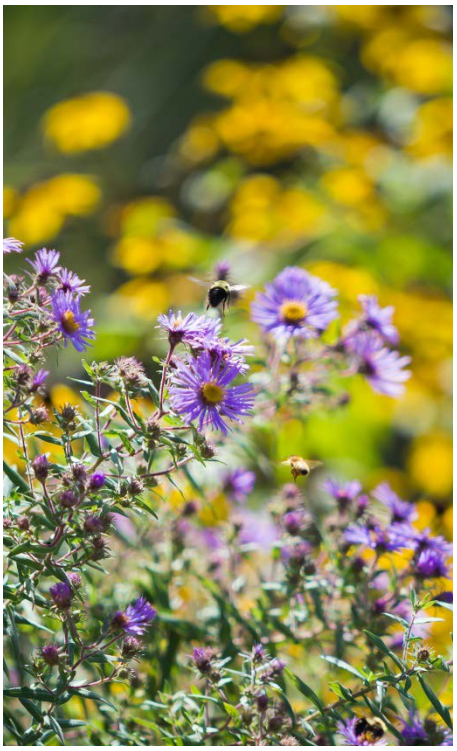
Natural Areas Program Volunteer Handbook



Revised February 2021

Introduction

If you live in Dane County, chances are you don't need to travel far to enjoy the great outdoors. While Dane County harbors many cultural attractions and big city amenities, its proximity to serene waters, scenic landscapes, and peaceful solitude are equally accessible. The quality of life in Dane County is unmatched, and the accessibility of parks and natural areas plays a large role in what makes Dane County such a special place to call home.

The diversity of the underlying geology and natural landscapes contributes in no small part to the abundance of remarkable outdoor opportunities. The four lakes anchor the heart of Dane County with the City of Madison stretching around their banks, creating one of the most scenic backdrops to any capital city. To the east stretches a gently rolling glacial landscape of drumlins, kettle lakes, and deep prairie soils. To the west lies a dramatically different land, a driftless isle from an ancient era that somehow escaped the threat of multiple glacial advances. Coulees, ridges, rock outcroppings, and streams lace the region with their unique beauty. The broad, sandy Wisconsin River Valley grazes the northwest corner of Dane County, a refuge for wildlife and people alike.

This region of diverse landscapes with a wealth of natural resources has attracted and inspired people dating back thousands of years to the age of the mound-building native peoples, followed by the Ho-Chunk nation of today. Many conservation pioneers and globally significant environmental leaders, such as Aldo Leopold and John Muir, have called Dane County home, and through their work, forever influenced the way people perceive their relationship to nature, inspiring us to care for the earth and the lands we call home.

Today, Dane County is the fastest growing county in Wisconsin, as people are drawn to the area for a multitude of reasons, including the abundance of parks, open spaces, and the opportunity for convenient access to the outdoors. More than ever, our natural areas face new and mounting challenges despite legal designations that prevent development and provide protections as parks or wildlife areas. These challenges include climate change, the encroachment of invasive species, the loss of rejuvenating natural processes such as fire, and the gradual disappearance of species and plant communities that won't return without intentional restocking.

While the challenges facing our natural areas today are daunting, these challenges also present a unique opportunity for the people of Dane County to leave their mark on the land and connect with the natural world and their own communities in deep and meaningful ways. Through ecological restoration, a concept first conceived right here in Dane County at the UW-Madison Arboretum, volunteers work on county lands to combat invasive species, plant native seeds, and steward the land back to health. Through their toil, lands are transformed from shabby thickets of weeds and brush to diverse and colorful natural areas that bloom again as they once blossomed for the Ho-Chunk many decades ago.

This labor of love enriches the lives of these dedicated volunteers and the people of their communities in ways that can't be imagined. Ecological restoration draws people together for a common good, unites those from different backgrounds, and builds community around a shared love for the land and a desire

to make a difference. In this time, every opportunity to bring people together is an opportunity worth pursuing.

On an individual level, people are seeking ways to satisfy their instinctual need to be outside, nurture a connection with the land, and strengthen their sense of place. Working in the outdoors provides a release from the stresses of our 21st century world. Stewardship of the land is stewardship for your soul!

At this time, more than ever, nature needs our help and we need the natural world. All it takes is a willingness to step outside and lend a helping hand by collecting or planting prairie seeds, removing invasive species, or helping with a controlled burn. And as we know, here in Dane County, the nearest natural area is just around the corner, waiting for you to leave your mark.

Joe Parisi
Dane County Executive

Purpose of this Handbook

How do I learn about volunteer opportunities? Where do I pick up tools and supplies? What should I be working on during this time of year? Do I need permission to use a chainsaw in the parks? How can I get help from staff on a project?

If you've ever asked any of these questions, you'll find this handbook extremely helpful! Whether you are a new volunteer still learning your first prairie plants, or a seasoned volunteer that knows every species by its Latin name, you will find this handbook to be a valuable resource and are encouraged to use it as your first reference when any question arises about volunteering in county-owned natural areas. The information in this document is particularly useful for Certified Land Steward Volunteers, who work independently in the parks and/or lead other volunteers without on-site supervision by staff.

This document provides an overview of the Natural Areas Program and offers guidance on how to work safely, efficiently, and get the most out of your volunteer experience. With over 12,000 acres in the park system, thousands of registered volunteers, and only a limited number of staff, it's critical that program volunteers understand and embrace this system of policies and procedures to keep everyone organized and informed, ensure safety, and help things run as smoothly as possible. Following this framework will help staff, volunteers, and outside stakeholders to work cooperatively within the program and ensure that we are all on the same page and pulling together towards a common goal.

This handbook is a living document that will evolve over time. Regular updates will be made when issues arise or when better solutions are developed. Notifications will be sent when important updates are made and the most current version of the manual will always be available on the Dane County Parks website's Volunteer page (danecountyparks.com/Volunteer-Program). As a volunteer with the county, please feel encouraged to let your voice be heard by providing suggestions on how the handbook can be strengthened over time.

Volunteers can achieve remarkable things! There is living proof in many Dane County Parks. Just take a stroll through one of your local parks and ask a volunteer what the area looked like before they started working. The transformation can be extraordinary, but nobody can do it alone! The likelihood that your volunteer efforts leave a lasting impact in Dane County hinges on our ability to work as team. This handbook is a guide to help us do that.

Acknowledgements

Managing and restoring natural areas requires a community of committed people working together. No one person can do it alone. The same can be said about the development of this handbook. Dane County Parks thanks the many volunteers, staff, and partners whose ideas, edits, and thoughtful comments contributed to the creation of this handbook. In particular, the county would like to recognize significant contributions made by the following individuals:

Brian Berkan, Dane County Parks Park Ranger
Lars Higdon, Dane County Parks Botanist/Naturalist
Tom Klein, Dane County Parks Land Management LTE and Volunteer
Shane Otto, Dane County Parks Land Restoration Specialist
Susan Sandford, Dane County Land & Water Resources Strategic Engagement Coordinator
Rhea Stangel-Maier, Dane County Parks Volunteer Coordinator

Jan Axelson, Volunteer
Sue Eagle, Volunteer
Marrion Farrior, UW-Madison Arboretum
Jim Parry, Volunteer
Anne Pearce, Wisconsin First Detector Network
Alex Singer, Volunteer
Michael Vahldieck, Volunteer
Jared Urban, Wisconsin Department of Natural Resources
Tom Wise, Volunteer

Contact Information and Staff Notifications

FOR EMERGENCIES, CALL 9-1-1

Parks would appreciate being notified if any incident occurred on county lands that required notification of emergency services.

The Dane County Non-Emergency Dispatch line (608-255-2345) should be used in urgent matters that do not warrant a call to 9-1-1. Dispatch has the radio and phone directory for all staff and will be able to route your notification through proper channels. This number is staffed 24 hours a day.

The Volunteer Coordinator is the primary point of contact for volunteers for non-urgent matters. This includes general inquiries about the volunteer program and any maintenance issues such as downed trees, blocked trails, vandalism, and needed repairs. Maintenance notifications received by the Volunteer Coordinator will be routed through the proper channels for service. When reporting any maintenance needs, it's always helpful to send a picture of the problem and be prepared to provide specific location directions. It is possible that the issue will not be addressed immediately as there are many other competing requests that staff handle on a daily basis. Staff will determine the urgency of the request relative to other tasks on the agenda and address the issue in the appropriate order.

For specific questions about the Natural Areas Program including invasive species control, native seeds, prescribed burning, and vegetation management contact the Naturalist/Botanist or the Land Restoration Specialist.

Dane County Parks Staff Contacts

Please add relevant numbers to your cell phone contacts address book.

	Schedule	**Office (608)**	**Cell (608)**	**Email--@countyofdane.com**
Dane County Non-Emergency Dispatch	24 hours	255-2345		
Deputy Director/Volunteer Coordinator Joleen Stinson	Weekdays		422-0657	Stinson.joleen
Naturalist/Botanist Lars Higdon	Weekdays		286-9497	Higdon.lars
Land Restoration Specialist Shane Otto	Weekdays		575-0396	Otto.shane
Mendota Unit Ranger NW quarter of Dane County	Weekends	224-3730	220-4386	
Token/Babcock Unit Ranger East half of Dane County	Weekends	224-3730	220-9673	
Capital Springs Unit Ranger Capital Springs and Anderson Park	Weekends	224-3730	712-3869	

Brigham Unit Ranger SW quarter of Dane County	Weekends	224-3730	516-7399	
Land and Water Resources Front Desk	Weekdays 7:45am-4:30pm	224-3730		Dane-parks

The following numbers should be used for pesticide related emergencies:

- Human Poisonings (800) 222-1222
- Animal Poisonings (800) 224-4500
- Pesticide Spills (800) 943-0003

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Dane County Natural Areas Program Mission

The mission of the **Natural Areas Program is to restore and sustain the natural communities of Dane County Park lands** to the highest standard while helping to foster within people a deeper connection to our natural resources and an understanding for the principles and practices of land stewardship.

Core Values

Core values of the Natural Areas Program include:

- Ecosystem Recovery
    - Restoring ecosystem integrity, resiliency, and functionality.
    - Restoring sensitive and declining species.
    - Controlling invasive species.
- Land Stewardship Education
    - Training the next generation of land stewards.
    - Connecting people to the land and waters of Dane County.
    - Instilling a sense of wonder and appreciation for the natural world.

Vegetation Management Approach

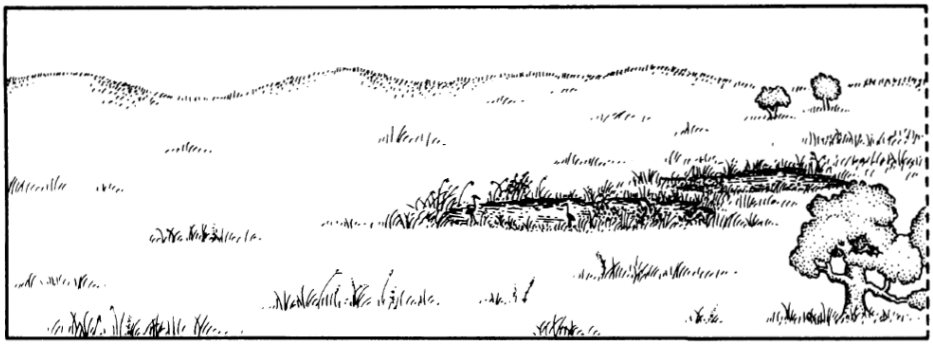
Natural Communities

Vegetation management in Dane County Park natural areas recognizes and embraces the understanding that the distribution of vegetation on the land is not random. Plants and all living things support and influence each other in a web of interactions that form natural communities. A natural community is an assemblage of native plants, animals, and other organisms interacting with each other and their physical environment in a particular area. Over 100 natural communities have been identified across Wisconsin by the Department of Natural Resource's (DNR) Natural Heritage Inventory. On Dane County Park lands, typical natural communities include southern forests, oak woodland, oak opening, and prairies (see figure 1). Appendix 1a-1d provides a detailed description of these communities and descriptions for every community in Wisconsin are available on the DNR's Natural Communities webpage.

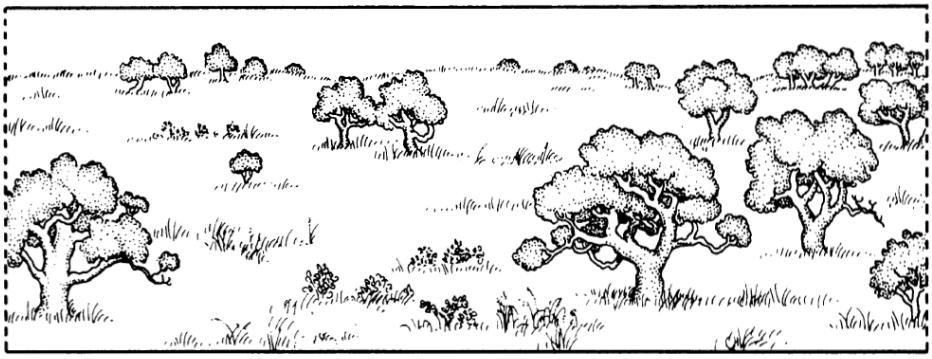
Environmental factors such as moisture, sunlight, soil type, temperature, and disturbance (for example, flood or fire) determine which community prevails in a specific location. Natural communities exist in a mosaic across the landscape and repeat where similar environmental conditions exist. Changes in these environmental factors account for transitions from one community to the next. For example, the north facing side of a hill is likely to be receive less direct sunlight and will therefore be cooler and retain more moisture as compared to the south facing side. The species of plants and, therefore, the natural community is likely to be significantly different on opposing sides of the hill. In Dane County, south facing slopes are typically suitable for prairie or an oak opening with burr or white oaks while north facing slopes are better suited for southern dry and mesic forests containing red oaks or even sugar maple.

Figure 1 : Typical Natural Communities in Dane County

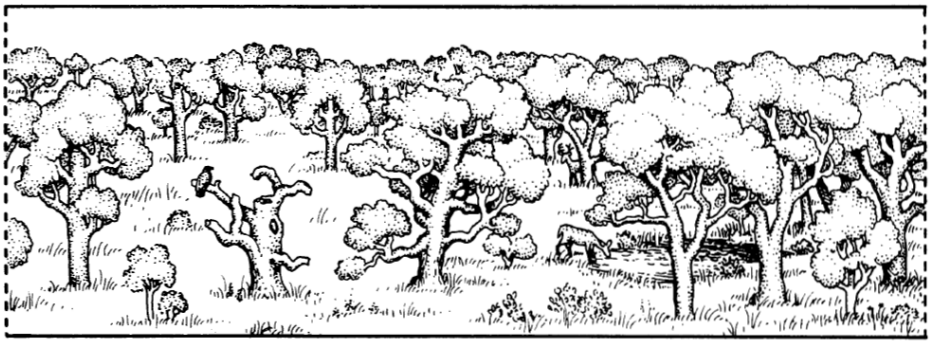
Prairie



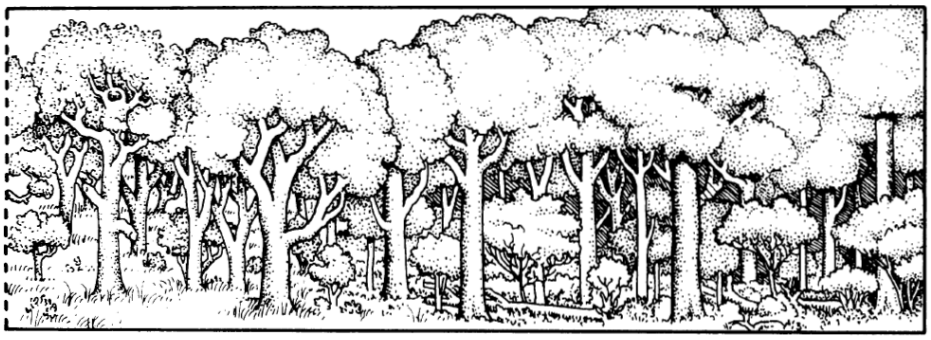
Oak Opening/Savanna



Oak Woodland



Forest



From *The Tallgrass Restoration Handbook* edited by Stephen Packard and Cornelia F. Mutel. Copyright © 1997, 2005 Society for Ecological Restoration International. Reproduced by permission of Island Press, Washington, D.C.

Restoration vs. Replication

Over the course of the last 200 years, the vegetation in Dane County have been heavily impacted by human activity. Beginning in the 1830s, a growing number of European settlers in the region brought significant changes to the land. Wildfires, which once swept across the land and shaped the vegetation, were extinguished by people or stopped by farm fields and roads. Agriculture and livestock grazing damaged the soil and displaced native species. Furthermore, the introduction and spread of non-native, invasive species, has contributed to significant losses in biodiversity and creates challenging obstacles to recovery.

The Natural Areas Program attempts to restore natural communities that have been heavily altered or lost due to anthropogenic causes. A common misconception is that the goal of ecological restoration is to turn back the hands of time by returning vegetation back to a specific ideal point in history—perhaps the 1820s, just prior to European settlement. This approach is comparable to the restoration of an antique car whereby the goal is to replicate how the car functioned and appeared when it was new and then preserve it in that state. Furthermore, it may not even be practical to set that goal. For example, it would require considerable time and effort to restore a farm field to a forest. A prairie or oak opening, on the other hand, is a much more attainable goal and may be the preferred alternative.

Rather than turning back the hands of time to a specific point in history, restoration attempts to fix the clock itself, and allow the hands to begin moving again. Natural communities are dynamic—expanding, contracting, and shifting in response to changes in the environment over time. Restoration attempts to restore the capacity of the land to respond to disturbances and allow it to provide the array of ecological functions and services (for example, wildlife habitat, stormwater filtration, pollination, and carbon sequestration) that it did the past. As a result, the target natural community for a particular site may or may not be identical to the community present immediately prior to European settlement.

Understanding where different natural communities occur on the landscape and the species that comprise each community is key to setting vegetation management goals. If oak opening is the target community for a particular location, management activities should promote species that comprise this community and deter or remove species that are not associated with this community. Exotic, invasive species are obvious candidates for removal. Less obvious, but also important to consider are native species that have encroached from other natural communities. Using the example above, when restoring an oak opening to a south facing slope, red oaks and sugar maples should be removed even though these species are native to Dane County. Decades of fire suppression likely led to their expansion onto south facing slopes and their removal is key to the restoration of an oak opening.

Volunteer Partnership

Dane County Natural Areas volunteers work to maintain and restore native vegetation, soils, wildlife, and natural processes in the portions of county lands and easements off-trail and outside of developed areas such as turf, playgrounds, shelters, and boat launches. Natural areas are largely wild and undeveloped spaces such as prairies, woodlands, and wetlands with limited sign of human development. Natural areas comprise over 10,000 acres of land in the 12,000-acre park system. Park lands are further classified as Recreation Parks, Natural Resource Areas, Wildlife Areas,

Historical/Cultural Sites, or Forests based on the primary use, mission, or management objectives of the property. Natural areas exist within all classification of park lands and volunteers are encouraged to work in any natural area regardless of the classification.

The management of natural areas requires a partnership between county staff and volunteers. County resources alone will never satisfy all stewardship needs required to maintain healthy ecosystems. For example, the county will never have the staffing to keep pace with the encroachment of invasive species or to collect enough prairie seed to restore new lands. Likewise, volunteers are also limited in what they can accomplish on their own. Volunteers come from a variety of backgrounds and have a wide diversity of skills and experiences but often lack the specific training and expertise needed to plan and execute land stewardship tasks. Volunteers also require tools, training, and guidance to work successfully. However, when staff and volunteers work together in a coordinated partnership, there is unlimited potential to restore and enhance natural areas!

Program Activity Areas

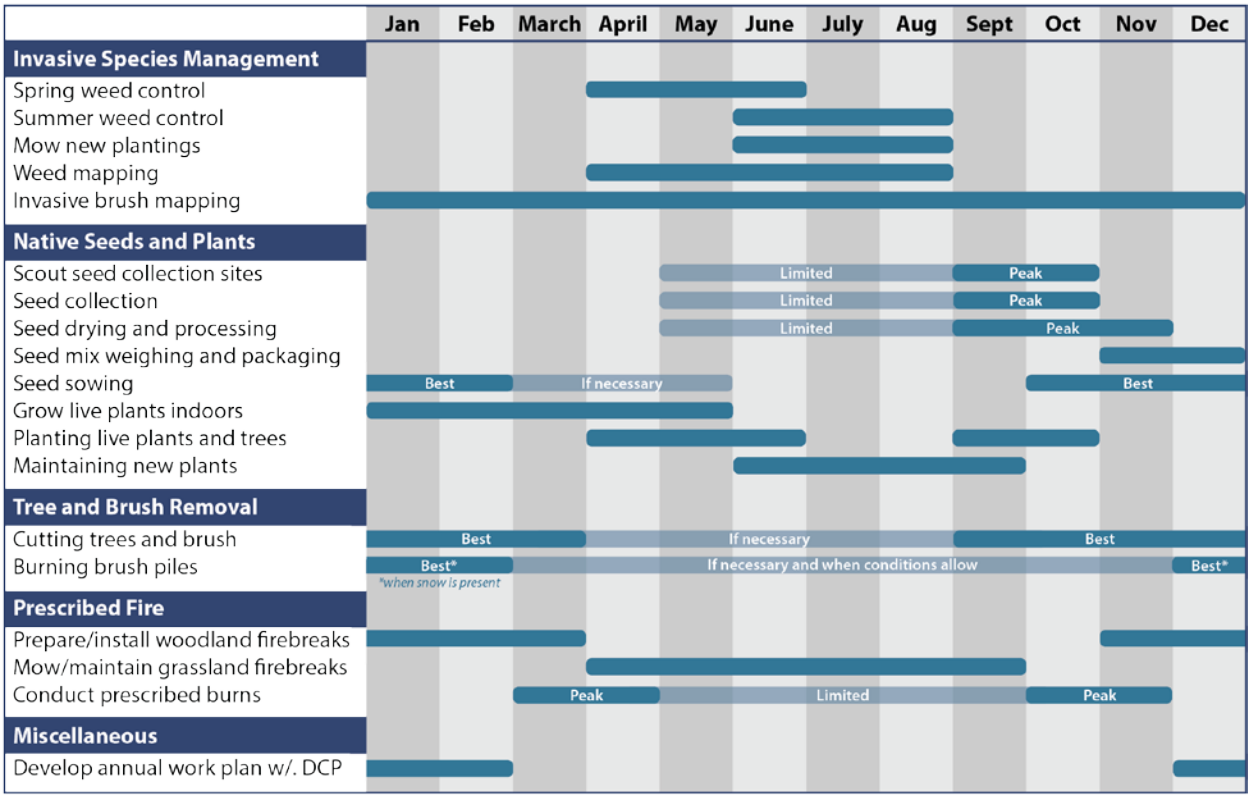
Stewardship tasks in the Natural Areas Program generally fall within four main activity areas:

- Invasive species management
- Native seeds and plants
- Prescribed fire
- Tree and brush removal

Tasks are often highly dependent on the season, weather, and condition of the vegetation in the field. Certain tasks, such as seed collection, can ONLY occur during specific windows of time. Likewise, invasive species control is highly dependent on the stage of growth of the target plant and can only be accomplished during a narrow window of opportunity. Other tasks can occur during a wider range of times but are often more convenient, efficient, or comfortable during a specific season. For example, tree and brush removal can be done at any time of year but is most efficiently accomplished when leaves are absent and when cooler weather allows a person to work more comfortably.

Most natural areas in the park system would benefit from volunteer efforts in all activity areas. For any given natural area, there is usually restoration work that can be done during any day of the year. The chart below lists recommended periods when a specific tasks needs to be accomplished or when field conditions are typically appropriate for the task.

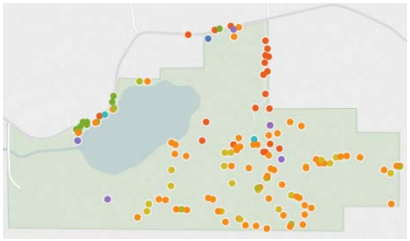
Calendar of Main Tasks



Invasive Species Management

The encroachment of non-native, invasive species is one of the greatest challenges facing Dane County natural areas. After habitat loss, the spread of invasive species is the greatest factor contributing to the decline of biodiversity worldwide. Invasive species contribute to wildlife habitat degradation, native species extirpation, and a loss of ecological services such as pollination, erosion control, and stormwater filtration. Containing and eradicating priority invasive species and reversing their impacts are core objectives in managing Dane County natural areas.

Invasives Mapping



Mapping infestations is often the first step to the management of invasives. When a map is created, populations are cataloged, information can be shared, management strategies can be developed, and trends can be observed over time. To document the locations of the most serious invaders, the county uses a free smartphone app called the Great Lakes Early Detection Network (GLEDN). GLEDN allows a user in the field to map the location of any invasive species using their smartphone's GPS (Android or iOS). The record is then uploaded to a central database called EDDMapS (https://www.eddmaps.org/), and once verified by an expert, is publicly viewable on an online map from the EDDMapS interface. Infestations can also be mapped directly in EDDMapS using a home computer. See the "Mapping Invasive Plants in Wisconsin" document on the Web Resources for Volunteers page of the Dane County Parks website.

Mapping can be fun and is an excellent activity for people who would like to contribute but don't have the ability for, or interest in, more physically demanding tasks. If you are interested in mapping invasive species, consult with natural areas staff on which species are a priority for mapping in the area you are working.

Invasives Control

Spring through summer is the primary, if not the only, window of opportunity for controlling most herbaceous (non-woody) weeds such as crown vetch, bird's foot trefoil, sweet clover, and wild parsnip. The goal is to prevent the spread of invasive plants and begin to eradicate existing infestations, which will otherwise squeeze out native flora and severely impede the process of recovery. Control efforts vary by species and time of year but include techniques such as herbicide application, mowing, slicing the root with a shovel, or pulling by hand (See "Selecting an Approach" section for more details on specific techniques). There is often a relatively narrow window of time to conduct control efforts on herbaceous weeds before they set seed or become less susceptible to control efforts. Summer weed management is often overlooked or neglected as the heat and biting insects can make field work challenging. Nevertheless, it's a beautiful time of year and a critically important task that deserves adequate attention to ensure invasive weeds do not overrun restoration sites.

Selecting an Approach

Controlling invasive species requires a basic understanding of the various methods and techniques. There are many pros and cons to consider when selecting an approach. Taking time in advance to fully evaluate the costs and benefits of various control methods is always wise and usually pays off in the end. While there may be several possible approaches for treating a particular invasive species, it's always important to follow best management practices, which apply to any situation.

Best Management Practices

The following are best management practices (BMPs) and common methods for controlling invasives in Dane County natural areas. These methods and practices were adapted from the Wisconsin DNR State Natural Areas Volunteer Handbook. (Be sure to consult with Dane County Parks natural areas staff for creating an integrated long-term plan before undertaking the control of any particular invasive on a site.

Best management practices are methods or techniques that have consistently shown results superior to those achieved by other means. These practices have been determined to be the most efficient, practical, and cost-effective measures to yield long-term success. At Dane County Parks, and directly pertaining to land management, stopping the spread of invasive species is a key area for applying BMPs.

It is counterproductive to spend time and resources performing habitat restoration while at the same time inadvertently moving weeds from one area to another. BMPs should be implemented for all restoration activities. Proper and consistent implementation of BMPs is essential to ensuring that we manage the land with excellent results.

Pick your targets carefully

Be strategic about where you focus your control efforts. Natural areas staff will work with volunteers to set priorities and organize an appropriate plan of attack for certain species/areas and can help determine a schedule for when and where species are to be removed. The specific approach will depend on the species and the areas in question. A general rule of thumb is that you should control a weed invasion from the edges and work inward. Prioritize removing invasive plants from: roads and trails where seed can be easily picked up and spread; more pristine and intact habitat areas; and new or emerging weed populations.

Time work to plant cycles

Time your attack based on the growing cycle of the plant you are targeting and modify your choice of tools accordingly. For instance, sweet clover can be controlled by mowing but only when plants are in full bloom.

Minimize damage to native plants

Inadvertently killing natives is entirely counterproductive to the county's mission and to what we are all trying to achieve. If there is any doubt about a plant being an invasive species, leave it alone. Make notes as to what and where it is, and take a photo if possible. Staff are happy to identify plants brought to their attention.

Minimize soil disturbance

When using any tool, disturb the soil as little as possible. The more you dig and rip up the soil, the more you allow weed seed to enter the soil and find suitable conditions to germinate, and the more you expose weed seed lying dormant in the soil to be exposed to conditions more favorable for its germination. It is very likely you could just swap one weed for another.

Do not trample plants

Stay on the trail when walking to and from your work site! Please ensure that your work does not create the beginning of a new path that others will use and further disturb habitat.

Bag seed heads and remove from area

Whenever possible, bag and remove seeds and fruits when cutting and removing invasive plants, which reduces the chance of future invasive weed populations. Note, with the exception of purple loosestrife, flowers do not usually need to be removed as seeds are not typically viable at this stage of growth.

Clean footwear, tools, and equipment

To the extent possible, keep footwear, tools, vehicles, and clothing clean of debris, soil, and seeds, particularly when moving between sites. Doing so will reduce the chance of weed dispersal and helps to prevent deterioration of equipment, especially on metal surfaces where rust can form.

Record when and where you worked

Work location maps and notes are vital parts of a successful stewardship program. Recording your work will help us track success.

Leave no trace

Clean up after yourself. Do not leave trash, foot-prints, or digging holes. Plant material can be left on site but should be stacked or spread so as not to be an eye sore and not smother native vegetation.

Methods

Many different tools and techniques are available for managing invasive species. Below is a summary of options. Selecting the proper approach is not always straightforward and often depends on a variety of factors including species, cost, time, season, stage of growth, access, and likelihood of collateral damage to adjacent vegetation. Natural areas staff are always available to provide recommendations. UW-Extension Weed Science (https://fyi.uwex.edu/weedsci/) and the Wisconsin First Detector Network (https://fyi.uwex.edu/wifdn/) also provide lists of management recommendations for a range of invasive species.

Tree Girdling

Girdling removes the cambium layer from the stem of a tree, cutting the roots off from the supply of sugars produced from the leaves and causing a slow death. The tree may leaf out for a year or two before it dies because water and nutrients are still able to flow to the leaves from the roots through the xylem. Girdling is a reliable way to control aspen clones without using herbicide. Girdling should be done below the lowest live branch in spring or early summer after leaf out but before mid-summer. For most other species, which don't die without herbicide, girdling can be done together with herbicide. Girdling can be an efficient way to kill larger trees without producing large amount of dead limb accumulation in

the short term. But beware: there will be dead trees for many years before they eventually fall down. Girdling should not be performed on trees near trails or structures likely to be damaged when the tree does finally fall.

Hand pulling

It is possible to hand pull many invaders. The pros of hand pulling include being cheap, easy, no tools required, and visible progress. Cons are soil disturbance, bringing up seeds from the seed bank, being labor intensive, pulling desirable plants as well, and not getting the entire root. There is usually a time of year when hand pulling is easier due to smaller plant roots or ease of finding the invasive.

Digging/slicing

For wild parsnip and some other taproot species such as sweet clover and burdock, it is possible to cut below the root crown (just below the soil) to achieve effective removal. A so-called "parsnip predator," a modified shovel designed specifically for taproot slicing, can be a valuable tool for handling such species. Digging up the entire root will leave a more noticeable disturbance and should be used sparingly on species that can be controlled with other methods.

Mowing

Mowing can be effective at controlling some biennial plants that put all of their resources into flowering and producing seed in their second year before dying. Mowing with power equipment can be much more efficient than hand pulling. The drawback is that mowing, especially on a large scale, is non-selective and can damage non-target species. Some examples of biennials that mowing can target are sweet clovers, Japanese hedge parsley, wild parsnip, and some thistles. Mowing timing is crucial and specific to the species, but it should be mowed at peak flowering before seeds are mature. Repeated mowing may be needed if cut stems resprout. Mowing is also an option to top kill brush. Repeated mowing can decrease the cover of brush species like sumac, honeysuckle, and dogwood.

Herbicides

Herbicides can be applied in a variety of ways and can be very efficient and effective at controlling invasives. Herbicides are essential to the control of some species. Drawbacks can include collateral damage to adjacent vegetation, other environmental impacts, cost, and disturbance to park visitors. For more about herbicides, see the "Using Herbicides" section

Prescribed fire

Many of Wisconsin's plant communities relied on fire before the landscape was fragmented by European settlement and fires were extinguished. Prairies, wetlands, savannas, and oak woodlands are all dependent on fire to top kill brush, decrease canopy cover, stimulate natives, release nitrogen and other nutrients, and warm the soil. Fire can be a very efficient tool for invasives removal because a large area can be impacted with minimal effort. If favorable fuels are present (oak leaf litter, grasses), fire can drastically change the landscape for the better. Fire isn't a magical cure because many areas don't have enough fuel to burn and undesirable woody plants will resprout.

New methods

Keep learning! There are always new methods out there to be discovered.

Using Herbicides

Herbicides are one of many tools for managing undesired and invasive plants in natural areas. Typically, a combination of cutting, prescribed fire, herbicide, and seeding provides the most successful and longest lasting benefits. When used with caution and precision, herbicides do far more good than harm for natural areas. Below is a list of policies and procedures that help volunteers work with herbicides in a safe and responsible manner.

The following are State and Federal Laws that County volunteers must observe:

- No one under the age of 18 will apply pesticides or assist in any way with the process.
- At a minimum, long sleeves, long pants, shoes plus socks, gloves, and eye protection must be worn for mixing, pouring, or applying herbicide.
- Applicator must read the herbicide label prior to use and follow all requirements.
- Applicator must have the herbicide label on site and accessible in case of emergency.
- Clean-up supplies, including soap and water, must be available on site.
- Restricted entry intervals (REI) listed on the label must be observed.
- Aquatic applications (below the ordinary high water mark) must be made by an applicator certified in the Aquatic category.

The following are additional rules set by Dane County Parks:

- Volunteers conducting herbicide applications independently or supervising the application of herbicides by other volunteers must attend the Certified Land Steward Orientation, which includes an Herbicide Safety component (see Certified Land Steward section for more information).
- No restricted use pesticides (RUP) may be applied to county lands.
- In the event of an accident or spill, an Incident Report (Appendix 2) should be completed and forwarded to the Volunteer Coordinator.
- Volunteers treating stumps during volunteer events work under the supervision of a Certified Land Steward or staff member and do not need to receive separate herbicide training.
- Volunteers must keep track of chemical usage including: applicator name(s), date, site name, method, pesticide brand, amount used, application rate, and species targeted. The preferred way of reporting applications is online using ISMTrack; alternatively you can record your applications using the paper form in Appendix 3. Records must be submitted to the Volunteer Coordinator by December 31 of each year or made available upon request.

Additional recommendations:

- Obtain Wisconsin Pesticide Applicator certification category six, Right-of-Way & Natural Areas. The county will reimburse volunteers who complete the certification.
- Applicators should let someone know where they are going to be working.
- Applicators should carry a cell phone in case of an emergency and program these numbers into their phone:
    - Human Poisonings (800) 222-1222
    - Animal Poisonings (800) 224-4500
    - Pesticide Spills (800) 943-0003

Herbicide Best Management Practices

*****Read and understand the herbicide label and keep it accessible at all times*****

Dane County Parks provides appropriate herbicide labels for all herbicide containers supplied to volunteers. Labels are attached directly to two and a half and five gallon Garlon 4 Ultra and Roundup jugs used for stump applications. Labels for eight and 32 ounce herbicides, stored in the green chemical cabinet, are in the file system on top of the cabinet. Be sure to take the matching label with you when taking herbicide from the green cabinet.

The following BMPs were adapted from the Wisconsin Pesticide Applicators Training Manual: Right-of-way and Natural Areas 7th edition.

Storage

- Store in a secure location away from children and possible theft.
- Store in a dry location off the ground and in an area that is not prone to flooding and away from wells or surface water.
- Store above an impervious surface and/or in a tray to contain leaks or spills.
- Ensure containers are properly labeled and sealed.
- Do not store chemicals in old food or drink containers.
- Use mixed chemicals the same day or soon thereafter. Do not store mixed chemicals as they become unstable and lose strength over time.

Transportation

- Secure chemicals in your vehicle to prevent shifting or puncturing by sharp objects.
- Transport in a ventilated rear compartment or truck bed separate from people, pets, fertilizers, food, or drinking water.
- Sturdy plastic storage bins are highly encouraged and work well to contain leaks, tip-overs, or residues.
- Always wear chemical resistant gloves when handling containers or equipment.

Mixing

- Always wear personal protective equipment (PPE) including eye protection, long sleeves, gloves, and closed-toe shoes.
- Mix away from surface water, wells, or water drains where spills can result in contamination.

Spills

- The 3 C's of spill management:
    - control the spill—prevent the release of further material as soon as possible.
    - contain the spill—contain material by constructing a dam with soil or kitty litter then isolate the area to keep people away.
    - clean-up the spill—refer to chemical label or Saftey Data Sheet (SDS) for recommendations on how to clean up the spill. You should also contact natural areas staff for guidance and to report the spill.

Applications

- Wear PPE and bring fresh water, soap, and towels for washing hands and cleaning contaminated surfaces.
- Keep equipment clean and properly maintained. Periodically rinse sprayers, clean nozzles, and inspect gaskets.
- Keep the herbicide label accessible when spraying.
- A list of herbicide recommendations and application rates is in Appendix 4.

Posting

Signs must be posted to notify park visitors when pesticide has been applied. Signs are available at herbicide pick up locations including the Parks Operations building and the Libby Rd. shed. Signs must remain in place until sunset of the day following application and this date must be noted on the signs.

If a park visitor questions or challenges the use of herbicides in natural areas, feel free to direct them to natural area staff. Alternatively, here are a few talking points for discussing the use of herbicides in parks:

- Volunteers receive training on the safe and appropriate use of herbicides.
- Volunteers work off a plan developed in consultation with natural areas staff, who have provided professional guidance on invasive species control and management techniques.
- Invasive species are the second most significant reason for the loss of global biological diversity behind habitat loss.
- Controlling invasive species will ultimately lead to an increase in biological diversity.
- Herbicides are only one of a handful of techniques used to control invasive species and restore natural areas. Dane County uses an integrated approach to combat invasive species.
- Certain invasive species can only be controlled when herbicides are a component of the approach.

Tree and Brush Removal

Non-native shrubs such as common buckthorn and bush honeysuckle have invaded most woodlands in Dane County. Prior to European settlement, many areas in Dane County were kept “in balance” by wildfires started by lightning or by Native Americans. The wildfires would sweep across the landscape and suppress woody species in favor of fire adapted grasses, wildflowers, and trees such as the bur oak. With the suppression of fire, much of the “sea of grass” the pioneers encountered has been lost. Even native trees and shrubs, including dogwood, box elder, and black cherry, have encroached into habitats that were formerly much more open.Removing and thinning non-native and excessive woody growth is necessary in most natural areas projects. After trees and brush are felled with chainsaws or loppers, the stumps are treated with an herbicide to prevent resprouting. Brush and limbs are stacked into piles where they are burned when

conditions are safe. The most convenient and comfortable time of year to complete this work is in the winter after leaves have fallen. In spite of cold temperatures, burning brush piles and body motion generate good heat and keep everyone toasty! During the heat of summer, tree and brush removal and brush pile burning can be done but other restoration priorities are often more pressing.

Chainsaws

Chainsaws are one of the most important and useful pieces of equipment in natural areas management. One chainsaw in the right hands can accomplish the same work as dozens of people using hand saws. Chainsaws are typically used for cutting invasive brush, felling undesired trees, bucking up logs, and removing trees that have fallen over trails. While just about anyone can pick up a saw and cut wood, it takes training and experience to operate a saw safely and efficiently. In fact, there is always more that can be learned and new techniques to be mastered. Chainsaws are also one of the most dangerous pieces of equipment and cause serious injury to many people each year. There are about 100 accidents reported in the US and Canada each day. The following is a list of policies and procedures that must be followed when operating a chainsaw on county lands.

Training

Volunteers wishing to use a chainsaw on county lands must successfully complete a FISTA (Forest Industry Safety Training Alliance) certified chainsaw safety course and sign a liability waiver (Appendix 5). Dane County Park staff regularly provides a FISTA certified course at a minimal fee to volunteers. Proof of completion of a comparable FISTA certified course provided by an outside entity is also acceptable. Volunteers are also required to wear appropriate personal protective equipment (PPE) when using a chainsaw. This includes chainsaw chaps or pants, helmet, ear protection, eye protection, gloves, and boots, all of which are discussed below.

Personal Protective Equipment

Proper Training Is Your Best Protection

Personal protective equipment (PPE) is a precaution taken to minimize the damage from an incident, although, no amount of PPE will protect you from unsafe actions. At no time should PPE be used in place of proper training and safe practices. Be smart and avoid injury by dressing properly for the job and doing the job intelligently.

Foot Protection

Proper foot protection is essential for safe work: a good pair of boots supports your ankles, reduces stress on your feet, and provides solid footing. Protective-toe boots reduce the exposure to injury if something were to land on your foot.

One pair of boots won't meet all of your footwear needs. A leather boot is superior under dry weather conditions. When conditions become wet, it may be necessary to choose a waterproof boot. When conditions become cold, a boot with good insulation may be required.

Leg Protection (Chaps)

County-approved chainsaw-resistant leg protection **MUST** be worn at all times when operating a chainsaw.

The materials used in chaps vary by manufacturer. Two of the most used and well known materials are DuPont Kevlar and Nylon of Engtex. Both materials provide ample protection if they have sufficient layers. Keep your chaps clean. Soiled material reduces the amount of protection provided.

Some county-issued chaps have buckle snaps in the rear of the legs and a buckle snap on the waist strap. All of these straps are adjustable to ensure a comfortable fit. Be sure to pull the straps tight to insure that they don't twist if they come in contact with a running saw chain.

Chipping brush wearing this style of chap should be avoided due to the snag hazard presented by the straps.

Any nick or cut to any portion of the chainsaw chap or trousers compromises the integrity of the protection. If your chaps or trousers are cut, remove them from use and replace them with a fully functioning pair.

Head Protection

Hard hats or helmets **MUST** be worn by all employees and volunteers engaged in tree care operations, overhead operations, or entering work site areas. This includes supervisory and operations personnel.

Head protection shall conform to ANZI Z89, or CSA standards. In addition, only class E hard hats shall be worn when working in proximity to an electrical conductor. The term "Class E" signifies a specific dielectric capability for that hard hat or helmet. The term "Class E" is on your head protection if it meets those standards.

It is important to periodically check and maintain the condition of your hard hat. Clean it only with mild soap and water. Never use a chemical agent on it, such as alcohol or gasoline. These agents could deteriorate the shell and weaken the impact resistance of the hat. Hard hats with cracks or holes through the shell are unsafe and must be replaced. With regular use, hard hats should be replaced at least every five years. Ten years is the maximum life of a hard hat, even if it hasn't been used.

The suspension system must be in good repair and adjusted properly. This system absorbs most of the shock from a blow. A poorly adjusted suspension allows most of the shock to be transmitted directly to the head. In addition to being adjusted properly, the hat must be worn properly. Position the hat squarely on your head, not backwards or to either side. Use chin straps to keep the hat secure on your head. Helmet liners should not interfere with the fit of the hard hat and should be worn between the head and suspension. Using these items correctly will help keep the hard hat secure on your head.

Eye Protection

Eye protection should be worn when you are operating or near equipment that generates flying particles. All workers should wear eye protection on or near brush chippers, chain saws, saws, pruners, weed trimmers, augers, stump grinders, chopping tools, shop equipment, or other pieces of equipment.

The eyes must also be protected when mixing or applying pesticides, fertilizers, or other chemicals. In short, eye protection should be worn at all times where equipment or chemicals pose a risk.

The county provides several types of eye protection that conform to the current ANSI standards. Safety glasses are available in clear or tinted lenses and are suitable for most county operations. Goggles are commonly used for spraying operations and must provide splash-protection. Face shields and screens are also available and are usually fastened to the hard hat. These must be worn over safety glasses or goggles since they do not meet ANSI standards when used alone.

Specialized eye protection is required when performing shop operations such as cutting with a torch, welding, or grinding. Only glasses or masks that are designed for these purposes may be used.

Proper care for eye protection is essential for it to be functional. The lenses must be protected from scratches, particularly when they are not being used. Scratches reduce the anti-fogging properties of the lenses and may obstruct vision. Frequent cleaning, proper storage, and the use of anti-fogging materials will give them a longer service life.

Ear Protection

Workers are exposed to different kinds of sounds every day, both on and off the job. Some of these noises may be annoying, but they are not necessarily harmful. What does hurt your hearing are loud noises that last for a long period and noises of a particularly high frequency, some of which may not even be audible.

Prolonged use of equipment such as chainsaws, chippers, air compressors, and other heavy equipment can have damaging effects. All volunteers are responsible for understanding the hazards involved with their equipment and taking appropriate protective measures.

Earplugs and earmuffs are the protective devices most commonly used. Earplugs are typically rubber or plastic devices designed for easy insertion into the ear. They can be handled separately or attached to a retaining clip or string. Either way, they allow the wearer to move the head freely while working. There are a few cautions to observe when using earplugs:

- Never share earplugs with someone else, because ear infections can be transmitted.
- Wash reusable earplugs with soap and water after each use. Discard disposable earplugs after use.

Earmuffs are sound-attenuating devices made of a rigid plastic shell and lined with foam or soft sponge-like material capable of blocking sound. They may have a headband to secure the earmuff to the head. However, most hard hats now allow earmuffs to be directly attached to the helmet.

Select the devices that best suit your needs and wear the devices faithfully. Your ears can be protected, but it is your responsibility.

Safety procedures

Always follow these safety procedures when working with chainsaws.

Chainsaw operation and maintenance

- Never start your saw using a "drop start." See the owner's manual for the proper procedure to start your saw.
- Always engage your saw's chain break between cuts and when walking with your saw.
- Be sure the chain does not rotate when idling with the chain break off. See your owner's manual for making the proper adjustment if it does.
- Keep two hands on your saw at all times when cutting, even if using an arborist saw.
- Keep your saw in good working order, including:
    - Always work with a sharp chain – a dull chain is actually ***more*** dangerous than a sharp chain since it causes you to push the saw instead of letting the saw do the work. This causes you to work harder, leading to fatigue, and more wear on your saw.
    - Be sure your chain break is in proper working order.
    - Be sure your saw has a functioning chain catch. The chain catch catches your chain when it comes off during operation, preventing it from flinging back into your body.
    - Check and clean your air filter at regular intervals. A dirty air filter can lead to poor engine performance, which could lead to you pushing the saw in an attempt to compensate.
    - Maintain your bar. Wear on your bar can lead to poor cutting performance, even with a sharp chain. Refer to your owner's manual for proper bar maintenance.

Working in groups

- **We recommend never working alone with a chainsaw. You MUST have a partner when cutting trees over 4 inches in diameter on county lands.**
- Use a spotter when dropping trees to ensure that the area remains clear of people. Bystanders must stay at a distance of at least 1.5 times the height of the tree being felled.
- Temporarily close trails with barricades and signs or redirect traffic when felling near trails.
- Keep sawyer/swamper groups well separated from each other. No two groups should be close enough that they need to exchange warnings when felling.
- You'll typically want two haulers/stackers to each sawyer for maximum efficiency.

Other safety considerations

- Never attempt to cut a tree you're not comfortable with. As a volunteer, you are not expected to be a master sawyer, and your safety is always far more important than any tree. **It's not worth risking injury to yourself or others by attempting to take down a tree you're not comfortable with.**
- Even if you feel comfortable, never attempt to cut dangerous or difficult trees. Instead, contact the volunteer coordinator, who will place a work order to have the county arborist take it down.
- Always monitor for loose limbs or leaning trees that may be prone to falling when a tree is felled.

Brush Pile Burning

The invasion of non-native brush and the encroachment of native trees into previously open habitats is one of the greatest challenges facing Dane County natural areas. Removing this excess woody growth is a priority and a great opportunity for volunteers to get involved in land stewardship. Stacking the brush in piles and burning them is an acceptable option for eliminating woody material and can be a great way to stay warm on a winter day! Pile burning must be done properly to ensure it is safe, the fire is contained, the smoke doesn't cause a nuisance to nearby residents, and the public and fire officials are properly notified. Volunteers are required to follow the policies and procedures outlined on the next page and complete the checklist prior to burning piles on county lands. All sections that apply to the project must have boxes checked before burning can take place.

Brush Pile Burning Policies and Procedures Checklist

Location-specific steps: *(if your project is located in one the areas below, complete these steps before proceeding)*

- ☐ ***If in NW Dane County DNR Protection Area:*** Ground must be completely covered in snow. DNR places restrictions from January 1 to May 31 on lands in the DNR Protection Area, including the townships Roxbury, Mazomanie, Berry, Black Earth, Vermont, and the northern tier of sections in Blue Mounds. On the day of the burn, check the daily burning restrictions https://dnr.wi.gov/topic/forestfire/restrictions.html or call the hotline 1-888-WIS-BURN (947-2876) to get final approval.
- ☐ ***If in the City of Madison city limits:*** written General Burning Permit required and $50 fee submitted at least 30 days before planned activities. Details are found on the City of Madison FD permits webpage: https://www.cityofmadison.com/fire/permits-inspections/licenses-permits/licenses-permits-applications

In advance of burning, ALL PROJECTS must notify:

- ☐ Dane County Non-emergency Duty Supervisor (608-267-3913)
- ☐ Local Fire Department: See Appendix 6 of handbook to find your local Fire Department contact information.
- ☐ If March/April: Permission to be burn must be obtained from Dane County Parks (DCP) natural areas staff.

In advance of burning, ALL PROJECTS must meet the following environmental conditions:

- ☐ DNR Fire danger rating is LOW. Danger rating can be found here: https://dnr.wi.gov/topic/forestfire/restrictions.html
- ☐ Winds are below 20 mph and predicted to stay calm
- ☐ Wind direction blowing smoke away from people, signs, structures, and roads.
- ☐ Temperatures below 75 degrees F and predicted to stay cool
- ☐ No air quality notices are in place for Dane County. Visit this DNR webpage to confirm air quality conditions: https://dnr.wi.gov/topic/airquality/status.asp
- ☐ Brush pile will be located in an area where heat will not cause damage to desirable vegetation or other important natural resources.
- ☐ Snow/bare soil (i.e. tilled soil, harvested hay w/o residue) is completely covering the ground OR DCP Certified Burner with approved burn plan is present to supervise the burn.

If snow/bare soil is not completely covering the ground, and site occurs outside DNR Protection Area, ALL PROJECTS must meet the following conditions:

- ☐ Pile must be supervised by a DCP Certified Burner. Successful completion of NWCG courses S-130 and S-190, DCP Certified Land Steward Orientation, and Certified Burner Orientation qualifies an individual to become a DCP Certified Burner.
- ☐ DCP Certified Burner must follow a burn plan that is approved by DCP natural areas staff.

Additional condition-specific steps:

- ☐ **If temps above 40 degrees:** you must have a minimum of five gallons of water available on site.
- ☐ **If temps below 40 degrees:** suppression tools such as shovels and/or rakes available in lieu of water.

Per State law, fire must be extinguished. Contact natural areas staff for advice on extinguishing fires. Failure to comply with any of these guidelines may lead to revocation of brush pile burning privileges.

Tips for a successful brush pile fire

Clothing

Be aware that brush pile fires can send up or spit out embers that have the potential to land on you, particularly if you're walking downwind of a burning brush pile. We recommend wearing clothing made of natural fibers such as wool or cotton. Synthetics are more prone to melting and smoldering. In addition, you should always wear eye protection, some sort of head covering, and clothes you don't mind smelling smoking or getting burn holes in.

Location and size

- Keep piles off of mowed areas and away from roads, trails, and man-made structures.
- Keep piles off of desirable plants as much as possible.
- Keep piles away from trees you wish to save and their over-hanging limbs.
- Keep piles away from snags and dead limbs, which can easily catch on fire and fall and are often difficult to extinguish.
- Keep piles to a manageable size, no larger than eight feet in diameter and six feet tall

Create a flammable foundation

- Begin by creating a 12 inch high by five feet across bed of small diameter, preferably dry, twigs and branches, to act as kindling.
- Slowly begin increasing the diameter of branches, laying them in parallel rows.
- Stack brush in a compact way, especially if green wood will be included and/or you want to burn the pile soon after construction.
- Cut branches to four feet in length or shorter and remove side branches before stacking to keep the pile tight and compact.
- Continue using dry branches as much as possible until the pile is at least three feet high. You may need to search for dry wood in the area.
- Do not use rotten wood in the foundation as it may contain a lot of moisture and can prevent the fire from starting.

Lighting the brush pile

- With a pump sprayer of torch fuel (4 parts diesel : 1 part gas), squirt a small quantity of fuel at the base of the brush pile in the foundation of fine twigs and branches. A drip torch can also be used if a pump sprayer is not available.
- Light the fuel with matches or a cigarette lighter.
- Using the pump sprayer, slowly squirt more fuel onto the flame and spread the fire throughout the base of the brush pile.
- A leaf blower can help stoke the fire, but too much force can blow the fire out when the flames are still small. Adjust the direction and velocity of the blower to promote the fire without extinguishing it.

- You may need to continue adding fuel and keep the blower pointed at the fire for a few minutes before the pile stays ignited. It helps to have two people for this job.

Feeding the brush pile

- When the pile catches and stays ignited without adding torch fuel, you can slowly add larger and larger diameter branches and logs.
- Continue to keep branches compact on the brush pile, laying them in parallel rows.
- Refrain from adding large diameter and/or green logs until the fire grows to its maximum size and a bed of coals has begun to develop.
- Large diameter wood and green logs may best be set aside and not burned as they will continue to burn for a long time. They can be removed from site and used for firewood.
- Keeping the blower pointed at the fire will rapidly increase the speed at which the pile burns down and is ultimately extinguished.

Closing down the fire

- Stop adding brush to the fire 30-45 minutes before the end of the volunteer event to allow time for flames to settle down before volunteers leave.
- Keep the blower focused at the fire to speed up the burning of brush and coals.
- Periodically consolidate branches and logs toward the center of the pile to ensure minimal brush is left unburned.

Chipping and Scattering Brush

When brush pile burning is not an option there are a few acceptable alternatives for disposing of brush. Small amounts of brush or logs can be scattered to appear as natural as possible without smothering the vegetation. Scattered brush should be hidden out of site and away from roads, trails, and turf areas. Doing so helps to maintain the natural aesthetics for park visitors and prevents fuel accumulation next to the trail, which is critical if the trail will be used as a firebreak.

Chipping is another acceptable alternative for disposing of brush. If the area is to be managed with prescribed fire, chips should be piled outside of the burn unit or taken off site. Don't spread chips within the burn unit or on top of hiking trails used as burn breaks. Don't smother desirable native vegetation.

If an area is not managed with prescribed fire, you can leave brush piles in place to decompose. This actually provides some natural benefits including cover for birds and other critters as well as a source of dead wood for insects and fungi. Nevertheless, always construct piles as though they will eventually be burned in case it becomes possible or desirable to do so at a later time. See "Tips for a successful brush pile fire" for advice on constructing a brush pile.

County staff may be available for chipping or hauling away brush under special circumstances. Prior arrangements for this should be made with natural areas staff before the project begins. Don't ask staff to chip or remove brush after a mess is made. Make sure there is a plan for brush removal ahead of time.

Tree Girdling

Girdling is a method of killing a tree in place to let it fall down and rot away over time can be an acceptable method of disposal. Girdling is an extremely efficient means for dealing with unwanted trees and a great way to create valuable wildlife habitat. However, this method should only be used in specific situations and with prior permission from natural areas staff. Staff will evaluate whether girdling will result in the creation of a hazardous situation.

Don't girdle trees near hazards such as trails, structures, parking lots, or any other area where the falling tree could cause damage to property or injury to people. As a general rule, girdling should not occur when a hazard exists within one and half times the height of the tree regardless of the direction the tree is leaning. Girdled trees also have implications for prescribed burning as they can catch fire during burns and create hazards or contribute to extensive mop-up needs. Staff will also evaluate whether or not the benefits of girdling trees outweigh any complications that may result from prescribed burning.

If a park visitor questions or challenges the removal or girdling of trees and brush in natural areas, feel free to direct them to natural areas staff. Alternatively, here are a few talking points when discussing the management of trees and brush in parks:

- The majority of woody growth is comprised of non-native invasive species and native trees that have encroached upon open habitats due to wildfire suppression.
- There are more trees in Dane County today than at any time over the last several thousand years.
- Open habitats (woodlands, savannas, prairies) are the most threatened habitat types and are in high demand by wildlife. Dense, overgrown, and shady habitats are plentiful.
- Grasses and flowers provide critical habitat for a multitude of species but cannot persist when excessive woody growth overtakes an area.

Firewood Collection

Dane County Parks requires individuals to obtain a Surplus Wood Removal Permit to remove wood from county park lands. Wood cannot be gathered for commercial purposes under this permit. The permit applicant must register as a Dane County Parks Volunteer. No permit is required to remove wood during an approved County Parks volunteer event. Wood generated at such events is made available to all volunteer participants.

General guidelines for surplus wood removal:

- Wood removal must support the objectives of existing natural areas management and/or park development projects such as habitat restoration, pest control, trail maintenance, or facilities development.
- Permit holder is expected to understand the purpose of firewood removal as it supports the objectives of the county and be willing to explain these objectives to park visitors upon request.
- Permit holder must coordinate firewood removal with a designated field contact (parks volunteer or park staff) who will inform them of appropriate areas where wood may be collected.

- Firewood is on a first come, first served basis and cannot be reserved by individual permit holders.
- Wood to be gathered must be flat on the ground. No trees may be felled and no leaning or hung up dead wood can be brought to the ground unless specifically stated in the permit.
- Use of a chainsaw must be approved and identified on the permit. Dane County Parks requires anyone operating a chainsaw or power equipment to show proof of having passed an authorized chainsaw or power equipment training course.
- Permit holder must keep vehicle on established roads and trails and prevent driving on such surfaces when rutting or damage may occur.
- Wood must be removed by hand, wheelbarrow, sled, or other method that does not damage trails or natural areas.
- Permit holder must keep on site the letter of permission and the rules and guidelines.
- Permit holder must display the orange Dane County Parks Volunteer card on the vehicle dashboard.
- If a gate key is issued to gather firewood, the volunteer may only use the key for access to gather that wood and the key must be returned upon completion of gathering.
- To prevent the potential spread of tree pests and pathogens, the transportation of firewood must comply with all state and federal regulations.

Prescribed Fire

Native ecosystems in Dane County developed under the influence of fire started by Native Americans or lighting, and require regular fire to be sustained. Fire is a central component of natural areas management. Fire helps prevent and reduce brush and tree encroachment in all habitats, promotes native species, and recycles nutrients, among other benefits that contribute to a more diverse and healthy natural community.

Volunteers on the prescribed burn team may participate in any/all of the following:

- carrying a backpack water pack or a rubber flapper to contain the fire by putting out shorter flames along the edges of the burn area
- running a spray hose connected to a water tank on a vehicle
- carrying a drip torch to spread fire
- line boss (requires significant experience): directing a team performing these tasks along one side of a burn unit

Most prescribed burns occur in the early spring, but fall and even summer burns are also possible.

Prescribed burning on Dane County lands may be led only by natural areas staff or an authorized and insured professional contractor. Prescribed burning differs from brush pile burning in that fire is broadcast over a much larger area such as an entire prairie or woodland. (See the Brush Pile Burning section for information related to that activity.)

Volunteers are encouraged to participate in prescribed burns in a support role. Dane County Parks offers a comprehensive prescribed burn training workshop each spring and all volunteers are highly encouraged to attend. Due to the strenuous and potentially dangerous nature of prescribed burning, all volunteers are also encouraged to maintain a minimum level of physical fitness. It is recommended that volunteers are able to carry 25 pounds for two miles in under 30 minutes.

While training and fitness standards are not currently a requirement of Dane County Parks, some level of both will likely be required in the future. Within the next five years, it's likely that county staff and volunteers participating in prescribed burns will need to complete the National Wildfire Coordinating Group (NWCG) courses S-130 and S-190 and pass the fitness requirement. The majority of the course-work can be completed independently online followed by a short field component that will be coordinated through county natural areas staff.

Native Seeds and Plants

Purchasing native seed for planting new areas on a large scale would be prohibitively expensive. A diverse seed mix to plane one acre of prairie can cost as much as $2,000 or more when purchased from a professional grower. Consequently, the county runs its own native seed collecting, processing, and distribution operation. In 2018, county staff and volunteers collected over 1,000 lbs of seed from more than 180 different native species; the market value of this seed likely exceeds $300,000. Rather than selling this seed, the county uses it for restoring natural areas and participates in valuable seed sharing arrangements with local partners. Some of the county's first prairies were established using seed collected from the UW Arboretum and other outside sources. In recent years, the majority of the seed collected by the county has come from established prairies in County Parks.

Seed Collection

The collection process depends on the species but typically involves either cutting off the top of the plant with hand clippers or, as with many grasses, simply stripping the seed by hand. Collected seeds are processed over the fall and early winter and eventually get distributed to sites throughout the county to establish new habitat or supplement an existing area. The main seed collecting

season runs from late August to late October, but extra dates for earlier blooming species such as shooting star and spiderwort are scheduled when those seeds are ready to collect in mid-summer.

Seed Drying and Processing

Seed processing involves drying raw seed from the field, then breaking down the material and filtering out the seed. Step one is to lay out the raw collected seed on large trays to be dried in front of a fan or in the sun. Depending on the species, drying can take several days and often requires occasional turning of the seed to prevent mold.

Once the seed is dry, it is usually run through a hammer mill that breaks apart the heads and frees the seeds from capsules, leaving a jumble of loose seed and chaff. Operating the hammer mill involves standing on a stepstool and feeding seed heads into a chute that leads to the chamber where they're broken apart.

The next step separates the seed from the chaff using a fanning mill. The fanning mill consists of screens of different sizes and a fan that work together to separate out the seed based on differences in size and weight compared to the chaff. Fanning mill workers feed seed over a screen to get the process going and then monitor the fanning mill to ensure seed isn't getting lost with the chaff and not too much chaff is mixing in with the seed.

The county provides hearing protection and face masks, as both steps in the process can be relatively loud and dusty.

Seed drying and processing takes place at the Libby Rd. Storage shed Bay #2 from September through November.

Seed Weighing and Packaging

Seed weighing and packaging is the last step before distributing the seed to the sites where it will be spread. The seed weigher's job is to weigh out particular amounts of seed for each site, bag it, and then affix a printed label to the bag indicating intended site, species, and weight of seed provided. Seed is weighed at the Libby Rd. Storage shed facility in November and December.

Seed Sowing

Most restoration projects will require sowing seeds or planting an area with native species, many of which are unlikely to recolonize an area without intentional reintroduction. Seeding and planting often occur after invasive species have been cleared from an area or when plans have been made to remove an agricultural field from production. Over the years, Dane County Parks has seeded and planted over 700 acres of habitat in the park system using seeds collected by volunteers.

Seed sowing is the process of scattering native seeds on a restoration site. Typically seed sowing involves hand tossing seed, one species at a time or in a mix appropriate for the soil and sun conditions, in areas that have been prepared for planting. Seed may also be used to increase diversity in an established site by "overseeding" with additional species. Seed sowing is best conducted in fall and winter, preferably with a little snow cover, which helps to show where seeds have been spread as volunteers attempt to seed the site evenly.

Obtaining seeds and plants

Seed can be made available for volunteers working in Dane County natural areas. If you know that seed will be required for a project, communicate with natural areas staff well in advance. Ideally, seed needs should be identified when developing annual work plans with staff, if not sooner. Advance notice is critical as there are many competing projects and only a limited amount of seed. Advanced notice also helps staff know which species to collect and how much seed is needed for a particular site.

Seed collection season typically concludes by the end of October and processing is completed by the end of November. Seed orders are weighed by volunteers and distributed soon after that. If you wait until January to request seed, you won't receive the seeds until the following November.

Purchasing or growing seeds and plants for natural areas

Collecting seeds with volunteers is an extremely cost effective and efficient way to restore lands on a large scale relative to purchasing seed or plants from a grower. When resources allow, seed or plants are occasionally purchased from native growers by the county, Friends groups, or individual volunteers. Volunteers also occasionally grow plants from seed that are later planted in county natural areas. Contributions of seed and plants from volunteers are welcome but should meet the following requirements:

- Species must be native to southern Wisconsin.
- Original genetic origin should be from southern Wisconsin. (Reputable native growers can usually fulfil this request.)
- Transplants/soil should not be moved from one park to another to prevent the spread of invasive species, including jumping worms.

Natural areas staff are available to recommend seed mixes, help select individual species, and can provide seed for volunteers who would like to grow plants at home.

Essential Information

Volunteer Positions

The County Park system welcomes volunteers of all skill and commitment levels, from those who have never set foot in a prairie to those who have battled invasive species for years. Whether you're interested in only one activity area or if you're a Jack/Jill-of-all-trades, all are encouraged to participate no matter how much time you are able to contribute.

Walk-up Volunteers

Most volunteers start on an irregular or casual basis or maybe decide to participate for a single event. Walk-ups are often unfamiliar with the County Parks and likely possess only limited knowledge about the task at hand or the overall purpose of the effort. A walk-up volunteer may just be curious to see what's going on and whether or not volunteering for the County Parks is a good fit for them. Walk-ups are always welcome and invited but must sign a liability waiver before participating at each event (see Appendix 7 for a sample liability waiver). Leaders of the volunteer event and more seasoned volunteers should spend a little extra time with walk-up volunteers to answer questions, ensure that they feel comfortable and welcomed, and are working in a safe manner.

Registered Volunteers

If someone volunteers on a regular basis, they are encouraged to become a Registered Volunteer with the county by visiting the Volunteer Program webpage at www.danecountyparks.com/Volunteer-Program. Here, a registration form can be downloaded and sent to the Volunteer Coordinator (See Appendix 8 for a sample Volunteer Registration Form). Registration involves submitting basic contact information, indicating interest area(s) or park(s) where they may be willing to volunteer, and signing a liability waiver and a photography release. Registration formally acknowledges a volunteer's relationship with Dane County Parks and confirms their willingness to receive communications from the county.

Registered volunteers typically have a basic level of understanding of the mission and purpose of the Natural Areas Program and have some previous experience participating in a volunteer work day with the county. No training or certification is required to become a Registered Volunteer. Registration provides the following benefits:

- Receive direct notification of volunteer, training, and educational opportunities via email.
- Entitled to receive a Dane County Parks shirt, hat, and other parks merchandise of your choice.
- Preference in registration for training and educational opportunities.
- Waiver and photo release are kept on file and do not need to be signed before each event.
- Invitation to volunteer appreciation event held annually.
- Ability to collect firewood on county park lands, independent of a volunteer event, with permit.
- Ability to operate a chainsaw on county park lands, with county or recognized FISTA (Forest Industry Safety and Training Alliance) training.

Certified Land Steward

A Certified Land Steward is approved by Dane County Parks to work independently in natural areas and/or lead volunteer events with little direct supervision. Certified Land Stewards must be registered with County Parks and attend an orientation with county staff. A background check is needed to supervise children under 18. Any volunteer who intends to work independently on a regular basis or lead other volunteers on county natural areas must be a registered volunteer and attend the Certified Land Steward orientation. The last hour of the orientation will cover herbicide safety, which is a required training for Certified Land Stewards to apply herbicides independently or supervise the application of herbicides by other volunteers.

A Certified Land Steward has advanced knowledge of the Natural Areas Program and understands the policies, procedures, and standards outlined in this handbook. Certified Land Stewards serve a vital role by expanding the capacity of the Natural Areas Program. These exemplary volunteers take the initiative to manage and restore areas beyond what staff members are capable of doing on their own. Given the thousands of acres of county lands and the limited number of county staff, Certified Land Stewards can accomplish goals that wouldn't otherwise be pursued. In coordination with staff, these committed volunteers are able to lift a natural area to the next level and truly make it shine! In all cases, Certified Land Stewards follow a work plan that they have developed with county staff.

Necessary skills and abilities for Certified Land Stewards include:

- Maintains consistent lines of communication with staff, willingness to ask questions when unsure.
- Has a desire and willingness to work in a safe and responsible manner and helps to ensure that others are doing so as well.
- Is welcoming and courteous to other park visitors, observes park rules, considers their surroundings, and consistently acts as a good ambassador for the Natural Areas Program.
- Maintains accurate records of work (hours, tasks, chemical usage, etc.).
- Works as a team player.
- Displays good judgement in all aspects of their work.

Skills and abilities that are helpful and/or necessary for certain tasks:

- Ability to identify common invasive species and distinguish them from native plants.
- Basic familiarity with various land management tools and techniques used to control invasive species.
- Basic herbicide use and safety.
- Chainsaw safety certified.

- Ability to troubleshoot problems with small engines such as brushcutters or chainsaws.
- Ability to sharpen, repair, and maintain equipment (for example, chainsaws, brushcutters, and sprayers)
- Ability to determine native seed ripeness and knowledge of seed collection methods.

Skills and abilities that are necessary when leading groups:

- Considers group and individual safety at all times.
- Cultivates a welcoming and inclusive atmosphere.
- Develops workday activities that are appropriate for the skill level and ability of the volunteers.
- Is good with people and directing groups.
- Gives clear directions and explains tasks well.
- Is patient and willing to answer questions.
- Is friendly and approachable.
- Displays good organization and preparation.

Volunteer Positions

Volunteer Status	Benefits to Volunteer	Duties to Dane County Parks
Walk-up Participant	No strings or commitment.	Sign liability waiver/photo release at each event.
Registered Volunteer	Receive email notifications of training, and educational opportunities. DCP merchandise. Preference in registration. Waivers/Photo release kept on file. Invited to volunteer appreciation event. Collect firewood, with permit. Operate a chainsaw, with required training.	Complete registration paperwork. Obtain firewood collection permit, if firewood desired. Attend chainsaw safety, if chainsaw use desired. Volunteer orientation recommended, not required.
Certified Land Steward	**Receives all benefits of registered volunteer PLUS:** More direct training and mentorship by staff. Greater sense of ownership and autonomy in park projects. Ability to work independently. Ability to lead other volunteers. Access to buildings and gates. Access to drive on County trails. Opportunity to gain career related experience in natural areas management. Staff letters of recommendation for education and employment opportunities.	Volunteer orientation required within 3 months. Sign lead volunteer handbook acknowledgement. Develop work plan with staff. Notify Parks staff of planned group events. Report management activities. Report individual hours. Submit group event sign-in sheet and hours. Herbicide safety training (if using herbcides). Submit herbicide records. Ensure safe use of herbicide during events. Chainsaw certification (if using chainsaw). Background check when working or leading youth under 18.

Developing Natural Areas Goals and Work Plans

Natural Areas Management Plans

Master plans guide the development of park facilities by providing the overall vision for a park based on an intensive consensus building public participation process. A natural areas management plan clearly and concisely describes the broad ecological vision and goals for the natural areas within a park and is consistent with the vision of the master plan. All county natural areas should eventually have a natural areas management plan to provide guidance to staff and volunteers and to communicate the intentions of stewardship activities to key stakeholders. Natural areas management plans are written by county staff and will likely include the following elements:

- Map depicting location of desired vegetation types and/or management units.
- Description of noteworthy resources and unique opportunities.
- Threats/concerns.
- Priority management recommendations.
- Potential Friends Group and volunteer opportunities
- Other potential partners/collaborators.

Other elements may include:

- Objectives for each vegetation type and/or management unit—specific and measurable.
- Maintenance Plan explaining how the site will be maintained for the long term upon completion of the project.
- Monitoring Plan describing what data should be collected, such as annual photographs, species lists, etc.
- Documentation and reporting requirements and procedures.

Management plans should be developed with input from all stakeholders. County natural areas staff will provide key input and are ultimately responsible for approving plans. To the extent possible, plans should be helpful, concise, and accessible by all audiences. Management plans should be revisited and updated every few years or after any significant ecological event such as severe flooding or storm damage.

Annual Work Plans

Management of natural areas requires an integrated approach utilizing a wide variety of tools, methods, and techniques to achieve site objectives. Likewise, management activities on park lands are often implemented by a constellation of different entities working in close coordination. On county lands, key players include county staff, volunteers, and Friends groups but may also include entities such as Operation Fresh Start, contractors, non-profits, or other public resource agencies. Successful management of natural areas requires a partnership of different members, who may each contribute different resources and abilities. This team approach enlists the strengths of each partner.
Developing a work plan with partners is key to success. Work plans clearly define responsibilities and deadlines and summarize the sequence of tasks for specific windows of time. Work plans are informed

and directed by the overall Forestry/Vegetation Management Plan. Each work plan is an incremental step toward the larger vision and goals described in the management plan. Work plans should be developed with all key partners at the table. Typically, work plans cover management activities for one year but regular check-ins should occur at least quarterly, if not sooner.

The winter season is a great time to develop work plans. Natural Areas staff have fewer responsibilities in the field and reserve the winter months for planning and preparation for the spring and summer. By mid-March, staff are already beginning to ramp up efforts in the field for prescribed burning and become less available. An example of an Annual Work Plan is attached in Appendix 9.

All Friends groups and Certified Land Steward Volunteers should operate off a work plan developed in conjunction with county staff. Clearly defined roles, responsibilities, and deadlines are key to a successful partnership in managing natural areas. With almost twenty Friends and other partner groups, dozens of lead volunteers, and a variety of staff working on county lands, a written work plan is essential to document plans and prevent obligations from falling through the cracks. Prior planning also helps natural areas staff secure materials, schedule staff work calendars, and lay the proper groundwork prior to implementation.

County staff members have a broad range of skills and experiences and can provide valuable input to project development and implementation. Natural areas staff also have resources that are not otherwise widely available to Friends groups and other volunteers such as heavy equipment, forestry mowers, and large quantities of native seed. Short notice requests for these resources typically cannot be fulfilled. For example, native seed is collected, processed, and dispersed in the fall with specific planting sites in mind. Any new seed requests made in the spring cannot be fulfilled until after the following seed collection season. Work with county staff well in advance to develop a plan that clearly identifies resource needs and leaves ample time for preparation.

Lastly, work plans keep natural areas staff tuned in to activities occurring on county lands. Staff also need to ensure that activities occurring on county lands are in the best interest of the land and are properly coordinated with other efforts. Developing a work plan with volunteers and Friends groups provides an opportunity for staff to review activities and ensure proper coordination with other user groups.

Documenting Work for Certified Land Steward Volunteers

At the end of each day of work, be sure to document your activities, including:

- How many hours you worked
- Where in the park you worked
- What kind of work you did
- How many people were present
- Herbicide usage: applicator name(s), date, site name, method, pesticide brand, amount used, application rate, and species targeted.

It doesn't take long to forget these details, or to confuse them with work from another day, so it's best to record your activities as soon as possible.

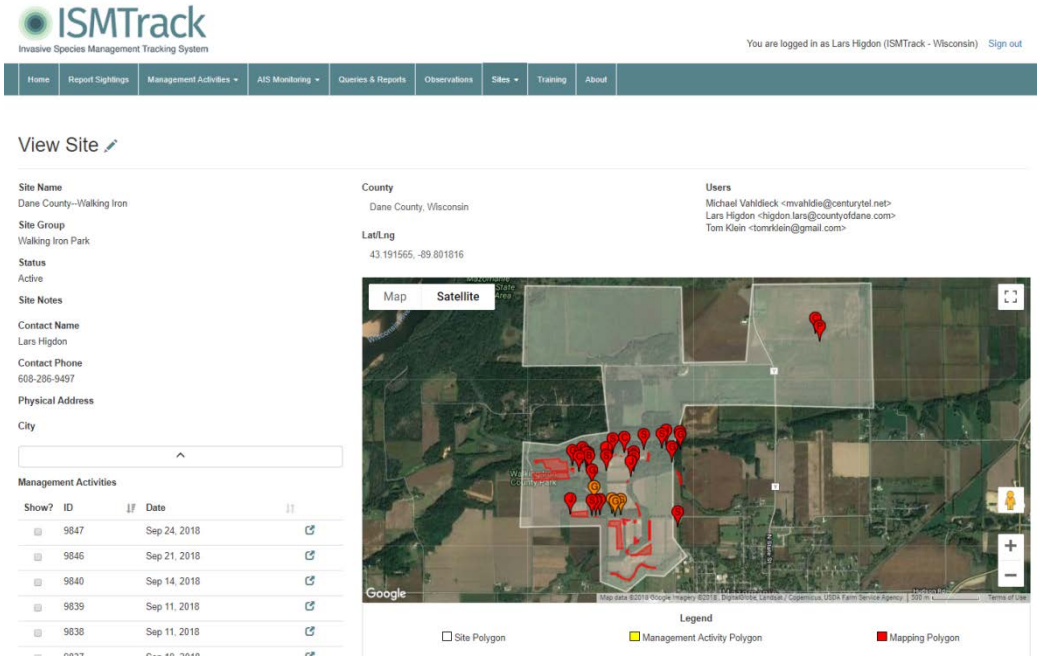
These work records benefit you and the parks in several ways:

- **Funding and Recognition**: Number of volunteer hours worked can be used for grant requests, budget justifications, reports, and for volunteer recognition!
- **Communication:** Keeps staff up to date. The combination of limited staff and a large number of parks and Friends groups makes it practically impossible for staff to be on the ground checking on things.
- **Knowledge is power:** Records make it possible to evaluate previous years' work and help guide future efforts.
- **Herbicide records are required**: Staff and volunteers are mandated by the Parks Commission to document herbicide usage. Herbicide records are also helpful in evaluating the effectiveness of application methods and rates.

In the past, such records were kept on paper and turned in to parks staff on a regular basis. For natural areas work, going forward, the preferred way of entering records is online, which provides several important benefits. Parks staff have access to the records on the same day they're entered, keeping them more up to date. Digital records make it easier to filter records or search for certain terms and to quickly find records from previous years. Records in digital form are much easier to summarize for year-end reports and free up staff for other work. And there is no paperwork for you or staff to keep track.

Parks uses an online reporting program called ISMTrack (www.ismtrack.org). To get started with ISMTrack you need to sign up for an EDDmapS account at https://www.eddmaps.org/. The next step is to request access to ISMTrack through the home page. To get started, you can also review the helpful ISMTrack video tutorials here: http://www.ismtrack.org/index.cfm?action=training

If you'd still prefer to document your efforts the old fashioned way, a paper form is available in Appendix 3.



Volunteer Etiquette and Responsibilities

From dawn to dusk, seven days a week, there are likely dozens of volunteers active within the county park system. Volunteers outnumber staff many times over and are often just as passionate about the parks, if not more so. Volunteers often live and work locally, are active members of the local community or Friends group, and frequent the park regularly. As a result, volunteers are often the first point of contact for a visitor using a county park.

Volunteers are expected to be welcoming, considerate, and respectful ambassadors and a positive reflection of Dane County Parks. When working in any capacity, volunteers are representatives for Dane County Parks and are expected to follow basic rules of etiquette and courtesy. The following are some guidelines to follow when working in a park and interacting with the public.

- Be courteous and polite to park visitors at all times.
- Understand that county lands are owned by everyone and access is typically granted to multiple user groups.
- Be aware of how your activities can affect other park visitors and neighboring land owners (noise, smoke, chemicals, etc.) and attempt to minimize conflict however possible.
- Work in a safe manner, especially near trails and public use areas where visitors are concentrated.
- Give park visitors the right-of-way on trails and roads.
- Greet park visitors and explain what you are doing and why your efforts are important.
- Be able to explain the volunteer program and direct people through the proper channels if they express an interest in participating.
- Know the rules of the park. (Dogs on leash, park hours, etc.)
- Volunteers are not exempt from park rules and regulations and should set a positive example for the public.
- If someone takes issue with your activities in the park, be polite and feel free to direct them to county staff.
- Consider every interaction with a visitor as an opportunity to promote and encourage new volunteers.

Driving on Trails

Park visitors do not expect to see a vehicle driving on trails and this activity is not normally permitted. The following is a list of policies and guidelines when driving on trails:

- Only drive on park trails when you are volunteering, not in your personal time.
- Avoid driving when it isn't truly necessary. Walk or carpool if possible to minimize damage, traffic, and potential for conflict on county lands.
- Do not drive on trails when damage may occur due to wet or thawing ground.
- Always yield to other park visitors and watch for dogs.
- Do not exceed 5-10 mph and be cautious when taking corners with low visibility.

- When parking, pull the vehicle out of the way so as not to block access for park visitors and other vehicles.
- Display a door magnet or an orange Dane County Parks Volunteer card to let staff and others know that you are authorized to be in the park.
- Close gates behind you.
- Do not drive on groomed ski trails when snow is present.

Dog Exercise Areas

All policies and procedures described in this handbook apply to Dane County Parks volunteers working in Dog Exercise Areas. Due to the high number of visitors and the presence of unleashed dogs, the following additional policies and procedures must be observed to ensure public safety while allowing volunteers to conduct work in Dog Exercise Areas.

Vegetation Management:

- To apply herbicide, park must be closed to the public. Park will remain closed through the duration of the Restricted Entry Interval (REI) as indicated on the herbicide label. This period is typically 'until spray has dried'.
- Stumps should be cut as low as possible to prevent injury to people or dogs.

Power Tools:

- A sign must be placed at park entrances notifying visitors of work activities with a map indicating where work is occurring.
- Cones or flagging will be used to identify work area in the park.

Driving on Trails:

- Whenever possible, limit the number of vehicles driving in the park. Carpool or walk-in whenever it's reasonable to do so.
- When driving in the park, head lights should be turned on and do not exceed 5mph.

General recommendation:

- During group work days, designate an information officer to educate the public and help direct visitors to ensure safety.

Training and Educational Opportunities

Workshops and Teaching

Educating about land stewardship principles and practices is a core component of the mission of the Natural Areas Program. Volunteers and Friends groups also play a central role in the stewardship of county natural areas. Volunteers bring a level of attention and care that the county cannot otherwise deliver. To empower volunteers with the

knowledge and skills necessary to steward natural areas to the highest standard, Dane County Parks provides a rich variety of educational and training opportunities that are open to all volunteers.

A few examples of trainings and workshops that are provided include:

- Invasive Species ID and Management
- Invasive Species Mapping (EDDMapS and GLEDN applications)
- Invasive Species Management Activity Documentation (ISM Track application)
- Pesticide Safety
- Prescribed Fire Basic Training
- Weeds and Wildflowers ID and Management
- Prairie Plant ID Walks
- Chainsaw Safety Levels 1 and 2
- Small Engine/Chainsaw Maintenance and Sharpening
- Native Seed Collection
- Native Seed Processing

Registered Volunteers will learn about these opportunities directly through email announcements. Preference may be given to Registered Volunteers and some opportunities may only be available to Registered Volunteers. Opportunities will also be posted on the Dane County Parks webpage (www.danecountyparks.com).

Experiential Learning

Workshops and reading can provide a great foundation, but in the end there's no substitute for getting out in the field. Fortunately, it's easy to get on-the-ground experience with the county by attending a volunteer workday where you can:

- work alongside and learn from experienced naturalists, leaders, and volunteers;
- participate in a broad range of land management activities, including: invasive species management, prescribed burns, seed collecting, and chainsaw/brush work;
- learn to use a variety of methods and tools for land management

You are encouraged to attend workdays covering a variety of activities and events at a variety of parks. This will give you the chance to work in different habitats and with different people that have their own perspectives on how to do things. (There's rarely a single way!).

Access to Gates and Buildings

There are three county keys used for opening doors, gates, and padlocks. The suma key, which is the size of a standard house key, opens most doors and buildings. Two small keys open padlocks, which are typically found on gates and the volunteer trailer. These keys are labeled 045 or 2004.

Certified Land Steward volunteers will be issued a set of keys upon completion of the orientation. **Please do NOT duplicate or distribute these keys**. Doors, gates, and padlocks are only to be accessed when working in a volunteer capacity, not on personal time. Lastly, please remember to always close and

secure any door, gate, or padlock when leaving. Emergency medical services will be able to gain access to the park even when gates are locked.

Trail Construction and Maintenance

Trails are a critically important component of any park. Trails allow visitors to enjoy and appreciate parks, provide a variety of recreational opportunities, function well as firebreaks, and allow access to stewardship work areas. However, sometimes there can be too much of a good thing. Trails can present a variety of issues and challenges that can detract from the visitor experience and degrade natural features of the park. Trails provide a corridor by which weed seeds are moved by people, horses, pets, and equipment to all corners of a park. From the viewpoint of the park visitor, too many trails can confuse and disorient people, detract from the natural scenery of the park, and degrade the peaceful experience of being alone in nature. Sometimes less is more! For this reason, the siting and construction of trails need to be evaluated and approved by park staff before construction. Parks staff will help to evaluate if there is need for a trail and determine how to minimize or mitigate any damage that may result.

Some considerations when deciding where to place a new trail, or whether to add a trail at all, include:

- What is the property classification of the natural area (Recreation Park, Natural Resource Area, Wildlife Area, Forest, etc.), and how does the trail contribute to or detract from the objectives of that property type?
- Is there an existing master plan that has already evaluated trails and public use areas?
- If the proposed trail is in a natural area, how does it fragment or degrade existing habitat?
- Would construction of the trail negatively impact sensitive or rare plants or animals, or impinge on a high quality natural community?
- Might the new trail be in a location that would lead park users to create undesired side trails?
- Will the trail disorient park visitors who are not familiar with the trail system?
- How will the trail be constructed and maintained and who will be responsible for its maintenance?
- Is there existing trail signage which will need to be modified?
- Is the trail in a location susceptible to erosion?
- Is the trail safe to all permitted user groups (hikers, bikers, equestrians, etc.)?
- Is the trail in a location that will be muddy or unpassable during wet periods such as spring snow melt or after a heavy rain storm?
- If the trail will need to be mowed, will there be room and suitable conditions for a mower?

You are encouraged to seek input from natural areas staff early in the process if you think a new trail is warranted, and they will help to evaluate the need and assist with siting the trail along the best route.

Tools and Supplies

The Natural Areas Program is able to outfit volunteers with the basic supplies and tools to be safe and productive in the field. Friends groups may have the capacity to provide an additional supply of resources above and beyond the basics. Volunteers should not buy supplies on their own with the

intention of getting reimbursed by the county. Due to county purchasing policy, this is not something that can be easily done.

Please do your part and plan ahead for what you need and make every effort to secure these resources. Don't expect county staff to deliver resources to you unless staff have offered the favor. Plan ahead to pick up tools and supplies on your own. Below is a list of resources that are available to volunteers and a summary of the proper procedures for obtaining resources.

Hand tools

An assortment of parsnip predators, pruners, loppers, handsaws, shovels, ditch blades, rakes, and various other hand tools are available at the Libby Rd. storage shed. For large group events, it may be more convenient to have the county's volunteer tool trailer available on site. Contact the Volunteer Coordinator to inquire about trailer availability well in advance of the event.

Small power equipment

A limited supply of brush cutters, chainsaws, leaf blowers, and other small motorized equipment is available for checkout. Due to the limited quantity of this equipment, items should only be checked out for discrete periods of time and returned promptly, ideally for no longer than two weeks at a time. These items can be picked up at the Libby Rd. storage shed. If small power tools are needed on a regular basis, volunteers are welcome to purchase these items on their own or request that a Friends group purchase these tools. Small grant opportunities are available to Friends groups to fund equipment purchases. Inquire with the Volunteer Coordinator for more information on these grants.

Chainsaw and Brushcutter Supplies and Protective Wear

Two-cycle fuel, chain and bar oil, 50:1 two-cycle oil, sharpening files and guides, and an assortment of chains and brushcutter blades are available to volunteers. Volunteers also have access to required protective wear including eye-glasses, gloves, hearing protection, chaps, and helmets, which are all required for chainsaw operation on county lands. Chaps and helmets can be checked out for a limited period of time but must be promptly returned. All supplies and protective wear are available at the Libby Rd. storage shed or the Parks Operations building.

Herbicides and Sprayers

All hcerbicides, PPE, and clean-up supplies such as soap and towels can be picked up at the Libby Rd. storage shed or the Parks Operations building.

Stumps and Basal Treatments: Garlon 4 Ultra and Roundup are the herbicides most commonly used by volunteers in the Natural Areas Program, and containers of both are available at both locations. Jugs of Garlon are premixed (20% Garlon 4 Ultra, 80% Bark Oil Blue) and ready to use for cut stump and basal bark applications. Jugs of Roundup for cut stumps (usually honeysuckle) are also available on the

herbicide table but require the addition of water before use on stumps. Follow the instructions on the container, which states that water should be added to the 2.5 gallon mark of the container to dilute the Roundup concentrate in the jug to the appropriate solution (40%) for treating stumps. Roundup will freeze when temperatures are in the 20s or below. During such weather, it's best to use Garlon 4 Ultra. Roundup and Garlon 4 Ultra for treating stumps should NOT be used for foliar applications as the concentration is much too strong.

Broadcast Foliar Treatments: Small quantities of other chemicals are also available in the green pesticide cabinets at both locations. These herbicides are typically used for foliar applications. Natural areas staff should be aware of your intention to use these herbicides on county lands. When taking chemicals from the green cabinet, make sure to take the corresponding herbicide label, which can be found in the organizer near the green cabinet.

When picking up any herbicide, record your withdrawal on the "Herbicide Sign Out" sheet on the nearby clipboard. Make sure to read and understand the label before using the product and have it accessible at all times. Natural areas staff should be contacted for any questions regarding the use or safety of herbicides.

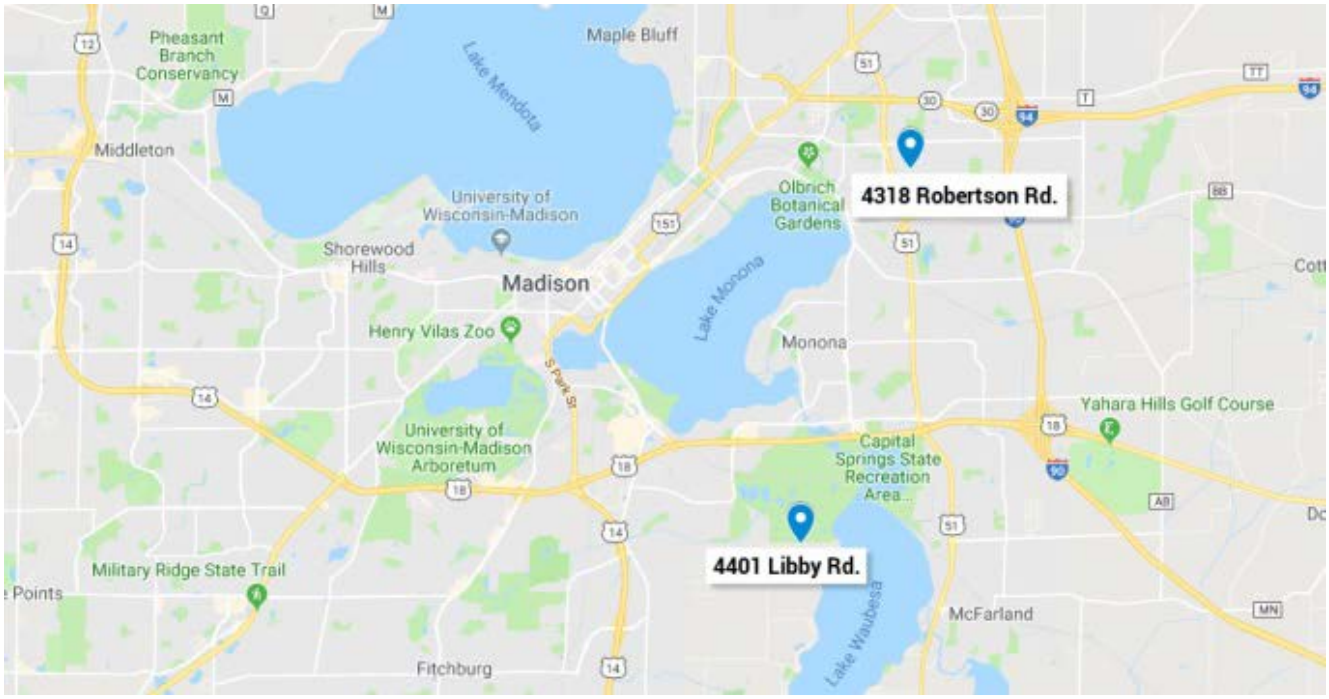
Application Equipment: Spray bottles for treating stumps and one and two gallon pressurized sprayers are available to volunteers at the Parks Operation Building and the Libby Rd Storage Shed. A limited number of backpack sprayers are also available for check out at both locations.

Volunteer Tool Trailer

A tool trailer is available for check out for large group events. The tool trailer comes stocked with a variety of hand tools, supplies, and a first aid kit. Minimal group size required for trailer use is 40 participants.

Pick-up locations

	Location	Access	Tools and Supplies Available
Parks Operations Building	Madison East Side: 4318 Robertson Rd. Madison 53714	Open 6:30am-5pm Monday-Friday only--no access after hours Do NOT unlock with key—alarm will sound	• All herbicide types • Herbicide sprayers • Protective wear • Clean up supplies • Containers for cleaning water • First aid supplies • Chainsaw supplies
Libby Rd. Shed	Madison South Side: 4401 Libby Rd. Madison 53711, Bay #3	Accessible dawn to dusk with the county suma key Site is monitored with security camera Lock when leaving	• All herbicide types • Herbicide sprayers • Protective wear • Clean up supplies • Containers for cleaning water • First aid supplies • Chainsaw supplies • Hand tools • Small power equipment • Tree planting supplies • Wheel barrows • 5 gal buckets
Volunteer Tool Trailer	Madison South Side: 4401 Libby Rd. Madison 53711, Stored in Bay #3	Accessible dawn to dusk with the county suma key to access shed County padlock key is required to access trailer Site is monitored with security camera Lock when leaving	• Hand tools • Wheel barrows • Protective wear • Clean up supplies • Containers for cleaning water • First aid supplies • 5 gal buckets



Tool, equipment, and trailer checkout system

All requests and reservations for loans of tools and equipment must go through the Volunteer Coordinator, preferably well in advance. If you need something for a volunteer project, contact the Volunteer Coordinator to inquire about the availability of the items needed, and, if available, to arrange a reservation. Only after permission has been granted should any tools or equipment be removed. Volunteers must pick up and return tools and equipment. Staff are not available for delivering tools and equipment but must transport the tool trailer. Volunteers are not permitted to transport the trailer.

A suma key is needed to unlock door #3 of the Libby Rd. shed where tools and equipment are stored. Remember to relock when you leave. When returning tools and equipment, ensure that all items are placed back in the proper locations and notify the Volunteer Coordinator that they have been returned and are available for use by other volunteers.

All tools and equipment require routine maintenance and occasionally get damaged during use. There is no need to be embarrassed or feel guilty. Please report anything that needs to be fixed or maintained in a timely manner. There are repair tags available at all pick up locations and in the tool trailer. Fill out and attach the tag with an explanation of what is wrong. Follow up by notifying the Volunteer Coordinator so that items can be repaired promptly for use by another volunteer.

Operation Fresh Start Conservation Crews

Operation Fresh Start (OFS) is a non-profit organization in Madison that started in 1970 with a mission to "provide disconnected youth a path to self-sufficiency". OFS works with youth ages 16-24 through mentoring, education, and employment training. Youth are typically enrolled in a high school education program and get assigned to a 900-hour (about nine months) crew working on home construction or conservation projects.

Dane County Parks supports two OFS Conservation Crews to conduct stewardship work on county lands. These crews consist of an OFS staff crew leader, and three to eight participants in the OFS program. In the eight years since the OFS Conservation Crew program started, many county park locations have seen great improvement through restoration or maintenance efforts provided by these crews. OFS crews are well suited for many tasks including brush removal and piling, brush pile burning, fence removal, mowing, weed control, native seed collection and planting, and various gardening and landscaping projects. However, keep in mind that participants are not professionals and should not be held to that standard. These young adults are in OFS because they are trying to get their lives back on track. Some tasks are completed efficiently and others tasks may take much longer.

Project Planning

When working with OFS crews, volunteers should have a defined project to be accomplished during the week (or weeks) with clear start and end points, rather than a vague or loosely defined project. This information helps the crew to understand the task at hand, defines a clear goal, and provides a sense of accomplishment once completed. The OFS Crew Leader can help evaluate the suitability of the project

for the crew and develop a strategy for completing tasks. Volunteers should always work with the OFS crew leaders to develop project goals, discuss daily work expectations, and give positive feedback to the crew. The OFS crew leader is in charge of the crew. Any negative feedback should be given only to the crew leader, as it is their job to manage the participants, and help re-direct them as needed. Crews take work breaks every hour or two as determined by the crew leader, which should be factored into the workday plan.

It is not always necessary, or even helpful for Dane County Parks volunteers to work alongside the crew. Volunteers can work elsewhere in the park or simply come back at a later time to check in on the crew's progress and consult with the crew leader. If the crew is having a difficult time completing the assignment, consider allowing more time or re-directing their efforts elsewhere.

Incorporating an Educational Component

OFS is intended to be an educational program for participants and county volunteers are encouraged to provide an instructional component to the project such as plant identification walks, tours of the project area, tool use instruction, or lessons on any number of topics related to the project background. Any instruction that further engages the participants in the project helps participants to better understand the purpose of the project and feel more invested in the task at hand. This will likely also lead to greater productivity from the crew.

All of the OFS participants are involved in completing a high school curriculum when they are not at the work site. Engaging in conversation regarding their studies can make them feel engaged as well.

Rewarding the Crew

Although not expected, rewards can improve morale, express your appreciation for their work, and encourage participants to stick with it. Examples of rewards might include cold lemonade on a hot day, a batch of homemade cookies after lunch, a pizza party, or even a celebratory cookout at the completion of a long project. All of these gestures are encouraged even if it prolongs the completion of a project.

Volunteers should strive to positively impact the lives of these participants. While project goals are important, remembering the overarching goals of the OFS program and understanding where these young adults have come from is critical. Equally important to making a difference in the park, volunteers can make a difference in the lives of crew members. A simple gesture to show appreciation for a job well done may impact a participant in significant ways. What others take for granted is often not a privilege for these young people. OFS participants are here as a resource in the stewardship of county lands, but consider working with these youth as a potential life changing experience for them!

Scheduling a Crew

Shane Otto, Land Restoration Specialist, is the primary county contact for coordinating the use of OFS or any questions related to OFS. Dane County Parks volunteers may request a crew to work on their site, typically in one week increments, although shorter term projects can often be accommodated. Crew availability can be viewed at the URL below and can be reserved by contacting Shane via email at otto.shane@countyofdane.com. A brief description of work to be completed should be included so the crew is properly prepared for the week of work. This information should include contact information for

who will be the lead for the week, where the crew should meet, the work description (ex. cutting, treating and hauling brush), and any special tools or materials that will be needed for the project.

OFS Crew Calendar:
https://calendar.google.com/calendar/embed?src=b45sflmru63qp6a01kdeeu5vds%40group.calendar.google.com&ctz=America%2FChicago

References

Packard, S. and Mutel, C. (Eds.). (2005). *Tallgrass Restoration Handbook*, Washington, D.C. Island Press

Tomasko, S., Nice, G., Renz, M. (2014). *Wisconsin Pesticide Applicator Training Manual—Righ- of-Way & Natural Areas* (7th ed). Madison, WI.: University of Wisconsin-Extension.

State Natural Areas Volunteer Handbook. Retrieved from: https://dnr.wi.gov/topic/lands/naturalareas/documents/snaVolunteerHandbook.pdf Wisconsin Department of Natural Resources. Madison, WI.

Appendices

Appendix 1a. Mesic Prairie Natural Community Description

Appendix 1b. Oak Opening Natural Community Description

Appendix 1c. Oak Woodland Natural Community Description

Appendix 1d. Southern Dry-Mesic Forest Natural Community Description

Appendix 2. Incident Report Form

Appendix 3. Management Activity and Herbicide Report Form

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Appendix 6. Fire Department Contact Information

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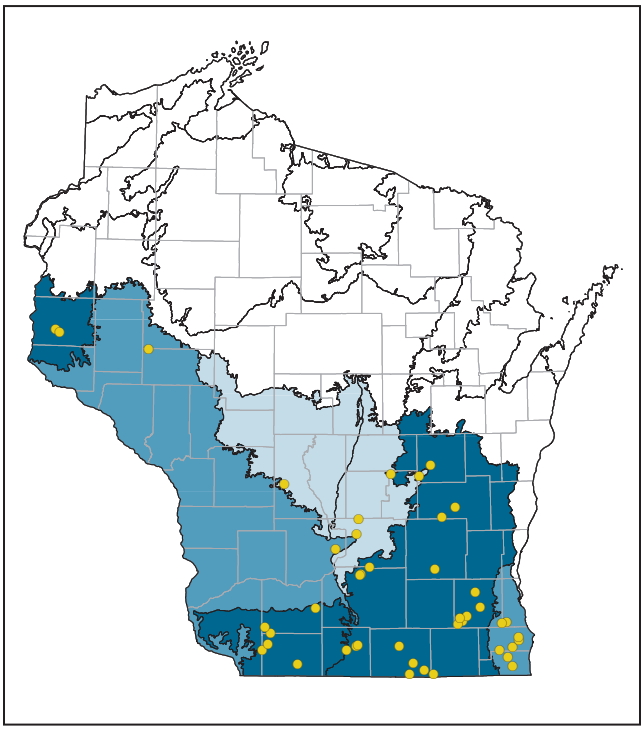
Appendix 1a. Mesic Prairie Natural Community Description

Mesic Prairie (Global Rank G1G2; State Rank S1)

Overview: Distribution, Abundance, Environmental Setting, Ecological Processes

Mesic Prairie was historically the most abundant of the tallgrass prairie communities in southern Wisconsin, where it was estimated to have covered approximately 840,000 acres (Curtis 1959, Finley 1976). Sites supporting Mesic Prairie featured nutrient-rich loamy soils, level to gently rolling topography, adequate moisture, and good drainage. Frequent wildfire was the primary disturbance factor responsible for maintaining Mesic Prairie, though periodic drought and at times grazing by wild ungulates were sometimes important factors. The most extensive tallgrass prairies occurred in areas lacking natural firebreaks, where there were few lakes, streams, or wetlands to obstruct fires ignited by lightning strikes or native Americans. Major landforms supporting extensive areas of Mesic Prairie included well-drained ground moraine and silt-capped ridgetops in the Driftless Area.

Today Mesic Prairie is one of the rarest native grassland communities in Wisconsin and across continental North America. The few remnants are small, isolated, often weedy, and tend to occur in narrow strips along roads, railroad tracks, or in utility corridors and are highly vulnerable to further degradation and decline. A few stands are known from cemeteries established in the late 19th or early 20th centuries. The landscape mosaic within which tallgrass prairie remnants are embedded today is typically composed of intensively cropped agricultural lands, some of which are rapidly urbanizing. This is especially acute in southeastern and west central Wisconsin.



Locations of Mesic Prairie in Wisconsin. The deeper hues shading the ecological landscape polygons indicate geographic areas of greatest abundance. An absence of color indicates that the community has not (yet) been documented in that ecological landscape. The dots indicate locations where a significant occurrence of this community is present, has been documented, and the data incorporated into the Natural Heritage Inventory database.

Community Description: Composition and Structure

The dominant plants are grasses and a diverse and showy assemblage of forbs. Important tall grasses, which grew to heights of 2–3 meters or more, were big blue-stem (*Andropogon gerardii*), yellow Indian grass (*Sorghastrum nutans*), needle grass (*Stipa spartea*), and switch grass (*Panicum virgatum*). Shorter grasses, such as prairie dropseed (*Sporobolus heterolepis*), little blue-stem (*Schizachyrium scoparium*), and several of the panic grasses (e.g., Leiberg's panic grass, *Dichanthelium leibergii*) are often present and may be common in some stands. The diverse forb layer is vibrant as it typically includes good representation from groups such as the asters, goldenrods, sunflowers, blazing stars, and legumes. Representative forbs of Mesic Prairie include compass-plant (*Silphium laciniatum*), prairie rosinweed (*S. integrifolium*), rough blazing-star (*Liatris aspera*), thick-spike blazing-star (*L. pycnostachya*), heath aster (*Symphyotrichum ericoides*), smooth aster (*S. laeve*), stiff sunflower (*Helianthus pauciflorus*), showy tick-trefoil (*Desmodium canadense*), Illinois tick-trefoil (*D. illinoense*), purple prairie-clover (*Dalea purpurea*), rattlesnake-master (*Eryngium yuccifolium*), flowering spurge (*Euphorbia corollata*), prairie thistle (*Cirsium discolor*), northern bedstraw (*Galium boreale*), wild bergamot (*Monarda fistulosa*), yellow coneflower (*Ratibida pinnata*), heart-leaved golden alexanders (*Zizia aptera*), common spiderwort (*Tradescantia ohioensis*), and violet wood-sorrel (*Oxalis violacea*).

Cover values for woody plants would have been low under the disturbance regime of frequent fire that typically maintained the community but increased rapidly as fire suppression policies were implemented across southern Wisconsin by Euro-American immigrants. Shrubs associated with Mesic Prairie included New Jersey tea (*Ceanothus americanus*), prairie willow (*Salix humilis*), lead-plant (*Amorpha canescens*), American hazelnut (*Corylus americana*), and Carolina rose (*Rosa carolina*). Stands from which fire had been excluded for long periods were quickly overrun by shrubs and sapling trees. Problematic plant species for land managers trying to maintain or restore Mesic Prairie are some of the native sumacs such as smooth sumac (*Rhus glabra*) or staghorn sumac (*R. typhina*) and dogwoods like gray dogwood (*Cornus racemosa* and red osier dogwood (*C. stolonifera*) and nonnative highly invasive shrubs such as the Eurasian buckthorns such as common buckthorn (*Rhamnus cathartica*) and glossy buckthorn

(*R. frangula*), honeysuckles (especially Tartarian (*Lonicera tatarica*), Asian fly (*L. morrowii*), and hybrid Bell's (*Lonicera* x *bella*) honeysuckle), and multiflora rose (*Rosa multiflora*).

Some rare plants associated with mesic prairie are pale green orchid (*Platanthera flava*), the U.S. Threatened and Wisconsin Endangered prairie white-fringed orchid (*P. leucophaea),* Wisconsin Endangered wild hyacinth (*Camassia scilloides*), Wisconsin Threatened pale purple coneflower (*Echinacea pallida*), American feverfew (*Parthenium integrifolium*), prairie-turnip (*Pediomelum esculentum*), and hairy fimbristylis (*Fimbristylis puberula*). Mead's milkweed (*Asclepias meadii*) formerly grew in the mesic prairies of southwestern Wisconsin but is now considered extirpated as a wild plant in Wisconsin.

Remnants that have retained high cover values for native grasses and forbs continue to provide habitat for many prairie insects (Panzer et al. 1995) dependent on native prairie vegetation, but some of the vertebrates, especially those that are somewhat area-dependent such as the Great Prairie-Chicken (*Tympanuchus cupido*), Northern Harrier (*Circus cyaneus*), Short-eared Owl (*Asio flammeus*), and American badger (*Taxidea taxus*) are present and persist only if the surrounding area offers extensive areas of open grassland, including core areas that are not cultivated annually. Other noteworthy animals associated with Mesic Prairie are Franklin's ground squirrel (*Spermophilus franklinii*), Henslow's Sparrow (*Ammodramus henslowii*), Bobolink (*Dolichonyx oryzivorus*), and Dickcissel (*Spiza americana*). Rare invertebrates inhabiting mesic prairies include the regal fritillary (*Speyeria idalia*), liatris borer moth (*Papaipema beeriana*), silphium borer (*P. silphii*), phlox moth (*Schinia indiana*), and red-tailed prairie leafhopper (*Aflexia rubranura*).

Conservation and Management Considerations

The attributes of high soil fertility, gentle topography, the absence of trees, John Deere's invention of the first commercially successful steel moldboard plow in 1837, and a large influx of Euro-American settlers (many of them farmers) led to the rapid loss of virtually all of our mesic prairies in less than half a century. Once an implement capable of breaking and turning over the tough prairie sod was available, outright destruction was the overriding factor in the precipitous decline of North America's tallgrass prairies. Because of favorable growing conditions and high productivity for crops, the mesic prairies were among the first of our natural communities to disappear. Today, no more than a few hundredths of one percent of this community's former acreage in Wisconsin persists, a situation which is unfortunately paralleled throughout the continental range of these native grasslands.

Because so many of the persisting remnants are small, isolated, and bordered by intensively cultivated agricultural lands, developed residential areas, roads, or railroad tracks, they are exceptionally vulnerable to damage from herbicide spray, salt residue, nutrient-enriched runoff, and infestations of invasive plants. Where rights-of-way are managed with herbicides or road-grading equipment, the remnants are quickly degraded, and the diversity within them is quickly lost. Grazing, mowing, fire suppression, and tree planting are also disturbances that pose serious threats to mesic prairies. Grazed stands eventually become dominated by nonnative cool season grasses, including smooth brome (*Bromus inermis*), Kentucky bluegrass (*Poa pratensis*), Canada bluegrass (*P. compressa*), timothy (*Phleum pratense*), orchard grass (*Dactylis glomerata*), and reed canary grass (*Phalaris arundinacea*).

Long term, the best conservation opportunities occur where small remnants can be embedded within extensive

Good examples of mesic prairie vegetation are now virtually nonexistent. Rich silt loam soils and level topography led to the almost total destruction of the deep-soil, tallgrass prairies and their conversion to crop land. Extant remnants are all small, isolated, and vulnerable to disturbance and degradation by further species loss, the spread of invasive plants, herbicide drift, and neglect. Ipswich Prairie occupies an abandoned railroad right-of-way in the cornscape that now covers much of Grant and Lafayette counties. Southwest Savanna Ecological Landscape. Photo by Eric Epstein, Wisconsin DNR.

Only small fragments of mesic tallgrass prairie persist today. Most of them are in transportation rights-of-way where they are highly vulnerable to inadvertent damage or outright destruction. Hammond Cemetery Prairie, St. Croix County, Western Prairie Ecological Landscape. Photo by Eric Epstein, Wisconsin DNR.

areas of open vegetation composed of other prairie types, sedge meadows, and "surrogate" grasslands. This may be especially effective where "prairie pastures" (lands that have a history of livestock grazing but that have never been plowed) are relatively abundant, though these are most often found in areas of steep topography or where bedrock is close to the surface. Occasionally a (narrow) zone of mesic prairie occurs at or near the base of a slope, on the margins of a wetland, or on a narrow ridgetop with a deep loess cap. Meanwhile, it is imperative that the prairie biota, especially plants and invertebrates, are thoroughly surveyed and that the data are analyzed and applied to restoration efforts wherever viable grassland management opportunities at large scales occur.

Sites where it may be feasible to consider the restoration and maintenance of Mesic Prairies at larger scales include Military Ridge and some of the historic prairie areas just to the south, mostly in southwestern Wisconsin's Driftless Area, the Scuppernong Basin in the Southern Kettle Moraine Region in the southeastern part of the state, the Western Prairie Habitat Restoration Area near the Minnesota border in Pierce and St. Croix counties, and, straddling the Wisconsin-Illinois border along Lake Michigan, the Chiwaukee Prairie-Illinois Beach State Park complex.

We also encourage state and local governments, other institutions engaged in land management and protection, NGOs, and private individuals to take on the task of preserving and properly managing as many of the small remnants scattered across southern Wisconsin as is possible.

Additional Information

For additional information on somewhat similar natural communities, see the descriptions for Dry-mesic Prairie, Wet-mesic Prairie, Wet Prairie, Calcareous Fen, Southern Sedge Meadow, and Oak Opening. In the U.S. National Vegetation Classification, the community corresponding most closely to Mesic Prairie is CEGL002203 Big Bluestem – Yellow Indiangrass – (Prairie Dropseed) – Blazingstar Species – Gray-head Prairie Coneflower Herbaceous Vegetation (Faber-Langendoen 2001).

Also see:
Henderson and Krause (1995)
Sample and Mossman (1997)

FROM: Epstein, E.E. Natural communities, aquatic features, and selected habitats of Wisconsin. Chapter 7 *in The ecological landscapes of Wisconsin: An assessment of ecological resources and a guide to planning sustainable management*. Wisconsin Department of Natural Resources, PUB-SS-1131H 2017, Madison.

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For a reference list, please see the **Literature Cited.**

Appendix 1b. Oak Opening Natural Community Description

Oak Opening (Global Rank G1; State Rank S1)

Overview: Distribution, Abundance, Environmental Setting, Ecological Processes

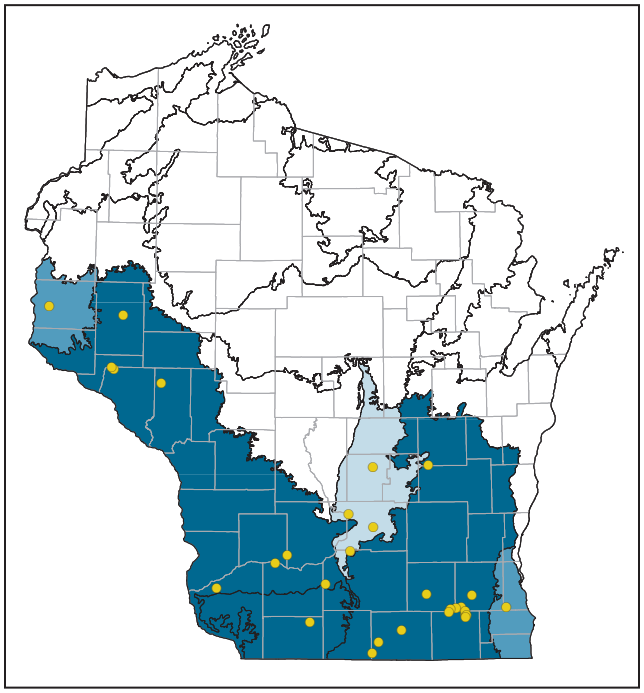
Historically, Oak Openings occurred on dry to wet-mesic sites across much of southern and western Wisconsin. Patch size and configuration varied greatly, and the community was found as isolated groves, in draws between ridges, on tongue-like peninsulas, on steep slopes partially protected by waterbodies or wetlands, and sometimes as extensive ecotonal areas separating open prairie from closed forest. According to the interpretations of Curtis (1959) and Finley (1976), Oak Openings covered approximately 5.5 million acres in southern Wisconsin at the time of the federal public land survey in the mid-19th century. Only the vast (and variable) Northern Mesic Forests in the northern part of the state were more extensive.

In 1959 Curtis wrote that "an oak savanna with an intact ground layer is the rarest plant community in Wisconsin today." This statement applies throughout the continental range of the type (Nuzzo 1986) and is even more apt now than it was a half century ago. Virtually all present conservation efforts to maintain and reestablish this type are restorations, wherein prescribed fire, mechanical removal of shrubs and saplings, mowing, and herbicides are employed to eliminate or control unwanted woody growth and invasive herbs and encourage suppressed native groundlayer plants. In some restoration efforts, it has been deemed necessary to reintroduce native plant species that have been lost.

As defined by Curtis (1959), Oak Openings are oak-dominated savanna communities in which there was at least one tree per acre but where total tree cover was less than 50%. However, he also noted that the "density (of trees) per acre was the most variable of all characteristics," a key point for managers and restoration planners. It's also worth noting that Oak Openings could grade seamlessly into communities still influenced by and ultimately dependent on periodic wildfire but characterized by increasing levels of canopy closure. A continuum of the fire-dependent "oak ecosystem" could grade from open and park-like oak openings, to a more closed oak woodland, and finally to closed canopy oak forest.

By 2012 wildfire suppression in much of the state had been policy for a century or more throughout the former range of these savannas. As a result, canopy cover is not by itself a useful criterion to define an Oak Opening, nor is it necessarily useful to identify a remnant. Multiple factors, such as the spacing and limb architecture of the dominant oaks, stand disturbance history, landscape position with respect to past fire behavior, and floristic associates (if they haven't been shaded or grazed into oblivion) are arguably of greater importance in identifying stands that have retained some savanna attributes and possess the highest restoration potential (Leach and Givnish 1998).

Few extant remnants are in good condition, and these are now mostly limited to dry, often steep, rocky or gravelly sites. Remnant condition is typically poor owing to explosive



Locations of Oak Opening communities in Wisconsin. The deeper hues shading the ecological landscape polygons indicate geographic areas of greatest abundance. An absence of color indicates that the community has not (yet) been documented in that ecological landscape. The dots indicate locations where a significant occurrence of this community is present, has been documented, and the data incorporated into the Natural Heritage Inventory database.

This morainal ridge in Waukesha County supports a remnant oak opening. The dominant trees are large open-grown bur oaks, with scattered white oak and shagbark hickory also present. A long history of grazing has maintained savanna structure, but the understory is now composed almost entirely of nonnative cool season grasses. Southeast Glacial Plains Ecological Landscape. Photo by Eric Epstein, Wisconsin DNR.

increases in woody growth, the dominance of invasive plants, the past and present impacts of grazing, and removal of the large oaks for timber or firewood. Oak Openings on mesic sites were formerly abundant, but these have essentially been extirpated, not only from southern Wisconsin but from the entire midwestern range of the community. Lowland savannas (these would occur on alluvial river terraces above the true floodplain) are now extremely rare, and known remnants are weedy and/or badly overgrown with shrubs and saplings.

The loss of the Oak Openings has been primarily due to four factors: the implementation of widespread fire suppression policies leading to an increase in the abundance and cover of woody plants at the expense of the native herbs; conversion of lands supporting savannas to other uses and cover types; prolonged periods of heavy grazing, which maintained savanna structure but caused the decline or loss of many native floristic associates; and recent increases in the abundance of invasive plants.

Fragmentation and the great changes in the vegetation mosaic within which the Oak Openings historically occurred have undoubtedly been significant factors in this formerly abundant natural community's demise, but the absence of intact remnants and the destruction and outright loss of the associated tallgrass prairies make the Oak Openings difficult to describe with precision, let alone manage with accurately predicted outcomes.

Community Description: Composition and Structure

Bur oak (*Quercus macrocarpa*) was the dominant tree on many mesic and dry-mesic sites in southeastern Wisconsin, with white oak (*Q. alba*) a dominant or co-dominant in some stands. Black oak (*Quercus velutina*) and shagbark hickory (*Carya ovata*) were the most important associates. The bur oaks were capable of achieving great girth, and the spreading crowns were often wider than the trees were high. No other upper midwestern plant community featured this unique stand physiognomy.

Shrub cover is highly variable and is often based on the time elapsed since the last fire. Important members of the shrub layer include American hazelnut (*Corylus americana*), gray dogwood (*Cornus racemosa*), New Jersey tea (*Ceanothus americanus*), leadplant (*Amorpha cansescens*), and several native roses (*Rosa* spp.).

The herbaceous layer has the potential to support high floristic diversity as it may include plants associated with open oak woodlands, more densely canopied oak-dominated hardwood forests, and treeless prairies. Historically, representative herbs were big blue-stem (*Andropogon gerardii*), little blue-stem (*Schizachyrium scoparium*), needlegrass (*Stipa spartea*), Leiberg's panic grass (*Dichanthelium leibergii*), flowering spurge (*Euphorbia corollata*), wild bergamot (*Monarda fistulosa*), thimbleweed (*Anemone cylindrica*), American pasqueflower (*A. patens*), northern bedstraw (*Galium boreale*), bird's-foot violet (*Viola pedata*), eastern shooting-star (*Dodecatheon meadia*), Solomon's-seal (*Polygonatum biflorum*), early buttercup (*Ranunculus fascicularis*), and yellow-pimpernel (*Taenidia integerrima*). Diverse and colorful displays of composites, especially among the asters, sunflowers, and blazing stars, were noted by observers who encountered the Oak Openings prior to the widespread settlement of southern Wisconsin by Euro-American immigrants.

A relatively small number of plants and animals reach their optimal abundance in the somewhat ecotonal Oak Openings. Some of the better known examples include kitten-tails (*Besseya bullii*), yellow giant hyssop (*Agastache nepetoides*), cream gentian (*Gentiana alba*), smooth phlox (*Phlox glaberrima*), white camas (*Zigadenus elegans* var. *glaucus*), and purple milkweed (*Asclepias purpurascens*), all of which are now rare in Wisconsin. Among other plants that are known to occur in Oak Openings but that are either too rare to be useful as indicators of any particular community assemblage or structure, or which have been more strongly linked to other natural communities, are woolly milkweed (*Asclepias lanuginosa*), great Indian-plantain (*Arnoglossum reniforme*), wild hyacinth (*Camassia scilloides*), violet bush-clover (*Lespedeza violacea*), slender bush-clover (*L. virginica*), and one-flowered broom-rape (*Orobanche uniflora*).

One of the native plants adapted to the filtered shade and patchy canopy conditions of the oak opening is the globally rare kitten-tails. Photo by Robert H. Read, Wisconsin DNR.

Animals of conservation interest that have a substantial association with Oak Openings are Eastern Screech Owl (*Megascops asio*), Red-headed Woodpecker (*Melanerpes erythrocephalus*), Eastern Bluebird (*Sialia sialis*), and Orchard Oriole (*Icterus spurius*). Trees with cavities can be important maternity sites for bats and also provide cover for other species. In years when the acorn crop is heavy, species such as Wood Duck (*Aix sponsa*) and eastern fox squirrel (*Sciurus niger*) may be common.

Conservation and Management Considerations

Because of its current rarity and the highly degraded condition of most remnants, conservation of the globally imperiled Oak Openings will be almost entirely dependent on efforts to restore heavily disturbed examples, most of them with greatly impaired, diminished, or missing components of the community's characteristic composition, structure, and function.

Frequent fires of low intensity are appropriate prescriptions for this community once the maintenance stage has been achieved, but initially, mechanical removal of unwanted competing shrubs and trees, augmented by the judicious use of herbicides, are critical steps. Once the surplus woody growth has been brought under control (this may be more effectively accomplished in stages, rather than in a rapid, massive reduction of woody cover) and reestablishment of a native ground layer is underway, the reintroduction of periodic fire will be the single most important step taken in the restoration process. Stands undergoing restoration will need to be monitored closely to assess ongoing needs to control invasive species (which are now present in virtually all remnants, including managed stands), set back shrubs and saplings, and determine whether or not there is a need to reintroduce missing elements of the native ground layer, ideally from similar habitats nearby.

The list of problematic invasive plants in the degraded, weed-infested remnants is long and includes Canada thistle (*Cirsium arvense*), garlic mustard (*Alliaria petiolata*), spotted knapweed (*Centaurea biebersteinii*), black swallow-wort (*Vincetoxicum nigrum*), common buckthorn (*Rhamnus cathartica*), multiflora rose (*Rosa multiflora*), Japanese barberry (*Berberis thunbergii*), and the Eurasian honeysuckles (especially *Lonicera tatarica* and the hybrid *Lonicera* x *bella*). Exotic cool season grasses often dominate the ground layer of stands with a long history of livestock grazing. Prevalent among these are Canada bluegrass (*Poa compressa*), Kentucky bluegrass (*P. pratensis*), and smooth brome (*Bromus inermis*).

Native shrubs can become abundant in remnant Oak Openings, and managers may seek to control or even eradicate them from sites undergoing restoration. Examples include several of the sumacs (*Rhus* spp.), blackberries (*Rubus* spp.), and common prickly-ash (*Zanthoxylum americanum*).

Oak Opening restoration and management will likely be most successful where other natural communities belonging to the mosaic of fire-dependent vegetation comprising the oak ecosystem are also present (such as oak woodland and oak-dominated forest types) or where the Oak Opening remnant can be embedded within native or surrogate grasslands. Opportunities to accomplish this are best offered by sites in the Driftless Area in both the Western Coulees and Ridges and Southwest Savanna ecological landscapes. Unlike many of the remnants in southeastern and south central Wisconsin (the southern Kettle Moraine being the exception), the steep slopes, shallow soils, and rougher topography of the Driftless Area have retained areas with unplowed sod, which may harbor seeds and other propagules of native species but also the native microflora and fauna associated with the uncropped substrate.

Open-grown bur oaks dominate this remnant oak opening in western Waukesha County. Grazing has maintained savanna stand structure, but the understory is now dominated almost entirely by nonnative plants. Southeast Glacial Plains Ecological Landscape. Photo by Eric Epstein, Wisconsin DNR.

The southern portion of southeastern Wisconsin's Kettle Moraine region is especially significant as savanna and prairie restoration activities have been occurring there for several decades, a substantial core of public lands well suited (really critical) to these activities exists, and public interest and support for doing work of this nature is high. Excellent partnerships have developed there between public agencies and NGOs (The Nature Conservancy, Waukesha County Land Trust, Friends of the Mukwonago River, and The Prairie Enthusiasts are just a few examples) as well as with many private individuals. Somewhat parallel situations exist in parts of the Driftless Area, though a majority of the public land base there is centered on the larger river corridors. At some of the sites undergoing restoration, the Oak Openings occur within a mosaic of vegetation types that included Wet-mesic Prairie, Southern Sedge Meadow, Calcareous Fen, and Emergent Marsh.

Among the subjects needing additional research are the importance of stand size and connectivity; variability in the spatial and temporal representation of mature trees; compositional differences across the community's Wisconsin range; demographics of the prevalent oak species; representation of native shrubs; the intensity, frequency, and timing of prescribed burns; and differentiating savannas (e.g., those from

which fire has been excluded for many decades) from oak woodland and oak forest. The significance and ecological roles of animals that had been present historically but that are now absent from the range of the Oak Openings such as elk (*Cervus canadensis*), Greater Prairie-chicken (*Tympanuchus cupido*), Sharp-tailed Grouse (*Tympanuchus phasianellus*), and Passenger Pigeon (*Ectopistes migratorius*) also need to be better understood. The Northern Bobwhite (*Colinus virginianus*) might be placed with this group of extirpated species as well.

Savannas on sandy or gravelly alluvium apparently existed on outwash terraces or islands within or in close proximity to several of the major river floodplains, especially in southwestern Wisconsin. To date, documentation of the composition, structure, and function of such alluvial savannas has been very limited, but this is an item that merits further investigation in the near future as good restoration opportunities may exist on some of the public lands bordering rivers such as the Mississippi, Wisconsin, Chippewa, Black, St. Croix, and others.

Wisconsin has a major role to play in the restoration and management of this globally imperiled natural community and is a legitimate focus of land management activities at appropriate sites scattered across southern and central Wisconsin.

Additional Information

For additional information, see the descriptions of Oak Woodland, Oak Barrens, Pine Barrens, Southern Dry Forest, Southern Dry-mesic Forest, Sand Prairie, Dry Prairie, Dry-mesic Prairie, and Mesic Prairie. In parts of southeastern Wisconsin, the descriptions of Wet-mesic Prairie, Southern Sedge Meadow, Calcareous Fen, and Emergent Marsh might also offer information of interest. The U.S. National Vegetation Classification (US NVC) type most closely corresponding to Wisconsin's Oak Openings is GEGL02020 North-central Bur Oak Openings (Faber-Langendoen 2001). The US NVC type CEGL005284 Chinquapin Oak Limestone – Dolomite Savanna is generally found farther south, e.g., in Missouri, but there is at least one good quality occurrence in Wisconsin on dolomite bluffs near the Mississippi River.

Michigan and Ontario have described CEGL005120 Lakeplain Wet-mesic Oak Openings. This extremely rare natural community is possible in the southeastern corner of Wisconsin and northeastern Illinois within the Chiwaukee Prairie-Illinois Beach complex. There is also at least one occurrence of a wet-mesic savanna in south central Wisconsin, south of Madison (obviously this stand would not fit the "lakeplain" concept). More study is needed to appropriately describe and classify this stand. The proposed state name is Wet-mesic (Alluvial) Swamp White Oak Savanna with a state rank of S1.

Also see:

Bowles and McBride (1998)
Brawn (2006)
Bray (1960)
Bronny (1989)
Haney and Apfelbaum (1990)
Haney and Apfelbaum (1994)
Henderson (2005)
Henderson and Epstein (1995)
Hujik (1995)
Kline (1997)
Leach and Ross (1995)
Leach and Givnish (1999)
Nuzzo (1986)
O'Connor et al. (2009)
Packard (1988)
Packard (1993)
Stout (1946)
WDNR (2010)
White (1986)

FROM: Epstein, E.E. Natural communities, aquatic features, and selected habitats of Wisconsin. Chapter 7 *in The ecological landscapes of Wisconsin: An assessment of ecological resources and a guide to planning sustainable management*. Wisconsin Department of Natural Resources, PUB-SS-1131H 2017, Madison.

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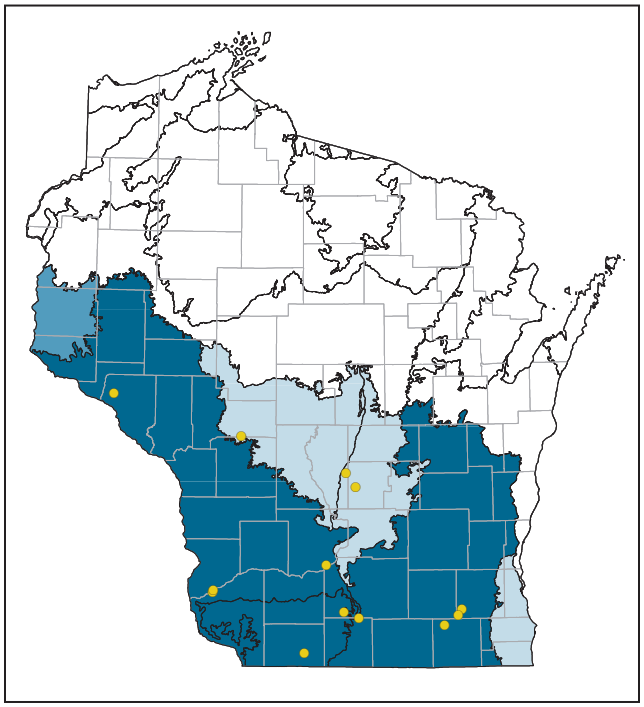
For a reference list, please see the **Literature Cited.**

Appendix 1c. Oak Woodland Natural Community Description

Oak Woodland (Global Rank GX; State Rank S1)

Overview: Distribution, Abundance, Environmental Setting, Ecological Processes

Oak Woodland is an integral part of the fire-dependent oak ecosystem complex, which also includes oak-dominated savannas and forests. Structurally, canopy cover in Oak Woodland is greater than that characteristic of the true savanna communities such as the more open, sparsely timbered Oak Opening and somewhat less than or approaching the more densely canopied Southern Dry and Southern Dry-mesic Forests. Canopy cover in Oak Woodland exceeds 50% and may approach 100%. Though this community shares many attributes with savannas and dry forests, a key point in defining Oak Woodland is that the higher canopy cover in remnants or restored stands is not simply due to fire suppression and the subsequent proliferation of fire-sensitive woody species. Besides the higher density of trees and greater canopy cover, the trees in an Oak Woodland lack the short, large diameter boles prevalent in well-developed oak savanna, and the crowns do not exhibit a limb architecture characterized by widely spreading branches, nor will they necessarily have the same form as the narrow crowns entirely lacking the spreading upper limbs of an oak forest.



Locations of Oak Woodland communities in Wisconsin. The deeper hues shading the ecological landscape polygons indicate geographic areas of greatest abundance. An absence of color indicates that the community has not (yet) been documented in that ecological landscape. The dots indicate locations where a significant occurrence of this community is present, has been documented, and the data incorporated into the Natural Heritage Inventory database.

It is thought that frequent fires of low-intensity maintained the understory in an open condition, free of dense growths of shrubs and saplings. It is possible that browsing by large herbivores such as elk and white-tailed deer also played a role in maintaining open understory conditions in this type prior to settlement by Euro-Americans. Though little is known about the historical extent or composition of Oak Woodland, it appears that at least some of the characteristic understory plant species (certain legumes, composites, and grasses among them) may reach their greatest abundance here.

The historical range of this type would have basically coincided with the range of other Oak Savannas, especially Oak Openings and perhaps dry hardwood forests dominated by white oak, which occurred mostly south of the Tension Zone in the Central Sand Hills, Southeast Glacial Plains, Southwest Savanna, and Western Coulees and Ridges ecological landscapes.

Community Description: Composition and Structure

Because so few intact examples have been identified and even fewer described in detail, information on composition is somewhat speculative. The canopy dominants on dry-mesic, mesic, and some dry sites in southern Wisconsin are oaks, commonly including white oak (*Quercus alba*), bur oak (*Q. macrocarpa*), northern red oak (*Q. rubra*), and shagbark hickory (*Carya ovata*). Black oak (*Quercus velutina*) and/or northern pin oak

Oak woodland features high canopy closure, but the dominant oaks retain distinctive limb architecture, and the oaks' leaf mosaic allows more light to reach the ground than in stands being invaded by shade tolerant trees such as maples. Such stands are somewhat transitional between more open savannas and true forests. In some situations, they can be managed and maintained to help accommodate both forest interior animals and light-demanding understory plants that tolerate high filtered shade. Kettle Moraine State Forest – South Unit, Jefferson County, Southeast Glacial Plains Ecological Landscape. Photo by Drew Feldkirchner, Wisconsin DNR.

(*Q. ellipsoidalis*) would have been less common, and perhaps absent, on more mesic sites due to their shade intolerance and the competitive advantages some of the other oaks would have had in these environments.

The floristic associates documented by those collecting data that were later analyzed and presented in *The Vegetation of Wisconsin* (Curtis 1959) were compiled about seventy years ago. This was well after fire suppression policies had been widely implemented across the state, and therefore it is thought by some researchers that more of the understory plants representative of an Oak Woodland situation (higher canopy closure and less light reaching the surface) would still have been present and relatively easy to observe. Table VII-3 in Curtis (1959) (Appendix for Chapter 5, "Prevalent Groundlayer Species of Southern Dry Forest") would be worth taking a hard look at for clues to the composition of some oak woodlands during the mid-20th century.

Some members of the Oak Woodland flora are thought to belong to genera or families that are also common in other communities in the oak ecosystem group but represented by a different set of species (belonging to genera that include as members composites, grasses, legumes, mints, and snapdragons). Examples of species observed in and thought to be possibly representative of oak woodland environments include figwort giant hyssop (*Agastache scrophulariaefolia*), poke milkweed (*Asclepias exaltata*), American bellflower (*Campanula americana*), wood thistle (*Cirsium altissimum*), long-bracted green orchid (*Coeloglossum viride*), bracted tick-trefoil (*Desmodium cuspidatum*), purple Joe-Pye-weed (*Eupatorium purpureum*), bottlebrush grass (*Elymus hystrix*), forest bedstraw (*Galium circaezans*), broad-leaved panic grass (*Dichanthelium latifolium*), Solomon's-seal (*Polygonatum biflorum*), Short's aster (*Symphyotrichum shortii*), and yellow-pimpernel (*Taenidia integerrima*).

This white oak-red oak-black oak woodland has been "thinned from below," and several prescribed burns have reduced the heavy shade created by the previously dense understory of deciduous shrubs and saplings. Legumes, composites, and other light-demanding herbs are now thriving in the understory. Rush Creek State Natural Area, Crawford County, Western Coulees and Ridges Ecological Landscape. Photo by Eric Epstein, Wisconsin DNR.

Mixed stand of white, black, and red oaks is now managed with prescribed fire to restore and maintain open understory conditions and allow for the habitat needs of the more light-demanding herbs. Oak woodland is an important part of the continuum of fire-dependent communities occurring in southern Wisconsin. Rush Creek State Natural Area, Crawford County, Western Coulees and Ridges Ecological Landscape. Photo by Eric Epstein, Wisconsin DNR.

Understory plants associated with oak savannas such as large-flowered yellow false foxglove (*Aureolaria grandiflora*), wild lupine (*Lupinus perennis*), and starry campion (*Silene stellata*) are also of potential or even likely occurrence within some oak woodlands. Species more often found in oak forest situations such as rough-leaved sunflower (*Helianthus strumosus*) and black-seeded rice grass (*Oryzopsis racemosa*) may also occur in Oak Woodland. Keep in mind that light conditions and the degree of shading may vary considerably within different parts of an oak savanna, oak forest, or oak woodland.

Plant species of high conservation significance owing to rarity or for other reasons would probably overlap with those more often associated with Oak Openings, at least to some degree. Examples include great Indian-plantain (*Arnoglossum reniforme*), purple milkweed (*Asclepias purpurascens*), yellow giant hyssop (*Agastache nepetoides*), violet bush-clover (*Lespedeza violacea*), snowy campion (*Silene nivea*), hairy meadow parsnip (*Thaspium chapmanii*), purple meadow-parsnip (*T. trifoliatum*), and white camas (*Zigadenus elegans*).

Characteristic animals may include not only typical savanna associates such as the Orchard Oriole (*Icterus spurius*), Eastern Bluebird (*Sialia sialis*), Northern Flicker (*Colaptes auratus*), and the declining Red-headed Woodpecker (*Melanerpes erythrocephalus*) but also species more often associated with hardwood forests, such as Great-crested Flycatcher (*Myiarchus crinitus*), Eastern Wood-pewee (*Contopus virens*), Red-bellied Woodpecker (*Melanerpes carolinus*), Blue-gray Gnatcatcher (*Polioptila caerulea*), and Yellow-throated Vireo (*Vireo flavifrons*). Several area-sensitive forest interior birds, such as Cerulean Warbler (*Setophaga cerulean*), Hooded Warbler (*Setophaga citrina*), and Acadian Flycatcher (*Empidonax virescens*), have been documented in Oak Woodland during their breeding seasons. Where stand size is sufficient, community structure is appropriate, and where Oak Woodland adjoins extensive areas of dry-mesic or mesic hardwood forest, it may be possible to maintain populations of these species.

Conservation and Management Considerations

Oak Woodland occurred south of the Tension Zone where it most often occupied a position in the continuum of fire-dependent, fire-maintained natural communities between oak savannas and closed hardwood forests. In the absence of fire or other disturbances, the ground layer was quickly overtaken by shrubs and saplings, and characteristic forbs and grasses were either suppressed and reduced in vigor or disappeared altogether.

Among the numerous obstacles preventing or impeding the conservation and maintenance of Oak Woodland are fire exclusion, logging of the large canopy oaks, livestock grazing, leaf litter build-up, and an increase in shrubs, saplings, and small trees, especially infestations of species formerly excluded or suppressed because of their sensitivity to periodic fire. Colonization by highly invasive species, many of them nonnative, is also a significant problem for managers. The lack of basic information on this segment of fire dependent oak ecosystems is another problematic factor.

The conservation focus will be on restoration, as remnants are either overgrown with woody understory plants or have lost their most characteristic understory species due to periods of prolonged grazing or the proliferation of invasive plants. Among the benefits to be gained by restoring and maintaining oak woodland is a clearer understanding that many of the native plant species that are currently declining in unburned oak "forests" will ultimately be lost from many parts of southern Wisconsin. Managing proactively for Oak Woodland using prescribed fire could alleviate or forestall this situation, at least locally.

As community stability is inherently low (or nonexistent) in the absence of periodic fire, there is a significant lack of information on the fire regime needed to restore and maintain an understory composed of native herbs in the Oak Woodland community. As a practical consideration, identifying and mapping stands of Oak Woodland using remote sensing imagery alone would be difficult or impossible. Canopy cover alone is not a criterion that will permit the planner, researcher, or natural resource manager to delineate occurrences of Oak Woodland with much confidence.

There are several factors that will aid in the differentiation of Oak Woodland from other fire dependent oak-dominated communities, such as oak savanna or oak forest. Among the potentially important clues to consider are composition of both the canopy and understory, limb architecture of the canopy trees, position in the local landscape with respect to physical features and other plant communities (which are the sources for recolonization of lost or depleted plants and animals from nearby woodland remnants), and perhaps most critically, the amount of light that reaches the soil surface.

The Oak Woodland type is NOT meant to simply indicate an overgrown Oak Opening in need of crown thinning—though that could be an appropriate, even necessary, management action for stands where more mesophytic tree species such as red maple, cherries, ashes, or ironwood have become part of the canopy.

More field inventory is needed to better characterize the community and identify restorable sites, especially those that occupy strategic locations bordered by oak savanna and oak forest. Managers of landscapes in which oak ecosystems are prevalent may be excellent sources of information, especially in areas such as the southern Kettle Moraine in southeastern Wisconsin or at scattered locations within the Driftless Area where management to maintain and restore savannas is an ongoing activity. This may be especially true in the vicinity of rough terrain bordering big rivers where the full complement of southern Wisconsin's fire-dependent natural communities is either present or could potentially be restored to functionality. Ideally these sites will be situated so that they can be managed with prescribed fire and, as needed and appropriate, by other methods such as brushing, judicious cutting, and limited herbicide use.

A potentially significant advantage to managers and conservationists when recognizing and managing Oak Woodland is that it can bridge the gap between stands managed to maintain or restore open savanna conditions with low tree cover of 10% to 50% and closed canopy forest. At some sites, this may mimic historical conditions and at others provide habitat for at least some sensitive forest interior species (Cerulean Warbler would be one of those). It would also mitigate some of the negative impacts associated with "hard," high contrast edge (such as excessive white-tailed deer (*Odocoileus virginiana*) browse, increased rates of brood parasitism and predation, and more competition from already abundant edge-adapted species).

It is possible, even likely, that important variants of Oak Woodland occur on wet-mesic, mesic, and very dry sites. However, at this time there is a lack of data sufficient to allow for the adequate description of additional oak woodland communities. Stands on extremely dry, droughty, low nutrient sites with coarse textured soils in which the dominant oaks are mostly black oak or northern pin oak may experience somewhat different disturbance regimes (for example, more frequent, catastrophic, stand-replacing fires) and require other management approaches—especially on sites that historically supported open barrens communities. These were most often in the sand country of central Wisconsin and on the broad sandy terraces bordering major rivers in southwestern Wisconsin.

Additional Information

Information on related vegetation types can be found in the natural community descriptions in this chapter for Oak Openings, Oak Barrens, Southern Dry Forest, and Southern Dry-mesic Forest. The U.S. National Vegetation Classification type most closely resembling Oak Woodland on dry-mesic to mesic sites is CEGL002142 White Oak – Bur Oak – Northern Red Oak / American Hazelnut Woodland (Faber-Langendoen 2001). However, CEGL002134 Central Midwest White Oak – Mixed Oak Woodland, though described for areas south of Wisconsin, and a wet-mesic type CEGL002140 Burr Oak Bottomland Woodland may also fit some Wisconsin occurrences with a bit of modification.

Special thanks to Wisconsin DNR botanist Rich Henderson for shedding light on many of the unknowns and other difficulties associated with this often-ignored and somewhat nebulous segment of the fire-dependent oak ecosystem continuum.

Also see:

Bray (1958)
Delong and Hooper (1996)
Gilbert and Curtis (1953)
Grossman and Mladenoff (2007)
Leach and Ross (1995)
Packard (1993)
WDNR (2010)

FROM: Epstein, E.E. Natural communities, aquatic features, and selected habitats of Wisconsin. Chapter 7 *in The ecological landscapes of Wisconsin: An assessment of ecological resources and a guide to planning sustainable management*. Wisconsin Department of Natural Resources, PUB-SS-1131H 2017, Madison.

For a list of terms used, please visit the **Glossary.**

For a reference list, please see the **Literature Cited.**

Appendix 1d. Southern Dry-Mesic Forest Natural Community Description

Southern Dry-mesic Forest (Global Rank G4; State Rank S3)

Overview: Distribution, Abundance, Environmental Setting. Ecological Processes

Southern Dry-mesic Forest is most common and best developed south of the Tension Zone, especially in the relatively rugged terrain of the Driftless Area in the Western Coulees and Ridges Ecological Landscape. As almost 70% of the Driftless Area is in Wisconsin, conservation and management opportunities are somewhat greater here than they are elsewhere in the Upper Midwest.

Southern Dry-mesic Forest is also a widespread natural community in densely populated and heavily developed southeastern Wisconsin, but extensive areas of oak-dominated forest are now limited to the northern portions of the Kettle Moraine region where the rough topography of the interlobate moraine has somewhat limited the intensive agricultural and residential uses that are now regionally prevalent. In other parts of southern Wisconsin, Southern Dry-mesic Forest now occurs mostly as scattered farm woodlots or in narrow strips on steep sideslopes bordered by agricultural fields. Apart from the Driftless Area, the northern Kettle Moraine, and a few locations in central Wisconsin, blocks of this forest community exceeding 1,000 acres are generally absent.

Community Description: Composition and Structure

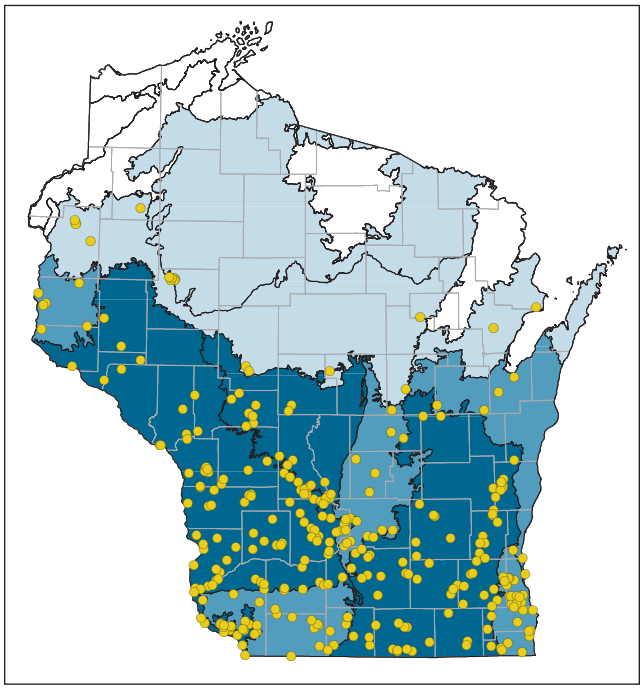
Dominant trees of relatively undisturbed, intact, mature stands are northern red oak (*Quercus rubra*), white oak (*Q. alba*), red maple (*Acer rubrum*), and sometimes American basswood (*Tilia americana*). Associates include shagbark hickory (*Carya ovata*), bitternut-hickory (*C. cordiformis*), black cherry (*Prunus serotina*), butternut (*Juglans cinerea*), and American elm (*Ulmus americana*). In the easternmost parts of southern Wisconsin, American beech (*Fagus grandifolia*) is sometimes a component of Southern Dry-mesic Forest.

Mature dry-mesic hardwood forest of red oak, white oak, and red maple. Monroe County, Western Coulees and Ridges Ecological Landscape. Photo by Eric Epstein, Wisconsin DNR.

Saplings and small trees usually belong to the more shade-tolerant mesophytes, such as red maple, sugar maple (*Acer saccharum*), white ash (*Fraxinus americana*), bitternut-hickory, and cherries (*Prunus* spp.). Ironwood (*Ostrya virginiana*) may be common as a sapling or small tree. Though oak seedlings can often be found, sapling oaks are generally scarce and may be altogether absent.

Shrubs associated with Southern Dry-mesic Forest include American hazelnut (*Corylus americana*), gray dogwood (*Cornus racemosa*), American witch-hazel (*Hamamelis virginiana*), and maple-leaved viburnum (*Viburnum acerifolium*).

The herbaceous flora may be highly variable as the community is widely distributed and covers a broad geographic range across southern and central Wisconsin. Like other fire-dependent natural communities, the Southern Dry-mesic Forest understory has been undergoing rapid changes in recent decades (Rogers et al. 2008). Among the groundlayer species that are widespread and that might be considered "characteristic" are wild geranium (*Geranium maculatum*), broad-leaf enchanter's-nightshade (*Circaea lutetiana*), false Solomon's-seal (*Maianthemum racemosum*), pointed tick-trefoil (*Desmodium glutinosum*), hog-peanut (*Amphicarpaea bracteata*), wood anemone (*Anemone quinquefolia*), American lop-seed



Locations of Southern Dry-mesic Forest in Wisconsin. The deeper hues shading the ecological landscape polygons indicate geographic areas of greatest abundance. An absence of color indicates that the community has not (yet) been documented in that ecological landscape. The dots indicate locations where a significant occurrence of this community is present, has been documented, and the data incorporated into the Natural Heritage Inventory database.

(*Phryma leptostachya*), large-flowered bellwort (*Uvularia grandiflora*), lady fern (*Athyrium filix-femina*), interrupted fern (*Osmunda claytoniana*), fragrant bedstraw (*Galium triflorum*), jack-in-the-pulpit (*Arisaema triphyllum*), downy yellow violet (*Viola pubescens*), and black snakeroot (*Sanicula* spp.).

Stands occupying sites that are variable in slope, aspect, soil depth, soil type, and moisture availability are likely to support some herbs characteristic of other forest communities, including such well-known spring wildflowers as spring-beauty (*Claytonia virginica*), Virginia water-leaf (*Hydrophyllum virginianum*), and blue cohosh (*Caulophyllum thalictroides*). Adjoining dry forests may contribute an additional complement of understory species. Examples might include rough-leaved sunflower (*Helianthus strumosus*) and starry false Solomon's-seal (*Maianthemum stellatum*). In the more extensive forests of southwestern Wisconsin, stands often include features such as springs, seepages, and bedrock outcrops. This adds to the number and kinds of niches available and increases the potential to support additional species and functions.

Among the rare and uncommon plants associated with Southern Dry-mesic Forest are forked aster (*Eurybia furcata*), heart-leaved skullcap (*Scutellaria ovata*), autumn coralroot (*Corallorhiza odontorhiza*), woodland boneset (*Eupatorium sessilifolium* var. *brittonianum*), Short's rock-cress (*Arabis shortii*), and nodding pogonia (*Triphora trianthophora*).

Characteristic birds inhabiting this forest community include Scarlet Tanager (*Piranga olivacea*), Eastern Wood-Pewee (*Contopus virens*), Great Crested Flycatcher (*Myiarchus crinitus*), Red-bellied Woodpecker (*Melanerpes carolinus*), Barred Owl (*Strix varia*), White-breasted Nuthatch (*Sitta carolinensis*), Red-eyed Vireo (*Vireo olivaceus*), Yellow-throated Vireo (*Vireo flavifrons*), and Ovenbird (*Seiurus aurocapilla*). Large stands are of especially critical importance to area-sensitive species, such as the Cerulean Warbler (*Setophaga cerulean*), Hooded Warbler (*Setophaga citrina*), Worm-eating Warbler (*Helmitheros vermivorum*), Acadian Flycatcher (*Empidonax virescens*), and Wood Thrush (*Hylocichla mustelina*).

Mature stand of southern dry-mesic forest composed of large red oak, white oak, red maple, and other hardwoods features an intact ground layer and supports several rare forest interior birds. Norwalk Hardwoods, Monroe County, Western Coulees and Ridges Ecological Landscape. Photo by Eric Epstein, Wisconsin DNR.

The extensive oak forests of southwestern Wisconsin have proven to be of high importance to migrating passerines as the peak spring migration periods for many of these birds is somewhat synchronized with the flowering of the oaks, opening of the oak leaf buds, and the appearance of a major hatch of caterpillars—an important food source for insectivores such as the wood warblers, vireos, gnatcatchers, and others needing to replenish their energy reserves after their long journeys.

At locations in southern Wisconsin where conifers play a significant role in the overall forest composition, the diversity of resident birds can be exceptionally high. Among the locations featuring such mixed deciduous-coniferous forests are the stream gorges of the Baraboo Hills (Sauk County) and the Upper Kickapoo River Valley (Vernon and southern Monroe counties).

Other animals for which Southern Dry-mesic Forest provides important habitat include gray fox (*Urocyon cinereoargenteus*), woodland vole (*Microtus pinetorum*), eastern red bat (*Lasiurus borealis*), northern long-eared bat (*Myotis septentrionalis*), and gray rat snake (*Pantherophis spiloides*).

Conservation and Management Considerations

Along with habitat fragmentation and decreasing patch size, the composition of oak-dominated southern dry-mesic forests is changing (Nowacki and Abrams 2008). In the absence of periodic fire and under current harvest regimes, mesophytic (and sometimes rather weedy) tree species are becoming increasingly common and may eventually dominate the canopy. The primary factor responsible for this is the long-term policy of fire suppression, which has now been in place for a century or more in much of southern Wisconsin. In the absence of appropriate periodic disturbance, especially by fire, the oaks are eventually replaced by other hardwoods, and these species are often of significantly lower ecological value to forest wildlife. Red and white oak timber is also a significant source of economic value to local landowners and communities.

Prolonged periods of fire suppression, repeated episodes of high-grading (an unsustainable but all too common logging practice), infestations of gypsy moth (*Lymantria dispar*) and other invasive species, excessive browse pressure due to high white-tailed deer (*Odocoileus virginiana*) populations, and heavy pasturage by livestock have all been recent contributors to the decline of oak in southern Wisconsin forests.

The understories of stands heavily disturbed by severe windstorms, logging, or prolonged grazing may be choked by dense thickets of blackberries (*Rubus* spp.), gooseberries (*Ribes* spp.), common prickly-ash (*Xanthoxylum americanum*), or other shrubs partially protected by spines or thorns. They

Mature forest dominated by large northern red and white oaks. Note the general absence of mesophytic competitors such as red maple, black cherry, and ironwood in the stand pictured. Maintaining oaks on mesic and dry-mesic sites in the absence of fire and in the presence of dense growths of shade-tolerant shrubs and saplings has been problematic, and current logging practices used by some can aggravate this issue and speed cover type conversion. Baraboo Hills, Sauk County, Western Coulees and Ridges Ecological Landscape. Photo by Eric Epstein, Wisconsin DNR.

may also be heavily invaded by nonnative invasive shrubs, such as the Eurasian honeysuckles (*Lonicera tatarica*, *L. morrowii,* and the hybrid *L.* x *bella*), buckthorns (*Rhamnus cathartica* and *R. frangula*), and Japanese barberry (*Berberis thunbergii*). Invasive herbs are now serious problems in many of southern Wisconsin's hardwood forests. Problematic weedy herbs in Southern Dry-mesic Forest include garlic mustard (*Alliaria petiolata*) and dame's rocket (*Hesperis matronalis*).

Given the ongoing major threats to the dry-mesic oak forests, as well as to other communities usually considered as parts of the fire-dependent oak ecosystem, the managers' toolkit to perpetuate oaks needs expansion. To have any hope of being effective, this will need to include measures such as prescribed fire, herbicide use, manual removal of competing shrubs and saplings, underplanting of seedling oaks of local genotypes, and fencing. This is especially important on dry-mesic sites where conditions border on mesic. Some of these practices may be well beyond the means of many private woodlot owners, but an investment must be made in developing more reliable and cost-effective means of maintaining our oak forests.

Opportunities to manage for oak-dominated dry-mesic forests at large scales are best in the Driftless Area, especially in the Western Coulees and Ridges Ecological Landscape. The Baraboo Hills and some of the blufflands along southwestern Wisconsin's larger rivers (e.g., the Mississippi, Wisconsin, Chippewa, and Black) offer especially good opportunities to manage for a broad suite of southern forest, savanna, and grassland communities. In southeastern Wisconsin, the northern portion of the Kettle Moraine region, including parts of the Northern Unit of the Kettle Moraine State Forest, also offer excellent opportunities to manage for this forest type, although at somewhat reduced scales and in a portion of the ecological landscape in which savanna and prairie representation is greatly reduced or absent compared to areas farther south and west.

As habitat fragmentation is also a serious problem for Southern Dry-mesic Forest and all other upland forest communities in southern Wisconsin, where feasible Southern Dry-mesic Forest should be conserved and managed in large patches that include other forest communities as well as bedrock outcrops, spring seeps, rivers, and streams. This will maximize ecosystem diversity and viability as conditions change over time and will provide habitat for populations of species that cannot or are unlikely to be maintained in small, isolated patches.

The Southern Dry-mesic Forests support a wealth of native plants and animals, including many that do not occur in the much more extensive and less fragmented forests of northern Wisconsin. In addition to the ecological values provided by the southern oak forests, the dominant trees are notable for their longevity and the great size they may attain and for their aesthetic appeal and high economic value. Private-public partnerships and the development of appropriate incentives will be among the key factors necessary to achieve success in conserving this forest community.

Efforts to perpetuate oaks as components of forests on dry-mesic sites may include areas that are presently treeless or with very low tree cover (e.g. fallowed or abandoned agricultural fields or pastures, ensuring that the openings do not represent a remnant natural community, such as a bedrock glade, savanna, or prairie), especially if they occur as small but hard-edged openings within areas of extensive hardwood forest. When both historical and present conditions indicate that forest vegetation is appropriate cover for such small openings, reforestation may be a better, and far more practical, choice than maintaining a non-natural opening. In addition to potentially increasing the amount of oak on the landscape, such activities could reduce the negative impacts of hard edge while increasing the area of effective

forest for many wildlife species. This could also ameliorate the practice of entering the older, more intact stands first, which can further decrease the number of large patches and already scarce developmental stages needed by some species. This is a consideration that should become a part of the oak ecosystem managers' toolkit.

Additional Information

For additional information, see the natural community descriptions for Southern Dry Forest, Southern Mesic Forest, Central Sands Pine-Oak Forest, and Northern Dry-mesic Forest. The U.S. National Vegetation Classification associations corresponding most closely to Wisconsin's Southern Dry-mesic Forest are Midwestern White Oak – Red Oak Forest CEGL002068 and Red Oak – Sugar Maple – Elm Forest CEGL005017.

Also see:
Abrams (1992)
Abrams (1998)
Abrams (2003)
Abrams (2005)
Bowles et al. (2007)
Dey et al. (2010)
Fralish 2004)
Johnson et al. (2009)
Knoot et al. (2010)
Leach and Ross (1995)
Lorimer (1984)
Nowacki and Abrams (2008)
Rodewald (2003)
Rogers et al. (2008)
Steele (2012)
WDNR (2011a)
Wood et al. (2012)

FROM: Epstein, E.E. Natural communities, aquatic features, and selected habitats of Wisconsin. Chapter 7 *in The ecological landscapes of Wisconsin: An assessment of ecological resources and a guide to planning sustainable management*. Wisconsin Department of Natural Resources, PUB-SS-1131H 2017, Madison.

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For a reference list, please see the **Literature Cited.**

Appendix 2. Incident Report Form

REPORT NO. N/A	**Dane County Parks Division INCIDENT REPORT**	☐ ACCIDENT ☐ VANDALISM
CASE NO. N/A		☐ COMPLAINT ☐ OTHER

1. Incident	2. Location (Park)	3. Date	4. Time

5. Name (First, MI, Last)	6. D.O.B.	7. Home Phone	8. Bus/Contact Phone

9. Address	10. City/Village/Township	11. State/Zip

12. Sex ☐ M ☐ F	13. Vehicle Make/Model	14. License No.	15. Year Plate	16. State

17. Report (who. what, when, why, how) REMEMBER TO USE DOWN ARROW AT END OF EACH LINE OF TEXT

18. Property Description

19. Other (witnesses, other people involved, etc.)

20. Disposition	21. Citation No.

22. Copy sent to Sheriff's Dept. ☐ YES ☐ NO	23. Sheriff's Deputy No.

Reported by	Signature

Date	Time ☐ AM ☐ PM	Supervisor Signature

Appendix 3. Management Activity and Herbicide Report Form

Management Activity and Herbicide Reporting Form

Fields marked with * are required

***Site Name**: _____ ***Date of activity**: _____

Start Time**: _____ * End Time**:_____

Tempertaure (°F): _____ Relative Humidity (%): _____

Weather Conditions (circle one): Clear Partly Cloudy Cloudy Foggy Rain

Wind direction: _____ Wind speed (mph): _____

***Crew List:** list additional crew members/volunteers in the notes section or attach list to this report.

First and Last Name	Hours worked	Check box if volunteer
		☐
		☐
		☐
		☐
		☐
TOTAL VOLUNTEER HOURS (include hours from additional list)		

***Method Used**:

Select the method that best describes your activity and note the number of person-hours spent on that method. Note: ISMTrack only allows one method per "Management Activity," so multiple Management Activity forms will need to be filled out if multiple methods were used.

Method	Person Hours		Method	Person Hours
☐ Basal- backpack sprayer			☐ Hack and Squirt- machete, hand sprayer	
☐ Basal			☐ Hack and Squirt	
☐ Biological			☐ Hand Pull	
☐ Crown Removal			☐ Masticators	
☐ Cut and Treat			☐ Mowing	
☐ Cut Only			☐ Mulch- Woodchipper	
☐ Equipment Maintenance			☐ Preemergent	
☐ Foliar- backpack sprayer			☐ Prescribed Fire	
☐ Foliar- ATV/UTV			☐ Revegetation	
☐ Foliar- ATV/UTV with boom sprayer			☐ Safety Training	
☐ Foliar- skid sprayer			☐ Stem Injection	
☐ Foliar- ATV/UTV- dual reel sprayer			☐ Survey	
☐ Foliar- truck/tractor with boom			☐ Survey- Eradicated	
☐ Foliar			☐ Tilling/Plowing	

□ General Maintenance			□ Trim	
□ Girdle			□ Burn Brush Pile	
□ Seed Collection			□ Other	

***Pesticides** (*required if you used pesticides). Fill out separate row for each pesticide used. Provide as much detail as possible.

Pesticide Brand Name	Total Solution Amount	Total Solution Units (circle one)	Rate	Rate Units (circle one)	% Solution	Surfactant (List any surfactants used)	Dye (List any dyes used)
		oz gal pints		oz/acre gal/acre pints/acre			
		oz gal pints		oz/acre gal/acre pints/acre			
		oz gal pints		oz/acre gal/acre pints/acre			

***Species** (list species managed)

***Map**

Include a map of the park property to show where you worked. Draw a border around the entire area you worked, and note locations of invasive species on map.

Additional notes:

Appendix 4. Herbicide Recommendations

Herbicide Recommendations

This table lists recommended herbicides and application rates for many common invasive and noxious species but it is not meant to be an exhaustive list. Other herbicides, application rates, or techniques may work well, or even better, depending on the circumstances. Multiple factors may affect the efficacy of herbicide, including, but not limited to temperature, precipitation, time of year, and stage of growth. Always read and understand the herbicide label and have it accessible at all time.

Contact Dane County natural areas staff with any questions. Last Updated: October 1, 2018

Target Species	Herbicide Trade Name	Backpack Foliar Rates*	Notes
Aspen	Milestone VM + Garlon 4 Ultra	0.2 oz per gal + 1-2 oz per gal	
Olives	Garlon 4 Ultra	3-4 oz per gal	Alternatives: Milestone, Roundup
Bird's Foot Trefoil	Milestone VM	1/6 oz per gal	
Black Locust	Milestone VM	1/6 oz per gal	
Box Elder	Garlon 4 Ultra	3-4 oz per gal	
Brush Mixture	Garlon 4 Ultra + Escort XP	2-3oz/gal + 0.25 teaspoon/gal	
Buckthorns	Garlon 4 Ultra + Escort XP	2-3oz/gal + 0.25 teaspoon/gal	
Creeping Bellflower	Escort XP	0.25 teaspoon per gal	
Crown Vetch	Milestone VM	1/6 oz per gal	
Dame's Rocket	Garlon 4 Ultra	3-4 oz per gal	Alternatives: Escort, Roundup**
Dogwoods	Garlon 4 Ultra	3-4 oz per gal	
Garlic Mustard	Round Up** OR Garlon 4 Ultra	2-4 oz per gal of either	
Honeysuckles	Escort XP OR Roundup**	0.5 teaspoon/gal Escort OR 3-4 oz/gal Roundup	
Japanese Barberry	Garlon 4 Ultra	3-4 oz per gal	Alternative: Escort
Japanese Hedge Parsley	Escort XP	0.25 teaspoon per gal	Alternative: Garlon
Japanese Hops	Garlon 4 Ultra	3-4 oz per gal	Alternative: Milestone, Escort
Japanese Knotweed	Milestone VM	0.5 oz per gal	Best after Aug 1. Alternative: Polaris
Leafy Spurge	Method	0.5 oz per gal	Add 1.5 3oz MSO/gal water
Multiflora Rose	Escort XP	0.25 teaspoon per gal	
Oriental Bittersweet	Garlon 4 Ultra	3-4 oz per gal	Alternative: Polaris
Phragmites	Polaris	1.5 oz per gal	
Poison Ivy	Garlon 4 Ultra	3-4 oz per gal	
Prickly Ash	Garlon 4 Ultra	3-4 oz per gal	
Purple Loosestrife	Polaris	0.75 oz per gal	Alternative: Aquatic glyphosate
Reed Canary Grass	Roundup** OR Intensity	3-4 oz per gal OR 0.8 oz per gal	
Spotted Knapweed	Milestone VM	1/6 oz per gal	
Sumac	Escort XP AND Milestone	0.25 teaspoon per gal AND 1/6 oz per gal	
Sweet Clovers	Milestone VM	0.3 oz per gal	
Tansy	Escort XP	0.25 teaspoon per gal	
Teasel	Escort XP	0.25 teaspoon per gal	Alternatives: Milestone, Garlon
Thistles	Milestone VM	1/6 oz per gal	Alternative: Transline
Wild Parsnip	Escort XP	0.25 teaspoon per gal	

***Spray until leaves are wet but herbicide does not run off. Results may vary depending on coverage.**

**** Add ½ oz Choice/gal water FIRST before adding Roundup**

Add ½ -1 oz MSO/gal of water to ALL recipes, unless otherwise noted. MSO (Methylated seed oil) is a surfactant and enhances the activity of the herbicide. Certification and licensing in the Aquatic and Mosquito (5.0) category is required to apply pesticides to waters of the state or below the ordinary high water mark.

Appendix 5. Chainsaw Waiver Form

Volunteer Program - Parks Division
Dane County Land & Water Resources Department
Joleen Stinson, Volunteer Coordinator

Chainsaw Waiver Form

Below are the safety requirements for all volunteers using power equipment while performing work on Dane County owned lands and the Volunteer Program:

- The volunteer is required to have attended a Dane County Parks Chainsaw Safety Training or equivalent Forest Industry Safety Training Alliance (FISTA) training.
- The volunteer shall utilize their own equipment or equipment provided. It shall be well maintained and in safe working order.
- Volunteers shall have another person on site when felling trees greater than 4" in diameter at the base.
    - It is recommended volunteers work with another person on site at all times.
- Volunteer must be a registered Dane County Park volunteer.
- The volunteer must use the following appropriate safety equipment per OSHA & ANSI safety standards:

    - **Dane County Parks – Required Safety Gear for Chainsaw Operations**
        - Head – OSHA approved hard hat
        - Ears – OSHA approved ear muffs or plugs
        - Eyes – Safety glasses, goggles, or face-shield (part of the hard hat)
        - Legs – OSHA approved sawing chaps, pants or leggings Class 1 or higher
        - Feet – Boots that Cover the Ankle - preferably leather (protective toe is recommended)
    - **Dane County Parks – Recommended Safety Gear for Chainsaw Operation**
        - Hands-Gloves are recommended (anti-vibratory is preferred)

(Dane County Parks Volunteer Program does have a limited quantity of safety gear available to loan for park projects.)

I, (print name) _____ have read and understand the above requirements and agree to abide by them.

_____ _____

Signature Date

Note: Any volunteer using a chainsaw in a Dane County Park or sponsored project must be a registered volunteer with Dane County Parks and have a signed waiver form on file with the Parks Volunteer Program.

Return to: **Joleen Stinson, Volunteer Coordinator**
4318 Robertson Road
Madison, WI 53714
Stinson.joleen@countyofdane.com
(608) 422-0657

Appendix 6. Fire Department Contact Information

Fire Department Contact Information

Locate the Fire Department corresponding to your park using the first table, and then follow the procedure for that fire department as listed in the second table.

Park/Property Name (A-Z)	Fire Department
Anderson Farm	Oregon
Babcock	McFarland
Badger Prairie	Verona
Baer Socha	Marshall
Black Earth Creek Headwaters	Middleton
Black Earth Creek Sunnyside	Middleton
Blooming Grove Drumlins	Madison
Blue Mounds	Mount Horeb
Brigham	Mount Horeb
CamRock	Cambridge
Capital Springs Rec area	Madison
Cherokee Marsh	Waunakee-Madison
Crystal Lake	Sauk
Donald	Mount Horeb
Door Creek	McFarland-Cottage Grove
Dorn Creek	Middleton
Falk Wells Sugar River	Verona-Belleville
Festge	Cross Plains
Fish camp	Mcfarland
Fish lake	Sauk
Goodland	Madison
Halfway Prairie School House	Black Earth
Halfway Prairie Wildlife Area	Cross Plains
Ice Age Trail Junction area	Verona
Ice Age Trail PINE RD.	Cross Plains
Ice Age Trail SCHUMAN RD.	Cross Plains
Ice Age trail TIMBER LANE	Cross Plains
Indian lake	Cross Plains
Jenni and Kyle Preserve	Madison-Fitchburg
Lafollette	Stoughton
Lake Farm Archaeological District	Madison
Lake View Hill	Madison
Lewis Nine Springs E-way	Madison
Lower Mud Lake	McFarland
Lussier	Sauk
McCarthy	Sun Prairie/ on border with Cottage Grove
Mendota	Middleton
Morton Forest	Black Earth
Mount Vernon Creek	Mount Horeb

Mud Lake	Sauk
North Mendota	Waunakee
Patrick Marsh	Sun Prairie
Pheasant Branch	Middleton
Phil's Woods	Sauk
Prairie Moraine	Verona
Riley-Deppe	Marshall
Salmo Pond	Cross Plains
Scheidegger Forest	Verona
Schumacher Farm	Waunakee
Silverwood	Edgerton – Albion township
Springfield Hill	Sauk
Stewart Lake	Mount Horeb
Sugar River Basco Unit	Belleville
Sugar River Davidson Unit	Verona
Sugar River Wildlife Area	Verona
Token Creek	Deforest
Token Creek Wildlife Area	Sun Prairie/ on border with DeForest
Vienna Pothole	Dane/ on border with DeForest
Viking	Stoughton
Walking Iron	Black Earth
Waubesa Wetlands	McFarland
Yahara Heights	Waunakee-Madison

The Dane County Non-emergency Duty Supervisor (608-267-3913) must be called, in addition to the number/procedure provided below. If no specific procedure is listed, call the number provided prior to each day of burning.

Fire Department	Phone Number (non-emergency)	Specific procedures and approvals
Airport (Dane County)	245-4561	
Belleville	424-3081	
Black Earth	767-3949	Leave message on voicemail
Brooklyn	455-3812	
Cambridge	423-3511	608-423-2014 Call prior to burn (1 day advance notice is preferred)
Columbus	(920) 623-5914	
Cottage Grove	839-4343	Annual burn permit required. Call 48 hrs. in advance of burn to notify
Cross Plains	798-2220	Contact Chief in addition to non-emergency number; you can call or text (608) 206-4647
Dane	849-4211	Notify via www.danefire.com prior to burning
Deerfield	764-5343	Leave message on voicemail
DeForest	846-4364	Online permit required prior to each burn or brush pile burn www.deforestwindsorfire.com/station-apparatus/burn-permits/
Edgerton	884-3327	Burn permits required; call prior to burning (Albion township has further requirements)
Fitchburg	278-2980	Request burn permit the day of burn.
Madison	266-4420	City of Madison burn plan and permit required.
Maple Bluff	244-3390	
Marshall	655-3322	Call day before burn
Mazomanie	795-2100	
McFarland	838-3278	Call morning of burn
Middleton	827-1090	
Monona	222-2528	
Mount Horeb	437-5571	Call morning of burn
New Glarus	527-5300	
Oregon	835-5587	Call morning of burn; follow township rules: Village of Oregon; Town of Rutland; Town of Dunn
Sauk City	643-8282	Call 608-355-4495 (dispatch) morning of burn in addition to non-emergency number
Stoughton	873-7218	Call morning of burn. Check with townships. Town of Dunn, Town of Albion (has further requirements)
Sun Prairie	837-5066	Call and listen to message to verify ok to burn. Leave message. Fire must be extinguished before leaving site.
Town of Madison	210-7261	
Verona	845-9401	Call morning of burn
Waunakee	849-5488	Must get verbal confirmation back from FD before lighting

Appendix 7. Event Registration and Release Form

Dane County Parks
Volunteer - Registration & Release

Project Name:_____ on _____

Timeframe: _____

I am participating on a voluntary basis and shall indemnify and hold harmless the County of Dane, State of WI and its officers, agents, partners and employees from and against all claims, demands, loss or liability of any kind or nature for any possible injury incurred during participating in this public event. I grant permission for my photo to be used in any promotional materials produced by Dane County Parks and/or its partners.

Name (print)	Signature	Address	Phone	E-Mail	Time In	Time Out

Thank you for enjoying your Parks! ~

Project Leader: Please return to: Joleen Stinson, 4318 Robertson Road, Madison, WI 53714 (608) 422-0657

Appendix 8. Volunteer Registration Form

Dane County Parks
Volunteer Registration & Release Form

Name _____ Date _____

Address _____

City _____ State _____ Zip _____

Email address _____

Home Phone: _____ Cell Phone: _____ Work Phone: _____

Preferred way to be contacted: □ Mail □ Email □ Phone (please circle - cell, home, work)

I am interested in volunteering at a specific park or area: _____ *ONLY - circle*

I am interested in volunteering in the following area(s) – please check all that apply:

Natural Areas

□ Natural Areas Volunteer – Summer Weed Control
□ Natural Areas Volunteer – Prescribed Burns
□ Native Plant Propagation
□ Prairie Seed (Collection, Cleaning & Processing, Planting)
□ Invasive Tree & Brush Removal
□ Herbicide Application
□ Tool Maintenance

Parks

□ Campground Host
□ Park Docent
□ Trees (mulching, planting, monitoring)
□ Landscaping & Clean-Up
□ Dog Park Stewardship
□ Research (includes wildlife & vegetation Inventories)
□ Trails Monitoring & Maintaining
□ Disc Golf Park Stewardship

Other

□ Friends Groups – Event Support
□ Office Support
□ Park Poetry Trail
□ Historical Research
□ Photography
□ Bird Houses, Bat Houses, Trails

Please sign Volunteer Agreement on the other side.

Volunteer Agreement

Thank you for agreeing to join the thousands of people who volunteer their time and talent to the Dane County each year. Your service is vital to our success. Please read the following information carefully and sign where indicated.

I, _____, (referred to as "the Volunteer" throughout the rest

Please print your name here

of this document) and Dane County agree to the following terms in their effort to supplement the work performed by Dane County employees:

1) The Volunteer may expect the following from Dane County:
   - Dane County will respect the Volunteer and show appreciation for the Volunteer's activities;
   - Dane County will provide Volunteer with a clearly defined description of the Volunteer's duties; and
   - Dane County will facilitate a cooperative working relationship between and among Dane County staff and other volunteers, and will provide appropriate supervision and direction, as needed.
2) Dane County may expect the following from the Volunteer:
   - The Volunteer will perform their volunteer duties in a professional manner under the direction and control of Dane County staff or their designee;
   - The Volunteer will work according to a mutually agreeable schedule, but if something comes up that prevents the Volunteer from working, the Volunteer will notify his/her supervisor as soon as possible;
   - The Volunteer will contribute to a cooperative working relationship between and among Dane County staff and other volunteers; and
   - The Volunteer will comply with established County policies and procedures, including safety rules.
3) Insurance:
   - The Volunteer understands that he/she is not a Dane County employee and is not entitled to compensation in any form, including but not limited to wages. As a non-employee, the Volunteer further understands that he/she does not qualify for worker's compensation benefits if injured while performing volunteer work, and therefore, the Volunteer should have personal medical insurance.
   - If the Volunteer drives a motor vehicle as part of his/her Volunteer duties, the Volunteer understands that he/she must have a valid Wisconsin driver's license and that Dane County is not responsible for any damage to the vehicle which may occur during his/her volunteer services, and therefore, the Volunteer should have personal car insurance under these circumstances.
   - The Volunteer understands that Dane County carries general liability insurance and the Volunteer may be eligible for legal defense and indemnification by Dane County if someone brings a claim against the Volunteer based upon the services performed by the Volunteer in good faith for Dane County.
   - The Volunteer understands and accepts any and all risks attendant to volunteering for Dane County, and agrees to indemnify, release, and hold harmless Dane County, its Board and officers, agents and employees from and against all claims, demands, loss or liability of any kind or nature for any possible injury (including but not limited to personal injury and/or death) incurred while providing services under this Agreement.

4) The Volunteer grants permission for his/her photo to be taken and used in any promotional material produced by the Dane County.

5) Either party may terminate this Agreement at any time for any reason without notice to the other party. The parties agree that this is their entire agreement, and no agreement, oral or written, exists outside of this document.

Volunteer Signature_____ Date _____

PARENTAL CONSENT

FOR VOLUNTEERS WHO ARE UNDER AGE 18

This is to certify that I am the parent or guardian with legal responsibility for this child-volunteer, and that I agree with and consent to this child-volunteer's compliance with this Agreement, including, but not limited to, this child-volunteer's release as provided above, and for myself, my heirs, assigns, and next of kin, release and agree to indemnify and hold harmless Dane County, its Board and officers, agents and employees from and against all claims, demands, loss or liability of any kind or nature for any possible injury (including but not limited to personal injury and/or death) incurred while this child-volunteer is providing services under this Agreement.

Volunteer's Parent/Guardian:

Name & relationship to the child-volunteer _____

Signature _____ Date _____

THANK YOU FOR VOLUNTEERING WITH DANE COUNTY PARKS

Please return to:

Joleen Stinson, Dane County Parks Deputy Director
4318 Robertson Road
Madison, WI 53714
Phone: (608) 422-0657
Stinson.joleen@countyofdane.com

Appendix 9. Sample Annual Work Plan

Silverwood County Park Annual Work Plan, Jan-Dec 2018

Plan contributors:

Dane County Staff (Lars Higdon, Shane Otto)

Volunteers (Rita Fox, Katie Whitten, John Steines, Emily Halapatz)

Schedule	Activity	Field Lead	Location	Notes
Jan-Mar	Cut, stack, and burn invasive brush including burning bush, honeysuckle, buckthorn, female boxelders.	Rita Fox	Woodland unit on south side of park along lake, west of N-S Trail.	Firewood to be removed when possible. Brush piles need to be burned to prep site for spring Rx Fire. OFS can assist.
Mar-April	Prescribed Burn	Lars and Shane	Woodland unit	Highly weather dependent--Advanced notice may be minimal. Targeting second half of burn season after weed seeds have germinated.
April-May	Seed native grasses provided by DCP after burn.	Rita Fox	Woodland unit	OFS may assist if requested.
May-June	Selective removal of garlic mustard around priority assets and trail sides.	Rita Fox	Woodland unit	Focus efforts around priority areas such as patches of desirable native herbs and trail sides, to minimize the spread. Parks staff can advise. OFS may assist if requested.
June-July	Search for and remove garden valerian population	Rita Fox	Woodland unit	Revisit know locations of garden valerian and remove/treat. Inspect suitable habitat around known locations for other potential occurrences. OFS may assist if requested.
June-July	Treat burdock, hedge parsley, parsnip, thistle, buckthorn seedlings, etc	Rita Fox	Woodland unit	OFS may assist with hand removals, if requested.
Sept	Treat leafy spurge along rd	Lars and Shane	Hwy 106 right of way	Population is small and should treat to keep from spreading.
Sept-Oct	Seed native forbs provided by DCP	Rita Fox	Woodland unit	OFS may assist if requested. Seed before leaves have dropped.
Sept-Dec	Continue cutting, stacking invasive brush moving north towards overlook	Rita Fox	Woodland unit	OFS may assist if requested.
Winter 2018-2019	Schedule chainsaw workday?—thin trees around large oaks, cut invasives	Shane and Lars	Woodland Unit	