association of Wisconsin (IPAW) has a list of non-native plants in Wisconsin with their habitats, level of impact, and frequency of observation. Some of the high-impact species only affect single land types, but many are seen across two or three types of habitat, with grassland and forests being the most frequently identified habitats for high-impact species. Some

non-native species, such as Reed Canary Grass, also have strains that are native to Wisconsin. IPAW has already gone through the trouble of compiling information from other sites, such as the Wisconsin DNR, the USDA, and the Invasive Plant Atlas of the United States for each of the species listed on their site. For their complete working list of invasive plants in Wisconsin, you can visit their site at ipaw.org.

Common Name	Habitats Invaded
1. Non-native Reed Canary Grass	Wetland, Grassland
2. Garlic Mustard	Forest
3. Purple Loosestrife	Wetland, Aquatic
4. Common Buckthorn	Forest, Grassland, Wetland
5. Eurasian watermilfoil	Aquatic
6. Glossy buckthorn	Wetland, Forest
7. Bell's honeysuckle	Forest, Grassland
8. Tartarian honeysuckle	Forest, Grassland
9. Non-native Common Reed Grass	Wetland
10. Morrow's Honeysuckle	Forest, Grassland

Species identified by IPAW as having the most significant ecological impact.³⁹

HOW DO I IDENTIFY INVASIVE SPECIES?

Many invasive plants thrive because they can fill the roles of plants that already existed in an area. Because of this, it can be difficult to be certain whether a plant is native without doing some research. Some invasive species thrive in a range of land types, while others are found in only specific settings. Finding common invasive species for your type of land and area is the first step in identifying possible invasive species on your land. The Fresh Coast Resource Center can help you get started if you have questions that are not addressed in this guide.



Purple Loosestrife



Spotted Knapweed (above)
Queen Anne's Lace (right)

Resources for Plant Identification:

University of Wisconsin-Madison

- Flora of Wisconsin: <https://wisflora.herbarium.wisc.edu>
- Extension Office Invasive Species ID and Impacts: <https://fyi.extension.wisc.edu/wifdn/learn/invasive-species-i-d-and-impacts/>

DNR Regulated Invasive Plant List: <https://dnr.wi.gov/topic/Invasives/species.asp>

Southeastern Wisconsin Invasive Species Consortium, Inc Invasive Plant List: <https://sewisc.org/invasives/invasive-plants>

Midwest Invasive Plant List: <https://www.mipn.org/plantlist/>

Invasive Plant Atlas of the United States: <https://www.invasiveplantatlas.org/index.cfm>

USDA National Invasive Species Information Center: <https://www.invasivespeciesinfo.gov/>



Some of the most common invasive plants in Wisconsin⁴⁰ are the following:

	Grassland	Wetland	Forest	Aquatic	Barrens
Non-native Reed Canary Grass					
Purple Loosestrife					
Garlic Mustard					
Spotted Knapweed					
Canada Thistle					
Sweet Clover (Yellow and White)					
Common Buckthorn					
Wild Parsnip					
Queen Anne's Lace (Wild Carrot)					
Common Burdock					

Once you know what to look for on your land, you can use the physical characteristics of the plants to determine whether you are dealing with an invasive species. This includes the form of the plant, as well as the appearance of the leaves, flowers, fruits, seeds, and roots.



Wild Parsnip

Once you have identified an invasive species on your land, there are several ways you can handle them, which varies by plant type. The Wisconsin DNR has pages for many invasive species in the area with recommendations for how to remove them. Techniques can include chemical and non-chemical techniques, some of which are covered in greater detail in the "Management Techniques" section.

For more information, contact the Fresh Coast Resource Center for guidance.

Pictures of invasive species from wisflora.herbarium.wisc.edu

MANAGEMENT TECHNIQUES

THIS SECTION WILL EXPAND UPON SOME OF THE CURRENT BEST PRACTICES IN OPEN SPACE MANAGEMENT FOR SOUTHEASTERN WISCONSIN. TO BETTER CONSERVE OPEN SPACE, THE FOCUS OF THE FOLLOWING MANAGEMENT TECHNIQUES IS ON IMPROVING BIODIVERSITY, STORMWATER MANAGEMENT, AND CLIMATE RESILIENCY. NOT ONLY IS SELECTING THE BEST MANAGEMENT TECHNIQUE(S) IMPORTANT, CREATING A STEWARDSHIP PLAN IS ALSO ESSENTIAL FOR THE PROSPERITY OF YOUR OPEN SPACE.

THE FRESH COAST RESOURCE CENTER WANTS TO BE YOUR CONNECTOR! AS A NATIONAL LEADER IN GREEN INFRASTRUCTURE AND INVASIVE SPECIES REMOVAL IF YOU HAVE ANY QUESTIONS, WANT MORE INFORMATION ON A SPECIFIC TECHNIQUE, OR WANT TO TALK ABOUT YOUR OPEN SPACE, CONTACT [THE FRESH COAST GUARDIANS RESOURCE CENTER.](#)

Marek Landscaping: MMSD Green Infrastructure & Outreach⁴¹

Green Infrastructure

Green Infrastructure is an approach to stormwater management that is cost-effective, sustainable, and environmentally friendly. In the coming decades, stormwater management will become a more important aspect of open space management in Wisconsin because of climate change. Climate change will likely increase the frequency of flooding in Southeastern Wisconsin due to increased instances of heavy rainfall. Better management of stormwater using green infrastructure on open spaces will elevate instances of major flooding, help keep waterways clean, and encourage biodiversity. Native landscaping, rain gardens, bioswales, wetlands, canopy and turf management all are forms of Green Infrastructure.



Native Landscaping

Wisconsin is composed of two general floristic regions, the prairie-forest in the Southwest and the northern Hardwoods in the Northeast.⁴² The MMSD service area falls in a transitional area between the two regions. The transitional area, also referred to as the tension zone, represents where many northern and southern plant species meet their natural range limits. Land in the tension zone allows for a blend of southern and northern species. One impact of climate change is the northward shift of the prairie-forest and tension zones. Rising temperatures have increased the range of southern prairie-forest plants, changing the composition of Wisconsin's forests and open spaces.⁴³



WI DNR⁴²

Native landscaping is recognized as a best practice for open space management because native plants are adapted to the local climate and soil conditions where they naturally occur. Native plants play an important role in all types of open spaces. As noted by the Audubon Society, there are many benefits to planting native plants in both urban and rural areas:

- Easy to maintain once established.
- Do not require excessing watering.
- Increases the soil's capacity to store rainwater.
- Aids in preventing erosion.
- Help combat climate change: native plants are effective at storing carbon dioxide (CO2).
- Encourage biodiversity by creating a habitat for birds, bees, butterflies, and wildlife.
- Bloom! Many native plants bloom into beautiful and colorful flowers across multiple seasons.



Identifying Site Conditions: Sun, Shade, and Soil Quality







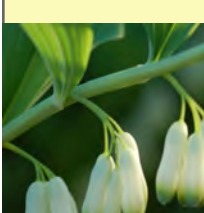




Before selecting the type of native species to plant, it is critical to evaluate your open space. Is your open space a grassland that you want to transform back to a more natural landscape? This evaluation will drive how you prepare the land and what kinds of plants and seeds you choose. See the Open Space Stewardship Template in the appendix of this Guidebook to help you evaluate your space and prioritize management tasks.

1. **Measure the planting area** to determine the amount of plants or seeds you will need. Measure in square feet for small spaces and acres for large spaces.
2. **Determine soil quality.** Most soil in Southeastern Wisconsin is a type of silt; a fertile, light, moisture retentive soil that is great for supporting plant growth.⁴⁴
3. **Determine soil drainage.** Well-draining soil is important for healthy roots; soil that does not drain well results in drowned and rotted roots. To compensate for poorly draining soil, topsoil and compost can be mixed into the native soil to provide additional nutrients and improve air penetration.⁴⁵
4. **Determine the appropriate sunlight pattern** for your space to ensure your native species thrive. Many native prairie flowers and grasses require full sun while shade loving species, such as Lady Fern, thrive under tree canopies.⁴⁶

Selecting Species

MMSD and The Fresh Coast Guardians are your go-to resource for native plant species selection in the Greater Milwaukee area. The Fresh Coast Guardians website has a plant selection tool that can be accessed here. Additionally, the Wisconsin DNR provides an in-depth guide of native species based on site conditions like soil quality, soil drainage, and sunlight patterns. In addition to determining species based on site conditions, deciding to plant either perennials, annuals, or both is an important decision. Perennials are plants that come back every year, while annuals only last through one blooming season. Many native species can be purchased at local nurseries, gardening stores, and online. Every spring, MMSD hosts a rain garden plant sale that sells bundles of native plants available for individuals and groups to purchase. Keep an eye out on the MMSD website in early spring for the plant order form to go live.

Below is a list, from the Wisconsin DNR, of some of the most durable and commonly planted native species in Southeastern Wisconsin.

Spring		Summer		Fall	
	Wild Geranium ☀️		Common Milkweed ☀️ ☁️		Heart-leaved Aster ☁️ ☁️
	Columbine ☀️		Bee-Balm ☀️ ☁️		New England Aster ☀️ ☁️
	Soloman's Seal ☁️ ☁️		Culver's Root ☀️		Little Bluestem ☀️
Sunlight Table					
Full Sun	☀️ > 6 hours sun per day				
Partial Sun	☁️ 4 - 6 hours sun per day				
Shade	☁️ < 4 hours sun per day				
			Maiden Hair Fern ☁️		Stiff Goldenrod ☀️

Images from: WI Pollinators, Minors Garden Center, WI Extension, Toad Shade Wildflower Farm⁴⁷

Care and Maintenance

Because native plants are adapted to the local climate and soil conditions, once established they generally require little maintenance. Depending on the species, adequate watering may be required on a weekly basis for the establishment of the plants. The most important maintenance task to care for all native species is weeding. Weeds suck water and nutrients from the soil that native plants require and create shade that sun-loving prairie plants crave. Weeding on a weekly or biweekly basis during the plant's seedling stage can alleviate weeds from taking over. Once native species mature and establish deeper roots, weeding can occur less frequently. Larger spaces, like open prairies or densely wooded areas, require less weeding. While smaller spaces, like gardens or urban infill lots, require more extensive weeding by hand and use of mulch.

Check out the Fresh Coast Guardians [website](#) and [How-to Manual](#) for more information.

Rain Gardens



Rain gardens are a relatively easy, attractive, and affordable way to manage stormwater. Rain gardens can be highly adaptable to best fit your open space's size and site conditions. Rain gardens are gardens that are watered by collected or pooled stormwater runoff, slowly infiltrating it into the ground along root pathways. They are typically planted with wildflowers and deep-rooted native vegetation, which helps infiltrate rain channeled to them from roofs, driveways, yards and other impervious surfaces. Fresh Coast Guardians has additional information on rain gardens and a [How-to Manual](#).

Bioswales



Bioswales are landscape features similar to rain gardens that use native plants to help absorb water, filter out pollution and slow water transmission before it enters the local storm or combined sewer system. Bioswales capture more runoff coming from larger areas of impervious surfaces like parking lots and streets. Bioswales, which are often located on the edges of parking lots, along highways, or in the median area of a street, have more complicated design features than raingardens. Because bioswales have a complex design, typically an engineer and landscape architect are needed to ensure they are designed and built correctly.

Natural or Restored Wetlands

Wetlands are areas that have soils that are inundated or saturated for part of the year or for the entire year, and are also known as bogs, marshes, and swamps. Under federal definition, the saturation of soil in a wetland is at a frequency and duration to sufficiently support a prevalence of vegetation typically adapted for life in saturated soils. Wetlands allow rainwater to pool and slowly infiltrate into the ground, but also seep to provide water at the ground surface. Wetlands are nurseries for fish and wildlife, purifiers for water sources, and storage areas for floodwaters and carbon dioxide (CO₂).



To best care for your wetland, try to minimize and prevent the spread of invasive plants. While open space caretakers can manage existing wetlands, restoring former wetlands through vegetative or hydrologic improvements typically requires the DNR and other agencies and organizations to provide technical and financial assistance. To learn more about wetlands in Wisconsin, visit the Fresh Coast Guardians or the Wisconsin DNR's Wetland website pages.



Tree Canopy Management & Stormwater Tree Planting

Proper tree canopy management reduces the heat island effect, increases carbon dioxide (CO₂) absorption from the atmosphere and has multiple benefits for reducing stormwater runoff. Trees can hold rainwater on their leaves and branches, infiltrate it into the ground, and absorb it through root systems. Although open space caretakers can play an important role in identifying tree issues and diseases, management of tree issues are often beyond the scope of most open space caretakers. Therefore, this section provides the information necessary to help open space caretakers identify common diseases that plague trees in Southeastern Wisconsin.

There are three principals of canopy management:

- Early identification of tree disease
- Maintenance from invasive species
- Promotion of healthy roots.



After identifying potential disease(s), professional foresters should be brought in. Professional foresters, like Wachtel Tree Services who serves Southeastern Wisconsin, offer a wide range of plant health care services to save trees in need. Another threat to tree canopy management are invasive species. Invasive species, like buckthorn and honeysuckle, steal nutrients and ground space from saplings and mature trees hindering their root and canopy growth. Removing invasive species from the area where you plan to plant a sapling is an important first step along with periodic removal as the sapling matures into a tree.

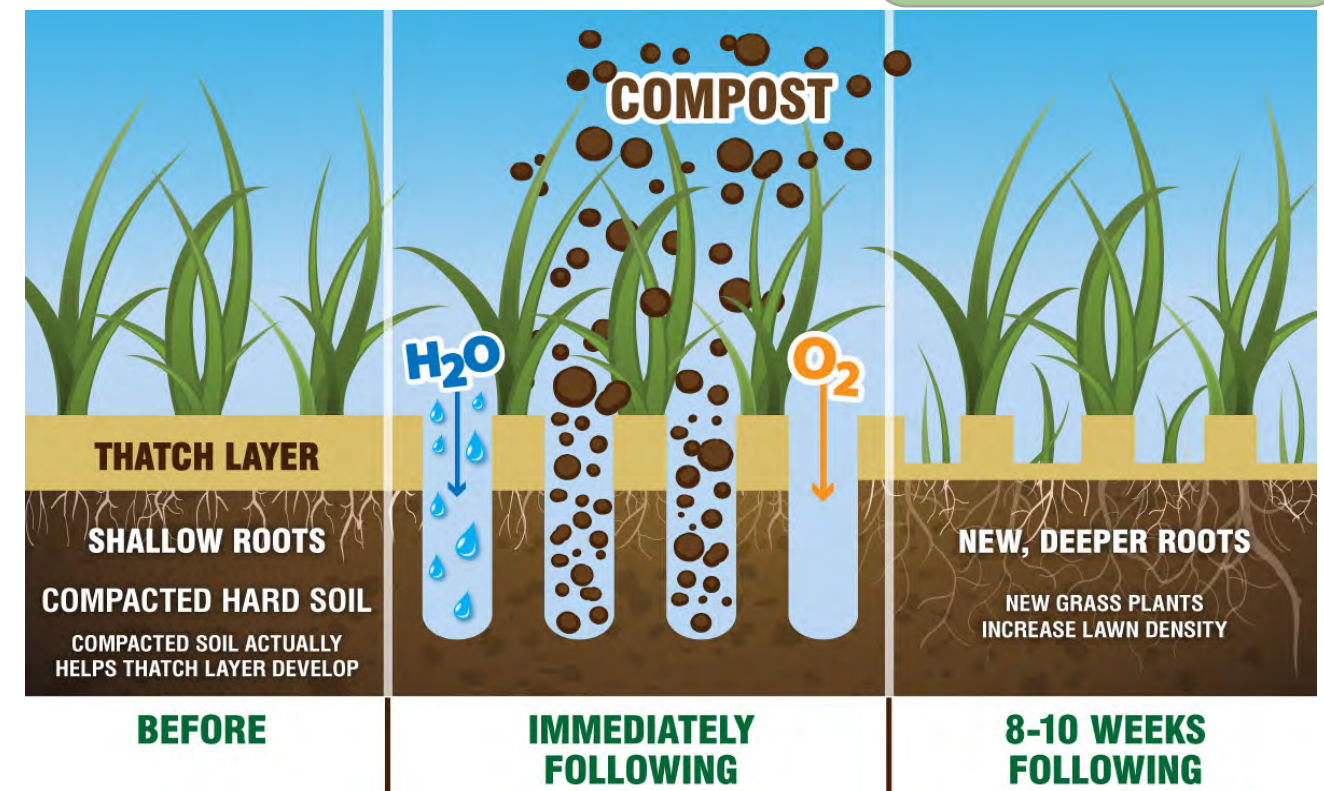
Disease	Tree(s) Impacted	Overview & Signs	
Oak Wilt	Oak trees	Oak trees. Oak wilt is caused by a fungus. If your Oak tree has brown wilting leaves this is an early sign of the disease.	
Emerald Ash Borer	Ash trees	Is an invasive, wood-boring beetle that kills ash trees by eating the tissues under the bark. You can identify infested Ash trees form S-shaped patterns left by larva under the bark or vertical splits in the bark.	
Gypsy Moth	Over 300 species of deciduous and evergreen trees	Gypsy moth caterpillars feed on trees and during outbreaks may eat the leaves of entire trees or forests. Look for signs of leaf damage like holes.	
Asian Longhorned Beetle	Maples & other hardwood trees	Emerging adult beetles chew round exit holes through bark that are about a half-inch in diameter; look for small piles of sawdust on the ground. As well as dead leaves and branches at the top of the tree.	

Turf Care

Turf grass encompasses various species of lawn grass designed to be mowed regularly and stepped on repeatedly. Historically, high levels of fertilizers have been used to manage turf grass for residential and commercial lawns. To promote more sustainable turf management techniques, open space caretakers should select turf grasses that require little grooming and are drought tolerant. Additionally, the use of naturalized or unmowed turf grass is being promoted by conservationists because these practices promote biodiversity and help to eliminate fertilizer runoff.⁴⁹

Before deciding to take part in the natural lawn movement, it is imperative to look up your municipality's codes and ordinances related to aesthetic lawncare. Some municipalities have ordinances that require grass to be cut to a certain length or only allow conventional turf grasses. If your municipality does not allow naturalized and vegetative lawns, you may have to do some lobbying to local lawmakers to educate them on its benefits.

More information on the naturalized lawn movement can be found from a quick Google search.



Turf grasses that require little grooming often are a blend of fescue. The most used variety is the tall fescue, which is valued for its adaptability to a wide range of climates and its tolerances for cold, heat, drought and shade. As a cool-season grass that grows most vigorously during cool spring and fall months, it is great for Southeastern Wisconsin.⁵⁰

Lawn Care

For more conventional turf grasses, follow these simple steps to perform a soil amendment for a healthy lawn.

1. Mow often: Remove no more than 1/3 the total height of the grass when you mow. Allowing the grass to stay tall encourages deeper root growth.
2. Dethatch, then aerate: Dethatch by raking with a stiff rake. Then aerate, which is pulling cores of soil and grass from your lawn and leaves them on the surface. Aeration loosens compacted soil, improves drainage, encourages deep root growth, reduces weeds, decreases the need for fertilizer, and prevents thatch. You should aerate once every other year. Many hardware stores have aerators for rent.
3. Top-dress: It's best to top-dress a thin layer of high-quality compost, topsoil, or manure.
4. Feed your lawn: Use a slow-release fertilizer, like Milorganite[®] once or twice a year.
5. Overseed: Overseeding is the planting of grass seed directly into existing grass, without tearing up the grass or soil. It's an easy way to fill in bare spots that weeds would otherwise take over.

Invasive Species and Weed Management

Invasive species and weeds are the bane of an open space caretaker's existence. Staying on top of invasive species removal and weeding is one of the most important aspects of maintaining any open space. As a huge threat to native biodiversity, invasive species actively compete and displace native plant species.⁵¹ Weeds, while not all weeds are invasive species, have a similar effect on open spaces and actively consume nutrients and water from desired species.

Three key things to keep in mind when tackling invasive species:

- Implementing a variety of techniques is typically the most effective route.
- Having a "catch 'em while their young approach" is the best mindset to have when tackling invasive species and weeds.
- Prioritizing is crucial. Determine which species are interfering most with your goals and attack!

There are a variety of invasive species and weed management techniques. For this guide, they are categorized into three management methods: biological, mechanical, and chemical controls.

Mechanical Controls

Mechanical controls are effective if repeated frequently during a growing season to exhaust a plant's root reserves, or if used in combination with other techniques. Three of the most effective methods are detailed below.

Selective Removal

While arguable the most time and body intensive method, selective removal of invasive species and weeds are beneficial because they do not require special licensing or introduce chemicals into the environment. Selective removal can be accomplished through several methods: hand pulling, weed wrenching, suffocation, cutting, mowing, and digging.⁵² If present in limited quantities, invasive species and weeds are best managed through these methods.

Removing as much of the root as possible is important to ensure no root regrowth. Plants should be pulled by hand or with a digging fork, as shovels can shear off portions of the root system, allowing for regrowth. It's easiest to undertake this type of method in the spring or early summer when soils are moist, and plants come out more easily. Suffocation is when a double or triple layer of UV-stabilized plastic sheeting is placed over trimmed undesirable plants and secured with stakes or weights. This technique will kill everything beneath the plastic but allows for easy implementation of a new native cover crop when the plastic is removed.⁵³

Selective removal methods are great activities for volunteers and community workdays because they do not require extensive knowledge to perform!



Biological Controls

Goats & Sheep

A rising trend in ecofriendly weed and invasive species management is livestock grazing. You can now find livestock rental services, typically goat and sheep, across the country for weed management on both public and private open spaces. Livestock grazing is a sustainable and often cost-effective alternative to chemicals and/or renting expensive greenhouse gas emitting machinery.

Goats and sheep are highly efficient workers. On average, a single goat can clear around 150 to 300 square feet per day. They can reach tight corners unreachable by machine or human, with an approximate reach of six feet off the ground.⁵⁴ Livestock are fenced in by section and kept away from desirable plants. Once one section is cleared the keeper will move the livestock onto their next section to graze. Depending on the size of your open space, a single treatment can take an afternoon to a couple of days.

For Southeastern Wisconsin, a quick Google search for goat and sheep weed management rental will populate a handful of companies. Additionally, local farmers may be willing to rent out their livestock. Most livestock renters can provide fencing, water, supplemental feed and supervision within their rate. An estimate for clearing one acre, which will take 40 goats about four days, from the Southeastern Wisconsin based company The Green Goats is approximately \$1,300.⁵⁵ This cost includes the site evaluation, goat transportation, fencing, and multiple day goat grazing fees.



Two things to consider when determining if livestock grazing is an effective weed management technique for your open space.

1. Livestock do not eradicate weeds from a single grazing treatment; they just remove above ground stems and foliage. Using livestock to manage weeds will require multiple grazing treatments or use of additional techniques.
 - Single Graze: Open an area in beginning of summer and then go in by hand to cut back buckthorn and other unwanted plants.
 - More permanent solution: Repeat grazing multiple times a summer (with four to six weeks in-between grazes).
 - Most permanent solution: Repeat grazing over multiple summers to get rid of stubborn invasive species like buckthorn and honeysuckle.
2. Livestock have different eating preferences and needs.
 - Goats will consume a wider range of foliage and woody shrubs.
 - Sheep stick to grass and flowering grassland plants.



Goats love these common unpopular plants: buckthorn, honeysuckle, box elder, mulberry, poison ivy, ragweed, bur dock, multiflora rose and garlic mustard.⁵⁷

Prescribed Burns

Prescribed burning is the intentional application of fire to a specific pre-planned area to promote biodiversity and growth of native species. It is one of the most environmentally-sound and least expensive methods for open space management. Many of Wisconsin's native plants developed adaptations to survive in a fire-prone environment. Deep roots and buds beneath the soil enables fire-adapted plants to survive and thrive while invasive shallow-rooted plants perish in the heat.

Prescribed burns are most often conducted on expansive grasslands and prairies, but any size open space can benefit from a prescribed burn. Not only does this method rid an area of invasive species, but nutrients are released into the soil during burning to further enhance the re-establishment of native species. Although it is dependent on your open space's size and plant characteristics, a prescribed burn cycle of once every three years is recommended to keep invasive species managed. Remember:

- Prescribed burns can NOT be conducted by anyone.
- Prescribed burns require extensive training, specific weather conditions, and a written plan addressing a number of important factors.
- Burns typically occur in early spring (March through May) and late summer/fall (July - November) in Wisconsin.
- A permit is needed to conduct a prescribed burn.

Check out the Wisconsin DNR's [website](#) for more information on prescribed burns and Wisconsin's fire history.



Photo taken by Michelle Johnson at the Urban Ecology Center

Handwicking of Stems

Hand-wicking is a popular mechanical method to manage weedy or invasive woody species and large perennial grasses. This method is somewhat of a combined mechanical and chemical control, that allows for precise herbicide application by a hand-wick. This technique can be used in a very selective and sensitive manner. This technique is most suitable for tall invasive species and weeds, by pulling the hand-wick bar across the top 1/3 of the weed. Staying above the desired, native vegetation this technique is best during the early development stage of native plants when the seedlings are often overpowered by aggressive annual weeds.⁵⁹



MLWP⁶¹

Chemical Controls

In some cases, careful use of herbicides should be considered. Herbicides are used to destroy unwanted vegetation. The use of herbicides alone, however, is not likely to be an effective or sustainable long-term solution for controlling invasive species and weeds. Difficulties include increased resistance (weeds are proven to have a remarkable ability to adapt to chemicals) and air, water, and soil pollution. Another challenge of herbicide use are the adverse health risks they pose to workers and the environment, herbicides need to be applied only by trained personnel. If used, herbicides should be used in small quantities for a stump application immediately after an invasive is cut back or used to control resprouts after the cutting.⁶⁰

With these facts in mind, some herbicides are less ecologically harmful than others. Harmful herbicides to avoid are persistent organic pollutants (POPs) like atrazine. Additionally, if you decide to use herbicides in your targeted invasive species and weed management plan, it is important to ensure that the herbicides used are used correctly. For example, the herbicide known as Roundup should not be used for residential lawns because it kills all vegetation, not just broadleaf weeds.

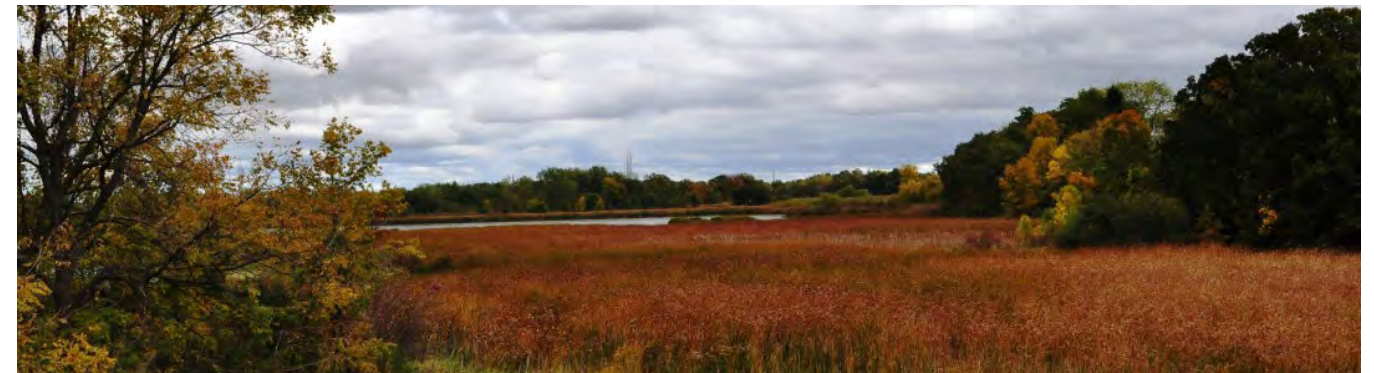
CONSERVATION EASEMENTS

WHAT IS A CONSERVATION EASEMENT?

- A CONSERVATION EASEMENT IS A PERMANENT RESTRICTION ON THE USE OF A PROPERTY TO MAINTAIN THE CONSERVATION USE AND VALUE OF THE LAND.
- AN EASEMENT MAY BE CREATED BY LANDOWNERS OR IN CONJUNCTION WITH LAND TRUSTS OR THE GOVERNMENT.
- CONSERVATION VALUES MAY INCLUDE THE PROTECTION OF WILDLIFE HABITAT, THREATENED AND ENDANGERED SPECIES, LAND TYPES (WOODLAND, WETLAND, RIPARIAN, AND FLOODPLAIN) OPEN SPACE, STORMWATER INFRASTRUCTURE, AND/OR TRAIL SYSTEM.
- IT ALLOWS LANDOWNERS TO PUT PART OR ALL OF THEIR PROPERTY INTO AN AGREEMENT THAT RESTRICTS THE FUTURE USES OF LAND IN ORDER TO BEST CONSERVE IT.
- THESE AGREEMENTS ARE LEGALLY BINDING, PROTECT THE EASEMENT FROM FUTURE DEVELOPMENT, AND ARE MOST OFTEN IN THE CARE OF A THIRD PARTY LIKE A LAND TRUST. THIS IS DONE BY BOTH FULL-SCALE LAND ACQUISITIONS OR ENTERING INTO CONSERVATION EASEMENT AGREEMENTS.
- A CONSERVATION EASEMENT PROVIDES PROTECTION IN PERPETUITY, WHILE ALLOWING LAND OWNERSHIP TO BE TRANSFERRED.

Why consider one?

Conservation easements provide a number of benefits for both the land and its owner. First and foremost, it puts the land into protection, ensuring that the land is conserved. Much of the land in conservation easements include natural forest or wildlife areas that play important roles in the region's overall ecosystem. Similarly, many conservation easements include agricultural land and prevent that land from being developed into other uses. Next, the process is customizable in many aspects. For example, as the landowner, you can have a say in whether you would like the easement to have public access, whether you retain current use rights like farming fields and other conditions that you can work with the land trust to determine. Lastly, conservation easements come with the benefits of tax deductions. Depending on the size of the land, a conservation easement can be tax deductible, saving you money while conserving your land.



What types and scales of open space are good fits for conservation easements?

Unsure about if a conservation easement is for you? Contact us at the Fresh Coast Resource Center! The FCRC is a great place to get connected to resources and organizations that can help to best serve you and your land.

The size and scale of an easement may be up to which land trust you choose to partner with. Each land trust is a bit different and have differing policies on minimums or maximums when it comes to easement area. Depending on the vision you have for your land, finding the right land trust should ensure your envisioned easement becomes realized.

The types of land that are good for easements vary and some may be more valuable in terms of land types or habitats. For example, a smaller easement may consist of a buffer zone around a waterway to protect the vegetation that helps filter out run off. Additionally, a larger easement may be a large swath of wooded land that is put into easement. Protecting the wooded land still leaves the surrounding land open to continued development while retaining the conservation value of some of the land.

Conservation Easement Process

The conservation easement process can look different depending on the land trust you decide to work with or the size of the land that is being protected. Generally, it follows a few steps along the way including:⁶²



- Choose a land trust to work with:
 - Do research on local land trusts.
 - Try and find a trust that shares your values and vision for your land and one that you feel is the best fit for your land.
 - Start with Gathering Waters, an umbrella organization that supports Wisconsin's 40 local land trusts.
- Have your land checked out
 - This will likely be done by someone from your chosen land trust, who will come out to your property to assess conditions and the areas suitability for the easement.
- Set up an agreement you are financially and legally comfortable with:
 - Consult with an attorney; this agreement is legally binding.
 - Meet with your financial advisor; donating land for a conservation easement can be tax deductible and your advisor can help you figure this piece out.
- Lock in your agreement
 - Once everything looks good for both parties, you can finalize the agreement.
 - Once the signed documents are filed in your local court, the land easement becomes legitimate.
- Continue your partnership
 - Depending on your land trust partner, additional agreements may be in order. Many land trusts ask for a financial donation to them to help monitor and enforce the conservation easement and the conditions that go with it. Continued dialogue with the land trust will help them best serve your easement and ensure its protection.



Conservation Easement vs. Deed Restrictions

Another way to ensure conditions are in place regarding land is a deed restriction. While they are commonly used, conservation easements are preferred for a number of reasons

- Conservation easements are more enforceable as there is a third-party monitor involved
- Conservation easements cannot be dissolved by the court like a deed restriction can be due to hardship or impracticality

Potential Conservation Covenant Language

When involving a conservation easement:

“This covenant is for conservation purposes and shall run with and burden the premises in perpetuity, and the land trust, its successors and assigns, shall have the right to enforce the same at law or in equity, and the right to enter the premises at a reasonable time and in a reasonable manner in order to monitor compliance here with.”



Resources

- Wisconsin Department of Natural Resources page on conservation easements: <https://dnr.wisconsin.gov/aid/Easements.html>
- Land Trust Alliance's find a land trust interactive map: <https://www.findalandtrust.org/>
- Gathering Waters: <https://gatheringwaters.org/>

APPENDICES

MANAGEMENT TECHNIQUE COST MATRIX
 OPEN SPACE STEWARDSHIP TEMPLATE
 SOURCES

Management Technique Cost Matrix

Management Technique	Stand-alone Cost (\$/SF, \$/Acre, \$/Materials)	Sources for Cost Estimates
Native Landscaping		
Shortgrass Prairie Seed Mix	\$1,600 Acre	Agrecol
Native Plant Plugs	\$2,000 - 4,000 Acre	U.S. EPA
Soil Amendment	\$0.11 - 0.35	Average ranges from FCGS* & Sustainable Soils
Green Infrastructure		
Rain Garden	\$10 SF	Middle of FCGS range
Bioswales	\$24 SF	Middle of FCGS range
Invasive Species Management Techniques		
Goat Grazing	\$1,300 + Acre	The Green Goats LLC
Selective Removal: Weed Control Sheeting, Digging Fork, Root Jack	\$25 - 200 Materials	Average ranges from Gardners.com and The Home Depot
Prescribe Burn	\$500 - 3,000 Acre	Adaptive Restoration
Hand-Wicking: Hand-Wick & Herbicide	\$50 - 175 Materials	Average ranges from Agri Supply & The Home Depot

Open Space Stewardship Plan Template

Property Information

- Open Space Name:
- Date Plan Completed:
- Location:
- List of Adjacent Properties:
- Map & Site Plans (attach documents & photos):

Objectives

Management Objectives and Needs

- Short Term:
- Long Term:

Future Vision

- What do you want your open space to look like in the next five to 20 years?

Existing Habitats and Natural Features

Habitats

- Briefly describe applicable habitats such as: Grassland, prairie, forest, riparian zone, wetlands, flood plain, other.

Soil

- Briefly describe the soil type(s) on the property: forested silty soils, prairie silty soils, wetland soils, or other. Show location and extent on map.

- Briefly describe any soil erosion or degradation issues you are aware of on the property. Show location and extent of problem areas on map.

Water

- Locate water resources on the property map. Water body types include streams, ponds (natural and man-made), wetlands including riparian areas along streams.

Water Body Type	Description	Extent/Size
<i>Stream</i>	<i>Slow moving, shallow, clean</i>	<i>1/4 mile in length</i>

- Briefly describe any issues with water bodies you are aware of on the property (streambank erosion, crossings, water quality). Show location and extent of problem areas on map.

Wildlife

- Briefly describe wildlife species including mammals, birds, fish, reptiles, and amphibians on the property. Include beneficial or pest mammals and insects in this section if applicable.

- Describe any improvements you have adopted to improve habitat for desired wildlife species or management of pest species.

Vegetation

- Briefly describe vegetation types on the property. Examples include oak woodland, annual grassland, hedgerows. Include infestations of weeds or invasive species.

- Briefly describe the tree/forest health on the property. Do you notice any signs of a sick tree(s): bark loss, discolored or falling leaves, and/or fungus?

- Describe any improvements you have adopted to address the issues/opportunities you have identified. Are further improvements needed? Show location and extent of improvements on map.

Other Features

- Briefly describe any other natural or built features on the property (walking trails, water/sanitary facilities, signage, other). Describe any improvements you have adopted. Are further improvements needed?

Existing Operations and Management

Briefly describe existing applicable management techniques:

Turf care

Plant care

Invasive species removal

Stream bank/erosion control

Tree care or removal

Other

Community and Volunteer Support and Opportunities

List existing community or volunteer support:

List potential individuals, groups, or organizations that may be interested in caring for this land.

List existing volunteer opportunities. Examples include invasive species removal, lawn care maintenance like mowing, planting, or fundraising opportunities.

List potential volunteer opportunities.

Summary and Prioritization of Management Concerns

What are your highest priority projects based on your analysis of your open space? What new or existing management techniques would you like to implement or continue on your open space?

Project	Timeframe	Priority (1-5)

Potential projects:

- Invasive species removal: scheduling a prescribed burn, livestock grazing sessions, or volunteer weed-out days.
- Implementing green infrastructure projects like a rain garden or bioswale.
- Remove nonnative landscaping and replacing with native perennials.
- Conducting a soil amendment on your open space's turf area.
- Wildlife habitat management: planting native species that attract butterflies, providing wildlife friendly water sources, or installing wildlife friendly fencing.

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