

Wisconsin Natural Resources

THE WISCONSIN DNR'S GUIDE TO THE OUTDOORS | WNRMAG.COM

AUTUMN ADVENTURES

| YOUR FALL BUCKET LIST

| SAVING WISCONSIN'S SWAMPS

| LEGACY OF LIZARD MOUND

| HORSING AROUND AT STATE PARKS

OPENING SHOT



Fall train from Osceola, through the St. Croix River valley. For more on train rides and other fall day trips, see Page 14.



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Governor Tony Evers

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Lori Brose and her horse Jack enjoy the trail at Governor Dodge State Park.

16 Saddle up at state parks

ANDREA ZANI

FALL 2022,
VOLUME 46, NUMBER 3

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FROM THE SECRETARY **PRESTON D. COLE**



MIKE GORSKI

Although summer may be short, it's always an exciting season with lots of activities. Here at the DNR, we are quite busy and have lots of good news to share.

This past August, we were again at the Wisconsin State Fair celebrating all things outdoors with our "OutWiGo" themed exhibit focused on recreation across the state. It was great to see so many of you stop by for a visit, and we hope to see you again next year.

Meanwhile, Gov. Tony Evers recently announced more than \$4.5 million in funding for conservation projects across Wisconsin with significant importance to several communities, conservation and natural resource protection and the state's multibillion-dollar outdoor recreation economy.

The initial projects that led to the investments were submitted to the Joint Committee on Finance by the DNR to be partially funded through the Knowles-Nelson Stewardship Program but had yet to receive funding. The governor's investment, funded by the state's allocation of the American Rescue Plan Act, is supporting projects led by the Ozaukee Washington Land Trust, Milwaukee Public Schools Outdoor Spaces and Caroline Lake Preserve (Ashland County), plus land acquisition in the Town of Nashville (Forest County) and Sand Creek (Bayfield County).

Gov. Evers also announced the Wisconsin PFAS Action Council released its 2022 PFAS Action Plan Progress Report. As part of the Year of Clean Drinking Water, Gov. Evers created the council in 2019. Comprised of nearly 20 state agencies and the University of Wisconsin System, the

council is charged with developing a state action plan to respond to per- and polyfluoroalkyl substances (PFAS) in Wisconsin. The 2022 PFAS Action Plan Progress Report provides updates on PFAS action under the Evers administration and recommendations for continued future action.

This summer, the Wisconsin Groundwater Coordinating Council also shared key recommendations for protecting and preserving vital groundwater resources in its 2022 annual report to the Wisconsin State Legislature. The recommendations focus on setting new and revised health-based groundwater standards and evaluating and addressing drinking water contamination from nitrates and PFAS chemicals.

Both reports are available on the DNR website at dnr.wi.gov.

Wisconsin has a long and proud history of groundwater protection. Wisconsin's groundwater law, adopted in 1983, is held up as one of the nation's model environmental laws in part because of its robust, science-based process for protecting the quality of our groundwater and public health.

As I have said many times before, Wisconsin truly has something special. The DNR remains steadfast in its commitment to protecting the great people of Wisconsin and our natural resources.

As the leaves begin to change and a new season approaches, this issue has an array of ideas for you to enjoy the autumn colors and learn more about our state's wonderful offerings. I encourage you to find your adventure this fall and go wild in Wisconsin! 🍁

NEWS YOU CAN USE



ISTOCK/SOUTH AGENCY

NATIONAL PUBLIC LANDS DAY

Celebrate National Public Lands Day on Sept. 24 by getting outdoors and volunteering at a state property. The Wisconsin State Park System boasts nearly 156,000 acres of public lands to explore and help maintain.

Giving Back Together is the theme for this year's National Public Lands Day, marked every year on the fourth Saturday in September. The tradition was established in 1994 by the National Environmental Education Foundation.

There are volunteer activities at state parks all year long, ranging from cleanup and trail maintenance to tree planting to assisting with building projects. Learn more and find a link to sign up using the DNR's Volunteer Impact System at dnr.wi.gov/tiny/1006.

The National Park System and other federal agencies also mark National Public Lands Day with free entry to national parks and more, and volunteer opportunities nationwide. For details, see neefusa.org/npld.

FISHING LINE FOOTWEAR

Did you know that monofilament fishing line can last 600 years in freshwater? Thanks to the DNR's monofilament fishing line recycling program, you can help protect wildlife, boat propellers, water enthusiasts and the environment from negative effects of used fishing line.

While the recycled fishing line is generally melted down into raw plastic pellets to make products like tackle boxes or spools for fishing line, one graduate student discovered a clever new use for the used line: footwear.

Genevieve Gholizadeh, an industrial design graduate student at North Carolina State University, is focusing her thesis on the design and creation of beach running shoes



GENEVIEVE GHOLIZADEH

This rendering shows design student Genevieve Gholizadeh's plan for running shoes made from recycled fishing line.

made of used fishing line and fishing nets. Her closed-loop design — which is when a product is recycled to create something new — got a little help from the Badger State.

In need of more fishing line, Gholizadeh reached out to the Wisconsin DNR, which sent her 20 pounds of fishing line collected for recycling at DNR service centers, enough to start working on her project.

She now has renderings for her shoes, and her next step is to create prototypes.

Stay tuned for more on this story in an upcoming issue of *Wisconsin Natural Resources*. To learn more about recycling your fishing line, go to dnr.wi.gov/topic/recycling/fishingline.

STILL TIME FOR TROUT

With generally cooler weather on the way in autumn, this can be a great time of year for trout fishing; the general inland trout season continues through Oct. 15. September also is time for the lake sturgeon hook-and-line season, running through the end of the month, and fishing for many other species continues in fall as well.

Check dnr.wi.gov/topic/fishing for all season dates, regulations and to buy a license, just \$20 annually for Wisconsin residents and only \$5 for first-time resident buyers.



NICK VOLMER

Brown trout

SALUTE TO VETERANS

With Veterans Day on Nov. 11, the DNR recognizes the service of military members past and present by extending privileges related to hunting, fishing and other outdoor pursuits. State residents in active full-time service with the Armed Forces are eligible for a free small game and fishing license, with state stamps included.

In addition, any resident who has received a Purple Heart medal is eligible to purchase a conservation patron license for just \$10 (\$165 regular resident price), which includes gun-deer, turkey, small game and other hunting licenses plus an annual fishing license, park entry sticker and more.

For details, see dnr.wi.gov/permits/veterans.



WISCONSIN DNR

LETTERS TO THE EDITOR



CHICKEN DANCE

I was honored to attend a lek (where male birds perform mating displays) at the central Wisconsin Prairie Chicken Festival in early April. It is a nice event for sure. Here is my best shot. I'd say the event was a hoot, except that they call it "booming."

Larry Hollar
Inver Grove Heights, Minnesota



DOUBLE DIPPING

Between the walleye running on the Fox River and the pelicans returning in spring, it's an interesting combination. Here's a pelican catching two walleyes at once!

Adam Jackson
De Pere



MAKING A POINT

I've been getting your magazine for years and have always loved the reader submission photos. I just recently got into photography more and wanted to submit this photo of my 5-month-old German shorthaired pointer, Ada, on her first pheasant hunt, locking on her first point.

Growing up, we had GSPs, and I finally got one of my own. A dog's first point and first retrieve are images any bird-dog owner will forever have ingrained in their mind. Thank you guys, and keep up the awesome work!

Bo Schumacher
Green Bay



PICTURE-IN-PICTURE

We were camping at Point Beach State Forest, and I took a super cute picture of my kiddo and wanted to submit it. Her name is Anthem Ohlinger. This is in the parking lot up by the lodge looking out over Lake Michigan.

Mel Ohlinger
Neenah

FUN, INFORMATIVE, EDUCATIONAL

After reading the Summer issue cover-to-cover, I feel a sense of hope and resilience. Carrying on the great Wisconsin tradition of forward-thinking environmental stewardship established by Leopold, Nelson and many others, there was a pervasive sense of educating the reader about what our planet needs for sustenance woven into the articles highlighting myriad ways to enjoy the natural world.

This was no small feat given that the spectrum of topics included waterfalls, beaches, rock climbing and foraged food. Even better, it was beautifully written and edited to accomplish this without being preachy or depressing.

Case in point: Touching but not dwelling on the need for ongoing efforts to slow or ideally reverse climate change, coverage of the WICCI collaboration between the DNR and UW-Madison elucidated a pragmatic approach that asks "to the extent to which climate change is already here, how do we mitigate the impact and optimize our response to it?"

I believe this edition shows the way of the future, in which fundamental environmental concepts are consistently an integral part of fun, informative articles about outdoor pursuits, rather than being relegated to an afterthought or being the sole focus. Incorporating education like this into our daily actions is the only way we will be able to enjoy quality natural experiences in perpetuity.

Phillip Porter
Eau Claire





ANDREW PELAGE

KEY TO COTTAGE RESTORATION

To write about the Seth Peterson Cottage (Summer 2022) and not include Audrey Laatsch is a huge mistake. She spearheaded the campaign, brought the idea to the DNR and formed the nonprofit. The cottage would not be here without her. She was a wonderful friend to Mirror Lake, an amazing volunteer and her legacy should be honored.

Jennifer Stanek
Portage

Thanks for the letter, Jennifer, and yes, Audrey Laatsch was one of the earliest champions of Seth Peterson Cottage restoration. Laatsch, who owned another cottage on Mirror Lake, led initial efforts to revive the rundown building, which began with the founding of the Seth Peterson Cottage Conservancy in 1989.

"I loved Frank Lloyd Wright, but I knew nothing about preservation, and I had no idea what I was getting into," Laatsch told the New York Times in a 1994 story about the extensive work to rehabilitate the famed architect's design. But that didn't stop her and a long list of others from seeing their dream of a restored Wright cottage achieved.

Write in by sending letters to DNRmagazine@wisconsin.gov or WNR magazine, PO Box 7921, Madison, WI 53707.

Q&A

You asked, our DNR experts answered. Here is a quick roundup of interesting questions sent to us on Facebook.



Q: Do you need a fishing license to fish on a private pond?

A: In general, yes, you do need a fishing license if, say, you are fishing off your pier into a lake or river. The only exception is if you are fishing a private pond in which you own all the land surrounding the pond and there is no public access. In that case, no fishing license is required for you (or someone to whom you give permission) to fish that pond.

This is because most lakes, rivers and streams are "waters of the state" and fish are a state resource held in the public trust for public benefit. A fishing license authorizes anglers to take fish for their own private use, and the funding from license fees helps maintain sustainable fishing opportunities for all Wisconsin anglers.

Q: I'm interested in panning for gold in Wisconsin. Is there any information you can provide?

A: Panning for gold in Wisconsin streams and rivers has long been a pleasant outdoor recreational activity for a small group of amateur prospectors. There are residual occurrences of gold concentrated by weathering and erosion in most Wisconsin counties. Still, it is almost always in the form of very small gold particles. Unlike states out west such as California, there are no economic deposits of gold in Wisconsin streams. The glaciers did a good job of scraping up the few older gold deposits, grinding them into small particles and spreading them out over the landscape.

Anyone wishing to collect minerals (including by panning) on state property must first obtain a collector's permit from the local DNR property manager. In the case of a stream that runs through or is adjacent to private property, Wisconsin riparian (stream bank) owners generally have property rights that extend from the bank to the center of the stream or flowage. You will need the property owner's permission before conducting any panning.

Q: A deer was spotted swimming away from shore. Within five to 10 minutes, we lost sight of it in our binoculars. Why would a deer do this?

A: Deer can take to the water for several reasons, but it is most likely to escape a perceived threat or to explore for a potential food source believed to be on the other side of a body of water they think they can't get around (even if they can).

Q: If I'm riding an ATV or UTV and come upon a horseback rider, do I have to pull over and shut off my engine so I don't spook the horses?

A: Interestingly, many horses are more comfortable around ATVs than bicycles and other "silent" activities, which can spook horses (they don't have the best eyesight). We recommend stopping your ATV or UTV, shutting off the engine and calmly saying hello when you come upon a horse on the trail. For more on horseback riding on state trails, see Page 16.

AT THE BOAT LAUNCH

I really appreciated the "Tips for Launching Your Boat" in the Summer issue, as it can be frustrating when people monopolize the launch when others are trying to get their boats in or out. Tip No. 7 suggested unhooking all clips front and back prior to approaching the launch. If your trailer is a roller-type trailer, you

should consider leaving the winch strap hooked until the boat is at the bottom of the ramp, as the boat can easily roll off the trailer on the way down the ramp before you get to the water. I have witnessed this, and the results are not pretty. Thanks for the great magazine!

Chuck Bongard
Prairie du Sac

Bucket List

FIND YOUR
AUTUMN
ADVENTURE

ANDI SEDLACEK

Fall is fleeting in Wisconsin. Make the most of the season with our list of must-do fall activities, and don't forget to don your chunky sweater or fuzzy flannel while doing it all.

❶ Peep some leaves.

This one may be obvious, but fall fun would not be complete without some time spent soaking in the array of colors we're gifted for such a short time each year.

Wisconsin is packed with color-spotting opportunities throughout the fall season, from urban parks to colorful canoe routes and hiking trails. So where should you go?

Any park with an observation tower is an exceptional pick. Blue Mound State Park, High Cliff State Park, Copper Falls State Park and the Lapham

Peak Unit in the Kettle Moraine State Forest all have observation towers that put you up there with the tree-tops.

Eagle Tower at Peninsula State Park has a fully accessible canopy walk to the top, offering breathtaking views of the park, surrounding islands, the Upper Michigan shoreline and local communities, all in their glowing autumn glory.

Find fall color on any of Wisconsin's 44 state trails. See fall colors along the trail and water on the 400 State Trail, which is ideal for a bike and paddle trip. Sections of this former rail corridor parallel the Baraboo River. You can paddle downstream and then bike back to your starting point or vice versa. In season, shuttle service and rentals are available in Wonewoc.

On the 40-mile Military Ridge State Trail, you'll pass several observation platforms adjacent to the trail to stop and smell the fall foliage.

Equestrians can get in some fall fun on more than 700 miles of trails in Wisconsin's state parks, forests, recreation areas and unsurfaced trails on former rail lines, with 175 equestrian campsites in six parks. For more on horseback riding at state parks, see the story on Page 16.

❷ Embark on a scenic fall drive.

Cover more ground on your leaf-peeping outing by getting in the car. You don't have to drive around aimlessly, hoping to see some fall colors — there are plenty of byways and scenic drives already mapped out for you.



NICK COLLURA/TRAVEL WISCONSIN

Explore Perrot State Park along the Great River Road.

The Wisconsin Great River Road, part of the Great River Road National Scenic Byway, is a 250-mile route along the Mississippi River, stretching from Prescott to Kieler on U.S. Highway 35. You'll pass through more than 33 historic river towns and villages and have your pick of authentic Wisconsin dining, shopping and lodging along the way. And because you'll be right next to the great ol' Mississippi River, the fall colors will be extraordinary.

The 115-mile Kettle Moraine Scenic Drive covers the northern and southern units of the Kettle Moraine State Forest, taking you through the gorgeous changing colors of oak, maple and aspen trees. You'll traverse six Wisconsin counties, starting in Elkhart Lake in northern Sheboygan County and ending at Whitewater Lake in southeastern Walworth County. Find many places to picnic, hike, swim, fish and more along the way.

Hop on Highway 23 from Dodgeville to Spring Green for a delightful fall trip through southwestern Wisconsin. The trip is a short-but-sweet 18 miles, and you can experience so much along the way.

From north to south, stop at Tower Hill State Park for breathtaking views of the Wisconsin River; drive around Taliesin, the former home and estate of the famous architect and Wisconsin native Frank Lloyd Wright; and end with a waterfall experience with a hike down to Stephens' Falls in Governor Dodge State Park.

If you're not done exploring, head east on U.S. Highway 151 and check out Ridgeway Pine Relict State Natural Area. See the pine relicts — forests that have persisted since the last glacier receded 12,000 years ago — set among soaring sandstone cliffs, numerous rock outcrops, shallow caves and rock shelters.

Before heading out, check Travel Wisconsin's Fall Color Report map to see what's in store! Go to travelwisconsin.com/fall-color-report.

⑥ Take your fall apple picking to Oneida Nation.

In 1994, the Oneida Nation purchased an apple orchard as part of their continuing strategy of reacquiring lands within the original boundaries of the reservation. Today, the orchard encompasses about 32 acres

and is home to approximately 4,000 trees. And it's a great fall destination.

Pick more than 10 apple varieties, including familiar ones like McIntosh, Cortland, Jonagold, Gala, Red Delicious and Honey Gold. Or stop in the orchard's retail store and try a summer variety like Zestar, Viking, Summer Treat and Red Free. You can even pick up some Bosc and Bartlett pears, too.

The Oneida Apple Orchard opens the day after Labor Day every year. You can pick your own apples well into October, depending on the weather, and you can pop into the retail store for already-picked apples. Be sure to call ahead to verify the store and picking hours. The helpful staff also can tell you what varieties are available and share helpful information on them, like if they're best for pies or snacking and how to store them.

It's not only the perfect place to pick a fall bounty of apples — the gorgeous grounds give you plenty of opportunities for some Instagram-worthy photos.

④ Camp in the colors.

Camping in the fall can be seriously cozy. Build a toasty campfire, add some extra layers and plan some festive seasonal foods for your campsite cuisine.

Devil's Lake State Park is an obvious choice, as you cannot beat the panoramic views of vibrant autumn trees from atop the 500-foot bluffs that

Pick your own at the Oneida Apple Orchard or check out the retail store for already-picked apples.



ONEIDA NATION

Before migrating south in fall, sandhill cranes gather at places like Crex Meadows State Wildlife Area in Burnett County.



ROBERT ROLLEY

are just a short hike away from your campsite.

New Glarus State Park has campsites tucked into the woods, surrounding you in trees and making it easy to hop on the 24-mile Sugar River State Trail. Blue Mound State Park has year-round hike-in, bike-in and ski-in tent camping, along with standard campsites and an accessible cabin.

The Copper Range campground at Brule River State Forest is near fishing holes and canoe routes, making it a fall favorite among anglers.

⑥ Watch birds on their fall migration.

Fall in Wisconsin is busy with migrating birds. Novice or expert birdwatchers should be at-the-ready with gear like binoculars, a Wisconsin bird field guide and an account on the on-line portal eBird.org.

Explore hotspots on eBird, grab a Great Wisconsin Birding and Nature Trail guide or become a member of the Wisconsin Society for Ornithology to access their online edition of

"Wisconsin's Favorite Bird Haunts."

You can begin by birding in your neighborhood or nearby park. Fall migration is a wonderful time for birding because songbirds that go unseen during summer often appear during their journeys south.

Songbird migration peaks in September as favorites like hummingbirds, orioles, grosbeaks, tanagers and warblers wing their way to warmer temperatures. October brings harder species like sparrows, blackbirds, finches, raptors and waterfowl. Many will linger until snows deepen or water bodies freeze, often in late November or early December.

Tundra swans — not to be confused with trumpeter swans, which typically have a salmon-colored stripe on the lower mandible — pass through Wisconsin in the fall as they head to overwinter on the East Coast near the Chesapeake Bay and in the marshes of Virginia and North Carolina. You'll know they're tundra swans by their high-pitched whistle (compared to the trumpeter swan's deep, loud, trumpet-like call), large sloping black

bill and yellow spot in front of their eye, found on 80% of tundra swans.

Sandhill cranes, one of only two crane species found in North America, begin their migration in mid-November. But before they head off to their winter homes in warmer locales, they stage, or gather in groups of several thousand, in larger wetland areas in Wisconsin like Crex Meadows, White River Marsh and Sandhill state wildlife areas, Necedah National Wildlife Refuge and Comstock Bog-Meadow State Natural Area.

Wait and watch at one of these marshes and along the Wisconsin River in the south during the fall at sunrise or sunset to see huge flocks of these tall gray birds with distinct red patches on their heads take flight to feed in area fields.

These aren't all the bird migrations you can flock to in the fall. Head to Horicon Marsh, Schlitz Audubon Nature Center, Trempealeau National Wildlife Refuge and Harrington Beach State Park for some marvelous autumn birdwatching.

The Great Wisconsin Birding and Nature Trail is a driving trail that maps out every area of the state and tells you where to go to see the birds, so you can get your fall scenic drive in while birdwatching at the same time.



ISTOCK/LISOVSKAYA

Grilled venison is a good way to savor your hunting harvest.

⑥ Enjoy the fruits of your hunting labor.

You spent all that time planning and waiting and finally snagged a duck or two or a deer. Now what?

Don't let your hunting efforts go to waste — take the next step and cook something amazing with your game.

When cooking duck, remember to keep it simple. A basic brine, soaking in water with dissolved salt, adds flavor and moisture without overpowering the actual flavor of the bird.

The basic duck brine from Ducks Unlimited calls for a half-gallon of water, a half-cup of coarse salt, a half-cup of brown sugar and a half-cup of pickling spices. Heat two cups of the water in a saucepan over medium heat, then add the salt, brown sugar and pickling spices and stir until the salt is dissolved.

Add this mixture to the remaining water and cool completely in the refrigerator for at least three hours before adding the duck meat and returning to the refrigerator for 12 to 24 hours. After that, cook leg and thigh sections at a low temperature, about 300 F, for several hours and cook breast fillets over high heat.

When cooking duck, be sure to avoid overly flavorful marinades. You don't need much more than olive oil, garlic, herbs and maybe a little splash of wine (or vinegar) for your duck marinade.

For deer hunters, the first and most important thing to do with your deer is to have it tested for chronic wasting disease. CWD testing through the DNR is free for deer harvested in Wisconsin.

After you know your deer is CWD-free, you can do almost anything with it. It's key to know that venison is very lean, so be careful not to overcook it.

Venison is a tasty addition to hearty stews with potatoes and carrots. Or have your venison ground and use it in place of ground beef in your favorite chili recipe. Venison steaks feel a bit fancier, marinated, grilled and served with roasted mushrooms or creamy mashed potatoes.

If you're not into cooking venison at home, you can donate any deer that was legally harvested in Wisconsin through the DNR's deer donation program. Venison from donated deer is processed and distributed to food pantries across the state. Learn more at dnr.wi.gov/topic/hunt/donation.

7 Get in some fall fishing.

Fishing in the fall can be just as fruitful and fun as in the summer (and winter, if you're an ice angler). But you may have to switch up your bait and fishing spot when the leaves get crispy.

Hook some chinook salmon and largemouth bass in September and into mid-October. October is also a superb time for walleye, and your best timing for coho salmon in the fall is mid-October through November.

Steelhead are around in late summer and most of the fall, from August to November. Fall is the time for brown trout, with opportunities September through December. Whatever you're fishing for, do a little research before you go to find the best places for these fish in fall.

Don't forget your fishing license and a Great Lakes Trout and Salmon Stamp or two-day sports fishing

license if needed. And double-check the rules. For example, it is illegal to fish at night in the Lake Michigan tributaries from Sept. 15 until the general fishing season opener the following May.

8 Fall in love with our public lands.

Wisconsin's public lands, from state parks, forests, trails and natural areas to county and city parks and even a national forest, are exciting and diverse — and beyond colorful in the fall.

Autumn is a time for change, and that includes the public lands you visit. We love our favorites, but take a chance this season to seek out a new spot. You just might find you'll fall for Wisconsin all over again. ♡

Andi Sedlacek is a public information officer in the DNR's Office of Communications.



Kettle Moraine State Forest-Lapham Peak Unit

RACHEL HERSHBERGER/TRAVEL WISCONSIN

It's fall y'all

THE SCIENCE BEHIND FALL COLORS

ANDREA ZANI

When it comes to fall colors, no two years are the same and exactly how a given year will shape up remains unpredictable. That's because two of the main factors that influence fall color outcomes — temperature and rainfall — can vary widely from year to year.

"The intensity of Wisconsin's fall color season is influenced by the weather the state receives during September and October," said Colleen Matula, DNR forest ecologist and silviculturist. "To have the most brilliant and vibrant fall color display, a series of fall days filled with bright sunshine and cool but frost-free evenings are required."

As for the colors themselves, the bright yellows, glowing oranges and flashy reds we see are all about leaf pigments — chlorophyll, anthocyanins and carotenoids, including xanthophylls. These account for trees' individual colors, which can vary by species.

Let's look at the process: During a typical growing season, trees produce chlorophyll, which gives

leaves their green color. As days in the Northern Hemisphere get shorter in fall, trees respond by producing less chlorophyll until stopping altogether.

When that happens, other pigments already in tree leaves, carotenoids, show through. This gives leaves their yellow, orange and brown colors.

While these colors are fairly constant from year to year, they still can vary in brightness and timing. Yellow and orange hues may be more muted or take longer to show through, for example, if fall temperatures stay warmer for longer. That means more chlorophyll remains in leaves, keeping

them greener longer at the start of fall.

The red colors in trees come from anthocyanins. Not all trees make these pigments, which mostly are produced only in autumn and only under certain conditions. Anthocyanins are produced by trees as a form of protection, research has shown, allowing the plant to recover nutrients in the leaves before they fall off, thus preparing for the next growing season.

Perhaps you've noticed years when the red, purple and crimson colors of fall seem brighter and more ubiquitous. "Cooler nighttime temperatures tend to amplify



PHOTO ILLUSTRATION BY RACHEL HEISBERGER/TRAVEL WISCONSIN

the brightness of reds and purple in leaves," Matula said, "while warmer nights will mute this color change."

Rainfall, or lack of it, affects autumn leaf color in other ways. Wet weather and drought can lower color intensity, while drought can affect the timing of fall colors. An early arriving severe frost will kill the leaves, causing them to turn brown and drop prematurely.

Despite all the weather uncertainties, it's possible to generalize about the colors of fall.

"Fall color predictions by the National Oceanic and Atmospheric Administration are based on mathematical algorithms that factor in historical leaf peak, temperatures, precipitation, leaf volume, health and day length," Matula said.

In far northern Wisconsin, peak color usually occurs in the last week of September and first week of October. Central Wisconsin generally sees peak color during mid-October, and the southern part of the state mostly reaches peak at the end of October.

No matter where you are, you can get out and enjoy the autumn display.

"With a 17-million-acre forest resource in Wisconsin that is increasing in volume each year," Matula said, "fall color is one show that must go on." 🍂

Andrea Zani is managing editor of Wisconsin Natural Resources magazine.

FALL COLOR REPORT

Looking for the best places and right timing to take in the vibrant beauty of the season? Check out Travel Wisconsin's Fall Color Report for in-depth information on color status and estimated peak weeks all around the state — travelwisconsin.com/fall-color-report.



for the size of things in the background. A rock in the bottom left of a photo can help set the scene for the size of a flowing river and the bluffs behind it. Objects like tree branches and flowers also can help you create an interesting frame in the image.

5. Pay attention to the lighting.

The most stunning photos are taken at golden hour — just after dawn and just before dusk. The lighting on an overcast day is often better than a bright sunny day, as it creates more depth and even lighting in your images. Be aware that including the sun in the photo can cause the rest of your

PICTURE PERFECT

TIPS TO CAPTURE AMAZING AUTUMN PHOTOS, RIGHT ON YOUR SMARTPHONE

STORY AND PHOTOS BY KATIE GRANT

There's no time like autumn in Wisconsin for breathtaking views. Capture the moment to remember it later while you check off your fall bucket list. You can take stunning photos with just a smartphone using these tips.

1. Check your camera settings. Consider turning on HDR (high dynamic range). This feature takes multiple shots at different exposures and blends them together, lending more detail to shadowed and highlighted areas. If using an iPhone, you can also turn on Live Photos to give yourself multiple frames to choose from — this is especially helpful when shooting people or wild animals that may be in motion.

2. Use the rule of thirds. Rather than centering objects in the image,

focus them in one-third of the frame. For landscapes, focus the horizon line along the top or bottom third of the photo. If the subject for your photo is a person or an object, align them in the left

or right third. Turning on the grid lines in your camera app takes away some of the guesswork in getting things lined up.

3. Tripods are your friend! Using a tripod can help you take clearer photos and makes it easier to line up the objects

you're shooting. Keep in mind a tripod doesn't have to be a big heavy thing to lug around. There are lots of small, lightweight options, including ones that can wrap around objects to help you get the shot.

4. Look for the little details and include them in the foreground to give your image depth and create scale



image to be overly dark, wash out the image or add a flare of color. Try shading your lens like the brim of a hat to keep the sun from hitting the lens directly.

6. If you're lucky enough to get a photo of wildlife, be sure to give them space. Wild animals are unpredictable so staying at a distance is key to your safety.

7. Consider shooting from unexpected angles. Taking a photo from down low to the ground can give a totally different perspective of a scene than taking it from eye level. Play around and see what you can create.

8. Zoom with your feet rather than using the digital zoom on your phone. If you can't get closer to the object, zoom later with a free editing app. The more you use the digital zoom on the phone, the more detail is lost.

9. Practice makes perfect. The more photos you intentionally shoot keeping these tips in mind, the easier it will become and the better your images will turn out.

10. And don't be afraid to share your fall color adventures with us on social media using #OutWiGo. 📸

Katie Grant is a publications supervisor in the DNR's Office of Communications.

MAKE THE MOST OF FALL WITH THESE FUN DAY TRIPS

Holy Hill, in Washington County

MOLLY MEISTER AND ANDREA ZANI

When it comes to traveling around Wisconsin, there's no better time than autumn to see the sights. Check out these day trips just right for fall.

HOLY HILL

This popular fall destination is in Hubertus, just northwest of Milwaukee. The Carmelite Friar community is home to the Basilica and National Shrine of Mary. A scenic tower rises 192 feet from base to tip, with gorgeous panoramic views of the Kettle Moraine area atop the 178-stair climb. The tower is open daily, weather permitting, through October.

If you can't make the visit this fall, check out Holy Hill's scenic tower camera offering a bird's-eye view of the treetops, updating every five minutes. Find the camera and all visitor details at holyhill.com.

RIB MOUNTAIN STATE PARK

There are two great ways to see the lovely colors at this central Wisconsin state park. You can head to the park and climb the 60-foot observation tower, best accessed from

the Gray Trail. Or visit Granite Peak Ski Area and take a fall chairlift ride to the top of the mountain to check out the park scenery.

For Granite Peak chairlift ride details, check out skigranitepeak.com. And for more on Rib Mountain State Park, go to dnr.wi.gov/topic/parks/ribmt.

TAKE THE TRAIN

At the Mid-Continent Railway Museum in North Freedom, in Sauk County, the beautiful Baraboo Hills become even more scenic under the colorful cloak of fall. Take a train ride to travel right through the splashy display.

Mid-Continent is open for rides along the former Chicago & North Western Railway on weekends through Oct. 16, with peak color expected during Autumn Color Weekend Oct. 8-9, and Pumpkin Special trips Oct. 15-16. Learn more online at midcontinent.org.

Several other railroads offer the chance to see seasonal colors by train, mostly open on weekends only in fall.



RACHEL HERSHBERGER/TRAVEL WISCONSIN

Enjoy autumn train rides at Mid-Continent Railway Museum and other Wisconsin railroads.

- Osceola and St. Croix Valley Railway, part of the Minnesota Transportation Museum: transportationmuseum.org
- East Troy Railroad Museum: easttroyrr.org
- Riverside and Great Northern Railroad, a kid-sized train in Wisconsin Dells: dellstrain.com
- Wisconsin Great Northern Railroad, just north of Spooner: spoonertrainride.com

TIMM'S HILL COUNTY PARK

At nearly 2,000 feet in elevation, Timm's Hill in the southeastern Price County town of Ogema is Wisconsin's highest point.



NICK COLLURA/TRAVEL WISCONSIN

Pick a pumpkin at places like Schwertel Family Farms, Trempealeau.

sin's highest point. The county park features an observation tower to show off the scenic views of the surrounding area, heavily forested with northern hardwoods. Park gate is open daily through October.

DOWN ON THE FARM

Whether you're a kid or kid at heart, there's nothing quite like tramping through a pumpkin patch in search of that perfect orange orb or puzzling your way through a corn maze. With agriculture so integral to Wisconsin, there's no shortage of pumpkin patches and corn mazes, and many farms also offer haunted houses and other fun in fall. Here are just a few:

- Schuster's Farm, Deerfield: schustersfarm.com
- Country Bumpkin Farm Market, Wisconsin Dells: countrybumpkin-farm.com
- Wilke's Corn Maze and Pumpkin Patch, Wausau: wilkefarm.com
- Waldvogel's Pumpkin Farm, Juneau: waldvogelfarm.com
- Schwertel Family Farms, Trempealeau: Find them on Facebook.



RACHEL HERSHBERGER/TRAVEL WISCONSIN

Wineries such as Hawk's Mill in Browntown are a good option for fall relaxation.

- Schairer's Autumn Acres, Birnamwood: schairersautumnacres.com
- Treinen Farm, Lodi: treinenfarm.com
- Oulu Corn Maze, near Iron River: oulucornmaze.com
- Creek Bed Country Farmacy, Poynette: creek-bedcountryfarmacy.com

WISCONSIN DELLS GHOST BOAT

Brave souls can try this spooky fall tour on the Wisconsin River and journey into the "haunted canyon." It's dark, it's scary, so be prepared! Learn more at dellsghostboat.com.

CRANBERRY COUNTRY

The cranberry is Wisconsin's No. 1 fruit crop, and fall is harvest time for these colorful berries. Cranberry tours and festivals are an autumn tradition in the state.

Home of the world's largest cranberry festival, Warrens (in Monroe County) is the heart of cranberry country and home to the Wisconsin Cranberry Discovery Center, discovercranberries.com. Also in Warrens is the Cranberry Museum Inc., operated by the Wisconsin State Cranberry Growers Association, which lists information on cranberry marsh tours, festivals and more on its website, wiscran.org.

UNWIND AT A WINERY

Take a stroll through one of the many picturesque wineries in Wisconsin and raise a glass to the changing seasons. There are events aplenty, and if it's early enough in the fall, you might even catch a harvest-time grape stomp.

The Door County Wine Trail is a good place to start, with eight scenic wineries on the list, doorcountywinetrail.com. At the opposite corner of the state, the Southwest Wisconsin Wine Trail features four wineries, southwestwisconsinwinetrail.com. Here are a few other show-stopping destinations:

- Bailey's Run Vineyard and Winery, New Glarus: baileysrunvineyard.com
- Wollersheim Winery and Distillery, Prairie du Sac: wollersheim.com
- Botham Vineyards, Barneveld: bothamvineyards.com
- Hawk's Mill Winery, Browntown: hawksmillwinery.com
- Elmaro Vineyard, Trempealeau: elmarovineyard.com
- Dancing Dragonfly Winery, St. Croix Falls: dancingdragonflywinery.com

Check the Wisconsin Winery Association website for many more locations statewide, wisconsinwineries.org.



Check out the green and gold at the Packers Hall of Fame.

GREEN BAY PACKERS HALL OF FAME

Because fall means football, it's worth mentioning this day trip — where the colors are all green and gold. The ode to Packers glory at Lambeau Field is open daily except for some holidays, stadium special events and home game days, when a game ticket is required for entry. See packershofandtours.com.

And while you're in the area, consider a side trip to nearby Point Beach State Forest, just 45 minutes from Green Bay. Or head to Door County and its lovely state parks — Potawatomi, Peninsula, Whitefish Dunes, Newport and Rock Island — where the spectacular fall colors are simply hard to beat. 🍂

Molly Meister is a public information officer in the DNR's Office of Communications. Andrea Zani is managing editor of Wisconsin Natural Resources magazine.

Saddle up

AT STATE PARKS

THERE'S PLENTY FOR
RIDERS AND THEIR HORSES TO
SEE ALONG THE TRAIL

Riders get out on the trail at Governor Dodge State Park, from left: Sandy Rogers, Sherri Torrison, Penny Fanning and Cindy Anderson.

ANDREA ZANI

Jack takes one look at the steep hill in front of him and continues forward. Undaunted by the incline, he quickly powers his way up, moving easily along the grassy, tree-lined trail.

Jack is a horse, of course, and as such he has little problem navigating this challenging stretch at Governor Dodge State Park.

Jack, Dakota, Duncan, Rosie, Ruby, Molly, Cody, Rocky, Tucker, Fletcher, Suzanne, Rusty, Rain Man, Gus, Titan, Bella and Buttercup.

Collectively, these equine visitors and others like them have logged thousands of miles ambling through scenic state parks, forests and trails. For these horses — and their human riders — Wisconsin's state parks offer the perfect place to experience the beauty of nature.

"With urban sprawl and rights to ride on farmland ever shrinking, there's a diminishing pool of places to ride," said Jean Warrior, an avid rider and president of the Friends Group at Governor Dodge State Park, a popular spot for equestrian activities. "County parks and state parks are

really, really valuable as places for people to go ride."

Ricki Koinig, chief information officer for the DNR and a horse owner and longtime rider, loves getting out on the trail at state parks.

"There's something unique about experiencing Wisconsin properties on the back of a horse," said Koinig, who houses her horse near Watertown. "Obviously, you're naturally higher off the ground than when you're walking or biking and so you see trees and birds and the whole landscape from a different perspective."

More than 700 miles of trails are

open to horses throughout the Wisconsin State Park System; a state trail pass is required for riders 16 and older. Several state properties also offer equestrian camping opportunities.

State parks feature something for every rider: flat and easy rails to trails areas; meandering scenic rides with picturesque meadows, lakes and rushing waterways; and challenging hilly trails with a remote and rugged feel.

"I have ridden in different states and even different countries around the world, and Wisconsin is by far the most beautiful," Koinig said.

Ashley Hoekstra, executive staff secretary for the DNR's South Central Region, keeps half a dozen horses at her family's farm in Delavan, where her husband also trains and breeds the animals. When it's time to ride, they often find themselves out on the trail at state parks.

"My heart is in the woods with my horse," she said. "There's just something about seeing the woods and the wildlife from the back of a horse."

GREAT WAY TO EXPLORE

For many riders, being on horseback allows them to see Wisconsin's state parks in ways they wouldn't otherwise be able to experience. They might not hike or bike much distance or handle some of the varied terrain found at state parks, but they can go there on horseback.

"Horses are our assistive devices," Warrior said. "Riding really is for all ages, from kids to seniors."

Along the way, riders take in the beautiful scenery, see plenty of wildlife and embrace the ability to get outdoors, said Sandy Rogers, a veteran rider from Milton. "We are seeing things we'd never see if not for those horses."

The horses, too, are happy to be out on the trail, riders agree.

"You can see and feel the horses enjoying the trails as well," Koinig said. "Their ears perk up, they take in all the new smells, they're taking in the scenery just like you. ... It's just as relaxing for them as it is for me."

Sue Press, from Eagle, said, "My horse sightsees." Both horse and



The new equestrian campground at Governor Dodge State Park features 20 sites with easy access to trails and is one of several state properties for camping with horses.





DAVID NEVALA

Lori Brose and Jack at Governor Dodge State Park.

way. Christianson often takes her grandchildren along on outings with her horses.

"The kids are working — cleaning up, getting things ready, keeping the horses fed and watered," she said.

"And not stuck to a phone!" her friend and fellow rider Penny Fanning of Janesville added.

Fanning and Christianson, like Press, Rogers and Warrior, are all active members of the Friends of Governor Dodge equestrian committee. As mostly retirees, many of them have found fun and camaraderie riding together and working to improve the park's equestrian experience, highlighted by the recent opening of the park's new equestrian campground.

Hoekstra credits Friends Groups for being "phenomenal" when it comes to helping with state park equestrian activities. Members of these nonprofit 501(c)(3) organizations have an interest in Wisconsin's natural resources and volunteer their time, services and support to enhance Wisconsin's state parks, forests, trails and recreation areas. They also provide direct support to individual properties.

"They're getting things cleaned up, taking care of trails," Hoekstra said, citing times when volunteers have swooped in after storms to help with debris removal. "They're absolutely great at coordinating all that."

Friends Groups also have websites and Facebook pages that often provide information on trail conditions, Hoekstra added, which is helpful for planning rides and camping trips.

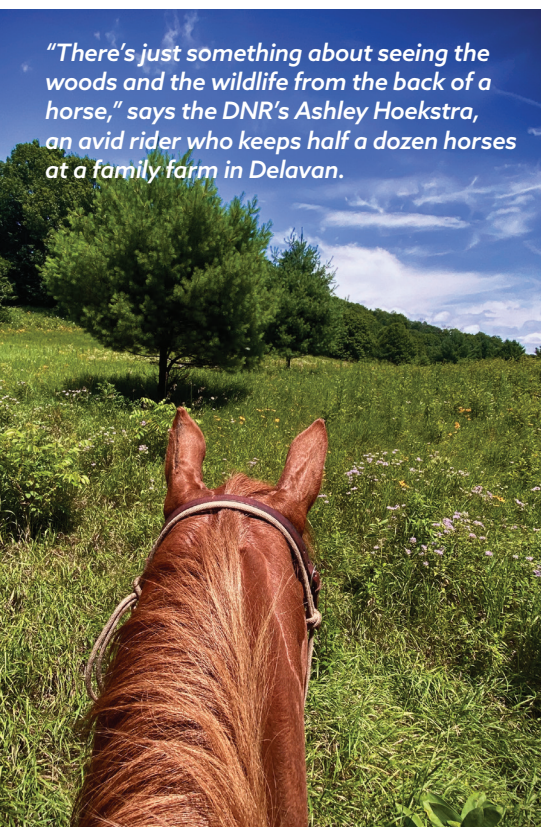
CAMPING AND DAY USE

Several state properties have equestrian campsites where visitors can stay with their horses, with each park offering a different experience.

The new Governor Dodge campground accommodates horses and riders with ample trailer parking, horse pens, highlines for hitching horses and even a group firepit for social gatherings after a day on the trails. The campground's opening earlier this year culminated years-long planning and fundraising efforts

"There's just something about seeing the woods and the wildlife from the back of a horse," says the DNR's Ashley Hoekstra, an avid rider who keeps half a dozen horses at a family farm in Delavan.

PHOTO COURTESY OF ASHLEY HOEKSTRA



rider feel more embedded in their environment out on the trail, she added. "It allows us to be part of nature."

Hoekstra touted the connection she has with her horse out in the woods that allows both horse and rider to see things from a different perspective.

"I've walked right by bedded-down deer before," she said. "They don't see me as a threat when I'm on my horse."

FAMILY AND FRIENDS

Horseback riding at state parks, forests and trails can be an excellent activity for families and friends to share.

Hoekstra said members of her family have attached a "buddy seat" to their saddles to take small children along on outings. "It's been quite a few generations of riders in my husband's family."

Younger riders can learn valuable lessons from being around horses, said Katee Christianson, from Ridge-

by the park's Friends Group and many partners.

With two beaches, a designated dog beach area, hiking, biking, fishing and more at Governor Dodge, camping with horses is just part of the fun for visitors at the park near Dodgeville, Fanning said. "You can be here all week and not run out of fun things to do."

Wildcat Mountain is another favorite for equestrian campers. The terrain has more hills, making it a nice challenge for riders, and the area around the park, located on the Kickapoo River in the Wisconsin Driftless Area, offers plenty to do when not riding.

Equestrian camping can be found at the northern and southern units of the Kettle Moraine State Forest. At the state forest's Southern Unit, the area's sandy soil helps trails stay drier for riding, even when it has rained, and there's a horse obstacle course for a change of pace, including tractor tires to jump over and L-shaped paths to practice backing through on horseback.

The state forest's Northern Unit has more out-and-back-type trails. Its equestrian campground includes covered stalls and a barn. Governor Knowles State Forest also has equestrian camping with more than 40 miles of trails open for riding, some with more of a remote feel.

"Camping is definitely where it's at for me," said Hoekstra, who likes the easier trails of the Kettle Moraine State Forest-Southern Unit as an early season spot after a long winter. "Once the horses get their jitters out, we hit the harder terrain at Wildcat Mountain."

While Hoekstra still tent camps, many equestrian campers have larger trailers that are split with space in back for hauling horses and a sleeping area for people in front. State park campgrounds accommodate trailers, and some like Governor Dodge have ADA-accessible sites available.

In addition to all the equestrian camping opportunities, several more state parks, trails, forests and recreation areas feature trails open for day use riding.



More than 700 miles of trails are open for horseback riding throughout the Wisconsin State Park System.

The Wild Rivers State Trail, for example, offers more than 100 miles of trail sections to explore on horseback in scenic Barron, Douglas and Washburn counties. The Mountain-Bay State Trail has nearly 50 miles open to horses between Rib Mountain and Green Bay. And Buffalo River State Trail, from Mondovi to Fairchild, allows horseback riding on more than 35 miles.

'TRAIL AMBASSADORS'

With equestrians enjoying so many state properties — even visitors with mules, which Warrior said are becoming more popular — riders often interact with other trail users. They may encounter families out hiking and biking, including some who may never have seen a horse in person before, Warrior said. It's rewarding to create positive interactions.

"Horse riders really are trail ambassadors and facilitate shared trail use," she said. "Sharing the trails really is a big deal."

There are a few things to keep in mind when encountering horses on the trail.

"We always say please talk, and the horse will realize you're a person," said longtime rider Sherri Torrison of Milton. It helps the horse feel comfortable and calm, especially if they see something strange like a "two-headed hiker."

Once the horse realizes it's just a person with a baby in a backpack carrier, they're fine saying hello, Torrison added.

Another tip is to keep dogs in control and move slowly on bikes when horses are near, Koinig said.

"Be respectful and understanding if a rider asks that you stop or stand at the side of the trail," she said. "They're trying to make sure you and the horses move past each other in the safest way possible."

Fanning said her riding experience has always been positive, with riders and other users showing mutual respect. "They understand how everyone gets along on the trail." 🐾

Andrea Zani is managing editor of Wisconsin Natural Resources magazine.

LEARN MORE



For details on exploring Wisconsin's state parks on horseback, including where to find trails and camping opportunities, scan the QR code or see dnr.wi.gov/tiny/1201.



Wisconsin's fall hunting seasons are here. Our deer season is the most well-known, but it's not the only one. Check out our other hunting opportunities and get ready to hit the woods this fall. Give a new season a try this year — you might even find a new favorite way to hunt.

LEARN MORE



Scan the QR code or see dnr.wi.gov/topic/hunt for complete details on hunting in Wisconsin. You'll find information on regulations, license and permit requirements and purchasing options, safety education, zone and subunit designations, finding a place to hunt and more. Hunting protected species such as badger, jackrabbit, moose and flying squirrel is prohibited; see Ch. NR 10.02. All hunting and trapping season dates are subject to change through rulemaking or a legislative process.

DEER

- **Archery and crossbow:** Sept. 17-Jan. 8 (until Jan. 31 in some metro subunits and counties with extended archery seasons)
- **Gun hunt for hunters with disabilities:** Oct. 1-9
- **Youth deer hunt:** Oct. 8-9
- **Gun deer hunt:** Nov. 19-27
- **Muzzleloader:** Nov. 28-Dec. 7
- **Four-day antlerless-only hunt:** Dec. 8-11 (no bucks may be harvested)
- **Antlerless-only holiday hunt:** Dec. 24-Jan. 1 (open only in select Farmland/Zone 2 counties; no bucks may be harvested)

MIGRATORY BIRDS

- **Early teal:** Sept. 1-9
- **Early goose:** Sept. 1-15
- **Rail (Virginia, Sora):** Sept. 1-Nov. 9
- **Snipe:** Sept. 1-Nov. 9
- **Common gallinule:** Sept. 1-Nov. 9
- **Mourning dove:** Sept. 1-Nov. 29
- **Youth waterfowl:** Sept. 17-18
- **Woodcock:** Sept. 24-Nov. 7
- **Northern duck zone:** Sept. 24-Nov. 22
- **Southern duck zone:** Oct. 1-9 and Oct. 15-Dec. 4
- **Open water duck zone:** Oct. 15-Dec. 13
- **Coot:** Same as wild duck zone you are hunting
- **Northern goose zone:** Sept. 16-Dec. 16
- **Southern goose zone:** Sept. 16-Oct. 9, Oct. 15-Dec. 4 and Dec. 18-Jan. 3
- **Mississippi River goose zone:** Oct. 1-9 and Oct. 15-Jan. 3

GAME BIRDS

- **Pheasant:** Oct. 15 (9 a.m.)-Jan. 8 (statewide)
- **Ruffed grouse:** Sept. 17-Jan. 8 (Zone A) and Oct. 15-Dec. 8 (Zone B)
- **Crow:** Sept. 17-Nov. 17 and Jan. 18-March 20, 2023
- **Hungarian partridge:** Oct. 15 (9 a.m.)-Jan. 8 (statewide, but closed in Clark, Marathon and Taylor counties)
- **Sharp-tailed grouse:** Season is under review; Oct. 15-Nov. 6 (only if season is open)
- **Bobwhite quail:** Oct. 15 (9 a.m.)-Dec. 7 (statewide)

TURKEY

- **Zones 1-5:** Sept. 17-Jan. 8
- **Zones 6-7:** Sept. 17-Nov. 18

SMALL GAME

- **Cottontail rabbit:** Sept. 17-Feb. 28 (northern zone) and Oct. 15 (9 a.m.)-Feb. 28 (southern zone); hunting is allowed year-round in Milwaukee County
- **Squirrels (gray and fox):** Sept. 17-Feb. 28 (statewide)

BEAR

Zones A, B, D — where dogs are permitted

- **Sept. 7-13:** (with aid of bait and with all other legal methods not using dogs)
- **Sept. 14-Oct. 4:** (with aid of bait, with aid of dogs and with all other legal methods)
- **Oct. 5-11:** (with aid of dogs only)

Zones C, E, F — where dogs are not permitted

- **Sept. 7-Oct. 11:** (with aid of bait and with all other legal methods not using dogs)

Note: The application deadline for bear permits is always Dec. 10, the year prior to the season.

PFAS WISCONSIN

NEW ADMINISTRATIVE RULES SET REGULATORY STANDARDS

DNR STAFF

The Wisconsin DNR is committed to protecting the great people of Wisconsin and protecting the state's incredible natural resources. Part of our commitment includes ensuring Wisconsinites have access to safe drinking water.

One way the department does that is by addressing PFAS contamination in the environment.

PFAS (perfluoroalkyl and polyfluoroalkyl substances) are a group of human-made chemicals used for decades in numerous products. PFAS are found in non-stick cookware, fast food wrappers, stain-resistant sprays and certain types of firefighting foam. These contaminants have made their way into the environment, and humans and animals can develop negative health impacts when exposed to them.

Although PFAS do not occur naturally, they are widespread in the environment, do not easily break down, and are found in people, wildlife and fish around the globe. According to the U.S. Environmental Protection Agency, certain PFAS substances pose several risks to human

health, including developmental problems in fetuses and infants, certain types of cancer, reduced antibody response and kidney disease.

The DNR is working on several initiatives related to PFAS and water quality across the state, including municipal wastewater treatment plant screening, municipal voluntary drinking water sampling, and surface water and fish tissue sampling.

New administrative rules for PFAS substances went into effect on Aug. 1. Two rules set regulatory standards for PFAS in drinking water and surface water, and the third rule sets requirements for using PFAS-containing firefighting foam. The rules will provide a better understanding of where PFAS are located in Wisconsin, require actions to correct contamination when it is found and reduce additional contamination.

If the PFAS compounds are found at levels higher than allowed by the standards in either drinking water or regulated discharges to surface water, steps to reduce the contamination will be required.

The DNR also is working with the firefighting community throughout Wisconsin to collect and safely dispose of PFAS-containing firefighting foam. The goal is to protect the environment from contamination while reducing exposure to firefighters.

Implementing these rules addresses priority actions identified by the Wisconsin PFAS Action Council in the Wisconsin PFAS Action Plan. WisPAC is comprised of representatives from nearly 20 state agencies working to address public health and environmental concerns regarding certain PFAS substances.

The agency also works closely with the state Department of Health Services to issue PFAS consumption advisories as necessary, including for fish and deer.

In addition, the Wisconsin PFAS Action Council has developed statewide initiatives to address growing public health and environmental concerns regarding PFAS. WisPAC was created by the DNR as part of Gov. Tony Evers' Executive Order #40, signed in August 2019 during the Year of Clean Drinking Water.



Scan the QR code or visit dnr.wi.gov/topic/PFAS

What are PFAS?

PFAS are a group of human-made chemicals used for decades in numerous products.

Here are some products that may contain PFAS.



stain-resistant carpet and fabric



nonstick cookware



firefighting foam



fast food packaging

What is Wisconsin doing about it?



The state is establishing PFAS health standards for drinking water, groundwater and surface water.

soil and water testing



researching fish and wildlife



state collaboration



action council and advisory groups

Why should I care?

PFAS persist in the environment and the human body for long periods of time. Recent findings indicate that exposure to certain PFAS may have harmful health effects in people.



certain types of cancers

thyroid and heart issues



developmental delays



infertility and low birth weight

What can you do?



Test your water.
dnr.wi.gov/u/?q=177



Learn more about PFAS health risks.
dnr.wi.gov/u/?q=175



Check state fish advisories.
dnr.wi.gov/u/?q=176



RACE TO SAVE HARDWOOD SWAMPS



BILL MCNEE

**VITAL NORTHERN
HABITATS FACE
LOOMING THREATS FROM
EMERALD ASH BORER,
CLIMATE CHANGE**

ANNA MARIE ZORN

The slender, segmented and winged insect body of the emerald ash borer is, objectively, gorgeous.

Light gleams off its back to reflect, as the name suggests, emerald shimmers along with amber, gold and sapphire. At about a half-inch long, it's no bigger than two small erasers plucked from a pencil and stacked end to end.

But the beautiful sheen and tiny size of the emerald ash borer bely the damage it has inflicted over large swaths of the eastern United States. Making its way west since 2002, the invasive insect has destroyed entire forests and urban landscapes along the way, obliterating hundreds of millions of ash trees.

With the emerald ash borer now in Wisconsin, expert foresters and ecologists are rushing to batten down the hatches in hopes that one particular tree species might not fall entirely victim to the insect's deadly appetite: the black ash.

If black ash succumbs to the emerald ash borer, with it goes an entire unique and vital ecosystem of the state's northern hardwood swamps, which prevent flooding, provide habitat for many species and sequester potentially climate-altering amounts of greenhouse gases.

"It's not a matter of if, it's when the emerald ash borer moves to northern Wisconsin," said Christopher Deegan, state plant health director for the U.S. Department of Agriculture's Animal and Plant Health Inspection Service. "This is the worst insect I've ever had to deal with."

Deegan and many others aren't taking the attack lying down. Efforts are in place to fight back against the

emerald ash borer directly through biocontrol and indirectly through conservation and management of the forested swamps.

If successful, these tools could be used to yield even greater results in other areas of the country where the emerald ash borer has not yet reached. "All eyes are on Wisconsin," Deegan said.



JOSHUA MAYER

Swamp Lake State Natural Area

WHAT TRANSPIRES HERE

Wisconsin's forested swamps are home to myriad biota that thrive in the wet, canopied shade of the northern region.

"Many species, including some rare plants, rely on the forested swamps to survive," said Colleen Matula, a DNR silviculturist in Ashland. "Some of those swamps are made up entirely of black ash."

The game plan is to keep these ar-

eas forested, and with good reason. If the swamps lose the ash trees, they essentially lose what Matula terms their "water pump."

Swamps are a specific type of wetland where trees have learned to adapt to constant or near-constant wet conditions. Matula joked that black ash don't mind "having their feet wet."

This flexible yet tough tree thrives in the swampy regions of the northern Great Lakes. Arguably, its most important job every year is the up-take of water.

"Each tree, when fully leafed out, pumps 60 liters of water per day during a typical growing season," Matula said.

The trees soak up the water through their roots with specialized tissue known as xylem and transpire it through their leaves. "It's amazing what trees can do," she added.

Black ash represents about 9% of the total tree density in Wisconsin, which translates to amazing amounts of water pumped from Wisconsin's northern swamps. If the emerald ash borer wipes out 99% of the ash trees in the state, as it has in Michigan, there's no doubt these places will "swamp out," as Matula termed it.

They'll turn into marshes, which are shrubbier habitats that shade fewer of the sun's rays and transpire less water. If this occurs, the water table will rise, invasive plant species will likely take over, and the entire ecosystem of these swamps will be destroyed.

BIOCONTROL WITH WASPS

Forestry experts have seen this coming and are doing all they can to stop it. Deegan and his USDA colleague Ellen Natzke, in plant protection and quarantine, work on



BILL MCNEE



BILL MCNEE

Emerald ash borer larvae cause damage as seen in top photo.



COLLEEN MATULA

Swamp white oak is being planted as a replacement for black ash.

a biocontrol program that has released parasitic wasps in hopes of controlling the emerald ash borer population.

While this might sound like an ill-conceived Frankenstein plan, these wasps aren't the arthropods of summer picnic nightmares. Some are no bigger than the head of a pin, and all have been studied extensively before being released.

"They under-

go rigorous and lengthy testing for at least five years to determine host specificity," said Natzke, a plant health safeguarding specialist.

The hope is that once the wasps are released into designated areas, they will find and attack emerald ash borer larvae, either by puncturing a tree's bark to attack larvae underneath or by laying their eggs inside emerald ash borer eggs. When the wasp egg hatches, its first meal is emerald ash borer.

Some wasps can attack up to 130 emerald ash borers each. "Studies have shown that wasps are killing 20-80% of emerald ash borer in ash trees up to 8 inches in diameter," Natzke said.

This is good news for ash regeneration, if not great news for mature ash trees, which typically are larger than that.

Because it's not cost-effective to release these wasps everywhere, there is a rigorous process to determine site eligibility, including showing signs of emerald ash borer. Unfortunately, this means the release efforts often are playing catch-up to infestations.

It's not actually adult emerald ash borer that do the most damage to ash trees, beyond chewing on a few leaves and creating an exit hole in the ash bark.

"It's the larva that causes the problem," said Todd Ernster, superintendent of forestry and landscape operations for the city of Stevens Point. "It hatches and feeds on the plumbing of the tree."

Yet it takes time to indicate a problem. The female emerald ash borer lays her eggs on top of a tree's bark, then the larvae hatch and burrow into the tree. They spend a good year or two meandering about, munching unseen tunnels on the tissue under the bark.

Much like that annoying restaurant straw with the all-but-invisible hole that makes it impossible to drink through, these tunnels inhibit nutrient and water uptake for the ash.

Over time, the larvae create S-shaped tunnels that eventually girdle the tree or remove the bark around the entire circumference, Ernster said. These visible markers of emerald ash borer presence don't show up until well after the emerald ash borer is established and the damage is done.

So, while there is hope for wasp release programs, black ash remain likely to be killed off. And that leaves researchers with more questions — especially in the face of impending climate change.

DIVERSIFY TO SURVIVE

Climate change in northern Wisconsin probably means milder winters as the state gets warmer and wetter. Black ash helps to stymie that change with its ability to sequester carbon. Losing black ash removes that line of defense.

Dwindling canopy in the northern hardwood swamps also impacts the ecology of these areas, which are known to be nutrient-rich, thanks in part to the black ash leaf litter, which is high in nitrogen, phosphorus and potassium, the major ingredients in most fertilizers.

In addition, black ash trees are an important resource for animals in

the swamps. Deer feed on younger ash trees; birds and mammals nest in older, larger trees; and dead tree snags and logs provide shelter and material for microbial decomposition. Without trees like ash to provide these resources, the entire landscape shifts.

Rather than work to save black ash, however, researchers like Matula and Dustin Bronson, a U.S. Forest Service research plant physiologist based in Rhinelander, are focused on diversification. That means maintaining a tree canopy with whatever species will thrive.

"With climate change happening, we need to experiment with different tree species that will be able to withstand swamp conditions," Matula said.

Work includes understory planting efforts and testing different tree species to see how they'll fare in the swampy, wet areas of northern Wisconsin. Beyond emerald ash borer, species diversity in the swamps decreases susceptibility to climate change or other unforeseen challenges.

"You really don't want more than 5% of one type of tree in a given area," Ernster said. "We didn't learn our lesson with the Dutch elm, and we overplanted ash trees."

He's referring to a fungus that came through in the 1950s and '60s, wiping out Wisconsin's American elm population. To this day, American elm have not recovered.

"It does sound a little gloom-and-doom for the black ash," Matula said. "But, if we can maintain these areas as forests, we'll protect the hydrology of those swamps and address some of the impacts of climate change."

Basically, if the swamps can be saved, it's still a win, even if it means the end of black ash. But Matula acknowledged the need to act fast.

"We cannot replace the canopy faster than emerald ash borer will destroy it," Matula said. ☺

Anna Marie Zorn has background as a science writer and is communications manager for the National Wildlife Federation's Great Lakes Regional Center.

Woodcock WANDERINGS

WELL-TRAINED DOG CAN ADD SPECIAL ELEMENT TO THE HUNT

BRILYN BRECKA

The floppy-eared springer spaniel in the back of the car wiggled excitedly and whined loudly during the ride through a parcel of thick, mixed hardwoods on a sunny day in early spring.

The eager dog's owner, Bill Koepke, was taking him on a "spring training" run through the George W. Mead State Wildlife Area in central Wisconsin.

"He knows where he is now," Koepke said of his black and white spaniel, Jango. "He knows there's woodcock in there."

After a left turn into a parking lot marked with dog training area signs, the whining got louder.

Outside the car, a rattling cacophony announced a group of sandhill cranes standing in the nearby field of low grass and swamp. While temperatures had finally reached 50 degrees, a crispness remained in the air and the ground was wet from snowmelt.

On command, Jango bolted from the vehicle, ready to explore. Built to work hard and play hard, he crashed through the woods, nose to the ground, sniffing for any birds, including woodcock, that may be hiding nearby.

"Like most birds, woodcock really like edges," said Koepke, a strength and fitness coach who spends most of his free time outdoors.

Each year, American woodcock return to Wisconsin in early April to begin establishing territories known as singing grounds. They can travel 20-50 miles per night during their extensive migration.

Come fall, woodcock — also referred to as timberdoodle, night partridge or mudbat — is a popular upland game bird species among hunters and their dogs.

UNIQUE SKILL SETS

Training dogs to hunt these birds is no easy feat. The ability is bred into many dogs, but training a dog to respond to commands takes time.

When Jango was a puppy, Koepke walked with him in zigzag patterns to search for hidden training toys and practice whistle commands. Still, Jango is very independent and naturally driven.

"He's got a pretty good nose and eye for where birds will be," Koepke said. "He's got a pretty good idea of what he's doing. I'm just here to carry his water."

Jango is a jack of all trades. He hunts waterfowl, small mammals and his specialty — upland game birds. Koepke views hunting dogs such as Jango as more than just a tool.

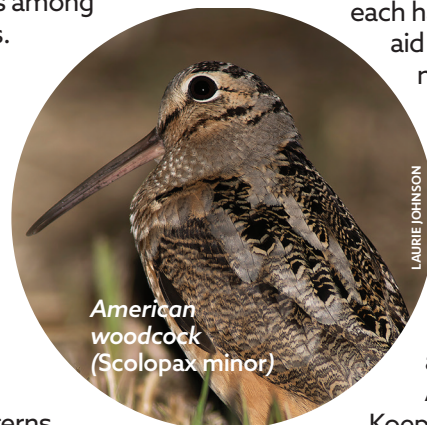
"I feel like I'm hunting with him, not using him as a tool, per se. We

each have skill sets that aid the other," he said,

noting the long-standing traditions of hunting with this particular breed. "Springers are some of the oldest hunting dog breeds, back before we had firearms."

As Jango worked,

Koepke eventually moved into a thick stand of woods dominated by tag alder, aspen and hopefully woodcock. It was a walk he had done before, with each



American
woodcock
(Scolopax minor)



Springer spaniels such as Jango have long been associated with hunting.

step revealing a story from hunts past.

"Right over there was probably the biggest buck I've ever seen in my life," he said. "Jango flushed a woodcock, and I shot, and directly under my barrel, up stands this ginormous buck.

"As he stands up, his antlers are moving the aspen around him. We make eye contact, and he takes off, running right over Jango. And Jango the whole time is just looking for the bird and has no idea. I was standing 15 yards from this deer."

During one of these stories, Jango began using a much tighter search pattern, hugging the ground and managing sharp, sudden turns — a sure sign he was tracking something. Then out of nowhere, a small explosion of wings elevated off the ground and quickly maneuvered away from the nose of the dog.

"Oh, there it goes! First one, good work!" Koepke encouraged Jango as the dog flushed the first woodcock of the day.

ENDURANCE TRAINING

Bird dogs are a mix of ground and air sniffers. Because of the nature of birds, dogs will catch a scent from the wind and work that cone on the ground.

In this case, Jango worked to get downwind of the bird and track it close enough to flush it. If Koepke had been hunting, Jango would have flushed the woodcock perfectly for a shot opportunity.

After Jango made sure no more woodcock remained in the area, we continued to a new part of the swamp. For the next half-hour or so, no birds were discovered, but Jango continued to hunt with an impressive endurance.

Koepke compared the dog's training schedule to athletics and fitness regimens for humans.

"The amount of nerdiness I take to programing for strength and conditioning for people, I also take to him," he said. "When he and I are in the woods doing this stuff, all of it is focused and communication-based — checking in, eye contact, whistles."

Looping around to another area in search of woodcocks, Koepke



Success is sweet for Bill Koepke and Jango during last fall's woodcock hunting season.

shared a little background on his love of hunting dogs. He grew up with beagles, hunting snowshoe hare and cottontail rabbits, and when he graduated college, he got an itch to get a hunting dog of his own.

"There's something about going out in the woods with Jango. It adds layers to it," Koepke said. "All these little things we would miss, he can see where animals have traveled, scat you wouldn't see."

Eventually, Jango managed to flush his second and last woodcock of the day.

"I just like every single bird flush," Koepke said. "Every time he looks at me and he's all excited or he wiggles, I love it all. I just like being outside. And when you can share the experience with another creature, you can't not be happy." 🐾

Brilyn Brecka is a recent graduate of UW-Stevens Point, where she majored in wildlife ecology and management.

WOODCOCK HUNTING



Wisconsin's woodcock hunting season is Sept. 24-Nov. 7 this year, with a daily bag

limit of three birds. A small game license is required. As with waterfowl and other migratory game birds, hunters who plan to pursue woodcock must be registered annually with the U.S. Fish and Wildlife Service's Harvest Information Program. Certification is free and available when purchasing a hunting license through the Go Wild online system or anywhere licenses are sold. For more on hunting woodcock and other species in Wisconsin, scan the QR code or visit dnr.wi.gov/topic/hunt.

This aerial view of the western half of the Lizard Mound site offers a good view of the park's trails and effigy mound features.

PRECIOUS PARCEL

LIZARD MOUND
TO BECOME
WISCONSIN'S
NEWEST
STATE PARK

LOUISE RED CORN

When he was a child, Casey Brown spent much time around the ancient earthen mounds his forebears built throughout Wisconsin.

His father was the head of what was then the Winnebago Tribe's Department of Natural Resources during what Brown, the tribal spokesman as well as a comedian, calls "The Casino Boom Era" of the 1990s,

when the tribe reorganized and "the People of the Stinky Water became the People of the Loud Voice, the Ho-Chunk."

Ritchie Brown was a leader devoted to preserving burial, effigy and other mounds throughout Wisconsin and took his son along as he traversed the state cataloging and sometimes acquiring mounds. Along the way,

he passed on his reverence for the sacred sites.

Among effigy mounds, which are peculiar to Wisconsin and the lands adjacent, the 28 at Lizard Mound State Park are special, said the younger Brown. They are of varying sizes, they were constructed over the course of hundreds of years, they include the unusual figures of two birds looking at

each other, and they are not near any water source that still exists.

The huge spread-eagled “lizard” is aligned with the summer and winter solstices, he added.

“When you talk to an archaeologist or anyone in higher learning, they always talk about different eras: the Mound Builders Era, the Late Woodland Era,” Brown said. “That’s not how the Ho-Chunk look at it.

“For us, these mounds aren’t just from one moment in time. They’re an evolving thing, a continuum. We’re just a drop on a timeline.”

Lizard Mound, less than an hour northwest of Milwaukee, became a state park in 1950 but was deeded to Washington County in 1986. It reentered the folds of the Wisconsin State Park System last year, and the state Department of Natural Resources, working with the Ho-Chunk, is dedicated to care and preservation of the site — particularly in confronting invasive plants.

‘A LIVING MEMORIAL’

From on high, especially using aerial mapping technology known as lidar (light detection and ranging), the effigy mounds at Lizard Mound are obvious: a head-to-head pair of giant panther-like creatures with long tails, the lizard for which the park is named, two birds facing off, and several conical and linear mounds.

On the ground, the effigy mounds, laboriously formed one basketful of soil at a time between about 750 and 1200 A.D., are less distinct as they stretch out up to 250 feet. But even after more than a thousand years, they still evoke ancient spirituality that attracts Native Americans and others to leave offerings such as corn, tobacco or a red ribbon.

“It’s an incredible site on par with the Great Pyramids and the Colosseum, but it’s here in Wisconsin,” said Amy Rosebrough, a staff archaeologist at the Wisconsin His-

torical Society and leading expert on effigy mounds.

“When people visit, they’re likely to spot an offering left on a mound; it’s a living memorial where Native people still come to commune with their ancestors.”

Brown agreed. “There are a lot of institutions we revere in the United States, but the mounds have been around much longer,” he said.

He recalled his father often counseling journalists to stop reading about the mounds and instead to visit them. “Just go and take it in,” Brown recalled his father saying. “It’s for you, to see what’s in the sky, what’s on the ground. The actual sense of place is so important.”

According to Richard Kubicek, an archaeologist with the DNR, individuals interred in effigy mounds appear to have been treated differently than those buried in conical or geometric mounds, which are often found at the same site.

While effigy mounds typically are burial sites for one or two people — usually buried near where the heart of the animal would be — the geometric mounds often contain groups of individuals, perhaps “a single kin group or individuals who died during a certain period,” Kubicek said.

SAFEGUARDING THE SITE

The Ho-Chunk Nation’s historic preservation office, led by Bill Quackenbush, is heavily involved in advising the DNR on how to care for the mounds and safeguard their future, said Samantha Lindquist, the DNR’s superintendent over the region.

“If the mounds were covered in non-woody vegetation such as native grasses or sedge, that would be the ideal way to preserve them,” Lindquist said.

So far, the DNR and Ho-Chunk have identified 180 hazardous or diseased trees that need to be carefully removed from the property.

Other plans include redirecting walking paths that hug too close to the mounds, leading to erosion. One path crosses inappropriately between the heads of the two panthers, or water spirits, who face each other.

Brown said the Ho-Chunk Nation appreciates the state’s attention to the mounds. In days of yore, one mound had a Plexiglas panel so folks could observe the remains within, and settlers often plowed mounds under for agricultural purposes.

The past affronts to the mounds mirrored affronts to the Ho-Chunk people, he noted. “We have oral stories that take us back to the Ice Age. That’s still our story. Despite people trying to get rid of the Ho-Chunk, the Ho-Chunk kept walking back.

“The memory of the oppressed is always longer than the memory of the oppressor.” 🍷

Louise Red Corn is an award-winning journalist and current staff writer for the Osage News in Pawhuska, Oklahoma. Red Corn has reported for the Detroit Free Press, the Lexington Herald-Leader, the Tulsa World and is the former publisher of The Bigheart Times.

ABOUT LIZARD MOUND



Lizard Mound State Park, 2121 County Highway A in West Bend, is

home to 28 effigy, conical and linear mounds. Hours are 6 a.m.-11 p.m. The 22-acre park is not staffed. It has a 1-mile walking trail and portable toilet, with plans to replace it with a vault toilet. For park information, scan the QR code, call 262-626-2116 or check dnr.wi.gov/tiny/1206.

READY FOR THE HUNT

GET SET FOR A SAFE AND SUCCESSFUL DEER SEASON

ANDREA ZANI

Starting with the archery and cross-bow season in mid-September, there are plenty of opportunities to enjoy deer hunting in Wisconsin. The main event — the nine-day gun-deer season — runs from Nov. 19-27 this year.

The DNR reminds gun-deer hunters and outdoor enthusiasts to practice firearm safety this hunting season. Hunters and public land users may be sharing fields or forests and need to be aware and alert.

While hunters should follow all safety rules, non-hunters enjoying public lands should consider wearing blaze orange during the fall deer hunting season to increase their visibility.

Beyond wardrobe choices, the DNR reminds hunters afield to practice the four rules of firearm safety, known as TAB-K. Any hunting incident can be attributed to a violation of one or more of these rules.

T — Treat every firearm as if it is loaded.

A — Always point the muzzle in a safe direction, where the bullet will

travel harmlessly in case of an unwanted discharge.

B — Be certain of your target, what's before and what's beyond it. Know that a safe backstop for a bullet is present before shooting to be sure no one gets hurt. Not knowing your target is the most frequently broken rule of shooting safety.

K — Keep your finger outside the trigger guard until ready to shoot to avoid an unwanted discharge.

A safe hunt also requires having your gear in proper working order. Firearms should be cleaned and closely inspected for any signs of mechanical wear that could cause problems in the field.

Also inspect clothing and other equipment for signs of wear and tear and repair or replace anything that might compromise safety. Blaze orange clothing that has faded over time, a jacket that doesn't fit right or a scope that isn't adjusted correctly can compromise your safety and the safety of others.

Tree stand safety is another consideration for many deer hunters. Wood can rot, steps may snap or railings fail, and climbers can slip and fall.

Always use a fall-restraint device every time you hunt above the ground, regardless of whether you hunt with a ladder stand, tower stand or hang-on stand.

A little preparation goes a long way to help ensure a safe and successful hunt. 🦌

Andrea Zani is managing editor of Wisconsin Natural Resources magazine.

LEARN MORE



Scan the QR code or check dnr.wi.gov/tiny/104 for everything

you need to know about deer hunting including complete season dates and regulations, information on chronic wasting disease, deer management details and more tips on preparing for the hunt. Buy a hunting license at gowild.wi.gov.

MAKE SAFETY YOUR #1 TARGET.



Treat every
firearm as if it
is loaded.



Be certain of your
target and what's
beyond it.



Always point the muzzle
in a safe direction.



Keep your finger outside
the trigger guard until
ready to shoot.

CULINARY SPOTLIGHT

PHOTOS BY AMY LAWSON/AMY LYNN CREATIVE



Elena Terry, founder and executive chef of Wild Bearies.

THE **ROOT** OF CONNECTION

WILD BEARIES BUILDS COMMUNITY THROUGH NURTURE AND NOURISHMENT



Using ancestral foods is an important part of Elena Terry's mission of education and outreach.

JOSHUA MORRIS

Chef Elena Terry, a member of the Ho-Chunk Nation, grew up spending summers in Chicago during the '90s, eating foods that came from gardening with her father.

Today, the Wisconsin Dells-based chef is the founder and executive chef for Wild Bearies, a nonprofit seed-to-table catering company connecting communities through Indigenous cuisine.

The seeds planted from those moments gardening with her father, paired with her Indigenous roots, have sprouted Terry's drive to feed her community using ancestral foods.

"When you say ancestral foods, you can't help but acknowledge that they are living beings," Terry said. "This food is just waiting for you to care for it to provide for you. And that's kind

of like humans, we are connected that deeply."

Terry's work is purposeful and carries the same duality of benefits of connection and sustenance she received planting with her father or spending time with her grandmother.

EDUCATION AND OUTREACH

The mission of Wild Bearies is to provide education and community outreach through nurture and nourishment. Their goal is to build stronger tribal communities through food and mentorship.

"We provide catering to spaces we have partnerships with, like the UW school system," Terry said. "We do work with students, and host community talks and presentations. We also do tribal outreach, where we go and help cater a community meal or an educational space to feed people and talk about what these connections to food meant to us historically."

During these community gatherings, Terry and Wild Bearies volunteers foster conversations where they reevaluate food systems and help revolutionize their approach to food.

"When discussing our food systems and interacting with the land, we must address clean water and air," Terry said. "A good example of this is that our plants are affected by what they're able to breathe. We have invasive species that are harming plants and penetrating our ecosystem."

"I think everything starts with water. We're all connected to it and rely on it. We discuss watersheds and how those chemicals significantly affect our clean water sources, and even the water table."

Since opening during the pandemic, Wild Bearies has expanded its partnerships from Wisconsin Dells to Milwaukee.

INSPIRED BY FAMILY

As a trained chef, Terry takes pride in pairing the cooking skills she learned from her grandmother and her culinary school training.

In addition to Wild Bearies, Terry is the Food and Culinary Program coordinator for the Native American Food Sovereignty Alliance. She also has partnerships with the Intertribal Agriculture Council, Meskwaki Food Sovereignty Initiative and the UW-Madison Horticulture Department.

"My grandmother taught us how to cook, and I always admired watching her. I would sit outside the open fire and cook with her," Terry said. "I am a wild game specialist and butcher because of the knowledge given to me by my family."

On her father's side of the family, her grandfather instilled the power of education, which inspired Terry to attend culinary school.

"At a later age, I was able to get in a kitchen and be respected as a female," Terry said. "I invested in myself and got better at my craft as a single mom by going to culinary school. It was a great decision." 🍷

Joshua Morris is a former public information officer for the DNR'S Office of Communications.



Elena Terry's discussions of food go well beyond simple recipes, addressing clean water, clean air and healthy ecosystems. "Our plants are affected by what they're able to breathe," she says.

STUFFED SQUASH

ELENA TERRY

(makes 4 servings)

INGREDIENTS

- 1 cup cooked wild rice
- 2 delicata squash (or any other similar squash such as acorn, butternut, honeynut, etc.)
- 1½ tablespoons olive oil
- Salt and pepper, to taste
- 1 small onion, diced
- 1 clove garlic, minced
- 2 tablespoons dried cranberries, chopped
- 1 pound ground turkey
- ½ teaspoon sage, chiffonade
- 1 tablespoon pepita or sunflower seeds, chopped
- 1 tablespoon maple syrup

DIRECTIONS

1. Cook wild rice according to package instructions. Optional: Substitute chicken or turkey stock in place of water for additional flavor.
2. Heat oven to 350 F.
3. Slice the squash in half lengthwise and scoop out the seeds using a spoon. Discard seeds or reserve to roast and use as a salad topping or snack.
4. Place squash on baking sheet and brush flesh side with olive oil. Lightly season with salt and pepper.
5. Bake for about 30 minutes with flesh side down. Remove from oven and flip using a fork. Bake for 5-15 more minutes or until slightly caramelized and fork tender.
6. While the squash bakes, dice onion, mince garlic and chop cranberries.
7. In a pan, heat ½ tablespoon of olive oil. Add ground turkey and cook until browned. Add onion and garlic.

Sautee until onion is translucent and turkey is cooked through. Season with salt and pepper to taste.

8. Remove turkey mixture from heat. Add cranberries, sage and wild rice.

9. Remove squash from oven and allow to cool until comfortable to touch.

10. With a spoon, gently remove the squash pulp, keeping the shells to refill. Add squash to turkey mixture and gently combine. Season with salt and pepper to taste.

11. Refill squash shells and place back in the oven until heated through, about 20 minutes.

12. Place pepita or sunflower seeds in a small pan over medium low heat. Stir continuously until slightly roasted.

13. Top squash with a sprinkle of toasted seeds and a light drizzle of maple syrup.

Rethink FALL CLEANUP

CONSIDER THESE SEVEN NATURE-FRIENDLY TIPS

KATHRYN A. KAHLER

It's fall and time to clean out gutters, drain garden hoses, check the furnace vent, rake leaves and wash windows.

Would it take too much to convince you that some of those fall chores you're accustomed to tackling this time of year are better left undone — or done differently — for the sake of our friends in nature? Especially if you could save time and money in the process?

Before digging out last year's list, check out these suggestions instead.

✓ GREEN THAT GRASS

Lawns need nitrogen and other nutrients, and fall is a great time to fertilize. Instead of using chemical fertilizers, ditch the bag and leave grass clippings when you mow. According to the Soil Science Society of America, doing this can account for as much as 50% of the nitrogen your grass needs, so it reduces fertilizer use and saves money.

As a general rule throughout the year, set your mower blade higher. Longer grass, 3 to 5 inches, shades

the soil, preserves moisture, promotes deeper roots and prevents weeds.

If you have dense, clay soil, fall is a good time to aerate your lawn. There are lots of manual aerating tools available that can save you money and even enhance your exercise routine. Check out local tool rental outlets.

Consider leaving bare patches of soil undisturbed to create habitat for pollinators like ground-nesting bees.



Fall is a good time to clean bird feeders, stock up on seed and switch over to a heated winter water source.

Be conservative with pesticides — use only when necessary, and only as directed.

If you see some dandelions lingering, leave them alone. They're an important early food source for the rusty patched bumble bee and other pollinators before other flowers bloom next spring.

✓ PLANT NATIVES

It's never too early to start planning for spring. Reduce your lawn-print — and need for mowing — and take time this fall to map out some new flower beds and unmanicured lawn spaces.

Trees, shrubs and plants native to Wisconsin are naturally acclimated to our climate and require less care and maintenance than nonnatives, saving you time and money.

Plant a variety of native flowers that bloom from early spring through fall, providing a food source for pollinators and birds. The DNR's Natural Heritage Conservation program has several publications online to help you get started: dnr.wi.gov/tiny/1231.

ALFRED VIOLA/BUGWOOD.ORG

Native deciduous trees like oaks, cherries, willows and birches, and conifers like pines and cedars will ensure a year-round food source for birds, along with shrubs like viburnums, dogwoods and serviceberry.

Plants like columbine, milkweed, cardinal flower, bee balm, aster, goldenrod, maidenhair fern, little blue-stem and Indiangrass are just a few of the many natives that will provide food and habitat for birds and pollinators in all the seasons.

✓ LEAVE THE LEAVES

Leaves provide natural winter protection for butterflies, moths, bumble bees and a variety of other beneficial critters like snails, beetles, millipedes and spiders.

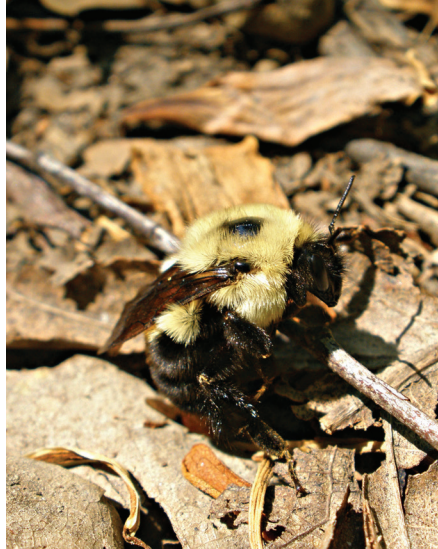
If you have an abundance of leaves, rake them to the edges of your property or around trees, shrubs, vegetables and flower beds to suppress weeds and insulate roots from the cold. Put the surplus in your compost pile or donate to neighbors who compost.

Urban homeowners should take care to keep leaves out of streets and gutters. Studies show that, on average, 43% of the annual phosphorous load in urban stormwater is discharged in the fall, largely from leaf accumulation on streets. Phosphorous is a key element in the eutrophication of lakes and streams.

Don't burn leaves and brush; leaf burning is a fire hazard, a nuisance to neighbors and pollutes the air. Even if it's legal in your community, try starting a compost bin instead. Check out the DNR's website for tips on home composting: dnr.wi.gov/tiny/1056.

Heed a word of caution about jumping worms in your compost. These invasive worms produce a grainy, coffee-ground like soil and disrupt the ecological balance of forests.

Their tiny cocoons are easily spread in soil and mulch, so keep an eye out for worms while doing fall cleanup. Check out DNR's jumping worm page for information about how to remove them from your yard: dnr.wi.gov/tiny/129.



Leaves left around trees and shrubs provide nesting habitat for overwintering pollinators like this two-spotted bumble bee.

✓ STEM THAT URGE TO CLEAN

You may have been taught that once perennials are done blooming in the fall, they should be cut back to the ground and flower beds cleaned up to be spic and span. Rather than clearing away remnants of perennials, leave them standing over winter.

Late-flowering plants provide seeds for birds, and hollow-stemmed plants provide homes for some bee species that hibernate in them over winter.

For rain gardens, fall is a good time to ensure that downspouts and conduits are clear of leaves to allow for proper flow.

✓ MAKE SOME BRUSH PILES

Mixed piles of brush, leaves and other plant material provide wonderful habitat for small animals, birds and insects, including bumble bees.

If you think they're an eyesore, consider hiding one behind a fence or out of sight in the backyard. Or release your artistic creativity and use them as focal points by adding unusually shaped logs, native plants or bee boxes.

For more ideas, see the Xerces Society's ideas for "Nesting and Overwintering Habitat for Pollinators and Other Beneficial Insects": dnr.wi.gov/tiny/1236.

✓ FEED THE BIRDS

Fall is prime time for giving your bird feeders some extra care. Give them a good cleaning with soapy water and a 10% bleach solution and continue every two weeks throughout the feeding season.

Place cone- or dome-shaped baffles above hanging feeders or below pole-mounted feeders to deter squirrels. Place feeders closer than 3 feet or beyond 30 feet from windows to minimize collisions. Stock up on bird seed, like black oil sunflower seed, which is high in fat and attracts the most species.

Fall is the time to transition from a summer water fountain to a heated winter water source. Unlike summer, you should offer deep water for drinking and not shallow water for bathing.

✓ MAINTAIN BAT HOUSES

This is a chore for late fall, as you want to be sure your bat houses are no longer occupied. Shine a light up into the box so you know no bats are present, and be sure to wear gloves and long sleeves. Here are some other tips:

- Use a stick or shim to knock out wasp nests and any buildup of guano (accumulated excrement).
- Check for gaps or holes and seal with caulk.
- If you find that woodpeckers have made holes in your bat houses, wrap tin around the top of the house.
- Replace warped baffles or deteriorating roof.
- If screening was used inside the bat house and is deteriorating, remove completely, including staples.
- Inspect the outside of the box and add a coat of stain or paint if it is fading.
- Inspect poles for rot, especially at the bottom. 🦇

Kathryn A. Kahler is associate editor of Wisconsin Natural Resources magazine. DNR contributors to this story include Jay Watson, Ryan Brady, Heather Kaarakka, Amy Staffen, Kirsten Held and Amy Minser.

Use simple chromatography, the scientific process of separating a mixture, to see the colorful pigments in autumn leaves.



WHY DO LEAVES CHANGE COLOR?

KATIE GRANT

Ever wonder why leaves change color in the fall?

Leaves need sunlight, air, water and chlorophyll (green pigment) to make food for a tree. Since chlorophyll is the dominant color during the spring and summer as leaves absorb as much sunlight as they can, the green color hides all the other colors in the leaf.

As autumn rolls around, the days are shorter, the nights are longer and temperatures start to get cooler.

When this happens, trees start to produce less chlorophyll, eventually producing none at all. As the chlorophyll fades, other colors such as red, orange and yellow — which have been there all along — start to show.

TRY IT OUT — LEAF CHROMATOGRAPHY

Want to experiment at home? Try this simple chromatography activity so you can see just what gives leaves their amazing fall colors.

SUPPLIES

- Leaves
- Mortar and pestle (or a spoon)
- Glasses or jars (one for each leaf color)
- Rubbing alcohol
- Large pan or heatproof dish to hold the glasses/jars
- White coffee filters

DIRECTIONS

1. Tear up a leaf and place it into a mortar, crushing it with the pestle to release the leaf's juices. Transfer the leaf pieces and any liquid into a glass. If you don't have a mortar and pestle, put the pieces into a glass and crush them with the back of a spoon.

2. Repeat this process with all your leaves, placing each one in its own glass.

3. Carefully pour 1-2 tablespoons of rubbing alcohol into each glass until the leaf pieces are covered.

4. Have an adult help you boil water. While it's heating, set the glasses in your pan. Pour the water into the pan or heatproof dish so the water is surrounding the glasses but not



SHOW US

What colors did you end up with?

Did the leaves have just one pigment in them or several?

Let us know what you find by emailing your results to dnrmagazine@wisconsin.gov.

in the glasses. The goal of this is to warm up the rubbing alcohol mixture in each glass.

5. Let sit for at least 30 minutes.

6. Cut the coffee filter into strips (approximately 1 inch by 5 inches). Place one end in the rubbing alcohol mixture and drape the other over the edge of the glass or jar and outside the dish, being careful to keep it from touching the water in the dish.

7. Patiently wait at least 1-2 hours, or overnight.

8. Pull out the filter strips to see what happened with each one. The alcohol will carry the pigments from the leaves and up the paper, separating them into bands of color. 🍁

Katie Grant is a publications supervisor in the DNR's Office of Communications. Activity courtesy of Malia Hollowell, a lesson planner and curriculum designer. Her blog, PlaydoughToPlato.com, is a resource for pre-K through first-grade teachers to save time, stay inspired and give every student bigger results.



Recycling



handbell



chili pepper



candle



nail



carrot



saucepan



ring



loaf of bread



in-line skate



golf club



ladle



flashlight



tack



hanger



spatula



FIND YOUR ADVENTURE



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This undated photo from the Wisconsin Historical Society collection shows horse-drawn wagon delivery of Miller Brewing Co. beer in Milwaukee.

BACK IN THE DAY

BEER HERE!

WHY WISCONSIN'S WATERS MAKE FOR THE BEST BREWS

ANDI SEDLACEK

We know beer is an unofficial food group in Wisconsin. So what makes the Badger State the perfect place to brew such a lovely libation? Let's step back in time to find out.

NATURAL FIT

Brewing beer in Wisconsin dates back to the Territorial era, 1787 to 1848, after German settlers took over land from the Ojibwe tribe, when Wisconsin was still a territory and not yet a state. In fact, there's record of the state's earliest breweries as far back as the 1830s.

Wisconsin's German settlers brought their love of beer and their knowledge of brewing techniques to the state, initially flocking to Milwaukee. The city's natural resources played a part in what made Milwaukee a hotspot for brewing beer.

It turns out that having access to fresh water (Lake Michigan and the Milwaukee River), a convenient place to receive and ship goods (Milwaukee's harbor), plentiful lumber to build barrels and access to ice for cold storage (from Lake Michigan) made a recipe for brewing success.

MORE THAN MILWAUKEE

Some believe the first commercial brewery in Wisconsin was established in Milwaukee. Owens Brewery opened in 1840, but according to records from the Wisconsin Historical Society, at least two other breweries were operating before that — one in Mineral Point and one in Elk Grove.

By 1860, Milwaukee alone was home to more than 40 breweries, but plenty more were popping up around the rest of the state, with nearly 200 operating statewide at that time.

Some of these breweries are still around today, or have been reestablished.

Potosi Brewing Co., tucked in the far southwest corner of the state, was founded in 1852. The brewery closed in 1972 and reopened in 2008 after a \$7.5 million restoration and redevelopment project by the Potosi Brewery Foundation, with public funding from a Brownfields Site Assessment Grant through the DNR's Remediation and Redevelopment Program.

Today, the brewery is operated as a nonprofit organization with a mission to spur economic opportunity in and around Potosi.

Monroe Brewery, known today as Minhas Craft Brewery, was established in 1845 and has been family-owned ever since.

Stevens Point Brewery was established in 1857 by Frank Wahle and George Ruder. Point Special, a lager brewed since 1857, was rated the No. 1 American Beer in 1973 by the Chicago Daily News.

And though the entire state was booming with breweries, we cannot forget about the big beer barons of Milwaukee: Pabst, Schlitz, Blatz and Miller.

Jacob Best founded the Jacob Best & Sons brewery in 1844 (it actually began as a vinegar factory in the 1830s). Frederick Pabst assumed control of the brewery when he married into the Best family in 1862, and it became Pabst Brewing Co. in 1889.

Joseph Schlitz founded his namesake brewing company in 1849 and brewed "the beer that made Milwaukee famous."

Valentin Blatz established the Valentin Blatz Brewing Co. in 1851 after taking over John Braun's City Brewery (established in 1846). Blatz was hired by Braun and, soon after, opened his own brewery right next door. When Braun died in 1851, Blatz purchased Braun's brewery — and married Braun's widow.

Frederick J. Miller founded Frederick J. Miller's Plank Road Brewery, later known as Miller Brewing Co., in 1855.

KEEP ON BREWIN'

The exact number is hard to pin down, but it's estimated that today, more than 200 breweries are operating in Wisconsin, dotting the state from Bayfield to Beloit and Somerset to Sister Bay.

Many of today's breweries pay homage to Wisconsin's brewing past, like Rhinelander Brewery,

brewing their 7-ounce Shorty beers, a tradition since 1845 and a popular Bloody Mary accompaniment today.

Some give a nod to Wisconsin's quirks, like the new Ope! Brewing in West Allis. Their beer names poke good fun at Wisconsinites' silly sayings including the 'Scuse Me pale ale and Ope! Sourry fruited ale.

And some now focus on conserving our state's natural resources.

LEARN MORE



Scan the QR code to learn more about Wisconsin's drinking water, or go to dnr.wi.gov/topic/drinkingwater.

Central Waters in Amherst was the first brewery in the state granted entrance into the Green Tier program, recognizing businesses that are sound environmental stewards, and they are the only brewery in the state's Green Masters program. All of their beer is brewed using water heated by four large solar arrays (a collection of solar panels).

The beer styles may vary, but all of today's breweries have two things in common: They're proud to carry on Wisconsin's rich beer brewing heritage and need fresh, clean water to do it. ♻️

Andi Sedlacek is a public information officer in the DNR's Office of Communications.



Potosi Brewing Co. delivery truck, 1968.

EXPERIENCE THE BEER

Want to step back in time in the world of beer? Head to Old World Wisconsin, where the new Brewing Experience taps into the state's brewing heritage. The Brewhouse lets visitors experience the sights, sounds, smells and suds of beer brewing like they did it back in the day.

Old World Wisconsin closes for the season on Sept. 25 and reopens in April, when more is planned including a garden growing beer-brewing ingredients. See oldworldwisconsin.wisconsinhistory.org.

CLEAN WATER MATTERS

Wisconsin's abundant, clean water is what has attracted breweries to the state — both way back when and now.

"That was one of the reasons our founders chose Potosi for the brewery, because of the high-quality spring water in the area's deep aquifers," said Rick Kruser, general manager of Potosi Brewing Co., established in 1852. "The location's easy access to railroads and the Mississippi River was important, too."

The river played a big part in the brewery's early days, as Potosi owned its own steamboat, used to deliver beer daily down to Dubuque, Iowa.

"Our historian refers to Potosi as the trifecta of transportation," Kruser said. "We had the railroad, the river for the steamboat and easy trucking access to distribute around the tri-state area."

Potosi no longer distributes beer via steamboat, but today the brewery is thriving and giving back to the community. They're on track to brew more than 20,000 barrels of beer in 2022 and are expanding with a new 15,000-square-foot addition.

They also support groups like Badger Camp and the UW Carbone Cancer Center in Wisconsin, Camp Albrecht Acres and Research for Kids in Iowa, and many more.

Central Waters Brewing Co. in Amherst has endless respect and appreciation for the water used to brew its beer.

"The water that we get here is phenomenal brewing water," said Paul Graham, president of Central Waters. "We're able to take the groundwater here in Amherst — served to us from two wells from the village — and all we do is make a small pH adjustment to it, and we have pristine brewing water. It's amazing stuff."

Another plus is that the water in the Amherst area is naturally hard, especially enhancing the hoppy beers that are so popular right now.

"The way those chemical compounds interact with the hops helps bring out the subtle nuances of them," Graham said.

Since brewing beer requires a lot of water, Central Waters makes a conscious effort to help offset its water consumption. Most recently, they invested in an ionized air rinser to clean beer cans before filling them with beer.

It's common for breweries to rinse their cans with sterile water, but once the water is used, it just goes down the drain. Graham wanted to change that.

"We're estimating that this will reduce our water consumption by 10%," he said. "We're already one of the most efficient breweries when it comes to water consumption, and this is going to push us just one step further ahead."

The brewery doesn't stop at water conservation — they're carbon-conscious and always looking to expand their solar energy production. Graham estimates that their solar panels generate 65% of the brewery's electrical needs.

And their taproom is built of recycled materials reclaimed from the Amherst community, like wood from an old barn and corrugated steel from an old building in town.

For both the Potosi and Central Waters brewing companies, success and commitment to their communities originated from one amazing place: Wisconsin's wonderful water.

— ANDI SEDLACEK

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NEW YORK TIMES SUNDAY CROSSWORD

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ANSWERS



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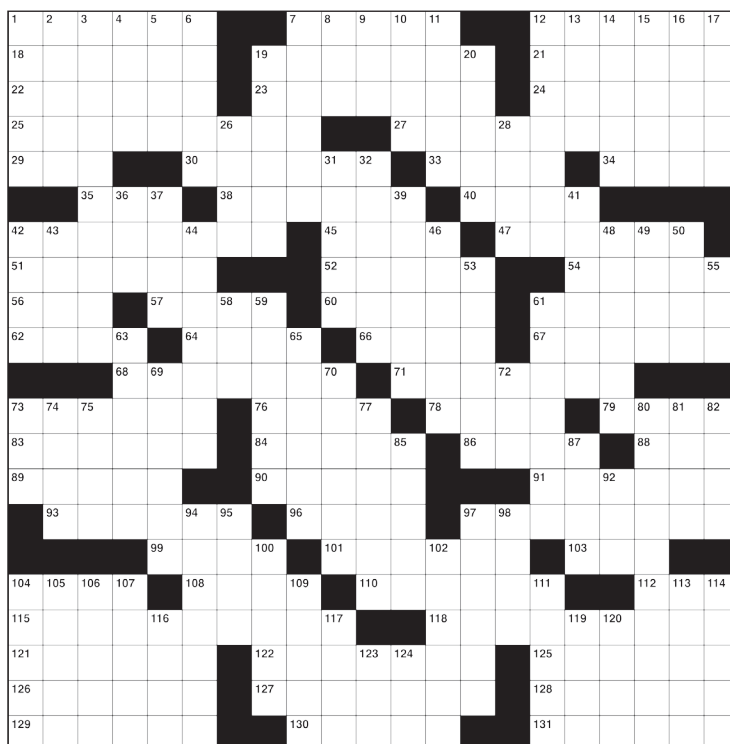
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