

# NATURAL HERITAGE

QUARTERLY



## URBAN LANDSCAPING FOR WILDLIFE

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HOW TO  
INCORPORATE  
NATIVE PLANTS  
INTO YOUR  
LANDSCAPING

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WHAT YOU CAN  
DO TO HELP  
THE DECLINING  
MONARCH  
BUTTERFLY

# Calendar

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## May 19–21

Chequamegon Bay Birding & Nature Festival, Ashland

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## May 21

Invasive plant management techniques workshop, UW–Milwaukee Field Station

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## May 22

Workshop for wetland owners, Barkhausen Waterfowl Preserve, 9:30 a.m. - 3 p.m.

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## May 27–29

Door County Festival of Nature, presentations and field trips at various Door County sites

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## May 31

Live chat with DNR experts on landscaping with native plants

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## Jun. 3–5

Great Wisconsin Bat Count, statewide

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## Jun. 3–4

Identification of amphibians & reptiles workshop, UW–Milwaukee Field Station

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## Jun. 4

Botanical Club of Wisconsin “botany blitz,” Arbutus Oaks State Natural Area

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## Jun. 10–11

Sedges: identification and ecology workshop, UW–Milwaukee Field Station

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## Jun. 11

Wild Ones native plant sale, Menomonee Falls

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## June 13–18

Vegetation of Wisconsin workshop, UW–Milwaukee Field Station

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## June 15

Due date for application to Wisconsin Coverts Project

### Editor's note

Wildflowers poking up from the forest floor, birds fortifying their nests for a new brood and frogs calling to potential mates are all welcome signs of spring. So is the receding threat of frost. It's soon time to plant.

If you have been thinking about incorporating native plants into your home landscape this year or adding to what you already have, this issue is for you.

Ecologist Amy Staffen shares her story of transforming her urban lawn into a native prairie garden that supports birds, bees, butterflies and much more. She also offers tips and resources to help you get started. As Doug Tallamy, author of *Bringing Nature Home: How You Can Sustain Wildlife with Plants*, says, "By planting productive native species, we can create life."

Eva Lewandowski, one of an exciting crop of new conservation biologists to join the Bureau of Natural Heritage Conservation in 2016, updates us on the status of monarch butterflies and what we can do around our home to aid populations of this beautiful summer resident.

And finally, we dig a little deeper into why garlic mustard and other invasive species become so predominant after timber harvests and how to prevent the problem.

As always, we invite you to suggest topics you'd like to see covered in the future and to share your stories of managing your land to benefit native species and natural communities. We hope you enjoy this issue.

Sincerely,

Lisa Gaumnitz  
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Bureau of Natural Heritage Conservation  
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Cover photo: eastern bluebird © Brian Collins.





# What you can do to help the monarch

by Eva Lewandowski

Once a common sight throughout Wisconsin, monarch butterflies have been few and far between in recent years. This situation isn't unique to Wisconsin; unfortunately, it's been the case across North America. In fact, the population of monarchs that inhabits lands east of the Rocky Mountains and is well known for its spectacular 2,000- to 3,000-mile yearly migration to Mexico has declined drastically in the last decade.

In 2013 the monarch population reached an all-time low, with a 90 to 95 percent decrease from its once grandiose size; 2014 and 2015 saw slight increases in monarch numbers, but the population is still well below the goals set by monarch scientists (see Figure 1). A smaller population is less able to absorb the effects of events like severe storms or large-scale habitat loss. A recent study[1] found that given its current size, there is a high probability that the population of migratory monarchs will vanish altogether.

*In the wake of the monarch's startling decline, many organizations and individuals have taken steps to protect the butterfly. Here are some ways you can help.*

## Create habitat for monarchs

Habitat loss through the monarch's summer breeding and migratory range, which includes Wisconsin, is considered to be the primary cause of the monarch population's crash. Other factors like disease, changing environmental conditions and illegal logging where monarchs spend their winters in Mexico are also thought to be harming the population, but habit loss throughout the summer range has been most clearly linked to the decline. As a result, one of the best things we can do for monarchs is to create new habitat for them.

### Plant native milkweed

Monarchs breed in Wisconsin throughout the spring and summer and the presence of milkweed (*Asclepias*) is crucial to their ability to do so. Milkweeds are the only plants on which monarchs will lay their eggs, so milkweed is required to produce new generations of monarchs. Many

**Total Area Occupied by Monarch Colonies At Overwintering Sites in Mexico  
1994/1995 - 2015/2016**

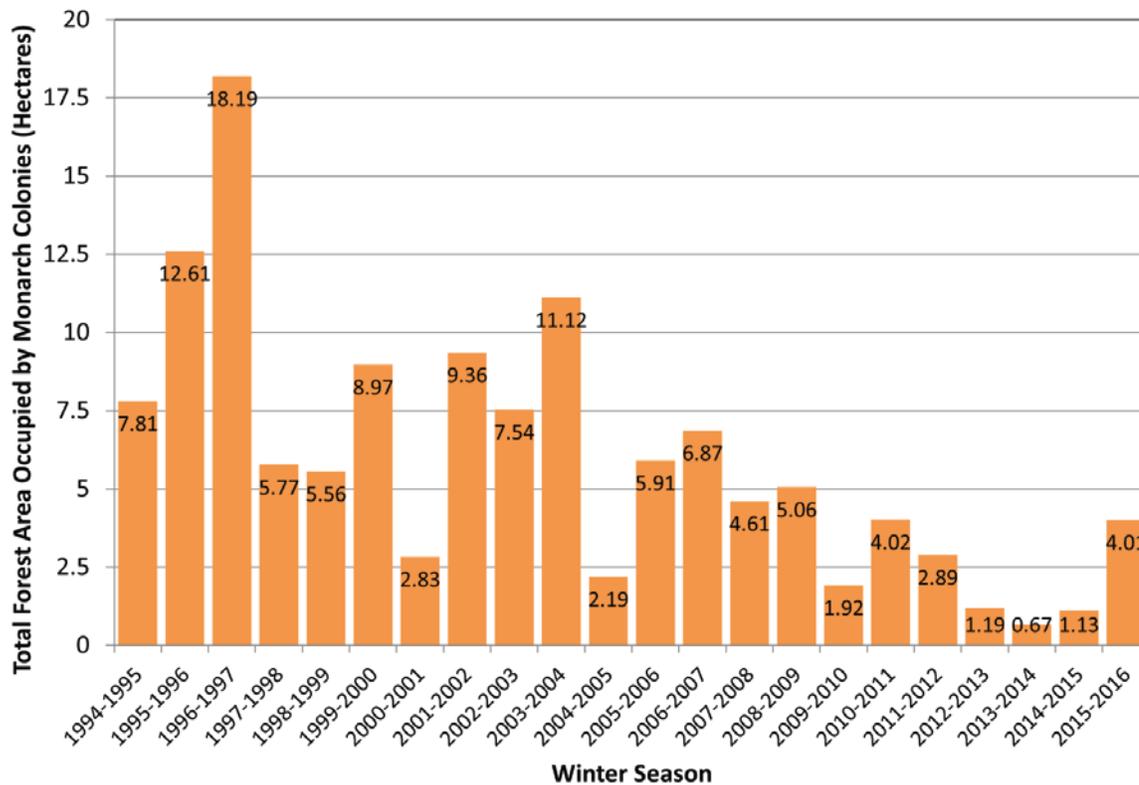


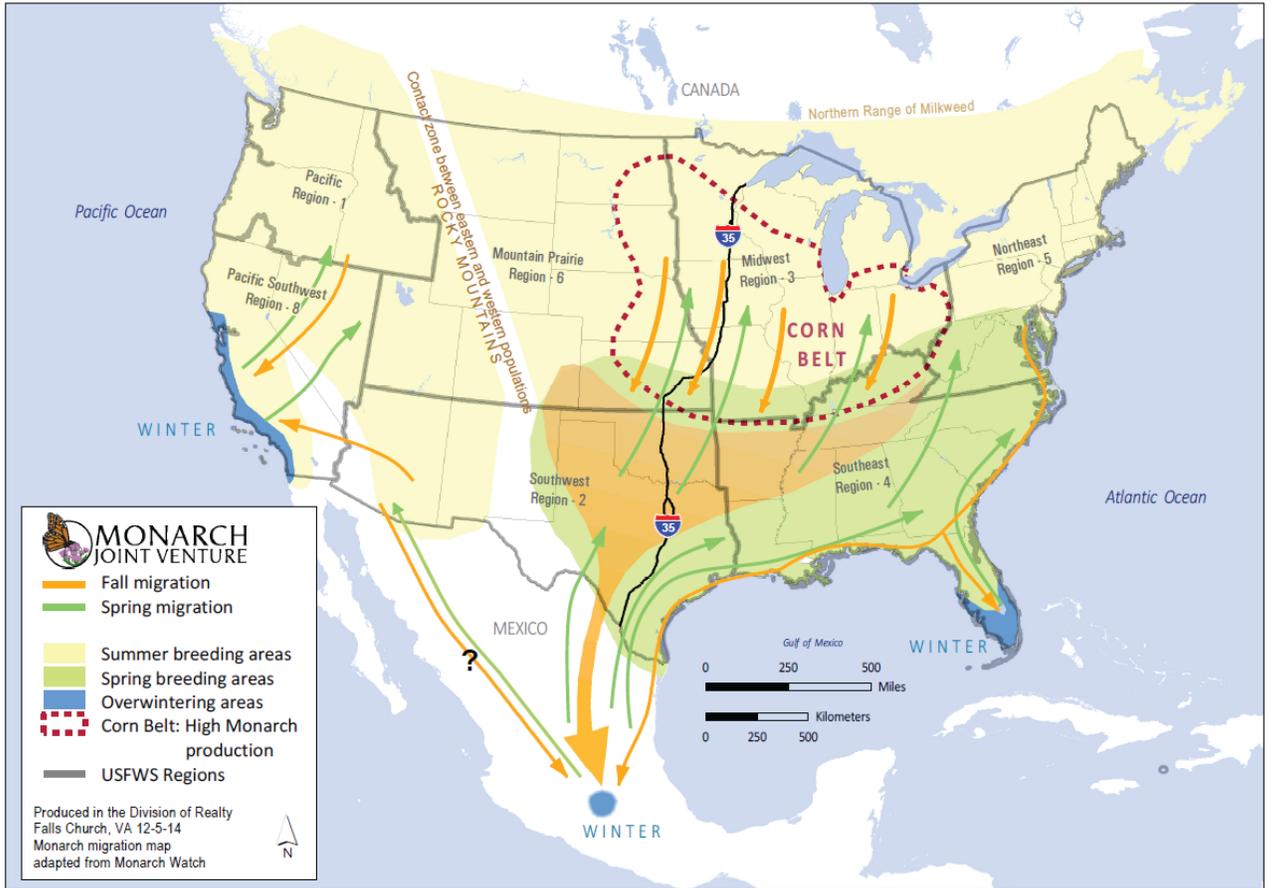
Figure 1. Graph courtesy of the Monarch Joint Venture.

<sup>1</sup>Semmens, B.X., Semmens, D.J., Thogmartin, W.E., Wiederholt, R., López-Hoffman, L., Diffendorfer, J.E., Pleasants, J.M., Oberhauser, K.S. and Taylor, O.R., 2016. Quasi-extinction risk and population targets for the Eastern, migratory population of monarch butterflies (*Danaus plexippus*). *Scientific Reports*, 6.

Enhancing summer breeding habitat for monarchs in Wisconsin and other parts of North Central U.S. is one of the priorities of the Monarch Joint Venture, a multi-state, multi-agency and organization effort to conserve monarch butterflies.



U.S. Fish & Wildlife Service  
**Monarch Butterfly: Fall & Spring Migrations**



people think of milkweed as just one plant, but in fact, there are more than 100 different types in North America, of which 14 are native to our state. It's important to plant only milkweed species native to Wisconsin. Nonnative species don't always mesh well with our local ecosystems, and research has shown that planting certain types of nonnative milkweed can actually hurt monarchs by spreading disease and upsetting their annual migration. When purchasing seeds or seedlings, check the scientific names instead of common names; this will help ensure you are choosing plants that are native to your area.

**Plant native nectar plants**

While monarch caterpillars can survive and feed only on milkweed plants, adult monarchs rely on a variety of nectar sources for food. Plants like blazing star (*Liatris*), coneflowers (*Echinacea*), Joe Pye weed (*Eutrochium*), asters (*Aster*), and

goldenrod (*Solidago*) are all good options for feeding hungry monarchs and other pollinators. When choosing nectar plants, remember that monarchs will need nectar the entire time they are in the state; monarchs typically arrive in Wisconsin in late April and depart in mid-late September. Plant a combination of nectar sources that bloom at different times to ensure that your land is always providing food for adult monarchs.

**Other habitat considerations**

Milkweed and nectar plants are the key components of good monarch habitat, but other issues are important as well. Create monarch habitat in sunny locations with windbreaks, if possible. Don't use herbicides or insecticides, as these can be harmful to monarchs. Avoid mowing your entire habitat at once and try not to mow when native plants are flowering or about to seed or when monarch activity is at peak.

**Mexico. Texas. Wisconsin. Understanding monarch migration**

Most monarch butterflies live only a few weeks, but the last generation, born at the end of summer, migrates to Mexico. The changes in day length, decreasing quality of milkweed, and temperature all impact whether a monarch will migrate or not. The ones that do migrate can live up to nine months – long enough to fly south for the winter and then make it as far north as Texas again in the spring, where they lay eggs. The butterflies emerging from these eggs may fly to Wisconsin this spring and produce the next generation of monarchs.

## Contribute to monarch citizen science

Much of our knowledge about monarchs and their population trends comes from data collected by citizen scientists – members of the public who contribute to real scientific research. Monarch citizen scientists number in the thousands and can be found throughout the country. From schoolchildren to retirees, people are observing and monitoring monarchs and the data they collect are used to inform monarch conservation. Consider joining their ranks – there are several great projects you can do right on your own property or at a school or local park.

### Journey North

Journey North tracks the monarch migration each spring and fall. It relies on sightings from the public to follow monarchs as they travel to and from Mexico. If you see a monarch, you can use their simple online sighting form to report it. Reporting sightings is a fun and easy way to become a citizen scientist.

### Monarch Larva Monitoring Project

The Monarch Larva Monitoring Project monitors monarchs in their breeding range. Volunteers are needed to monitor milkweed plants for the presence of monarch eggs and larvae (caterpillars) from week to week. This is a great project for folks who want to spend some time outside, either alone or in groups.

### Monarch Health

If you want to get some hands-on interactions with monarchs, then Monarch Health is the project for you! It tracks the presence and severity of a disease called OE, which can be deadly for monarchs but doesn't infect people or any other animals. Volunteers with Monarch Health take samples of monarch scales; the samples are submitted for testing and the monarchs are released unharmed.



Photo by Katie Steiger-Meister, USFWS.

## Resources

- Find out what milkweeds are native to your area: [North American Plant Atlas](#), [USDA Plants Database](#)
- Order milkweed seeds and seedlings: [Xerces Milkweed Seed Finder](#), [Monarch Watch Milkweed Market](#)
- Learn more about monarch life cycle, conservation, habitat creation, and citizen science: [Monarch Joint Venture](#)
- Register your monarch habitat: [Monarch Waystations](#), [Monarch Success Stories](#)



**Eva Lewandowski** joined DNR's Natural Heritage Conservation staff in March 2016, fresh from working for the Monarch Larva Monitoring Project. She finished her doctorate in conservation biology at the University of Minnesota and her dissertation, "Using butterfly citizen science to increase engagement in conservation." Lewandowski coordinates the Wisconsin Citizen-based Monitoring Network for DNR, a loose collaboration of more than 150 organizations that foster citizen science.

She earned her master's in zoology from Michigan State University and her bachelor's in zoology and the biological aspects of conservation from the University of Wisconsin-Madison. Eva is an experienced conservation and environmental educator who has contributed to program coordination and outreach for the Monarch Joint Venture.

About the author

# Makeover of an urban landscape

*From turf grass  
to big bluestem*

*By Amy Staffen,  
ecologist with DNR's  
Natural Heritage  
Conservation Program*



From top to bottom: (top) Amy and Rich Staffen's yard has been transformed from a food desert for wildlife to a haven for birds, bees and butterflies. (middle) Amy Staffen digs sod to create space for a new prairie garden in her Madison front yard. (bottom) Rich Staffen places native prairie plants, including little bluestem, in a newly prepared bed.



**W**hen I first bought my home in Madison in 1996, I found the landscape I inherited uninspiring and devoid of life. In fact, if I were to hand you a photo of our yard in 1996 and ask you where it was located, you could, at best, narrow it down to somewhere in USDA Plant Hardiness Zones 3-7 (which comprise more than half of the country)! This is because all of the plants were ornamental nonnatives once commonly promoted across the country for home landscaping.

On this 7,200-square-foot lot, a trimmed hedge of Japanese yew framed the front walkway, scrappy Eurasian honeysuckle bushes were planted along the back property line and hosta lilies concealed the water meter on the side of the house. The rest was a turfgrass lawn. From the beginning, I knew I wanted to transform this blank slate into a haven for birds, bees and humans.

I also wanted to embrace southern Wisconsin's ecological identity, or its "sense of place," by recreating local natural communities like prairies, savannas and woodlands, on a small scale. It's been a rewarding and fascinating journey of discovery over the last 20 years as my husband Rich and I have converted the yard and garden beds to all native species.



Bee balm, cardinal flower and other native prairie plants now flourish in their prairie garden, providing better habitat for pollinators and other wildlife.

Our first task was to eliminate nonnative invasive plants. Many nonnative landscape plants such as the honeysuckle that was growing in our backyard are ecologically invasive. They establish quickly, tolerate a wide range of conditions, are easily dispersed, and are free of the diseases, predators, and competitors that kept their populations in check in their native range. Invasive plants out-compete and even kill native plants by monopolizing light water, and nutrients, and by altering soil chemistry and processes. It's also important to note that birds nesting in weedy shrubs like honeysuckle are more likely to fall victim to predators such as cats and raccoons than are birds nesting in native shrubs.

With relatively little effort, I used a bow saw to cut out the honeysuckles and dabbed their cut stumps with herbicide. Now, may apples, blue cohosh and sweet cicely grace that back fence line. While the Japanese yew was not invasive, we excavated it and replaced it with black chokeberry, ferns and Solomon's seal. I say "excavated" because the roots were thick and extensive and had to be removed to allow new things to be planted. This was hard work using just shovels and loppers!

Next, we converted significant portions of the turf grass lawn to garden beds. Lawns can require significantly more inputs, both physically and financially, than native plantings, including application of pesticides, herbicides, fertilizer and water, according to "Redesigning the American Lawn: A Search for Environmental Harmony," by F. Herbert Bormann, Diana Balmori, Gordon T. Geballe, Lisa Vernegaard (Editor), Yale University Press. 2001.

We simply dug up the sod, lined the borders of the new garden beds with rocks that we found as we dug, and installed plugs of native prairie and savanna plants that were purchased from the UW-Arboretum Native Plant Sale. We watered these plantings initially while the plants were getting established and haven't watered them since then!

*Maintaining a formal border on native plantings can help promote their acceptance by neighbors who may otherwise perceive such gardens as neglected weed patches.*

We also have been gradually converting a large area of our lawn to Pennsylvania sedge, a no-mow alternative that creates a beautiful, thick and dense (albeit slightly bumpy) ground cover.

## What about a garden with a function?

For our backyard, we decided to install a rain garden to absorb rainwater from our roof. Many native plants have deep and extensive root systems that allow slow infiltration of rainfall to the aquifer. This prevents stormwater from running directly into our rivers and streams, and filters out contaminants such as lawn fertilizer, pesticides, herbicides, and vehicle oil. The ultimate benefits: cleaner water, ground water recharge, and reduction of flood risk. This was our most ambitious project, and involved a carefully planned excavation, extensive incorporation of organic matter into our heavy clay soils, installation of conduits from our downspouts to the rain garden, and planting unique wetland species. The results were impressive as within days of completing the installation, we saw rainwater filling up the garden 'basin' during a storm, but then slowly percolating into the soil over the course of a day. The fox and bottle brush sedges, swamp milkweed, and wild irises that we planted there flourished in this setting!

The constant parade of colors throughout the seasons and the fascinating bird and insect visitors make our native plantings exceptionally gratifying! In our yard, I've had the privilege to observe a honeybee sticking its proboscis into the tubular flowers of bee balm at eye level, milkweed beetles emerging from swamp milkweed stems, hummingbirds nectaring on cardinal flowers in the rain garden (then taking a rest by perching on a dogwood branch), house wrens raising a family in our yard, and dark-eyed juncos eating fallen seeds on snow. With spring around the corner, why don't you consider embracing your Wisconsin botanical heritage by planning a simple project to incorporate native plants into your home landscape? See the next section for more information and resources.



### Dig deeper: Enhanced infiltration with rain gardens

U.S. Geological Survey researcher William R. Selbig and Nicholas Balster of the University of Wisconsin constructed two rain gardens side by side at two different locations and planted one of the pair with turf grass and the other with native prairie species. Five years after planting, the researchers found that the roots in the prairie garden were found to a depth of 4.7 feet compared with 0.46 feet in the turf grass rain garden. They attributed this partly to earthworms: these invertebrates use cavities once occupied by prairie plant roots, and through their activity, fostered movement of water and air into lower soil horizons. Furthermore, the prairie roots had almost double the rooting length per volume of soil as compared to those in the turf grass garden. These differences point to superior soil development in the prairie rain garden, resulting in greater capacity for storm water storage and infiltration.

From top to bottom:  
(top) Preparing a rain garden bed involves digging a shallow basin that will hold stormwater and planting native wetland species. (bottom) Native wetland plants promote cleaner water and groundwater recharge, and reduce flood risk.





Get answers to your questions about landscaping with native plants during our May 31 live online chat. Join the conversation from noon to 1 p.m. that day or view the transcript at your leisure.

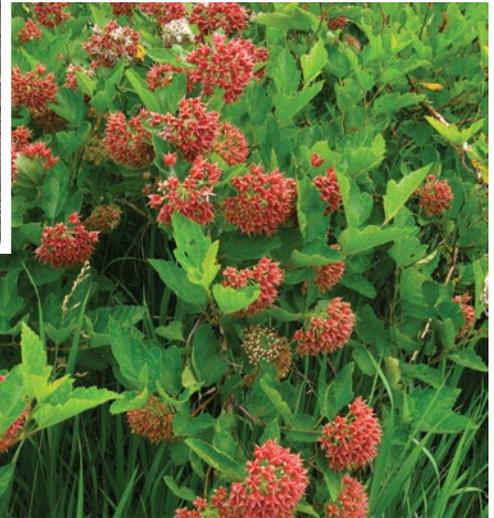
[Click here to go to the live chat webpage](#)

# Four ways to incorporate native plants into your home landscape

by Amy Staffen



From top to bottom: (top) Wild ginger is a good native ground cover. The yellow drooping flower is bellwort, a native lily. Photo by Amy Staffen. (bottom) Ninebark is a good native replacement for Japanese barberry. Photo by Janeen Ruby.



*Many native species are directly comparable to non-native invasives in your yard and can fill the same niche while providing more habitat.*



Brief descriptions of different ways to incorporate native plants into your land follow, along with resources to help you along the way. Choose the one that suits you best now – but be forewarned: native plantings can be addictive!

### **Replace non-native invasive plants in your yard with natives**

Many native species are directly comparable to non-native invasives in your yard and can fill the same niche while providing more habitat. Do you value your Japanese barberry as a low-growing shrub with attractive foliage and berries? The native ninebark (*Physocarpus opulifolius*) can serve as a reasonable native replacement. Does periwinkle (*Vinca minor*) cover the otherwise bare-soil area in your backyard? Wild ginger and wild strawberries can serve as excellent alternatives. Our native blazing star species (*Liatris* sp.) can deliver that stunning splash of purple in your garden that the invasive purple loosestrife has been providing.

#### **Resources**

- “[Landscape Alternatives for Invasive Plants of the Midwest](#),” available as a smart phone app and brochure from the Midwest Invasive Plant Network.

**W**ant to dip your toe in the water with native landscaping – or ready to jump in with both feet? There are different ways to incorporate native plants into your home landscape and they can achieve different goals, everything from providing more habitat for specific wildlife species to helping keep your local lake clean by keeping stormwater on your site.

Regardless of your goals, these two resources are good start places to start.

- “[Wild Ones Native Plants, Natural Landscapes: Landscaping with Native Plants](#)” Fourth Edition. Available for sale as well at the [Wild Ones website](#).
- “Noah’s Garden: Restoring the Ecology of our Own Backyards,” by Sara Stein. 1995. Houghton Mifflin Harcourt.

## Install a rain garden

What is a rain garden? It is a small, low area within a built landscape that is planted with native wetland plants for the express purpose of soaking up storm water. Storm water is typically delivered from a building's roof to the rain garden via storm drains and other conduits. In a typical landscape setting with turfgrass, rain water will penetrate only a short distance into the soils, then flow horizontally across the landscape into storm gutters and streets, and eventually into local waterbodies along with any contaminants collected along the way. A rain garden is designed like a shallow basin that fills with a few inches of water after a storm. The storm water is contained within the basin and slowly filters into the ground due to the deep and intricate root system provided by native plants. Compared to a conventional lawn, a rain garden allows at least 30 percent more water to soak into the ground.

### Resources

- [“Rain Gardens: A How-to Manual for Homeowners,”](#) available as well from DNR as a pamphlet.

## Promote habitat for birds

Loss of breeding habitat is a major cause of bird species declines, as is a lack of readily available food and shelter for migrants. While bird feeders support some species, many birds seldom if ever use them, preferring natural foods. Your yard, whatever its size, can offer these important resources to birds. For more information see:

### Resources

- The [Wisconsin Stopover Initiative](#) provides links to several great resources to help you provide stopover habitat for migratory birds.



## Plant a pollinator garden

Pollinators maintain viable natural communities such as prairies and wetlands, they provide food for wildlife, and they play an essential role in pollinating agricultural crops. Providing wildflowers to support pollinators in home landscapes represents a high-value action. You can provide nectar sources for adult bees and butterflies, and pollen can be collected by bees to feed their young. Many of our state's insects evolved specifically to utilize specific plant species. In addition, many native plants provide sites for egg deposition and food for emerging larvae.

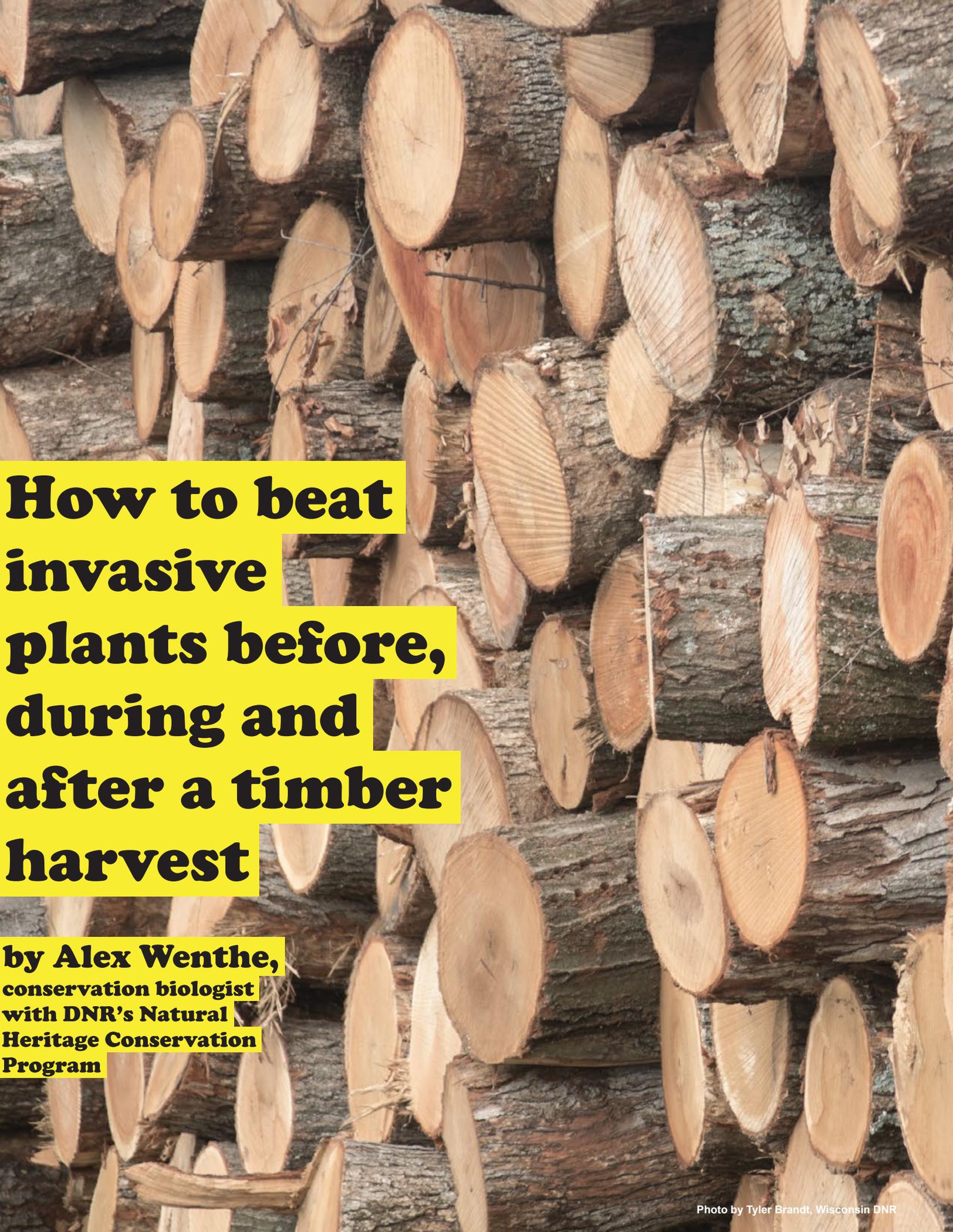
### Resources

The following resources and many others are available at the [Xerces Society website](#).

- [Pollinator Plants: Great Lakes Region](#). Three-page PDF with list of suitable species, general guidelines and tips, and additional resources.
- [“Attracting Native Pollinators: Protecting North America’s Bees and Butterflies,”](#) by The Xerces Society. Storey Publishing; North Adams, MA. 2011.
- [“Gardening for Butterflies,”](#) by the Xerces Society, published by Timber Press.



From top to bottom: (top) Pollinator garden. Photo by Courtney Celley, USFWS. (bottom) White-breasted nuthatch. Photo by Brian Collins.



# **How to beat invasive plants before, during and after a timber harvest**

**by Alex Wenthe,  
conservation biologist  
with DNR's Natural  
Heritage Conservation  
Program**

**W**hen the first warm spring days arrive after a cold winter, it is exciting to enjoy the sunshine again and take a walk or finish up the yard work from last fall. If you've lived in Wisconsin for any period of time, however, you know not to plant your garden right away unless you plan to protect it from the cold weather that's sure to return. Many native plants behave the same way – they may do a little house cleaning early on, like starting sap flow or dropping the last few leaves – but they don't commit most of their stored energy until a few weeks later when a frost is much less likely. These few weeks, however, are enough time for exotic species to gain an advantage.

### A competitive advantage

Many exotic and invasive species, such as honeysuckle and buckthorn, tend to leaf out at the first sign of spring. Although they may lose some leaves with frost damage, these extra days allow them to get a head start on their native counterparts. Invasive species often hold on to their leaves later into the fall for the same reason. This strategy effectively lengthens their overall growing season. This is one of the many ways invasive species out-compete natives for limited resources; but it is how they use their resources that can cause the real problems.

Honeysuckle and buckthorn use most of their resources to grow in height as fast as possible. They are often shallow-rooted compared to native counterparts of the same age because they do not invest energy into a large root system. This is a strategy most native species do not use. For instance, an oak tree will put much of its energy into root reserves then sprout up quickly when an opening in the canopy occurs. Some oak saplings can be 20 years old and only 5 feet tall as they wait for proper conditions to try to become a canopy tree.

Invasive species have a different timeline. Being able to grow in any light condition, full sun to full shade, certain invasives are able to effectively short-circuit the natural cycle. They quickly grow taller than the native tree saplings, and when a large tree falls that would typically leave an opening in the canopy for sunlight to reach the ground, the invasive species intercepts the sunlight and the forest floor remains in shade. The invasive plant then increases its own vigor with the additional sun and the cycle intensifies. This greatly lowers the health and productivity of the land by reducing the regeneration of native species like oak, pine, and hickory. By controlling invasive species you can reverse this process and help restore the natural cycles of the land.



From top to bottom: (top) Close-up of glossy buckthorn. (middle) Glossy buckthorn seedlings. (bottom) Infestation of glossy buckthorn. Leslie J. Mehrhoff, University of Connecticut, Bugwood.org.

**Learn how to identify this invasive**





A “flush” of plant growth after a timber harvest. Photo by Alex Wenthe, Wisconsin DNR.

# A plant “flush” can become a problem

## Plan, prevent, control

One situation where invasive species control is especially important is after a timber harvest. During a harvest soil is disturbed and the canopy is greatly reduced, which creates prime conditions for invasive species to take hold. Soil disturbance exposes many of seeds that are buried in the soil and creates a nice surface for germination, similar to tilling your garden. The reduced canopy means that more sunlight is reaching the forest floor, which aids the germination of the newly exposed seeds in the soil. These conditions often create a “flush” of both native and exotic plant species in the years immediately following a timber harvest. This is part of the natural processes following a harvest and can be a good thing if you are prepared.

This flush gives you an opportunity to improve the ecological health of your land by identifying and controlling invasive species at an early age. This allows you to exhaust the invasive seed bank quicker and promote the establishment of desirable native species. Remember, with increased sunlight the seedbank of both native and non-native species will be activated and it can be overwhelming if you are not prepared. However if you are able to control the invasive plants in the years following a harvest, you can encourage native plant regeneration, accelerate desirable tree recruitment, and improve the overall health of your land.

One way to greatly reduce invasives on your land is to make sure Best Management Practices ‘BMPs’ are used before, during, and after the harvest. This will help you identify and control potential spread of invasive species prior to the harvest as well as accidental introductions of species that may have hitched-a-ride on the heavy equipment, despite the loggers’ best efforts. Monitoring and early detection allows you to control new introductions and isolated pockets of invasives before they become a problem. Investing

some of the proceeds from your timber sale towards invasive control after a harvest can not only benefit the natural regeneration of native trees, but also provide substantial savings in the long run. Invasives species left to their own devices become more problematic, difficult, and expensive to control every year. There are programs available to help private landowners with the costs of invasive species control. One program offered by DNR is the Wisconsin Forest Grant Landowners Program (WFLGP). Please discuss all your options with your forester at least a year before the harvest if possible.

As a landowner, communicating what you want from your harvest is the most important step you can take. Your communication can help the harvest go smoothly and benefit Wisconsin’s native species for years to come. Having a plan for invasive species plan is an effective way to ensure everyone is on the same page. Be sure to talk with your consulting forester (plan writer), DNR foresters, and loggers before your harvest. Start the conversation and stop the spread of invasive species.

## Helpful links:

- [Wisconsin’s Forestry Best Management Practices for Invasive Species: A Field Manual for Foresters, Landowners, and Loggers](#)
- [Wisconsin DNR invasive species](#)
- [Wisconsin DNR forest landowners](#)
- [Wisconsin DNR financial forestry help](#)