

# Wisconsin Natural Resources

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## GIANTS

Beneath The Ice



- | PLAYFUL PADDLERS: WISCONSIN'S OTTERS
- | EXPLORE THE HIDDEN HISTORY OF INTERSTATE STATE PARK
- | SNOWY ROUTES FOR FROSTY ADVENTURES

WINTER 2023



# OPENING SHOT

BRIAN ROHLAND



*Brunet Island State Park in northwest Wisconsin, one of more than 400 entries in the annual Friends of Wisconsin State Parks photo contest. Winning images are featured in the 2024 calendar included in this issue.*



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Communications Director Katie L. Grant  
Publications Supervisor Andi Sedlacek  
Managing Editor Andrea Zani  
Art Direction Bailey Nehls  
Printing Schumann Printers



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Thousands try but only a few succeed each year in spearing an elusive sturgeon during the winter season on Lake Winnebago.

## 8 Passing the spear

ANNA MARIE ZORN

DAVID NEVALA

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COVER PHOTO OF LAKE  
WINNEBAGO STURGEON  
SPEARING BY DAVID NEVALA

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# FROM THE GOVERNOR TONY EVERS

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Every Wisconsinite deserves access to safe, clean water — whether for drinking, our crops and livestock, or natural waters for hunting, fishing and outdoor recreation. I'm proud to say over the last four years, we've made significant progress toward this important goal.

During my first year in office, I declared 2019 the Year of Clean Drinking Water to highlight the need for investments to ensure the water we use is free of harmful contaminants like per- and polyfluoroalkyl substances (PFAS), lead and nitrates, but our work has continued beyond the Year of Clean Drinking Water.

We recently celebrated the completion of a historic project that was 17 years in the making to clean up the Fox River in Green Bay. Additionally, 2023 also marked the one-year anniversary of our expanded and enhanced Well Compensation and Well Abandonment Grant Programs through the Wisconsin Department of Natural Resources, available through funding I proudly directed from the American Rescue Plan Act.

The programs provided \$10 million to help private well owners address PFAS, and thanks to the expanded eligibility under the programs, many previously ineligible individuals applied over the past year. Funding is still available to help private well owners get assistance to help keep their families healthy and safe, and I encourage all those who are interested to apply.

This critical program helped some small Wisconsin businesses with a noncommunity well, as well as daycare centers, rural restaurants, and churches, among others. I'm proud that, through this funding, we've already helped address 370 contaminated wells across the state. Still, we know there is much more work to do.

As we begin 2024, I am hopeful we will be able to build upon my administration's important work to improve water quality statewide through the investments available in the 2023-25 budget I signed earlier this year. We secured an additional \$125 million to address and prevent PFAS contamination statewide and ensure Wisconsinites have access to clean water — one of the first real and meaningful investments by Republican legislators to address the pervasive issue of PFAS.



Looking forward to the new year, I'm excited to share that even more access to clean drinking water is coming for Wisconsinites. In November, the Environmental Protection Agency announced a partnership with the state of Wisconsin to assist 10 communities in finding and replacing lead service lines as part of the EPA's Lead Service Line Replacement Accelerators initiative.

Wisconsin will also be receiving \$1.9 million from the National Fish and Wildlife Foundation through their America the Beautiful Challenge to develop effective manoomin (wild rice) management through state and Tribal inter-governmental collaboration. Both of these initiatives are great news for our state and will further our work toward building a healthier, cleaner Wisconsin for all.

So, here's to another great year and continuing our work together to ensure every Wisconsinite has access to clean, safe water. I look forward to all we'll accomplish together in the year to come for our families, communities, natural resources and our state. Happy reading, folks! 📖



# NEWS YOU CAN USE

## FREE FISHING WEEKEND

Another Free Fishing Weekend is coming Jan. 20-21! Always the third full weekend in January and June, it allows angling without a license on waters statewide (other regulations still apply). In January, Free Fishing Weekend is all about ice fishing, and numerous clinics around the state can help you get started. Learn more at [dnr.wi.gov/tiny/2006](http://dnr.wi.gov/tiny/2006).



## MOUNTAIN BIKE TRAIL OPPORTUNITIES

Exciting new mountain bike trails are ready to explore at Willow River and Kinnickinnic state parks, thanks to the work of the Willow Kinni, or WIKI, Mountain Bike Club. About 27 miles of trails have been added in the past two years, including technical trails, drops, berms, downhill, challenging climbs and other features. The trails are open year-round and are a growing attraction at the parks, even providing practice areas for six local high school mountain bike teams.

The WIKI Mountain Bike Club, part of the Friends of Willow River and Kinnickinnic State Parks group, has raised funds and logged thousands of volunteer hours to create the trails and help expand mountain biking opportunities in Wisconsin; [wikimountainbike.com](http://wikimountainbike.com). A state park vehicle admission sticker is required to enter the parks; no state trail pass is needed to ride the mountain bike trails. Learn more at [dnr.wi.gov/topic/parks](http://dnr.wi.gov/topic/parks).



*Just another day at work for recent Diversity in Conservation interns.*

## INTERNING FOR THE ENVIRONMENT

For young people interested in a career with the DNR or other environmental work, an internship can be a great way to get started, with several opportunities to consider.

**State of Wisconsin Student Diversity Internship Program:** Explore a career at a state agency, including the DNR, in a variety of fields for this paid internship. Application period is generally mid-December to mid-February; [dnr.wi.gov/tiny/1941](http://dnr.wi.gov/tiny/1941).

**Diversity in Conservation Internship:** The DNR participates in this Natural Resources Foundation of Wisconsin program for students from UW-Madison, UW-Milwaukee and Lawrence University in Appleton. Interns receive a stipend to work on a specific project, learn about their host organization and attend a weekly seminar; [dnr.wi.gov/tiny/1946](http://dnr.wi.gov/tiny/1946).

**STEAM Camp:** On a related note, this past summer the DNR again partnered with the Urban League of Greater Madison and Strang Inc. for the annual STEAM Camp, encouraging middle school students to explore careers in science, technology, engineering, arts and math. The Fitchburg office hosted about 40 students to learn about DNR careers and see presentations on raptor handling, native culture and history, invasive species, fish electroshocking for data gathering and more.





# LETTERS TO THE EDITOR

## CRANES RETURN TO REVITALIZED CREEK

These sandhill cranes have returned to revitalized Indian Creek, formerly an unsightly concrete-lined channel, flowing through Fox Point. Their creaky ancient calls are now often heard in this northern Milwaukee County community.

Christel Maass  
Fox Point



## CLARIFICATION

The Richard Bong State Recreation Area, featured in the Fall issue, is in Kenosha County. The mailing address is Kansasville, which includes Racine and Kenosha counties.

## MEMORIES OF FIELD TRIPS PAST

After reading through the Spring issue of *Wisconsin Natural Resources*, I decided to submit a few notes of what we did at the school forest many years ago. I am writing from my wheelchair at the nursing home, and I hope you can read what I have written. Old fingers don't work so good.

The short item that caught me was a note of what (Natural Resources Foundation of Wisconsin) field trips there would be to explore the great outdoors. We had one trip while at school — a freshwater spring, creek, the Wisconsin River, thick cover, overhead conifers, soil smell and temperature, open fields.

Each group had to make observations and record all ways each stop could be measured or made some impact on the students and any things that might be used by wildlife. We had six thermometers, so we had six groups. Each group had a kitchen knife for soil checks, the thermometer and a clipboard. Discussion and comparison completed the lesson.

Al Curtis  
Merrill

*A few weeks after writing to us, Al Curtis died in Wausau at the age of 94. His obituary noted he was director of the Merrill School Forest and was a "conservationist, environmentalist and a social activist ... (who) enjoyed hunting in Vilas County, fishing in Lake Superior, trapping, camping and traveling." Thank you, Al, for your many contributions to Wisconsin's natural resources.*

## TICK TIP

In response to the article "Summer Safety in the Outdoors" (Summer 2023), I was quite surprised at the advice to dispose of a tick — put it in alcohol or flush it down the toilet. When hiking or camping, who has alcohol on hand to put a tick into or a toilet to flush it down? What an unnecessary waste of water.

A much better way is to stick the tick onto a piece of tape, fold the edges over so it can't escape and dispose of it in the trash. A roll of tape is easy to add to your pack for environmentally safe disposal.

Margie Novak  
Kennan



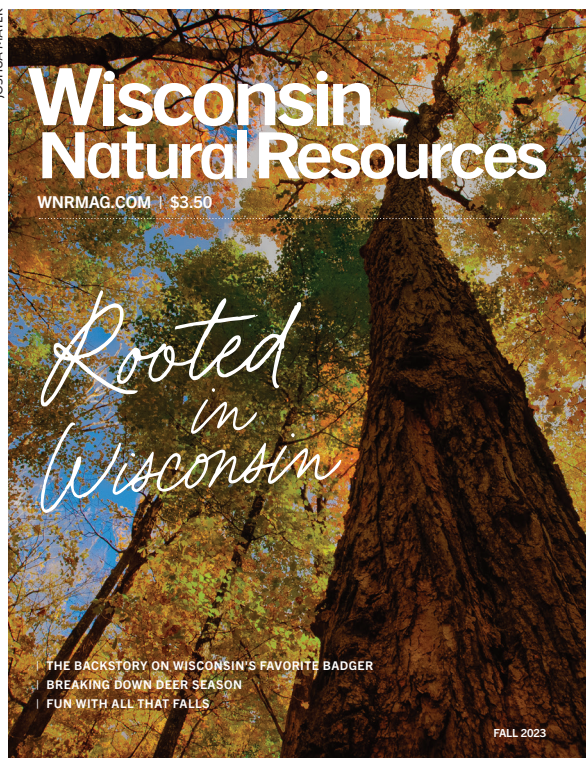
## WINGED BEAUTY

Just wanted to send you this. Zoom in on the wings, magnificent nature.

Robert Hilbert  
Madison







## HISTORY LESSONS

In the article "Something to Celebrate" (Fall 2023), it states Governor Dodge State Park is named for Henry Dodge, first governor of Wisconsin. Dodge was the first territorial governor. Odd fact was he was also the last territorial governor. Nelson Dewey has the honor of being the first governor of the state of Wisconsin.

I have lived all of my 84 years in Wisconsin, and I love your magazine. I learn something about our state in each issue.

Allen Knop  
Madison

*Thanks for the email, Allen. Dodge indeed was governor of the Wisconsin Territory on two separate occasions — 1836-41 and 1845-48. He was governor during the period featured in another Fall issue story, "Back to Belmont," about Wisconsin's First Capitol site, and also when Wisconsin miners were known as "badgers," noted in the "All About Bucky" story. So there's plenty of related history in the Fall issue!*

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



Here are answers to a few basic questions the public often asks about PFAS — per- and polyfluoroalkyl substances — and water testing in Wisconsin. To learn more, scan the QR code or check [dnr.wi.gov/topic/PFAS](https://dnr.wi.gov/topic/PFAS).

### **Q: Why don't all lakes and rivers in Wisconsin get sampled for PFAS?**

A: Wisconsin has roughly 15,000 lakes and 12,600 rivers, and testing all of them would be resource-intensive in terms of money and staff. Since 2019, the DNR has sampled representative lakes and rivers statewide. Most had very low PFAS concentrations.

When high PFAS concentrations are found, follow-up sampling is done to help define areas of contamination and gather information to allow people to make informed decisions to reduce their potential exposure. Sampling of additional lakes and rivers is ongoing, with waterbodies selected based on nearby results or information about possible PFAS contamination.

### **Q: Why does one body of water have high levels of PFAS, but another one near it has low or no PFAS detected?**

A: For a waterbody to have high PFAS concentrations, it needs to be directly connected to a PFAS source by either surface water or groundwater and be downstream of the source. The size of the waterbody and the speed at which water moves through it may also be more important than its location near a PFAS-contaminated waterbody.

### **Q: Should I be concerned about my private well if I'm a waterfront property owner and PFAS is detected in the waterbody?**

A: Testing your well if you know of nearby PFAS impacts is recommended. Shallow wells near waterbodies impacted by PFAS could also be affected if the PFAS contaminating the waterbody reaches the aquifer used by the well.

Well owners can contact the DNR or a drinking water professional for additional site-specific guidance or information about how to sample for PFAS. If PFAS are detected in your well, you may be eligible to receive a grant through the American Rescue Plan Act (ARPA) Well Compensation Grant Program to address the contamination.

### **Q: How should I dispose of household items, such as nonstick pans, containing PFAS?**

A: Generally, you can dispose of these items in your household trash, as you would with things that do not contain PFAS. Some waste management facilities have programs to take household waste known or suspected to contain PFAS. Check with your local waste management facility to see whether such a program is available near you.



# Passing the Spear

February's freeze brings another sustainable tradition

*Each February brings another sustainable sturgeon spearing season to Lake Winnebago, Wisconsin's largest inland lake.*





This February, square holes will once again checker the ice-blanketed Lake Winnebago as eager sturgeon spearkers dot the lake's 131,000 acres with shanties, trucks and spearing gear.

Gazing through holes carved up to 20 inches deep atop the murky lake waters, each person will hope to be one of the small percentage of those lucky enough to spear a sturgeon, the giant among fish that can grow up to 6 feet long and 200 pounds or more.

The odds will be stacked against these spearkers. With each icy cutout no bigger than 48 square feet — about the size of a compact car parking space — fishing for sturgeon this way is often likened to duck hunting through a chimney.

Despite a sturgeon population estimated at about 40,000 for the Winnebago System, many have tried and failed for decades to land one of these living dinosaurs, which can survive more than 100 years.

But that doesn't limit the optimism of the nearly 13,000 permit holders who will brave the cold this year for sturgeon spearing.

"There's a whole community of people who are absolutely devoted to this sport," said Margaret Stadig, the DNR's Lake Winnebago sturgeon biologist.

Stadig oversees the sturgeon program and the community event that's uniquely Wisconsin, steeped in tradition and growing by the year.

**STORY BY ANNA MARIE ZORN  
AND PHOTOS BY DAVID NEVALA**



*Snow is packed around a shanty for two reasons: to keep out light that might deter fish and to keep the shanty occupant warm.*



## WORLD TO WINNEBAGO

For up to 16 days each year, spearers from all over the world come to Lake Winnebago to try their luck at sturgeon spearing. Unlike hook-and-line fishing, spearers can't simply stop by the local bait shop to gear up.

"It's not a sport where you can just buy a spear and go fishing," said Justine Hasz, director of the DNR's Bureau of Fisheries Management.

Spearers on Lake Winnebago spend ample time preparing: augers, chain-saws, decoys, shanties. And don't forget worm abductors — sifting tools that dip into the lake bottom to search for the kinds of food sources that might attract scavenging sturgeon.

All are among the equipment needed to have even a shot at spearing one of these bottom-dwelling fish. The methods and tactics they employ have often been passed down through generations.

Take location. Before cutting through the ice, a good spearer knows they must find the perfect spot. Some take the time to use worm abductors, while others skip right to checking for water clarity, often using bright white coffee cups as litmus tests for opacity.

"You can't catch what you can't see," Stadig said about spearfishing.

In recent years, she noted, the water at Lake Winnebago has been fairly turbid, impeding the ability to see fish, a likely reason why the harvest caps have not been reached in those seasons.

Spearers also use decoys to attract sturgeon closer to the surface of the lake. From deer antlers to plastic milk jugs or fancy decoys sold at souvenir shops in the area, various objects are suspended in the icy water to capture the curiosity of the naturally inquisitive sturgeon.

Some of the objects have been used by family members for generations — good luck talismans passed down, much like the spearfishing tradition itself. Beyond these items, good spearers know the shack must be dark. Snow is often packed along the bottom and sides both to insulate the shack for the spearer and to keep out light that might scare away a potential catch.

## CENTURIES-OLD TRADITION

While the technology may have changed somewhat — from hand



*Decoys are used to attract bottom-dwelling but inquisitive sturgeon closer to the surface.*





*Creating a hole no bigger than about 48 square feet is the first step to sturgeon spearing.*



saws to chainsaws, for example — ultimately, the spearing of today looks a lot like the spearing of centuries ago.

The Indigenous Menominee first taught European settlers in the region how to spear sturgeon, since one sturgeon could potentially sustain an entire family during the harsh winter months. Spearers today often eat the sturgeon as well, with most choosing to smoke or fry the fatty meat.

But regardless of the technological advances, the practice is the same.

"When it comes down to it, you're still just a human being with a spear in a very dark shack," Stadig said.

Not everyone who attends the February spearfishing event comes to fish the frigid waters. Hasz and Stadig described the community at-

mosphere that brings thousands of people to simply observe and be a part of the fishing fellowship.

"People just come to check out these big fish," Hasz said.

Observers can stop by one of the stations dotting the Winnebago area to see successful spearers haul in their catches for required check-in. DNR staff weigh and measure, determine sex and record the details for each fish, with the data informing biologists on sturgeon health and population status and playing an important role in management.

## DOWN, THEN REBOUND

Historically, it was uncertain whether sturgeon would even remain to be at the center of so much ado. "Throughout the 1800s, sturgeon were considered a junk fish," Hasz said.

Ships burned sturgeon carcasses for fuel, sturgeon eggs were harvested in unsustainable numbers for caviar, and in the early 1900s, paper mills dumped pollutants into their habitats. Given the slow rate at which the fish mature and reproduce, it didn't take long for the population to plummet.

"Their numbers started getting really low," Hasz noted. "They were almost extirpated."

Beginning in 1915, Wisconsin banned sturgeon fishing for nearly two decades, reopening it during the Great Depression. Eventually, the Menominee Tribe took on the challenge of rebuilding sturgeon numbers and brought the idea of repopulation to state agencies.

The DNR and the state's Department of Agriculture, Trade and Consumer Protection, in coordination with the tribe and community stakeholders, began to formulate a plan.

"The importance of these fish was realized," Hasz said. "We stepped up to having a really rigorous management program for lake sturgeon, especially in the Lake Winnebago System."

The rigor has paid off. A century after the spearing ban, Wisconsin is home to the world's most sustainable sturgeon fishery. It also hosts one of only two spearfishing seasons in the nation, and it's by far the most prolific.



*Some sturgeon spearing equipment has been handed down from generation to generation.*



In 2023, the Winnebago season extended for the full 16 days, and fortunate spearers caught a total of 1,405 sturgeon. With better luck, more sturgeon could have been speared legally, as the caps usually remain around 800 females and 1,200 males for Lake Winnebago.

By comparison, the only other sturgeon spearfishing season in the nation takes place in Michigan, where the 2023 season lasted just over an hour and ended after spearers met the harvest cap of six fish. While there is an upriver sturgeon spearing event in Wisconsin as well as a hook-and-line season, the Winnebago harvest season is a distinct event with a rich history.

### CAREFUL MONITORING

For some sturgeon enthusiasts, however, it might seem irresponsible to hunt sturgeon. Despite the tens of thousands swimming in Wisconsin's lake systems, that's only a fraction of the 15 million that cruised the waters centuries ago. In fact, the population is still less than 1% of pre-1800s levels throughout the sturgeon's historic range.

But the DNR works hard to ensure there are still plenty of fish in the lake for population sustainability and for the two-week harvest event each winter, Stadig said.

"There are enough sturgeon to maintain this event," she said, "and the whole thing shuts down as soon as we reach a harvest cap."



*Data from harvested sturgeon is used by DNR biologists to help maintain the health of the population in Wisconsin, where good decisions and productive partnerships have led to management success.*

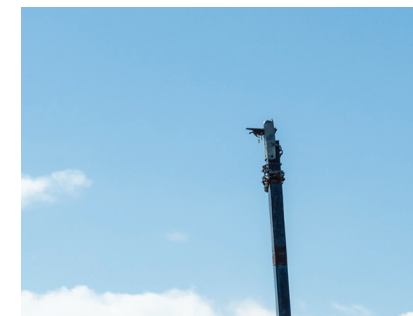
Sustaining the Winnebago harvest takes the cooperation of the entire community. The group Sturgeon for Tomorrow formed in the 1970s, bringing community stakeholders, the Menominee Tribe and the DNR together to protect sturgeon from overfishing, habitat loss and poaching.

Hasz said the DNR embraced this community effort and still relies on them today. "These community partners are really important to the management of this fishery," she said.

Stadig echoed this: "I've done a lot of fisheries work in my life, and I've never been in an area that has this much community support around a single species," she said.

### SPAWNING SUCCESS IS KEY

Part of the support for sturgeon might stem from how interesting they are as a species, Stadig noted. Spearing season offers a rare glimpse at this



*Location is key for spearing, with factors like water clarity and proximity to sturgeon food sources considered before siting a shanty.*







*Sturgeon are giants among fish, able to grow up to 6 feet long and 200-plus pounds in their decades-long lives.*

secretive animal that has survived since the time of the dinosaurs, nearly 136 million years.

"Everything about this animal is contradictory," Stadig said. Sturgeons look like sharks, but they don't have teeth. They can be huge but subsist essentially off a diet of bugs.

"I equate it to if humans grew to their adult sizes by doing nothing but licking ants off the street," she said.

By bottom feeding and scavenging, sturgeon also fill an important ecological role for the entire Winnebago System, where they've been able to thrive, especially over the last 30 years. With the community looking out for them, the Menominee Tribe's support and the DNR's regulations, the population has blossomed.

This is, in large part, thanks to the hundreds of miles of tributaries and rivers that allow for successful sturgeon spawning each spring, an event Stadig said is not to be missed.

Because of robust spawning seasons in Wisconsin, the DNR has even been able to help with sturgeon rehabilitation programs in other states such as Georgia and Tennessee, where habitat loss has been a factor. Sturgeon eggs from Wisconsin are shipped to create little sturgeon for stocking in rivers to grow into big sturgeon so populations hopefully can rebound.

#### ONLY IN WISCONSIN

Luckily, habitat loss has not impacted the Winnebago System like it has in so many other areas of the country.

"That's one of the gems about Lake Winnebago," Stadig said, noting the lake's healthy and large system of connected rivers, untouched by damming systems. "We have 70

spawning sites before they even hit the first manmade dam."

Because sturgeon are a key indicator species for the health of the Winnebago System, having 40,000 is a point of pride for everyone involved in their care and protection. Many of those with a vested interest will be out for spear-fishing season.

Whether there to support or to spear, this community will pour about \$3.5 million into the local economy throughout the two-week season. It's inland fishing with a big payoff and a carnival atmosphere to boot.

And it's only in Wisconsin, Stadig said: "Where else besides the Gulf or the coast are you going to get the chance to catch a 50-inch fish?" 🐟

*Anna Marie Zorn has background as a science writer and is communications manager for the National Wildlife Federation's Great Lakes Regional Center. David Nevala is a freelance photographer in Madison.*




#### LEARN MORE

The annual Winnebago System sturgeon-spearfishing season begins on the second Saturday in February (Feb. 10 in 2024) and runs for 16 days or until harvest caps are reached, with fishing permitted from 7 a.m. to 1 p.m. each day the season is open. For more about sturgeon in Wisconsin, including species information, the DNR's management plan and details on hook-and-line fishing and the Winnebago spearfishing season, scan the QR code or check [dnr.wi.gov/tiny/2011](https://dnr.wi.gov/tiny/2011).



# BEAR

## *Necessities*



*Even with cubs, the claws of a black bear are something to watch out for when handling.*





*A black bear cub stays warm inside Dylan Bartz's coat.*

## Den surveys gather vital information for black bear management

STORY AND PHOTOS BY RACHEL BENEDICT

As some Wisconsinites dream of summer, DNR scientists spend late winter braving the cold and snow to learn more about a large Wisconsin omnivore: black bears.

Traveling across Wisconsin's bear range, which encompasses approximately two-thirds of the state, Jennifer Price Tack and her team spend February through April surveying bear dens to better understand what reproductive success looks like for black bears.

"We are collecting information to look at cub survival rates, litter size and litter frequency," said Price Tack, the DNR's large carnivore and elk research scientist.

Those data points are only possible to obtain through surveying bear dens. They are critical to the DNR's bear population monitoring program.

Determining reproductive parameters requires revisiting the same bears over time to check on cubs and is



*While the mother bear is sedated, DNR staff record body measurements and take biological samples from both the sow and cubs to help identify the bears later and give clues on their diet. Cubs are weighed using a bag before being tucked in observers' coats to stay warm.*



accomplished by fitting a GPS collar on female bears, called sows. Collars collect data on bear movement and habitat use and allow researchers to locate the sows in the future.

Researchers revisit collared bears each winter to collect data and replace or remove the collar. The collars are designed to fall off after a few years, so the bear won't live the rest of its life with the collar.

Body measurements, weight and biological samples also are collected from the sow and any cubs she might have, providing information about the condition and diet of the bears.

### BEAR OF A CHALLENGE

Just like how people don't want to be found during a nap, bears also prefer cozy hiding spots for their winter slumber. That could mean a cave, a hollowed-out tree or just a hole in the ground. The main requirements: warm and hidden. Bears won't start using dens until winter is imminent.

This is where the public helps by reporting dens during late fall or early winter. Public reports are essential to meet the sample size requirements for surveys, Price Tack said.

Den surveys are conducted in late winter while black bears are in torpor, a low-energy sleeping state that allows scientists to approach bears safely and sedate them, reducing the risk for both bears and people. This is also when cubs are old enough to spend a short time away from mom while she gets fitted with a GPS collar.

Surveys proceed quickly.

"Once the sow is sedated, we have roughly an hour to extract her from the den, fit her with a collar and take





biological samples, all while working quietly not to wake her up," said Erin Morrison, a DNR research scientist.

"It's an incredible team effort, and we are always conscious to take measures that ensure human and bear safety."

DNR staff monitor the sow's breathing and heart rate, while others quickly gather samples and measurements. Cubs, if present, are carefully weighed, sexed and kept tucked in the coats of surveyors to stay warm.

Handling bear cubs has no negative impacts on them. They readily return to the warm den at the end of the survey, and mom resumes her usual parenting role upon waking.

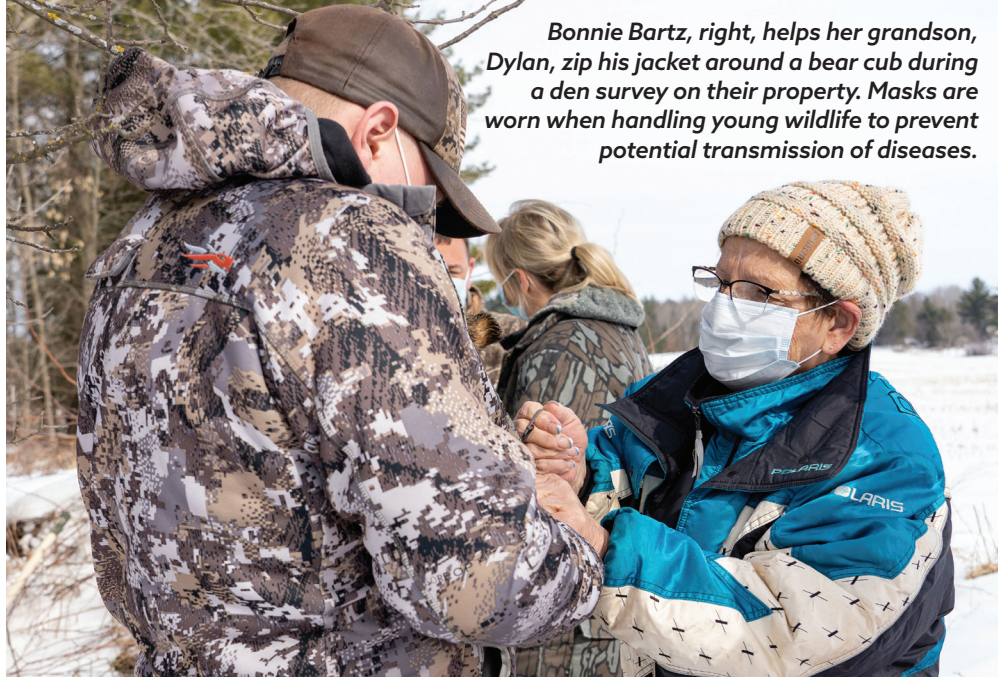
### LANDOWNERS LEAN IN

During surveys, it's all hands on deck — even the landowners where dens are found are invited along and can help. Dylan Bartz, who reported a bear den on his grandparents' property, was surprised to be immediately handed a cub to keep warm while the research team worked.

"It was by far one of the best experiences ever," Bartz said. "Not many people can say they've held bear cubs in their life."

His grandmother, Bonnie, also joined.

"I was amazed at the care that is given to the animal," she said. "They told us so much about the survey before we even started. We even helped get dried grass in the den because it was wet and they wanted to put her back in a dry den."



Bonnie Bartz, right, helps her grandson, Dylan, zip his jacket around a bear cub during a den survey on their property. Masks are worn when handling young wildlife to prevent potential transmission of diseases.

### LEARNING FROM BEARS

Wisconsin's bear population has expanded over the past several decades, and current reproductive measurements need to be updated to assess populations accurately within each bear management zone.

Data from the den surveys will improve the DNR's bear population assessment so sustainable management decisions can be made. And that will help Wisconsin's bear population thrive for years to come, Price Tack said.

"The thing I love about this research is that it is going to be directly utilized in the decision-making process and affect change," she said. 🐾

*Rachel Benedict is a communications specialist and publications editor in the DNR's Office of Applied Science.*



Scratch marks indicate bear activity in the area near a surveyed den.



Once the survey is complete, researchers carefully place the mother bear back in the den with her cubs.



Hair is among the biological samples taken during a survey.



### LEARN MORE

For more about black bear den surveys conducted by the DNR's Office of Applied Science, including how to report bear dens, scan the QR code or check [dnr.wi.gov/tiny/2061](https://dnr.wi.gov/tiny/2061).



# STOP THE SPREAD

Don't let aquatic invasive species slip through the cracks

**KATIE L. GRANT**





By February, winter in Wisconsin can feel like a frozen landscape — it's hard to believe the tiniest of creatures can survive the snow and subzero temperatures without hibernating. But even on the coldest of days, taking steps to prevent the spread of aquatic invasive species is necessary.

Waterways throughout the state have been found to contain any number of aquatic invasive species, from curly-leaf pondweed to invasive mussels. Anglers on the ice can reduce the spread by checking for and removing mud or plant material clinging to their gear, including sleds for hauling supplies, before leaving the area they're fishing.

### WHY IT MATTERS

If these invasive species are already present, why does doing anything at all matter? Invasive species are nonnative plants, animals and even diseases that cause great ecological, environmental and economic harm.

In the case of aquatic invasives, they can crowd out native plants and animals, making it difficult for these to survive and threatening the quality of boating and fishing in Wisconsin's waters. Once introduced to a waterway, invasive species can spread quickly and become tough to control or eradicate in the future.

The net result is a loss of diversity of our native plants and animals as invasive species rapidly multiply and take over. About 42% of the species on the federal threatened or endangered species lists are at risk primarily because of invasive species.

The U.S. Department of Agriculture notes that aquatic invasive species have cost North America over \$26 billion per year since 2010, up from \$2 billion a year in the early 1960s.

In Wisconsin, industries affected by invasive species include sport and commercial fishing, forestry and agriculture, and raw water users such as power companies, industrial water users and municipal water plants.

Expenses incurred because of invasive species are passed on to Wisconsin consumers through higher water and electric bills. On lakes with large aquatic invasive species populations, homeowners may see decreased property values.

### WHAT YOU CAN DO

Curly-leaf pondweed and Eurasian watermilfoil are two aquatic invasive species that remain hardy under the ice, giving them an advantage over our native aquatic plants. Disease and the larvae of invasive snails and mussels also can be present in the water and mud in winter.

Everyone can do their part to combat invasive species. It only takes a few minutes of preventative action to help preserve and protect our state's waterways for generations to come.

Before stepping on the ice to fish and when leaving, anglers should:

- Inspect trailers, shanties and fishing equipment for attached aquatic plants, animals or mud.
- Remove all attached plants or animals.
- Drain all water from buckets and containers.
- Buy all minnows from a licensed Wisconsin bait dealer. Up to 2 gallons of water may be kept for minnows, provided they will be used on the same waterbody or if no lake or river water from the fishing site has been added.
- Dispose of unwanted bait in the trash.
- Volunteer as part of the Citizen Lake Monitoring Network or by becoming a Clean Boats, Clean Waters Inspector. 🇺🇸

*Invasive curly-leaf pondweed remains hardy in Wisconsin waters, even in winter.*



BRETT SCHUMACHER

### LEARN MORE

For details on invasive species in Wisconsin, including aquatic invasives and what you can do to help slow the spread, scan the QR code or check [dnr.wi.gov/tiny/946](https://dnr.wi.gov/tiny/946).





Wisconsin supports the world's largest populations of Karner blue butterflies.



JAY WATSON

The return of the trumpeter swan is a true Wisconsin success story.



# Contribute to Cons

**DREW FELDKIRCHNER**

## DONATIONS HELP PROTECT WISCONSIN'S SPECIAL SPECIES

Forty years ago, things in Wisconsin looked a lot different than they do today. Trumpeter swans were no longer found anywhere in the state, bald eagles were limited to the far northern counties, and there were fewer than 200 state natural areas, then called scientific areas.

Little was known about most of the state's rare plants and animals. The viability of the DNR program responsible for protecting Wisconsin's special species was in doubt.

Then came a much-needed source of funding to support Wisconsin's rarest species and most unique places through a new law to allow state taxpayers to contribute to an Endangered Resources Fund on their income tax forms.

The goal was to conserve non-game species and their habitats, and generous Wisconsin taxpayers made their first donations for the 1983 tax season.

### SUPPORT FOR CRITICAL WORK

Four decades later, the Endangered Resources Fund is as important as



HEATHER KJARVICKA



*DNR conservation biologist Richard Staffen conducts a small mammal survey, part of the work supported by donations to the Endangered Resources Fund.*

ever. The fund helps the DNR protect and restore endangered plants and animals and their habitats, aiding species large and small and contributing to population gains not only locally, but nationally as well.

Today, trumpeter swans once again grace the landscape across Wisconsin, breeding as far south as Kenosha County and as far north as Bayfield County. Bald eagles not only have recovered, they are nesting in all 72 Wisconsin counties.

As for state natural areas, there are now nearly 700 conserving Wisconsin's biodiversity and enjoyed by many throughout the state. They are owned

by the state and more than 60 partner organizations committed to their protection.

Alongside partners across the state, the DNR has worked to conserve species from bats to orchids to turtles to bumblebees, even contributing to the national recovery of Karner blue butterflies, wood turtles, rusty-patched bumblebees and more.

It's no easy feat, but DNR staff are passionate about this critical work. They train and coordinate volunteers and work with private landowners. They control harmful invasive species, and they help industries conserve the rarest species when planning projects.



Work on behalf of the state's most vulnerable species includes a grassland climate adaptation project at Rush Creek State Natural Area in Crawford County. The effort is led by a small team including DNR conservation biologists Justin Nooker, left, and Amy Staffen, right, with additional help from the Natural Resources Foundation of Wisconsin.

BRIAN COLLINS

# ervation

RYAN BRADY



Wood turtles, a threatened species in the state, benefit when Wisconsinites donate at tax time and anytime.

## DOUBLING THE EFFORTS

Every gift or tax donation made to the Endangered Resources Fund is matched by the state, effectively doubling contributors' money. The donations and matching money make up roughly 20% of the funds needed to make this work possible throughout the state.

To fill the gaps, the DNR also actively pursues competitive grants, which often require a cost share of up to 50% that comes from the donations and state matching money. In the end, what started as a \$20 donation could lead to \$80 worth of conservation efforts.

This year, when you sit down to complete your state of Wisconsin income taxes, look for the donations section on your tax form. Or consider making a separate tax-deductible gift online or by mail to support this important mission. 🐢

Drew Feldkirchner is director of the DNR's Bureau of Natural Heritage Conservation.

## Endangered Resources Fund FAQ

Here are a few things to know about donations to the Endangered Resources Fund to support the work of the DNR's Bureau of Natural Heritage Conservation.

### Q: Is my donation tax deductible?

A: Yes, direct donations and tax-form donations are tax-deductible, and all gifts are matched dollar for dollar by the state.

### Q: Will my gift pay for losses due to wolves?

A: No, donated funds have not been used to pay for wolf depredations for many years.

### Q: I'm unable to contribute financially. Are there other ways I can help?

A: Monetary donations are necessary to complete this important work, but volunteering time to support on-the-ground efforts also is critical. Learn about a wide variety of volunteer opportunities at [dnr.wi.gov/volunteer](http://dnr.wi.gov/volunteer).

## LEARN MORE

Making a donation to the Endangered Resources Fund isn't the only way you can show support for the state's vulnerable plants and wildlife. In 1995, the Endangered Resources license plate was established in Wisconsin, allowing vehicle owners to support and promote nongame species everywhere they drive. When you choose to pay extra for the special license plate, \$25 a year is donated to this mission.

Check the DNR's Endangered Resources webpage for details on how to purchase the license plate or donate to the Endangered Resources Fund, plus learn about the important work these initiatives support. Scan the QR code or go to [dnr.wi.gov/tiny/1266](http://dnr.wi.gov/tiny/1266).







# Navigating Wonder

The Northwoods are known for snowmobiling in winter, but there are plenty of options throughout Wisconsin.



# Big Winter's Lands



TRAVEL WISCONSIN

**ANDI SEDLACEK**

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**SEE THE  
SNOWY SIDE  
OF WISCONSIN  
AT THESE  
SNOWMOBILE  
HOT SPOTS**



Snowmobile trails criss-cross the state from Burlington to Bayfield. Whether you're new to snowmobiling or a seasoned pro, this short list can help get you started or spark inspiration for new places to explore. Of course, there are many more options throughout the state, so think of this as your trailhead: an excellent place to start.

**1. St. Germain** — Boasts 100-plus miles of trails, taking you along the shores of Little and Big St. Germain lakes. Stop by the Snowmobile Hall of Fame Museum in St. Germain (open Thursday-Saturday; [snowmobilehalloffame.com](http://snowmobilehalloffame.com)).

**2. Eagle River** — It's the Snowmobile Capital of the World! The area has more than 500 miles of groomed snowmobile trails. Trail 10/13 takes you past the city's annual Ice Castle creation constructed by area firefighters when the conditions are right.


**3. Peninsula State Park** — The park has 17 miles of scenic trails that take you down the shores of Tonnison Bay and Nicolet Bay, with many chances to stop and take in the scenery while connecting you directly to additional county trails.

**4. Kettle Moraine State Forest-Southern Unit** — A 57.5-mile network of state forest trails joins private trails in Waukesha, Jefferson and Walworth counties. Trails traverse through the southern hardwood forests, pine plantations and open vistas.

**5. Wild Rivers State Trail** — Passing through Douglas, Washburn and Barron counties, this 104-mile trail crosses the Namekagon River, a federally designated river and part of the St. Croix National Scenic Riverway.

**6. Marathon County Forest** — The forest encompasses more than 30,000 acres and has more than 42 miles of snowmobile trails, which are part of nearly 800 miles of funded trails throughout the county. Head to the Kronenwetter Forest Unit for plenty of wildlife, flat lands complemented by rolling terrain, and diverse forests of oak, hardwoods, aspen and pine. And don't miss out on the Nine Mile Forest Unit, which has 10 miles of designated snowmobile trails.

**7. White River State Trail** — This 19-mile trail takes riders between Elkhorn in Walworth County and Dover in Racine County, with a short gap in Burlington. It passes by numerous bridges, scenic vistas, quaint towns, farmlands and wetlands. It's within 5 miles of Lake Geneva and Big Foot Beach State Park.

**8. Buffalo River State Trail** — Start at a trailhead in either Mondovi or Fairchild for this 36-mile trail that follows a historic railroad bed. The trail, named for the many bison that once inhabited the area, travels through Trempealeau, Buffalo and Eau Claire counties. 

*Andi Sedlacek is a publications supervisor in the DNR's Office of Communications.*

*Wearing proper gear such as a helmet and face shield can help keep you safe on the trail.*



We've mapped all these trails out for you on Google Maps: [dnr.wi.gov/tiny/2066](https://dnr.wi.gov/tiny/2066)





Watch your speed when approaching a curve so you can react to anything that might be around the corner.

## SLED SMART: TAKE THESE TIPS ALONG FOR THE RIDE

### LT. JAKE HOLSCLAW

Safety is tops when it comes to outdoor fun. Just as you always check the gas in your snowmobile, please make following these safety tips as automatic as filling the tank.

- **Make a plan — and share it.** You'll have many choices on where to snowmobile in Wisconsin. Determine where you'll ride, when you'll leave and your estimated return. Then, share your plan with someone — a family member, neighbor, hotel clerk or even the outfitter.

- **Pack a phone.** Charge that phone and take it with you so you'll have a way to stay in touch.

- **Travel together.** It's best to head out with someone else, but if you're on the trail by yourself, look for other people who likely would welcome a travel mate. That way, you're not alone if something happens.

- **Stay on the trail.** Dedicated volunteers and local clubs maintain marked trails. Some trails also cross private property, thanks to gracious landowners. If you go off-trail, you could damage the landowner's property or run into hidden debris and other potential hazards. Remember, riding off-trail is trespassing!

- **No ice is safe ice.** It's best to stay off the ice when snowmobiling. Snow cover or under-ice currents can weaken ice, and there might be hazards you can't see. If you do choose to ride on ice, wear a float coat or carry a personal flotation device.

- **Take it slow.** Why rush? Keep your speed in check, especially after sunset when the law is 55 mph max. Watch for curves, sharp turns, stop signs, trees, bumps, ice heaves, sudden visibility changes due to weather and other riders who may come around the corner. You'll need space to react to a surprise — life is full of them.

- **Gear up.** Wear your helmet with goggles or a face shield to protect your face from flying debris. Also, wear layers of water-repellent clothing and remove clothing strings or anything that could get caught in the machine.

- **Pack right.** Be sure to carry a flashlight, knife, compass, map and waterproof matches. It's a good idea to have a few bandages or first-aid ointment, too.

- **No drinking and driving.** Finally, but possibly most importantly, avoid alcohol until you've parked your sled for the day and are ready to share fun stories from the ride. Get some sleep and be prepared to enjoy another great day on the trail! 🍷

*Lt. Jake Holsclaw is a conservation warden and the off-highway vehicle administrator for the DNR.*



# YOU OTTER KNOW

ANDI SEDLACEK



ISTOCK PHOTOS/GERALD CORSI

Otters? In Wisconsin? You betcha! They're everywhere — they've been documented in every county throughout the state. But we're not talking about the sweet, cartoon-eyed otters who hold hands while sleeping. We're talking river otters, which are so elusive they're rarely caught on trail cameras.

## KNOW YOUR OTTERS

River otters spend a lot of time in the water, which is why these semi-aquatic critters are difficult to detect. They live near lakes, rivers, streams and wetlands, crossing dry land to get from one body of water to another.

River otters stick around areas of water with a reliable food source and mainly eat fish like carp and suckers. But they're opportunistic eaters, so they'll also eat shellfish, crayfish, amphibians, reptiles and even small mammals like muskrats. Basically, they'll take what they can get when it comes to food.

Though river otters are primarily nocturnal, mostly active at night, they can be seen during the day, which is when they go out and about to eat.

River otters are often mistaken for many other furbearers like fishers, weasels and mink. Of those four animals, river otters are the largest, weighing 10-30 pounds and measuring 3-4 feet long, including their tail.

They can run pretty fast, up to 15 miles per hour, and can slide even faster — remember, they're semi-aquatic, so they're often wet. Their webbed feet and long, muscular tails help them navigate water masterfully.

*The North American river otter (Lontra canadensis) is active year-round near waterbodies where food is available.*



## ALL-SEASON ANIMAL

Every season is the season of the otter; they're active year-round and breed annually. River otter pups, also called kits, are generally born in the early spring in litters of two to four. Breeding season begins again soon after that in April and May.

Otters have a unique breeding strategy involving delayed implantation, which also happens in other animals like black bears, weasels, bats and kangaroos.

After breeding, there is a period of about 10 days when a blastocyst, or ball of cells, forms and then cell division stops. The blastocyst, which also can be thought of as an embryo, won't implant in the female's uterus and will remain dormant in her body through summer and fall.

In the winter, the embryo will then implant and continue to grow and develop, and the female otter will be pregnant for two or three months. When spring rolls around and more food resources are available, the river otter pups are born and the breeding cycle starts again.





*An otter slide in the snow indicates activity nearby.*

WISCONSIN DNR

Would a river otter hurt you? Otter-human interactions are rare in Wisconsin. If one happens, it's likely a female protecting her pups — as always when it comes to wild animals, keep wildlife wild and leave them be.

### **SURVEYING WISCONSIN'S OTTERS**

River otters are challenging to detect, but the DNR's Wildlife Management program is finding creative ways to keep tabs on them.

The DNR mainly gathers population data on river otters through harvest numbers from trappers. Along with that data, a survey is sent to a sample of trappers for additional details on their harvest that year, and another survey is sent to fur buyers to gather information on pelt prices.

In winter 2021-22, the DNR conducted its first-ever river otter bridge site survey to determine where otters are in different areas around the state.

Staff selected data collection sites at bridges around the state, targeting those over streams large enough to ensure some open water year-round and under-ice space for catching fish. Sites also required low human and vehicle traffic and had to allow safe access to 800 meters of stream bank around the bridge.

Each bridge site was visited four times over the winter, one to three days following at least 2 inches of fresh snow in good tracking conditions, ensuring at least three days had passed since the last survey. Staff looked for otter signs like tracks, scat, evidence of sliding and air holes.

The survey continued again in the winter of 2022-23, and DNR staff conducted 247 surveys at 70 bridge sites around the state.

The data showed Wisconsin's river otter population is stable and the elusive and curious creatures are doing well in the state. But you'd never know — unless you're lucky enough to spot one out for a slide. 🦦

*Andi Sedlacek is a publications supervisor in the DNR's Office of Communications.*



*River otters can be difficult to spot, but they're found throughout Wisconsin and occasionally are even caught on a trail camera.*

SNAPSHOT WISCONSIN



# EXPANDING ACC

## ZACH WOOD

Wisconsin's hunting culture is rich — steeped in generations of history, tradition and a shared commitment to ensuring the next generation of hunters can enjoy their time outdoors.

Hunters help make this vision a reality each time they take a young person hunting, volunteer to teach a hunter education class or provide input through the Wisconsin Conservation Congress each year. Every time they buy new gear, they also help generate millions of dollars annually for expanding access to hunting opportunities — whether they realize it or not.

The Federal Aid in Wildlife Restoration Act of 1937, better known as the Pittman-Robertson Act, established a federal tax of 11% on the sale of shotguns, rifles, ammunition and archery equipment. There's also a 10% federal tax on handguns. All funds from the tax are distributed back to states for the exclusive purpose of supporting wildlife habitat restoration, preservation and expanding access to public lands.

Pittman-Robertson fund distribution is based on a formula that

accounts for each state's size and the number of hunting licenses sold. Thanks to Wisconsin's outstanding license sales, the state consistently punches above its weight with federal distributions, ranking eighth nationally in 2023 with nearly \$34 million in federal funds received.

Tim Lizotte, DNR's Lands and Habitat section supervisor, said that money is essential to expanding public access to hunting.

"It really is thanks to these funds generated by our hunters that Wisconsin has made some of the biggest investments to expand access

to hunting opportunities in recent years," he said.

In the past few years, Lizotte noted, excise money has been used to:

- Improve over 50 miles of public hunting access roads;
- Repair more than 100 hunter access parking lots;
- Build an accessible group hunting yurt;
- Install seven new accessible hunting blinds at DNR properties;
- Improve hundreds of miles of walking trails used by hunters; and
- Add more than 500 acres of public hunting land to the Leola Marsh Wildlife Area.

Funds also have been instrumental in several recent DNR land purchases, including adding 1,830 acres adjacent to Princes Point Wildlife Area in Jefferson County. All these projects are making Wisconsin's hunting opportunities more accessible than ever.

"None of that could have happened without Pittman-Robertson funds," Lizotte said.

### BY HUNTERS, FOR EVERYONE

While the funds are derived from hunting-related purchases and designated for improving hunting habitat,



*Accessible bridge at Dane County's Badfish Creek State Wildlife Area.*

WISCONSIN DNR



WISCONSIN DNR



# CESS FOR ALL

the projects benefit everyone, even if they're simply hunting for a beautiful view or a pleasant stroll in nature.

"Even though these projects are technically for hunting purposes, everyone who enjoys Wisconsin's outdoors benefits from them," Lizotte said. "Hunter access trails can make for a beautiful walk. The boat launches we repair for waterfowl hunters get plenty of use from kayakers and canoers."

Blinds might be used almost as often by people watching birds as hunting them, he added.

"Even if you've never hunted and never will," he said, "the odds are that you benefit from the funds the DNR receives thanks to the sale of hunting and recreational shooting equipment."

## MONEY STAYS IN PLACE

To ensure states continue to invest in their natural resources, Pittman-Robertson dollars have a few built-in accountability measures.

States must commit to a 25% match for any money received to be eligible for the program, incentivizing continued funding for preservation and accessibility. Additionally, participation requires states to adopt laws prohibiting the diversion of money from hunting and fishing license sales for any purpose other than the administration of their state wildlife agency.

In other words, Lizotte said, there is accountability "ensuring the dollars earmarked for natural resource projects and programs always go where intended."

In addition to high-profile initiatives such as land acquisition, habitat preservation and accessibility improvements, Pittman-Robertson funds support critical day-to-day work at the DNR. This includes financial support population surveys, wildlife research and essential habitat management.

The Pittman-Robertson program was initially enacted in response to rapidly declining game populations, which threatened hunting opportunities nationwide. The funds are as necessary today as ever.

The DNR remains committed to preserving Wisconsin's natural resources and expanding access so all may enjoy them. Delivering on this is only possible with the support of the Pittman-Robertson program — and the passion and commitment of Wisconsin's hunters. 🦌

*Zach Wood is a public information officer in the DNR's Office of Communications.*

## LEARN MORE

Among other things, federal Pittman-Robertson funds support accessible hunting opportunities in Wisconsin such as deer and turkey hunting for those with disabilities, [dnr.wi.gov/tiny/2026](https://dnr.wi.gov/tiny/2026). The program also helps fund hunting blinds on public lands, [dnr.wi.gov/tiny/2021](https://dnr.wi.gov/tiny/2021).



*Funding from excise taxes on hunting gear are used for projects like access roads, parking lots, hunting blinds and trails used by hunters and others.*

## WISCONSIN BENEFITS

The 1937 Federal Aid in Wildlife Restoration Act, also known as Pittman-Robertson, established excise taxes on the sale of hunting equipment to support wildlife habitat and access to public lands. Wisconsin has ranked in the top 10 among states in funding in each of the past five years.

YEAR	WISCONSIN ALLOCATION	NATIONAL RANK
2023	\$33,751,346	8
2022	\$31,606,529	9
2021	\$19,647,702	8
2020	\$17,654,380	6
2019	\$19,739,356	8

*Learn to Hunt events at places like Sandhill Wildlife Area help to grow hunting's reach in the state.*





# PROTECTING THE VINES

How Wisconsin winemakers are adapting to climate change

**MOLLY MEISTER**

It's a brisk cold morning in mid-December, with the mercury hovering around 15 degrees. While many of us are snuggling under blankets or enjoying a warm cup of coffee, Philippe Coquard and his small team of workers are bundled up braving the elements and handpicking frozen grapes on their 27-acre vineyard in Prairie du Sac.

These special grapes, known as St. Pepin, are on their way to becoming Wollersheim's award-winning ice wine, known for its intensely sweet taste, almost like liquid honey. Affectionately known as the "nectar of the vines,"

it's a holiday treat that pairs well with cheesecake, pecans and other desserts.

Ice wine is among dozens of specialty wines sourced from grapes grown around the state. It joins the ranks of wines created with other Midwestern grape varieties bred to thrive in Wisconsin's historically cooler climate.

However, as state temperatures fluctuate between unseasonal highs and lows, and Wisconsin experiences extremes of droughts or heavy precipitation, local winemakers are feeling the effects of climate change.



*St. Pepin grapes at Wollersheim, soon to be picked for the winery's sweet ice wine.*



WOLLERSHEIM WINERY

## 'WORST OF BOTH WORLDS'

Early in the 2023 growing season, Wollersheim lost 70% of its grape crop due to weather-related stress. The area had experienced temperatures north of 80 degrees in early April, and the plants began budding prematurely.

When a late spring frost hit, the buds did not survive, recalled Coquard, owner and head winemaker at Wollersheim.

"We have been seeing spring starting earlier, and the warmer temperatures cause the vines to start growing and budding out earlier, but then you have a cold snap and the buds get waterlogged and turn into little ice cubes," Coquard said. "It's devastating not only for us but for all the apple growers and fruit tree growers as well."

Steve Vavrus, state climatologist at UW-Madison, said this is one example of a growing trend.

"These warming spring temperatures could mean the worst of both worlds," he said. "You not only have a freeze to deal with, but you now have vulnerable plants, which had there not been the early warm-up, would have remained dormant and protected from that subsequent cold."

## DEVASTATING DROUGHT

Aside from the early warming spell, a persistent drought plagued Wisconsin crop growers for most of the 2023 growing season. For Colleen Halverson, co-owner of the 80-acre Wild Hills Winery in Muscoda, the drought caused severe problems for their grapevines.

"We experienced this incredible rain deficit, and that's fine to an extent," Halverson said. "The vines love the heat, they love the sun, and we do want the vines to experience some distress, because that's what channels the plants' energy into the fruit."

"But then we started seeing extreme distress. The leaves were starting to wilt, so we had to water them manually, which is unheard of."

Halverson and her husband, Aaron, have helmed the small winery since 2019, and this summer was their first experience with drought conditions.

"A lot of wineries that are a little older and more established than us have drip systems and irrigation systems, but we have nothing like that," she said. "So for us, it was like my husband buying yards and yards of hose at Walmart, strapping a big container of water on the back of the tractor and just going through and dumping water over our grapes."

Heading into the winter, the Halversons are concerned about how the drought will affect their vines — especially the 500 baby vines they planted in the spring. They're hoping all the watering they did will protect the young vines from dying off, but it's a waiting game to see what will come back in spring.

## WHEN IT RAINS, IT POURS

When it comes to climate change, another obstacle crop growers face is unpredictably

heavy rainfall. In between long bouts without any rain, the handful of summer storms that do roll in can be detrimental to farmers, Vavrus noted.

"Getting a lot of rainfall at once is bad for any sort of crop," he said. "It can lead to flooding, runoff and damage if the plants suddenly find themselves in standing water because they simply can't absorb it all."

Coquard has experienced that first-hand.

"In comparison, drought is easier to manage because you can always turn the water on, but you cannot turn it off," he said. "Excessive rain is also a very serious issue because, in addition to erosion, it can also lead to fungus and weed growth."

These climate change-related challenges are not unique to grapes and winemaking — corn, soybean and other crop farmers are experiencing similar difficulties. So are livestock farmers.

"Farmers have to try and keep livestock cool during heat waves. We saw very extreme heat in late August, and to a lesser degree over Labor Day weekend," Vavrus said of 2023 conditions. "You can have these sophisticated cooling systems with big fans that spray water. They're very effective, but they're not cheap."

"These are the sorts of adaptation measures that we can certainly implement in a changing climate, but it's a cost/benefit ratio. If you're a farmer, it's all about the bottom line."



WILD HILLS WINERY PHOTOS

*A little distress can be good for the grapes that are turned into wine, but too many climate extremes may have a negative effect.*





Grapevines overwinter at Wild Hills Winery in Muscoda.

## A LIFE OF ITS OWN

The effects of climate change on Wisconsin agriculture are undeniable, but there is hope.

As a 13th-generation winemaker, Coquard has been in the business for over 40 years and has seen it all. Like the winemakers before him, he knows he and his team can adapt to whatever challenges they might face.

Over the decades, for example, Coquard has learned to diversify species, irrigate, mulch, mow, spray, try new equipment — whatever it takes to keep the grapes healthy.

While the growing tactics might change from year-to-year, he finds comfort in the predictable winemaking process itself. At the end of the day, Coquard is still making wine the same way his predecessors did centuries ago.

Halverson finds inspiration in the resiliency of the grapes. “They have to

be tough, and they have to be able to withstand those incredible extremes,” she said.

She even sees an upside in the difficult conditions of this past growing season.

“I think we’re going to see some pretty high-quality wines this year because of the heat and the drought. I think it just really concentrated a lot of great flavor into the grapes,” she said.

“The vineyard has a life of its own. It’s an organic being in the sense that it will grow and do what it needs to do and adapt. And that’s what’s amazing about it.”

*Molly Meister is a public information officer in the DNR’s Office of Communications.*

## LEARN MORE

The Wisconsin Initiative on Climate Change Impacts, a joint effort of the DNR and UW-Madison’s Nelson Institute for Environmental Studies, includes an Agriculture Working Group that studies, creates and shares adaptation strategies for Wisconsin’s wide variety of agricultural industries. For information, check [wicci.wisc.edu/agriculture-working-group](http://wicci.wisc.edu/agriculture-working-group). For more about Wollersheim Winery, go to [wollersheim.com](http://wollersheim.com), and for Wild Hills, see [wildhillswinery.com](http://wildhillswinery.com).



# Winter

Mulled wine — also called gluhwein in German, which translates to “glow wine” — can be a warm treat for a cold day. Here’s a simple recipe for gluhwein from Colleen Halverson, co-owner of Wild Hills Winery in Muscoda, who lived for a time in Germany and learned some gluhwein-making tips.



*Dealing with climate change adds another layer to the agricultural process at wineries such as Wollersheim in Prairie du Sac.*



# Warmer

1 bottle of red wine  
 ¼ cup honey (more or less, to taste)  
 2 cinnamon sticks  
 5 whole cloves  
 8 allspice berries  
 3 star anise  
 3 tangerines, sliced

Place all ingredients in a slow cooker on low heat for at least 30 minutes, stirring occasionally, and it's ready to serve.

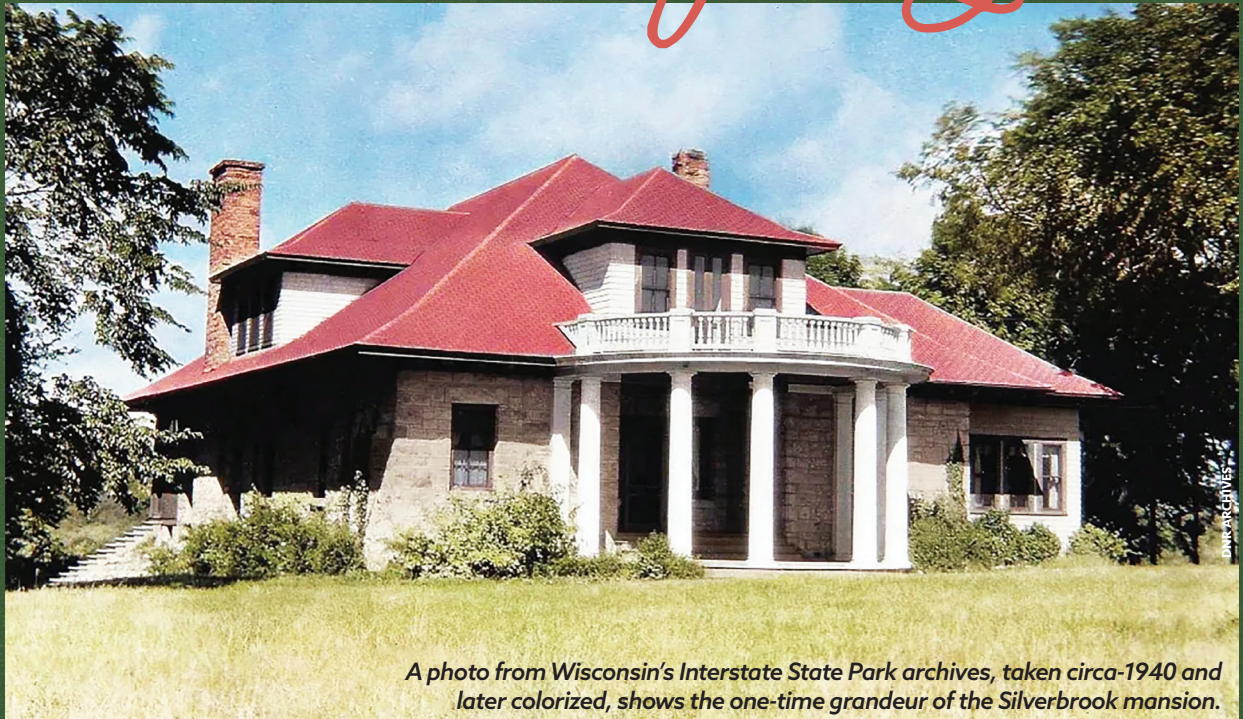
Pair it with a creamy and salty cheese such as aged cheddar, blue cheese or camembert and roasted nuts and you'll have the perfect combination for an evening spent with a book by the fire, holiday parties and everything in between.





# *Back in the Day*

# FROM GRAND ESTATE TO GONE *for Good*



A photo from Wisconsin's Interstate State Park archives, taken circa-1940 and later colorized, shows the one-time grandeur of the Silverbrook mansion.

ANDREA ZANI

*Interstate's past holds a tale quite extraordinary*





"SILVER BROOK" ON THE ST. CROIX RIVER  
STONE HOUSE. TWELVE ROOMS - FOUR BATHS  
ELECTRIC POWER, REFRIGERATOR, HOT WATER SYSTEM



"SILVER BROOK" ON THE ST. CROIX RIVER  
LOOKING WEST ACROSS THE ST. CROIX VALLEY FROM  
FRONT PORCH. HOUSE FORTY-FOUR FEET



"SILVER BROOK" ON THE ST. CROIX RIVER  
VIEW SO. EAST FROM VERANDA  
HIGHWAY ALONG BROW OF RIDGE

On June 1, 1974, thick clouds of black smoke billowed from a 19-room limestone mansion on the grounds of Wisconsin's Interstate State Park. Fire officials watched as it burned. After being gutted by fire, the home was razed, wiping away nearly all evidence of its existence.

The blaze had been intentionally set by officials with one purpose: to destroy the building. The once-glorious mansion known as Silverbrook had become a hazard, ravaged by more than a decade of neglect, Wisconsin weather and vandalism.

Without the resources to save it, Silverbrook was left to pass into the annals of history. And, oh, but what a history it was!

From mining operation to country estate to important gathering place for civil rights leaders — not to mention local rumors of brothel use, hauntings and old-time gangster connections — the remarkable Silverbrook story has a little bit of everything.

"It was a property many of us could only dream of," said historian and writer Haley Prochnow, whose extensive research has unearthed fascinating details of the estate. "There was so much folklore surrounding this place that I had to attempt to separate fact from fiction."

## EARLY HISTORY

Silverbrook was built in St. Croix Falls in the late 1800s, commissioned by Hezekiah Holbert, a banker and grain broker from St. Paul, Minnesota. He and his family lived seasonally at the mansion while Holbert worked to pursue his dream of establishing a copper mine on the more than 200-acre property.

Alas, the Holbert Mining and Mercantile Co. was a failure. Yielding no riches, the mine was abandoned, and Holbert sold Silverbrook in 1908.

In the meantime, in 1900, Wisconsin had established Interstate as its first state park adjacent to the property. Silverbrook existed as Interstate's neighbor, running through a series of owners from the nearby Twin Cities who mostly used the estate as a summer retreat.

Among them were Robert and Nina Payne, who bought Silverbrook in 1929. Their ownership was notable for the great care they took with the property, including adding a stone wading pool and fountain. At some point, Silverbrook was wired for electricity.

An informational flyer created by Robert Payne, possibly as he looked to sell Silverbrook, detailed many of the property's amenities: St. Croix River view overlooked by a large screened porch, two-car garage, stone barn and tool house, a brook and waterfall, five artesian springs with water piped into the home, concrete water tower, fruit trees, large fenced garden, acres of timber, stocked trout ponds and more.

Silverbrook was, by any standards, a treasure.

## SILVERBROOK PASSES AWAY



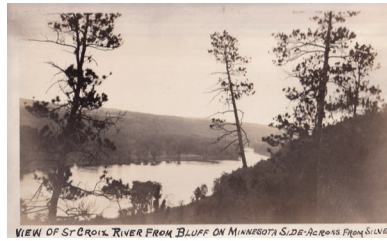
Saturday, June 1, was a dark day for this old house known as Silverbrook, in the Wisconsin Interstate Park. The house would soon be burned as unsalvageable. The house, built in 1906, had 11 bedrooms, in addition to fine marble pillars and railings.

*A controlled burn brought the end of Silverbrook and the St. Croix Valley Country Club in 1974.*



With clouds of black smoke billowing over its head, Silverbrook is gutted by flames before it is leveled to the ground. The house was once cared for by the Christiana family.





## GLORIOUS COUNTRY CLUB

From the Paynes, Silverbrook passed to Frank and Agnes Wukawitz, who, like Holbert, had dreams to make it something big. In this case, they wanted to create a ski resort. With a café and 100-foot ski hill, they managed to fulfill their ambitions for one season until the unexpected death of Frank Wukawitz forced the Silverbrook Resort to close.

What was next for Silverbrook? It didn't take long for that question to be answered after Agnes Wukawitz sold the estate in 1956. Enter James and Annabelle Rideaux.

The Rideauxs were well-known socialites, civil rights champions and members of the Rondo neighborhood, a thriving Black community in St. Paul. Together — by most accounts through the passion and energy of Annabelle — they quickly transformed the property into the St. Croix Valley Country Club.

The spot became a getaway destination for friends, guests, members of Rondo social and civic clubs, and NAACP meetings. One such meeting included notable civil rights leaders the Rev. Floyd Massey Jr. and the Rev. Denzil A. Carty, key players at the time on issues of equity in housing, public schools and the workplace.

Country club activities included fishing, hiking, archery, cotillions and debutante celebrations, birthday parties and games on the back porch with a view of Silverbrook Falls. It was just another way the Rideauxs found to nurture critical connections.



"It is inspiring that Annabelle and James Rideaux loved and believed in their community so much that they created the St. Croix Valley Country Club," said Prochnow, who is on the board of the St. Croix Falls Historical Society. "I'm always surprised how many people react to the story with, 'I had no idea!'"

## AMAZED AND INSPIRED

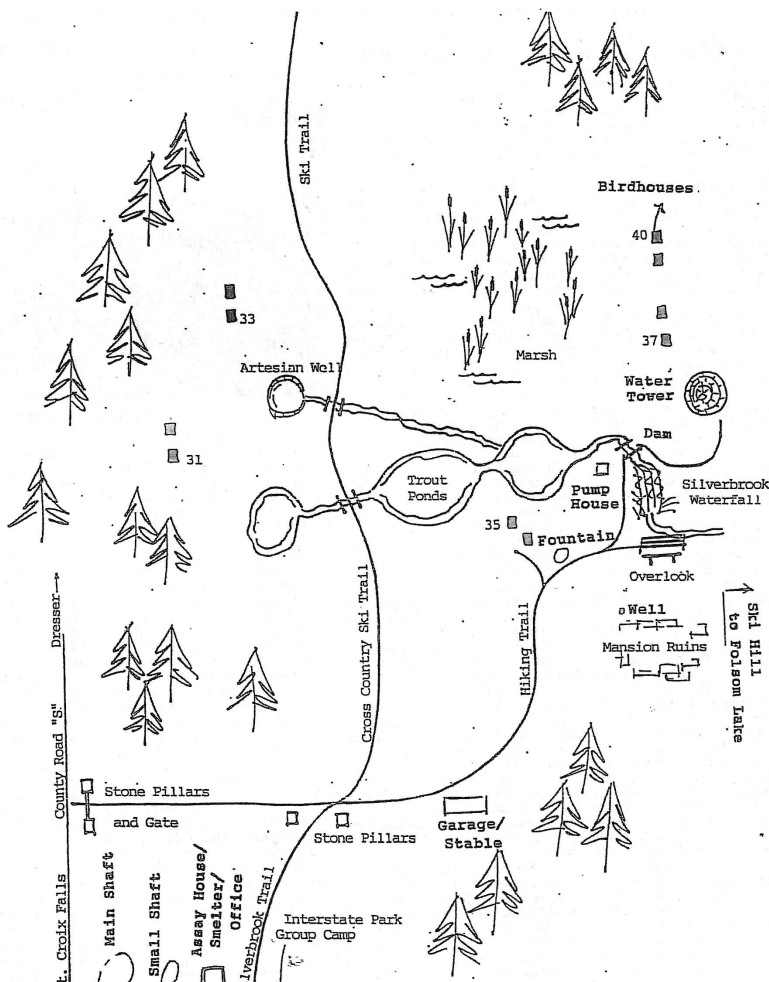
For filmmaker Cherrelle Swain, the St. Croix Valley Country Club tale is a personal one — she's the great-granddaughter of the Rideauxs. Swain knew some of her ancestors' story and learned more after connecting with Prochnow through ancestry.com.

"I'd heard the stories," she said of the wonders of the country club. "But you just don't know. I came to find out it was all true. I'm still blown away."

Swain is particularly impressed by the influence of Annabelle, who led the way in establishing the country club as a vital extension of the Rondo community, while James appeared to embrace more of the estate's outdoor pursuits.



Filmmaker Cherrelle Swain and her uncles — Joel Edmond, left, and Gordon Edmond — visit the site at Interstate State Park where Swain's great-grandmother once owned a popular country club.







"SILVER BROOK" PROGRESS OF CONSTRUCTION ON FOUNTAIN



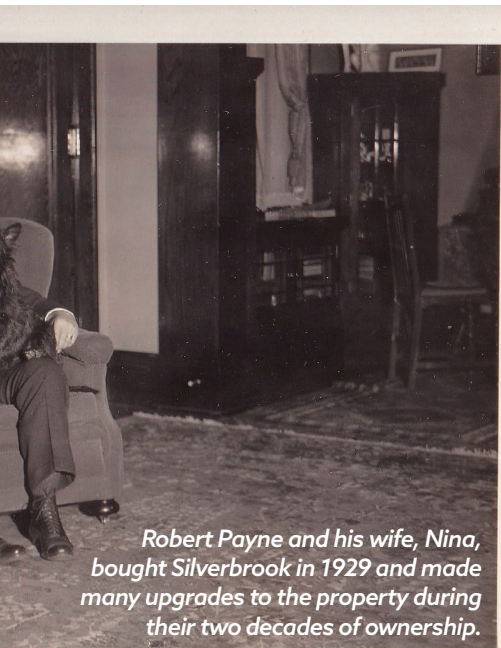
"SILVER BROOK" AUTUMN VIEW - LOOKING NORTH



"SILVER BROOK" LOOKING SOUTH-EAST ALONG FRESH WATER FRONTAGE



"SILVER BROOK" OUTLET OF THE BROOK



Robert Payne and his wife, Nina, bought Silverbrook in 1929 and made many upgrades to the property during their two decades of ownership.



COURTESY OF CHERRELLE SWAIN

Annabelle Rideaux and her husband, James, created the St. Croix Valley Country Club as a vibrant social gathering place when they owned the Silverbrook property in the late 1950s and early '60s.

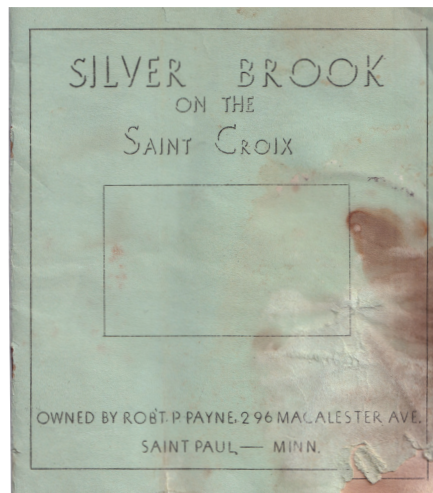
"My great-grandmother's legacy and spirit continue to be an inspiration to me every day," said Swain, who grew up in Burnsville, Minnesota, and now lives in Washington, D.C.

Through her filmmaking, Swain is working to tell the story that not only reflects her family's journey but recounts an important piece of the nation's history.

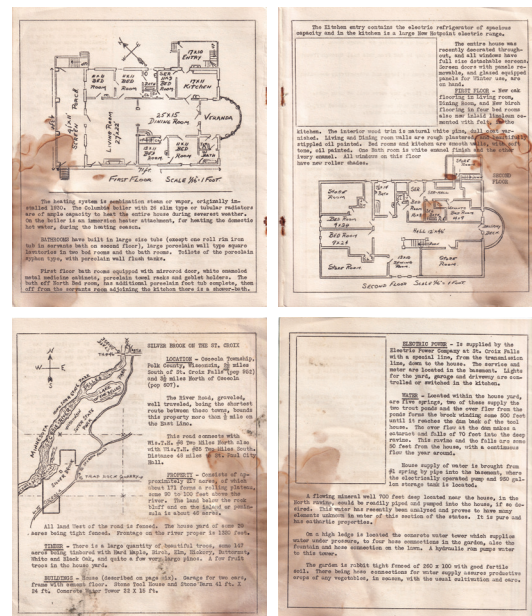
"I want to highlight her story as a hidden figure in history," Swain said of Annabelle. It's a way of honoring her legacy, Swain said, and also a documentation of "what Black families have lost and what they've gained."



Gordon Edmond recalls spending time in his youth at the St. Croix Valley Country Club property, where a waterfall remains visible along the trail today.



A booklet prepared around 1950 by Silverbrook owner Robert Payne offers numerous details of the once-glorious estate.

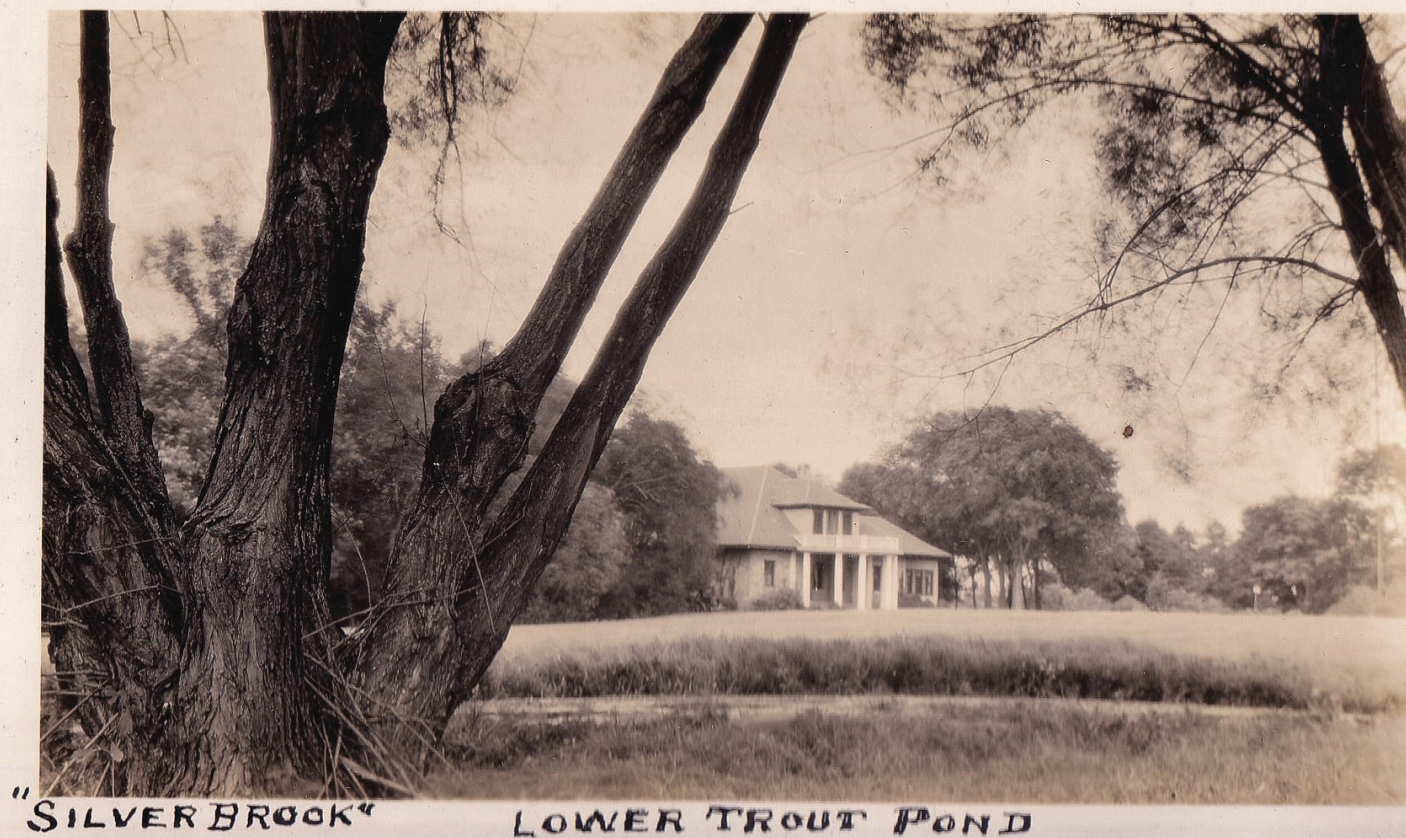


Nina Payne at the fountain on the Silverbrook grounds, 1940.



DNR ARCHIVES





"SILVER BROOK"

LOWER TROUT POND

### MORE THAN JUST BUILDINGS LOST

The loss in question was a devastating one. In the late 1950s, to make way for Interstate 94, the city of St. Paul began demolishing the Rondo neighborhood, displacing families, closing businesses and dispersing the community with meager compensation. Former Rondo residents were left with little to help them pick up the pieces.

The destruction of Rondo added even more significance to the St. Croix Valley Country Club, making it a vital touch point as community members sought to remain connected.

But by 1962, with Rondo gone and times changing fast, the St. Croix Valley Country Club was facing challenges, no longer the grand gathering place it once was. The Rideaux had no choice but to place the property in foreclosure.

A Los Angeles-based developer bought the property and, after a run of vandalism, hired a local family to live there briefly and do their best to maintain it. Still, time began to take a toll.

In 1970, the state of Wisconsin purchased the Silverbrook mansion and surrounding property in an effort to expand Interstate State Park. The mansion remained vacant, and time continued its assault. By 1974, well, that's when the fire was set.

Burned and plowed over, Silverbrook all but disappeared.

As for the gain in all this, Swain said she sees that in the empowerment that comes in telling what really happened — to the property, to the people.

"You have to find the power in the story and in remembering and learning," she said. "That's something we are gaining through this. ... I'm excited for the energy around this story and to be able to get it out there."



"SILVER BROOK" SEARCH LIGHT VIEW

TAKEN AT 10 PM



LOOKING TOWARD THE TOWN OF ST. CROIX FALLS - NORTH - FROM MINNESOTA BLUFF

St. Croix River view from the Silverbrook estate.





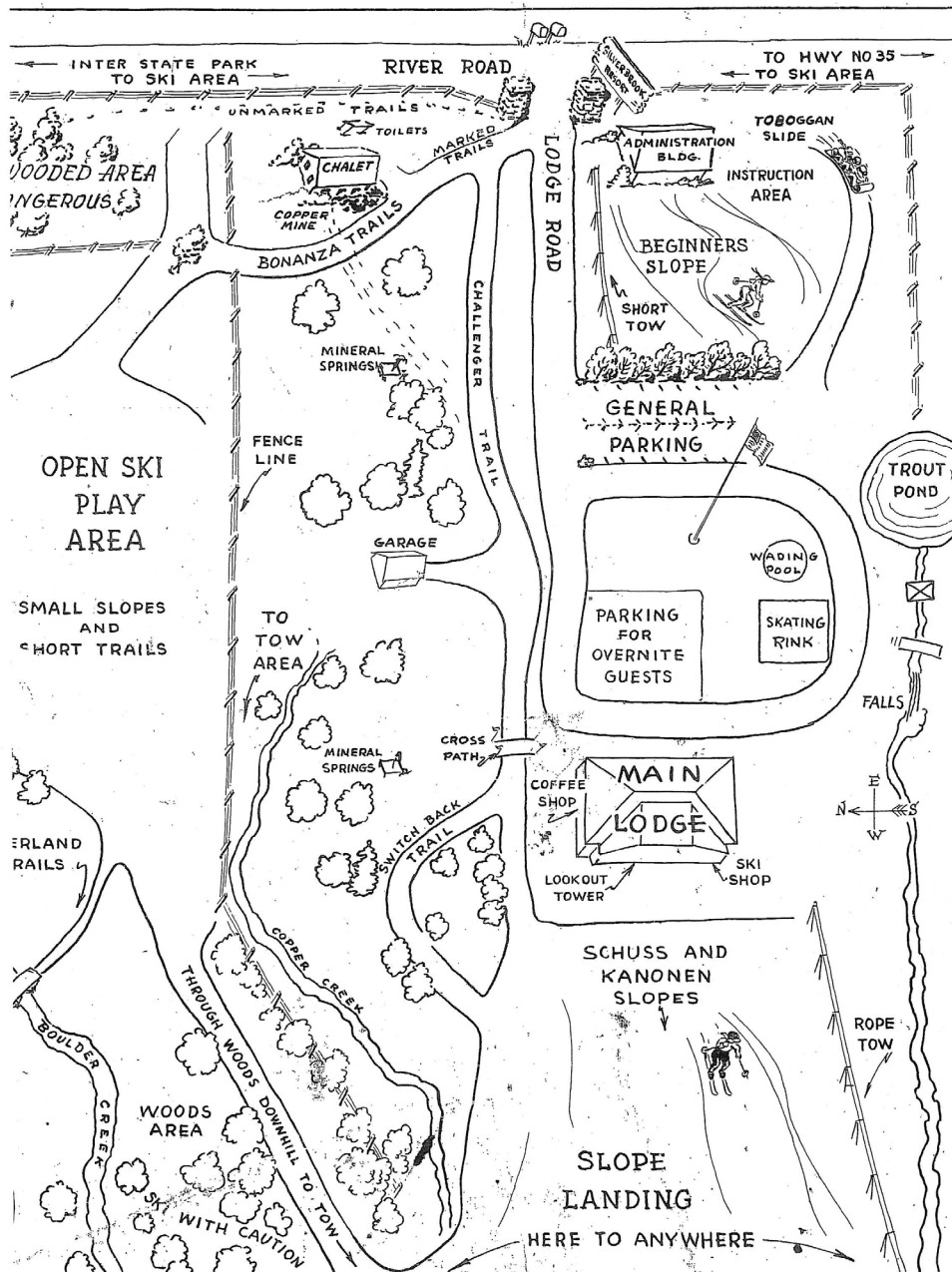
"SILVER BROOK" THE MAIN DAM WHEN WATER HAD CUT UNDER JULY-1931



"SILVER BROOK" DRIVE THROUGH MIDDLE GATEWAY



"SILVER BROOK" TWO CAR GARAGE



This historic map shows the Silverbrook property when it was briefly operated as a ski resort in the early 1950s.



"SILVER BROOK" LIMB SAW ON FOUNDATION



"SILVER BROOK" EQUIPMENT FOR CONCRETE CONSTRUCTION



"SILVER BROOK" WAITING FOR THE ONE O'CLOCK WHISTLE TO START WORK



"SILVER BROOK" MINERAL WELL WITH ARRANGEMENT FOR SYPHONING-LOOKING SOUTH



"SILVER BROOK" EQUIPMENT FOR HAULING ROCK AND GRAVEL





On the grounds at Silverbrook, 1940s.



"SILVER BROOK TWO GUARDIANS OF THE TROUT PONDS"

## ALL THAT REMAINS

Today, visitors to Interstate State Park can see only the faintest remnants of the erstwhile estate along the 1.2-mile Silverbrook Trail and 1.1-mile Silverbrook Loop. Both trails are mostly flat and fairly accessible. Parking is available near the shelter or off of Highway S near 113th Avenue.

To educate visitors about the site's history, interpretive signage is in the works — a joint effort of DNR staff, Swain, Prochnow and Interstate's Friends Group.

"Some driveway pillars might be visible and remnants of a wading pond ... foundation, trout ponds and mine buildings," Interstate park manager Matthew Densow said of what can still be seen.

Not too long ago, Prochnow and Swain walked the trails together, along with Swain's brother and two uncles, both of whom remember visiting the location when they were boys during the heyday of the St. Croix Valley Country Club.

"It was a really special day," Swain said of the tour. "My uncles had not been back since they were children. It was a dream. I'm a huge hiker and outdoors girl, and it was just breathtaking."

What's left of a trout pond from Silverbrook's heyday.



A safety fence surrounds a long-abandoned copper mine at Interstate State Park, part of what was once a large privately owned estate.





Densow credits Prochnow's research and writing about Silverbrook with generating interest and clearing up "a few misconceptions about what happened on the property" — the nebulous brothel and gangster connections among them. The real story, it turns out, is much more compelling.

"I know the story of Silverbrook and the St. Croix Valley Country Club is just the beginning as we cultivate Black and Indigenous history in our community," Prochnow said. "These stories are integral to our cultural growth and understanding."

### A NEED TO TELL THE STORY

For Swain, it's been especially gratifying to learn more about her great-grandmother's rich life narrative, especially what happened to the Rondo neighborhood and the triumph-to-tragedy tale of the country club. She never knew many details, she said, as it was difficult for her family to talk about the heartbreak of that period.

"It's just a reminder of why you have to dig so deep sometimes to get those stories," Swain said.

And telling the story is vital to help as much as possible in healing, she added. While ongoing organized efforts like the Reconnect Rondo physical land bridge project and St. Paul's Inheritance Fund for former Rondo families work on a governmental level, storytelling works in a more personal way.

"My family lost a lot during Rondo," she said, and that included their Wisconsin country club. "Some of that knowledge needs to be passed down by learning their stories."

As more is shared about the splendid estate once gracing Interstate's landscape, remembering the past — including the difficult parts — may help realize a better future.

"It's about how we can learn generation over generation, not just how to preserve our own legacy, but as our elders are aging, to do it in a way that honors them," Swain said. "It's about encouraging and challenging people to look back." 🍷

Andrea Zani is managing editor of Wisconsin Natural Resources magazine.



Visitors to Interstate State Park in St. Croix Falls might notice a pair of stone pillars, marking what was once the driveway leading to a beautiful estate known as Silverbrook.



Interstate State Park's trails wind through what was once the Silverbrook estate, including a waterfall and other scenery.



Plant growth covers the site of the fountain at the historic Silverbrook estate.



Remnants of an outbuilding on the Silverbrook site.

### LEARN MORE

"Silverbrook and the St. Croix Valley Country Club," a presentation by historian Haley Prochnow and featuring Cherelle Swain, can be viewed via a YouTube link on the website of the St. Croix Falls Historical Society, [scfhistorical.org](http://scfhistorical.org). For information about visiting Wisconsin's Interstate State Park, check [dnr.wi.gov/topic/parks/interstate](http://dnr.wi.gov/topic/parks/interstate).



# WINTER ROAD RULES

*Plan ahead to stay safe this season*

## WISCONSIN DEPARTMENT OF TRANSPORTATION

Winter is just around the corner. When it comes to driving, now is the time to get ready for the slippery conditions and frigid weather that comes with winter in Wisconsin. Get ready to explore our great outdoors this winter by ensuring you and your vehicle are prepared for winter road conditions.

### PACK AN EMERGENCY KIT

Consider carrying the following items in your vehicle in case you become stranded:

- Blankets or sleeping bags
- Hats, warm socks, gloves/mittens
- Flashlight with extra batteries
- First-aid kit
- Booster cables
- Windshield brush/scraper and shovel
- Drinking water and non-perishable food
- Sand or cat litter for traction
- Cell phone charger



*Be sure to pack some safety essentials before hitting the road this winter.*

### BEFORE YOU GO

Make sure your vehicle is working properly before getting behind the wheel. Winter conditions can cause wear and tear, so maintain these things regularly:

- Keep your fuel tank at least half-full to prevent lines from freezing and provide extra fuel if you get stranded. Make sure electric vehicles are fully charged.

- Check the condition of your battery, antifreeze, lights and cooling system.
- Replace worn windshield wipers and fill up washer fluid.
- Check tires and spares for pressure, tread and damage. Fill each tire to the manufacturer's recommendation and replace when you can see President Lincoln's head if you insert a penny in the tread.
- Remove snow and ice from the windows, lights, roof and hood.

### DRIVE WITH CAUTION

Winter weather is a regular part of life in Wisconsin, but it can lead to dangerous road conditions. Last season, winter weather contributed to almost 19,000 crashes in the state.

If possible, stay off the roads during severe winter weather and wait until conditions improve. Staying home eliminates the risk of a crash and helps keep the roads clear for first responders and snowplow drivers.

When you are out, follow these winter driving tips:

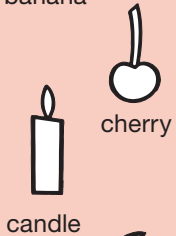
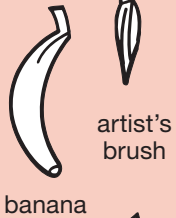
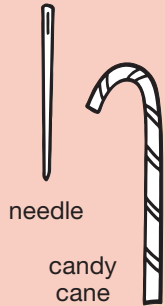
- If you must travel, check [511wi.gov](http://511wi.gov) or download the 511 WI app for updates on road conditions or incidents along your route.
- Snow means slow. Allow extra travel time and following distance, and reduce your speed.
- Turn on your headlights anytime conditions make it difficult to see.
- Leave room for snowplows and move over or slow down for stopped emergency vehicles.
- If you get stranded or slide off the road, stay in your vehicle with your seat belt on and call for help. Getting out of the vehicle in traffic is very dangerous.
- As always, buckle up and put down your phone while driving. Every trip, every time.

### LEARN MORE

For more from WisDOT on winter driving, scan the QR code or check [dnr.wi.gov/tiny/1996](http://dnr.wi.gov/tiny/1996).







Highlights

International.Highlights.com



# GET CREATIVE



DANIEL ROBINSON

# WITH HOLIDAY CLEANUP

ANDREA ZANI



Opening all those holiday presents sure can be lots of fun! But when everything is unwrapped, it also can leave plenty to clean up.

Here's a look at what to do with all that trash, some recyclable and some not. You can make a big impact by helping to remind your adults what to do with these things!

- **Cardboard:** Flatten boxes and place in your recycling bin.

- **Holiday lights:** Strings can get tangled around recycling equipment. If nowhere near you has a special recycling program for broken or unwanted lights, put them in the trash.

- **Plastic bags, film and wrap:** These also get tangled in equipment. Clean, dry plastic bags and wrap are accepted at many store drop-off locations. Everything else should go in the garbage.

- **Bows, ribbons and gift bags:** Save them to reuse next year! It could even become a fun joke with your family, passing them around year after year. Otherwise, place bows/ribbons in the trash. If they're free of glitter, plastic or foil, gift bags can be recycled. Just remember to remove any strings or ribbons first.

- **Batteries:** These shouldn't go in your recycling bin. Alkaline batteries can go in the trash. Rechargeable batteries can cause fires so please don't throw them away. Learn how to dispose of these at [dnr.wi.gov/topic/recycling/batteries.html](http://dnr.wi.gov/topic/recycling/batteries.html).

- **Holiday trees and greenery:** Some communities collect natural trees for recycling. If yours does, remove bags, tree stands, ornaments, lights and metal objects. Wreaths and other items often contain wires that can damage wood-chipping equipment and should be thrown away.

What's left? Wrapping paper is OK to go in most curbside recycling bins in Wisconsin, unless it can't be torn, has glitter or metallic finishes, or is made with plastic. So, gather up what you can and recycle away.

Tissue paper is a special case and can't be recycled. Why? The fibers in the paper are too short to be used again. Don't worry — we have a fun craft activity to help you turn this holiday trash into treasure! ♻️

*Andrea Zani is managing editor of Wisconsin Natural Resources magazine.*



*Try a fun craft project to reuse holiday tissue paper.*

DANIEL ROBINSON

## SUPPLIES

Tissue paper in a variety of colors; you could even use some of that wrapping paper with glitter or metallic finishes that can't be recycled.

Scissors

Cardstock paper, at least two pieces; white is recommended but have fun with other colors as well.

Glue stick

Pen or pencil

Paint or markers (optional)

Hole punch (optional)

## DIRECTIONS

1. Start with several sheets of leftover tissue paper or gift wrap, choosing whatever colors you like. Cut the tissue paper into 1-inch or 2-inch squares — don't worry about making them perfect squares or exactly the same size.

2. Take a piece of white cardstock paper and glue the squares in random patterns all over the cardstock, overlapping the collage to your liking.

3. When the glue dries, turn over the cardstock and draw triangles on the back, making these any sizes you like — tall, short, skinny, wide — then ask an adult to help you cut them out.

4. Decide if you want this to be a photo or a card; for a card, fold your second piece of cardstock in half. Create your treescape — you can leave it plain or have fun and draw a sky and the ground, building the background.

5. Use the triangles you've cut out to create trees by overlapping them and then gluing them down to the cardstock. Draw in some fun critters, too, if you'd like, adding birds or deer or anything else you want for your winter scene.

**Bonus:** Make "snow" on your treescape by using a hole punch to punch out small white circles from another piece of cardstock or wrapping paper that's white on the back. Dab a bit of glue where you want the snow, and sprinkle on the white circle pieces, shaking off any excess. Push down the remaining circles to be sure they stick — it will look just like white snow clinging to your colorful scene!





# FALL ISSUE PUZZLE ANSWERS

NEW YORK TIMES SUNDAY CROSSWORD

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# Highlights Hidden Pictures®

## ANSWERS

46 [wnrmag.com](http://wnrmag.com)



# NEW YORK TIMES SUNDAY CROSSWORD

DOUBLE TALK

BY RICH KATZ /

EDITED BY WILL SHORTZ

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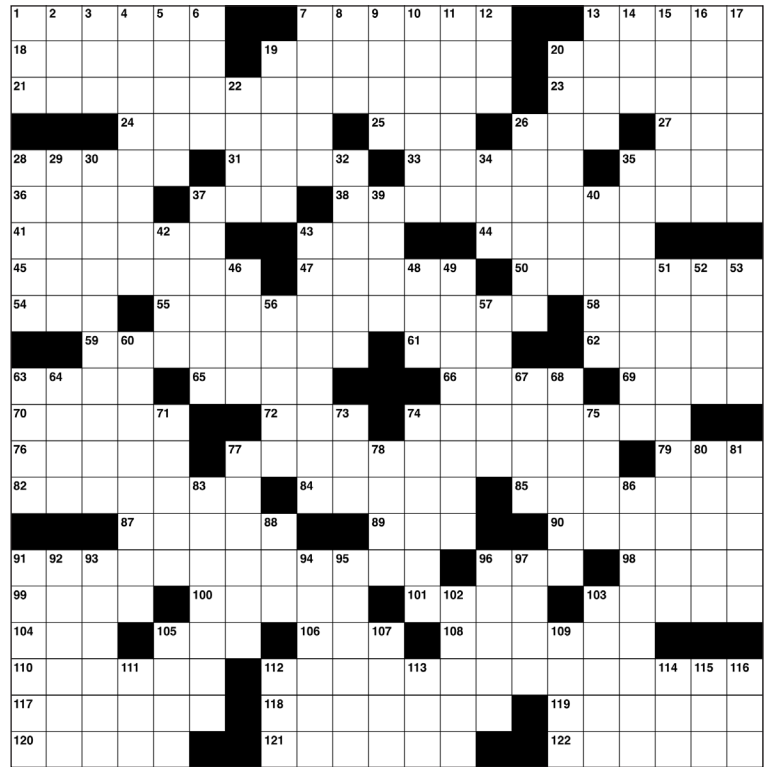
## ACROSS

- 1 Pulled one's pants up?  
7 Group of mimes, maybe  
13 Neither crushed it nor got crushed  
18 Revenue source for a website  
19 Excitement  
20 Really bad  
21 But wait!  
23 One of the Wayans brothers  
24 Output of Michel de Montaigne  
25 Asian honorific  
26 Bone insert following an accident  
27 In the past  
28 She shares a home with Homer  
31 Small plateau  
33 Broad key  
35 Pig  
36 Potato, in Indian cooking  
37 Buffoon  
38 To peace!  
41 Totally phat  
43 Nail-polish brand  
44 Queen's accessory  
45 "Star Wars" queen  
47 Go \_\_\_\_  
50 Classic Greek archetype?  
54 Word for word, in Paris?  
55 Holy Week  
58 Get ready  
59 Place to drop off a package  
61 With 2-Down, end of the Gettysburg address?  
62 Wipe clean  
63 Lhasa \_\_\_\_  
65 Pointer  
66 "E pluribus unum" appears on one  
69 Crushed (it)  
70 "The Glass Bead Game" author  
72 Lipa who sang "Levitating"  
74 Martini ingredient  
76 Text tweaks  
77 Air rights  
79 "Cool" that's no longer cool  
82 Mind-numbing detail  
84 Skip a party, in a way  
85 French cosmetics chain  
87 Coming 'round again  
89 Padre's hermana  
90 Psychedelic dose  
91 Bare feet  
96 Snoop

- 98 Ones who get setters better?  
99 Surface alternative  
100 One praised at the Kaaba  
101 Actress Rowlands  
103 One winging it?  
104 "And so on"  
105 Professional connections  
106 Guacamole or tahini  
108 Air-\_\_\_\_ (extra-secure, as a computer)  
110 "How considerate!"  
112 We won!  
117 Goes "bottoms up"?  
118 Brainstorms  
119 Beethoven work once called the "Bonaparte" Symphony  
120 Impatiently agitated  
121 Volkswagen model  
122 One of eight in a V8

## DOWN

- 1 Visit to the Kaaba  
2 See 61-Across  
3 Certain web portal  
4 Deliver (on), as a promise  
5 Beethoven wrote a piece "für" her  
6 Relaxation spots  
7 Lock  
8 Spoil  
9 Yours and mine  
10 Loan shark  
11 Grilled sandwich on Italian bread  
12 Part of a Western herd  
13 You might get it for a lot  
14 "\_\_\_\_ been thinking ..."  
15 Peak once known as Mount McKinley  
16 First state to legalize psychedelic mushrooms  
17 "Star Wars" Jedi  
19 "Mmm, I see what you're saying"  
20 Hershey toffee confection  
22 Scottish toppers  
26 Commit a holiday-etiquette no-no  
28 Term of address that becomes less formal when its middle letter is removed  
29 Enterprise alternative  
30 Flew by



- 32 Have ambitions  
34 One of its uses is boring  
35 One doing kickflips and ollies, in slang  
37 Red-faced  
39 Exhaust ... or something found near the exhaust  
40 Wrathful  
42 Yoga equipment  
43 Memorable part of Rossini's "William Tell"  
46 First of five at the Globe Theater  
48 Toss in  
49 Infuser contents  
51 See in  
52 Trick  
53 Column that might lead to a row?  
56 Home-organizing guru Marie  
57 Focuses of some sonograms  
60 Put on airs  
63 [purposeful cough]  
64 Salon treatment, for short  
67 Book before Obadiah  
68 Like those at the top, it's said  
71 Ingredient in perfumes  
73 Early ISP  
74 Using an e-cigarette  
75 Delivery org.  
77 Sources of winter strains

- 78 "You've got the wrong guy"  
80 Muse of love poetry  
81 Blue Ribbon beer  
83 Connective tissues in the legs, informally  
86 Some YouTube content, in short  
88 Real head-turner  
91 Middy nap  
92 "\_\_\_\_ Girl" (Billy Joel hit)  
93 Ketchup container, maybe  
94 "Well, aren't you the cat's meow!"  
95 Complains, complains, complains  
96 Manages to acquire, as a table at a popular restaurant  
97 Bear whose porridge was too hot  
102 Everglades bird  
103 \_\_\_\_ dish  
105 Like a leaky pen  
107 Smartphone predecessors, for short  
109 Word with school or cook  
111 1040 collector  
112 Currency unit in Laos  
113 Flight spec  
114 Small problem  
115 Lead-in to sphere or system  
116 Sought office

Look for puzzle answers in the Spring issue.



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