

INSIDE:

Friends of Wisconsin State Parks Calendar
Natural Heritage Conservation Field Notes

WISCONSIN NATURAL RESOURCES

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Winter 2019 \$3.50

Weathering WINTER

**At-risk species
get a checkup**

**Helping hand
for injured birds**

**Back in the day:
American
Birkebeiner**





EMMA MAYEN, DEPARTMENT OF VETERANS AFFAIRS

DNR Secretary-designee Preston D. Cole, left, and Department of Veterans Affairs Secretary Mary Kolar at the Mackenzie Center near Poynette. Both secretaries salute our veterans and encourage them to find their adventure and enjoy Wisconsin's wild side.

A message from Preston D. Cole

Wisconsin's hunting legacy runs deep.

Every hunting trip creates a new memory and there's always a story to tell. As fall turns to winter, it is important to recognize the time-honored tradition of deer hunting in Wisconsin.

With an estimated 1.8 million deer on the landscape statewide, there were more hunting opportunities than ever for the state's annual nine-day gun deer season. For the first time in a decade, all Wisconsin counties had antlerless deer hunting opportunities, thanks to an abundant deer herd.

Everyone is welcome to join in the excitement of hunting in Wisconsin, from our youth to our veterans. The nine-day gun deer season takes place each November, the same month we salute our veterans and thank them for their service.

That's why myself and Mary Kolar, Secretary of the Wisconsin Department of Veterans Affairs, wanted to take time to acknowledge the veterans who hunt with a video message. You can find it on the DNR's YouTube channel — youtube.com/user/WIDNRTV.

As we take a moment to honor those who serve, I especially want to thank the veterans among our DNR staff. The commitment to public service ingrained at the DNR is no more evident than in the 201 staff members who are veterans, making up 5.5% of the DNR workforce. We are fortunate to have them as colleagues.

Wisconsin is ranked second among all states in the number of resident and non-resident hunters. Hunting is not only woven into the fabric of the state's culture, it is an important economic boost for local communities and the state.


For those of you who do hunt, I encourage you to take the time to introduce someone to your favorite sport. By doing so, you help protect Wisconsin's hunting heritage while at the same time enjoy the thrill of helping someone experience their first hunt.

Have no fear, dear reader, this issue highlights more than deer hunting. As I have shared before, Wisconsin is home to amazing natural resources. At the DNR, it is our job to protect those natural resources. This issue dives into the DNR's focus on clean drinking water, an irreplaceable resource, by looking at the work the department is doing to protect the water we drink.

In September, I sent a memo to DNR staff outlining the department's role in addressing climate change and clean energy. This issue explores what we are doing alongside other agencies to protect this state's great resources in a changing climate.

Other content includes stories on the mysteries of Mother Nature and how plants and animals endure Wisconsin winters, one woman's dedication to a bird rehab center, the conservation measures being used to help save one of the world's rarest butterflies and more.

Giving you an insider's view of the natural resources that make Wisconsin special, and introducing you to the people who protect them, is what this magazine is all about.

As always, from all of us at *Wisconsin Natural Resources*, thanks for reading. 

WISCONSIN NATURAL RESOURCES

Winter 2019 | Volume 43, Number 4



ABOVE:

Newport State Park, Wisconsin's only formally designated wilderness park, becomes a wonderland for winter enthusiasts when snowfall packs its trails. This serene scene is among the many seasonal images captured at state properties for the annual Friends of Wisconsin State Parks photo contest, with more featured in the 2020 FWSP Calendar included in this issue.

PHOTO BY WENDY MURKVE

ON THE COVER:

When cold weather arrives in Wisconsin, plenty of species say so long for winter. For the regal cardinal, though, flying south is for the birds. They stay put year-round, their flashy red coats looking especially bright against evergreens and fresh white snow.

PHOTO BY HERBERT LANGE

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Editor-in-chief Sarah Hoyer
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Printing Schumann Printers

Wisconsin Natural Resources magazine (USPS #34625000) is published quarterly in Spring, Summer, Fall and Winter by the Wisconsin Department of Natural Resources. The magazine is sustained through paid subscriptions. No tax money is used. Preferred Periodicals postage paid at Madison, WI. POSTMASTER and readers: subscription questions and address changes should be sent to Wisconsin Natural Resources, P.O. Box 37832, Boone, IA 50037-0832. Subscription rates are: \$8.97 for one year, \$15.97 for two years and \$21.97 for three years. Toll-free subscription inquiries will be answered at 1-800-678-9472.

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PUBL-OC-019
ISSN-0736-2277

HARDY FLORA AND FAUNA FIND CLEVER WAYS TO ENDURE WISCONSIN'S WINTERS.

Christopher Tall and Kathryn A. Kahler

As temperatures and snow begin to fall and Wisconsinites settle in for another winter, we take comfort in fireside recliners, hot cocoa and cozy blankets. And, of course, snowblowers. Some of us just throw in the towel, forward the mail and head south to warmer climes.

While they can't don boots or mufflers, our furred and feathered friends have their own special adaptations for toughing out Wisconsin winters.

Birds that don't migrate, like the regal northern cardinal on our cover, weather the winter by fluffing their feathers to trap air, giving them an extra layer

of insulation. When food is scarce, cardinals frequent bird feeders where their heavy, cone-shaped beaks help them crack sunflower and safflower seeds, peanuts or cracked corn.

Other physical and behavioral adaptations in birds include specialized beaks for prying seeds from pine cones (crossbills), huddling together for warmth (sparrows), flocking in search of food (grosbeaks and waxwings), putting on fat and extra downy feathers (geese and grouse), shivering to generate warmth (chickadees and titmice), burrowing under the snow (redpolls), and using tree cavities to roost at night (nuthatches and woodpeckers).

Mammals have their own ways of coping with winter. Like birds, some put on fat and add bulk to their coats. Some cache extra food to eat later and huddle in tree cavities or burrows.

Others have specialized adaptations to keep them alive. While in hibernation, black bears recycle their

Masters of M



urine to utilize the nitrogen in their blood, guts and liver. This conserves strength and muscle mass and promotes healing from injuries they may have had going into hibernation.

It would take a book to cover the myriad methods our flora and fauna use to survive Wisconsin's harsh winters. We've chosen just a few to highlight here, trying to be detailed but simple enough to understand the often intricate biology behind nature's survival skills.

Along with each capsule, we feature entries from the extensive photo file the magazine has maintained over the years. We invite you to get out and snap a shot or two of how you see nature's winter warriors and send them to us at DNRMagazine@wisconsin.gov.

And should the polar vortex make its way to our state this year, don't forget your polar fleece mittens. ❧

Christopher Tall is a DNR communications specialist for the Forestry Division and Office of Communications. Kathryn A. Kahler is associate editor of Wisconsin Natural Resources magazine.

Other Nature

A half-inch coat of feathers insulates the chickadee in winter. These birds also eat to add significant body weight by day then use those reserves to survive long, cold nights, when they purposely lower their body temperature to conserve energy.

A downy woodpecker stops for a winter morsel.



Studies show that birds benefit from feeders, especially in severe winters when their natural food sources are unavailable. With the number of U.S. households with bird feeders estimated as high as 75%, that's a big boost for birds.

Fatty food sources like safflower, sunflower and suet help a variety of birds put on fat. That allows them to survive winter nights and improves nesting success in the spring.

Winter bird feeding is not only good for birds, it provides hours of enjoyment for birders stuck inside. Hanging a variety of bird feeders — from hopppers and tube feeders to platforms and suet feeders — will assure a diversity of birds in your backyard.

Want to up your game and help scientists track bird populations? It's as easy as sitting at your kitchen window with binoculars and a tally sheet.

Several projects are available for birders to help count birds seen in their backyard or on a winter hike.

- Wisconsin eBird will help you get started with tools for managing lists, photos and audio recordings plus a mobile app for collecting and reporting your sightings. Visit eBird.org/wi/about to learn more.
- Project FeederWatch is run by the Cornell Lab of Ornithology and provides information about how to get involved with bird counting, as well as tips for feeding and identifying birds. Visit feederwatch.org for information.
- Become part of the longest-running citizen science birding project by joining others around the country in the Christmas Bird Count. Visit audubon.org/conservation/science/christmas-bird-count and make this Christmas special for the whole family.
- The National Audubon Society invites birders to count birds over a four-day period in February (Feb. 14-17, 2020) with the Great Backyard Bird Count. Visit birdcount.org to learn more.



Cold feet, warm heart?



KYLE COKER

Badgers spend the winter in underground dens in a state of temporary hibernation called torpor, sometimes emerging when temperatures warm.

Badger digs in for long naps

The elusive American badger's talent resides in its expert ability to dig. These solitary carnivorous nocturnal mammals have extraordinarily long claws that are dull at the tips, which helps them create a network of up to 980 feet of burrows and dens. This network of tunnels is called a sett and may take years to complete!

In the winter months, badgers waddle down to their sett and enter a state of torpor, a period of about 29 hours where deep sleep slows their metabolism and conserves energy. It can be thought of as a temporary hibernation. They do emerge from their burrows when the temperature rises above freezing.

Before this temporary hibernation, however, a badger needs to hunt for food. A badger's menu might consist of ground squirrels, woodchucks, pocket gophers, snakes, moles, shrews, mice and rats.

Badgers are accomplished hunters and dig into the underground tunnels of their prey, sometimes intentionally covering up the exit routes so their prey cannot escape. During some hunting trips, badgers will work along with coyotes to round up their prey. Coyotes will chase prey into their dens while the badger catches the prey underground. Wildlife ecologists call this behavior mutualism.

During fall, badgers might save some of whatever they catch to eat later. This is called caching and is typically a behavior used in the autumn months to help the badger gain weight for a long, cold winter. Their food is hidden inside burrows and is usually found again and eaten within a few months.

Have you ever seen ducks standing on a frozen lake and wondered why their feet don't freeze? It turns out they have specially adapted arteries and veins that act as a heat exchange.

The birds' legs are intertwined with arteries carrying warm blood to their extremities, and veins carrying cold blood back to the heart. Heat is exchanged from arteries to veins before the blood reaches the feet, preventing body heat loss while keeping the feet just warm enough to prevent frostbite.

Research shows ducks only lose about 5% of their body heat through their feet. In extremely cold weather, you may see ducks and other birds standing on one foot with the other tucked up under their feathers. This serves as added protection by cutting the surface area exposed to the ice by half.



FRANK SCHENBERGER



HERBERT LANGE

Specially adapted arteries and veins in their legs allow ducks to stand the cold.



Deer hunker down in winter coats

At first glance, white-tailed deer may not look well prepared for the bitter cold of winter, yet deer have developed several practical adaptations that help them survive until spring.

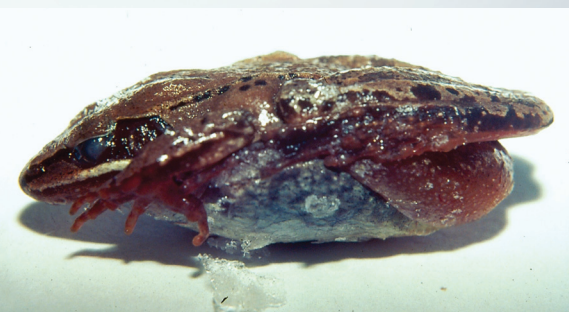
In fall, they seek out high calorie food such as fruits and nuts and build up fat reserves in their body. As chilly weather approaches, they shed their summer coats and replace them with thicker undercoats. Their overcoat grows to have darker, longer and hollow hairs called guard hairs that absorb heat from the sun and insulate their body.

Deer and moose are the only mammals that share this unique adaptation. Deer also have glands in their skin that produce oil, making the hairs in their coat hydrophobic and able to repel water from melting snow.

In winter, deer reduce their activity and hunker down with other deer in stands of coniferous trees like cedar, spruce and fir, which keep their leaves in winter. These stands are called “deer yards” and help provide valuable shelter from wind and snow.

Deer also are browsers, like goats, and aren’t dependent on looking under the snow for food. They sustain themselves with a diet of twigs, stems from low-hanging tree branches and saplings.

Deer build up fat, put on a warmer winter coat and hunker down in deer yards where they browse on twigs and low-hanging branches.



JON COSTANZO

The wood frog and other species can freeze solid in winter and be none the worse for wear come spring.

Frog-sicles and skin breathers

Perhaps the most amazing of all overwintering adaptations belongs to amphibians. Some Wisconsin frogs — most notably spring peepers and wood frogs — freeze solid during the winter.

When temperatures start to fall, they insulate themselves in the leaf litter on the forest floor. As their body temperature drops to freezing, their metabolism first speeds up and produces a natural anti-freeze, a type of sugar called glycol.

They gradually stop breathing, their hearts stop and brain waves cease. For all intents and purposes, they're dead. Come spring, however, they thaw out and resume their lives.

Other amphibians avoid freezing under the ice of lakes and ponds, where they take in oxygen through their skin and reduce their activity level — although central newts and mudpuppies remain active despite the cold.

The same is true of turtles. Most Wisconsin turtle species spend the winter under ice, where they either bury themselves in the mud or become semi-active by lowering their body temperatures and slowing their metabolism by as much as 99%.

Because they can't come up for air, painted turtles take in needed oxygen through their skin, mouth or cloaca — literally, through their butts! They also break down glycogen, then "borrow" chemicals from their shell and skeleton to counteract the resulting acidosis.

Ruffed grouse igloo

Some wildlife actually benefit from a big snowfall, taking advantage of the insulating value of snow. The ruffed grouse is one such species. It combines a seemingly irrational behavior with a specialized anatomical adaptation to make the perfect winter abode — a grouse igloo!

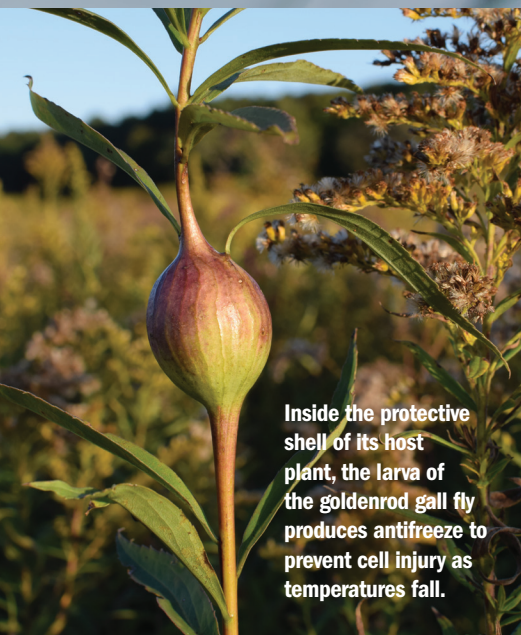
The grouse's winter food supply consists of buds of aspen, poplar, birch, cherry or apple trees. They sit in the tops of trees and can eat enough of the heat-producing buds in a half-hour to sustain them for a day or more. Their large crop — an extension of the esophagus used for food storage — is flexible and can be packed with food to be digested later.

In particularly frigid weather when there's about a foot of powdery snow on the ground, ruffed grouse are known to dive-bomb headfirst into the snow, working their way down until completely buried. The grouse's body heat quickly warms this igloo-like shelter several degrees above the air temperature. Provided the snow surface doesn't become crusted, it can hunker down for a few days in its cozy shelter.



A ruffed grouse may eat enough tree buds, its winter food source, in 30 minutes to last a full day or longer.

JERRY REED



Inside the protective shell of its host plant, the larva of the goldenrod gall fly produces antifreeze to prevent cell injury as temperatures fall.

CHRISTOPHER TALL

Fly on the inside

At the end of summer and into autumn, yellow flowers start to blanket the fields and prairies of Wisconsin. These sturdy plants grow tall and have a strong stem and root system. This plant is called the goldenrod, with a few different species found in Wisconsin.

Unbeknownst to the plant, a small female goldenrod gall fly has spent her time in the spring tasting the plant with chemical sensors in her feet to find a genetically matched plant. She then lays an egg within the stem, and the goldenrod grows around the egg, providing nourishment for the larva after it hatches.

During winter, cold weather triggers the larva living inside the goldenrod stem to convert its glycogen into glycerol and sorbitol, which serve as antifreeze by reducing water content in the body so ice crystals do not form and cause cell injury. This is called rapid cold-hardening (RCH) and is a response in insects that induces protective physiological changes within minutes to hours of exposure to low temperatures.

As winter wanes, rising temperatures prompt the larva to transform into a pupa and finally into adulthood. The goldenrod gall fly — now a winged insect — emerges from its flower stem home through an escape tunnel excavated during the larva stage. Welcome to spring!



Snowfall can be a boost for cottontail rabbits, allowing them to reach higher off the ground to browse for food.

Splitting hares

As its name suggests, the snowshoe hare — occupying mostly the northern half of the state — has specially adapted hind feet with stiff, dense hairs that help it travel on top of the snow. It also changes color from brown to white to camouflage itself in the winter landscape.

Its cousin, the eastern cottontail rabbit, is abundant in the southern half of the state. Both species change their summer diets of grasses and forbs when snow covers the ground. That's when they switch to the tender bark, twigs, buds and needles of a wide variety of trees and shrubs.

In winters with continual snowfall, each snow brings new opportunity to browse, as animals are able to reach higher into the shrubs.

GREG SCOTT


Incredibly shrinking shrews

Because shrews have a phenomenally high metabolism, they have to eat a lot — some consume two to three times their body weight each day. That means they're active day and night throughout the year.

In winter, they use underground tunnels or grassy runways under the snow to find prey, mostly insects, but also slugs, worms, amphibians and other small rodents. Water shrews, which have specially adapted feet allowing them to walk on water, can trap air bubbles in their fur. They can stay underwater — and ice — to hunt larvae and aquatic prey.

Research in Germany documented an amazing feat that helps common shrews survive the brutal cold — they actually shrink in size. Their spines shorten and major organs, including the brain, shrink by as much as 30%, then rebound in spring.

LINDA FRESHWATERS ARNDT



Shed antlers are full of calcium, phosphorus and mineral salts and provide winter dietary supplements to wildlife such as squirrels, raccoons, coyotes, mice and shrews like this one.

Squirrel tales

The eastern gray squirrel is active year-round, but during the winter it's more active mid-day when the temperature is generally warmer. When the weather is especially frigid, it may seek shelter in a tree cavity or hollow — often excavated by woodpeckers — lined with shredded bark, grass and leaves.

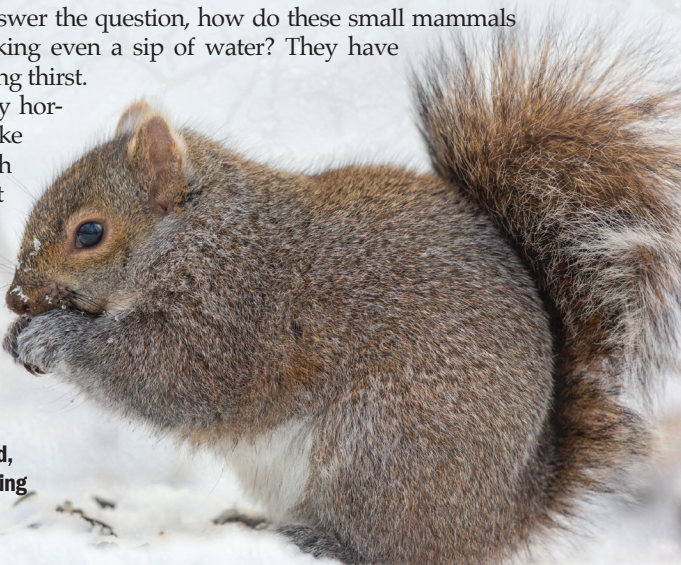
During winter, these squirrels rely on their sense of smell to retrieve acorns and nuts they busily hid and buried throughout late summer and fall.

Though tree squirrels don't hibernate, a smaller ground-dwelling cousin — the thirteen-lined ground squirrel — is a true hibernator. It can survive six months of the year asleep in an underground burrow without food or water.

The species packs on weight in autumn to prepare for its long nap. While hibernating, body temperature drops to that in the burrow and heart rate decreases from 300 beats per minute to 10.

Recent scientific studies answer the question, how do these small mammals endure that long without taking even a sip of water? They have evolved a means of suppressing thirst.

Hydration is maintained by hormones that move materials like salt and urea back and forth through the cell walls. In not being awakened by the need to get a drink of water, they are able to stay in their burrow until spring, when body functions return to normal.



Gray squirrels are active year-round, seeking shelter in tree hollows during especially cold temperatures.

LINDA FRESHWATERS ARNDT

Let's hear it for the trees

A common thread in over-wintering in nature is the ability of cells to change composition and structure and produce sugary "antifreeze." The same is true for trees whose winter survival depends on staving off water loss and freezing.

More than 50% of a tree is made up of water — which, in its frozen state, can be deadly to plants and trees. Think of ice crystals as tiny blades that, within a living cell, pierce the cell membrane resulting in death.

Trees in our temperate zone have evolved with adaptations to avoid the killing ability of ice in their veins, basically by reducing or cutting off the flow of water when temperatures fall below freezing.

Broad-leaved deciduous trees — maples, oaks, beech, birch, aspen and the like — drop their leaves each autumn, a process that stems the flow of water in the tree and eliminates the certainty of water loss by freezing in the leaves.

In winter, most of the water in a deciduous tree is stored as sap in the root system, where there's less chance of freezing. The sap that remains in the trunk and branches contains more sugar, which lowers the freezing point of the water.

With maple trees each spring, that sweetness translates into the maple syrup produced when day and nighttime temperatures achieve just the right balance to make sap flow.

Evergreens such as spruce, pines, firs and cedars have their own set of strategies to deal with the cold. Their needle-shaped leaves have less surface area and are covered with cutin, a waxy substance that also cuts water loss and protects from freezing.

Conifer sap is much stickier, or viscous, than that of deciduous trees and

not as susceptible to freezing. Their conductors — called tracheids — are much narrower in diameter, reducing formation of air bubbles that could puncture the vessel walls.

Also, because conifers lose their leaves gradually over several years as older needles dry and brown, they maintain a certain amount of photosynthesis year-round to provide nutrients to the tree.

There are other characteristics of deciduous and evergreen trees that help them weather the extremes of winter.

The conical shape of evergreens prompts heavy snow to slide off branches that otherwise might break from the weight. Similarly, deciduous leaf drop lessens the surface area available for snow and ice to accumulate and cause breakage.

In winter, a tree's bark protects it from temperature variations caused by nighttime lows and daytime highs, especially on frigid, sunny days. This prevents frost-cracking in the trunk and branches.

Though trees are most treasured and appreciated in warmer months when they provide shade, protection and vivid color for human pleasure, they offer untold value to Wisconsin's wintering wildlife.

Their sweet sap provides nutrition to sapsuckers and tree squirrels that nibble maple branches as winter wanes. Thick bark harbors insects that are mined by woodpeckers, excavating cavities that are in turn used by small birds and mammals to shelter from the cold.

Low branches of pines and spruces act as snowy shelters for mammals large and small. And cones clinging at the peaks of these trees are seed havens for small birds throughout the season.



R.J. AND LINDA MILLER

The needle-shaped leaves of evergreens are coated with cutin that cuts water loss and protects them from freezing.

Clean drinking water



PROTECTING AN IRREPLACEABLE RESOURCE.

Andrea Zani

In 1984, the Wisconsin Legislature passed a pioneering law designed “for the protection of public health and welfare” regarding one of the most basic requirements for human existence: the water we drink.

These Groundwater Protection Standards in Chapter 160 of Wisconsin state statutes — or simply, the Groundwater Law — instantly became the nation’s most sweeping criteria for fighting pollution and ensuring the highest standards to keep our water safe.

Thirty-five years later, the battle for clean water for everyone marches on. Gov. Tony Evers declared 2019 the Year of Clean Drinking Water because thousands of families do not have access to safe, clean drinking water.

“No one should ever be afraid to turn on their tap. Clean drinking water is a public health priority,” said DNR Secretary-designee Preston Cole. “Water is life-giving.”

The Wisconsin Department of Natural Resources has a long history of water protection. In addition to the groundwater law, the DNR is responsible for implementing and enforcing the Safe Drinking Water Act to safeguard the quality of Wisconsin’s drinking water.

Here you’ll find just a quick overview of a few hot topics regarding drinking water and groundwater. This magazine

has long featured stories on DNR’s work in this area and will continue to do so.

Although the official Year of Clean Drinking Water is coming to an end, the DNR’s work is not. From the emerging concerns of newly recognized contaminants to ongoing issues concerning lead, runoff and other classic pollutants, striving for clean drinking water carries on and moves the Wisconsin way — forward.

PFAS front and center

The acronym PFAS is being heard a lot lately and stands for per- and polyfluoroalkyl substances. This group of human-made chemicals has been used for decades in numerous products including non-stick cookware, fast-food packaging, stain-resistant sprays and certain types of firefighting foam that have made their way into the environment.

Work is underway to understand PFAS, including its health effects, and take steps to ensure safety. In July, following recent discoveries of PFAS contamination around the state, the DNR initiated a new



Firefighting foams can contain types of chemicals known as PFAS, which may leach into groundwater.

ISTOCK PHOTOS

voluntary testing program at 125 municipal wastewater treatment facilities. With known PFAS issues in Marinette, the DNR has been holding listening sessions there to keep the public informed.

The agency also is developing administrative rules to establish groundwater quality standards for two common PFAS compounds (no federal standards are currently in place). That process, outlined by Wisconsin law, follows science-based recommendations developed through interagency work with the state’s Department of Health Services and Department of Agriculture, Trade and Consumer Protection.

In early October, the DNR received results from the State Lab of Hygiene on a first round of testing for PFAS in surface water samples from five waterbodies near known or suspected PFAS contamination sites. Results showed elevated levels of PFOS, one type of PFAS, in Madison’s Starkweather Creek and in Silver Creek in Monroe County, and lower levels at three other waterbodies.

Results are posted on the DNR’s PFAS

initiatives website: dnr.wi.gov/topic/Contaminants/WaterQuality.html. These results and two more rounds of testing, including fish tissue sampling, will help direct DNR's investigative work regarding PFAS and inform efforts toward additional actions.

The most updated information on this developing issue can be found on the DNR's PFAS website, dnr.wi.gov/topic/Contaminants/PFAS.html. More health-related information is available from DHS, dhs.wisconsin.gov/chemical/pfas.htm.

Looking out for lead

As the water crisis in Flint, Michigan, showed, exposure to lead from aging water pipes is a public health concern that requires a proactive approach. According to the Centers for Disease Control and Prevention, Wisconsin's children are affected by lead poisoning in greater numbers than many other states.

Lead can leach into drinking water, causing serious health problems including permanent brain damage among children and infants.

Wisconsin law banned lead solder in plumbing materials in 1984, four years before such a ban was implemented nationally. Some lead drinking water fixtures continued to be manufactured until 1996. Lead can enter drinking water when plumbing materials and water lines suffer corrosion.

In October, the U.S. Environmental Protection Agency announced proposed updates to the federal Lead and Copper Rule for the first time in nearly 30 years, looking to improve testing, strengthen treatment requirements and keep the public better informed when issues arise.

Removal of lead service lines (LSL) is one way to help prevent lead from getting into drinking water. The only way to know if your water supply contains lead is through testing, and the DNR's Bureau of Drinking Water and Groundwater maintains a list of accredited testing laboratories

for lead and other substances. Find links on the Drinking Water homepage.

For municipalities, the DNR offers funding options for LSL replacement through the Safe Drinking Water Loan Program. Wisconsin's Public Service Commission also assists municipalities with LSL concerns.

Ensure you're well served

There are more than 800,000 private wells in Wisconsin, serving drinking water needs of roughly a quarter of the state's population. Nitrate contamination is Wisconsin's most widespread groundwater contaminant. It is increasing in severity and extent.

Private wells usually serve a single home or farmhouse, with the homeowner largely responsible for maintenance and safeguarding. Issues with a well's water can include such things as bacterial contamination or excess nitrates, especially harmful to infants and pregnant women.

Livestock manure is one contaminant that may infiltrate the water in wells. One way the DNR is addressing this issue is by regulating Concentrated Animal

Feeding Operations, or CAFOs, an important part of agribusiness in the state, defined as including 1,000 animal units or more. Naturally, an operation that feeds so many animals also must handle significant amounts of waste.

To keep pollutants from entering surface water and groundwater, the DNR regulates

manure application and waste storage structures at CAFOs. Permitting is done in accordance with the federal Clean Water Act and the U.S. pollutant discharge permit program, known in this state as the Wisconsin Pollutant Discharge Elimination System.

Contamination of well water can be from point sources, sites that are known contributors, or from nonpoint sources, which can include indeterminate runoff from residential, agricultural and natural sources. As with lead, the only way to know whether well water contains excessive levels of nitrates or other pollutants

is through water sample testing by a certified laboratory.

Council coordinates outreach

The Groundwater Coordinating Council, an interagency group dating to the passage of the Groundwater Law in 1984, facilitates activities related to groundwater in the state. This includes data management, public education, support for research activities and more.

The DNR provides administrative support for the GCC, which meets quarterly and sponsors forums and other outreach efforts. The GCC also prepares an annual report to the Legislature each August, summarizing council activities and addressing the state of groundwater resources in Wisconsin. Search dnr.wi.gov, "GCC," for more.

Other DNR water work related to the Legislature can be found with the newly created Speaker's Task Force on Water Quality. The bipartisan group dedicated to water quality issues held public hearings statewide this year. The DNR joined other agencies at those hearings and in formulating water quality recommendations for the Task Force.

Public water data

Public Water Systems fall under regulations of the federal Safe Drinking Water Act (SDWA) passed in 1974 and administered in Wisconsin by the DNR. A PWS has at least 15 service connections or serves an average of 25 people daily.

Through regular inspections, DNR drinking water experts help public well operators with SDWA compliance such as well code and sanitary standards. The DNR maintains a public Drinking Water System database with information including sample results, inspection findings, violations and other details; check dnr.wi.gov/dwsviewer.

The database is just one more way to help safeguard water supplies for all of us.



Andrea Zani is managing editor of Wisconsin Natural Resources magazine. Information for this report was culled from a variety of DNR program web pages, dnr.wi.gov.



Lab testing is the only way to know if a water supply contains lead.

>>> INFORMATION

Numerous water quality topics are covered in-depth through links found at the DNR's main landing page for drinking water — dnr.wi.gov/topic/DrinkingWater.

A fine Feather friend

PAT FISHER'S DEDICATION TO HER BIRD REHAB CENTER GIVES NEW FLIGHT TO MANY.

Story and photos by David Horst

The first time I visited Pat Fisher's house, a guy sitting at the kitchen table had a bald eagle in his lap, and a ruby-throated hummingbird was flying around in a bedroom. The bird rehabilitator's volunteer troops, there for the eagle's release, carried on as if there was nothing unusual about this scene.



A rescued great horned owllet is banded before release by Pat Fisher, left, and retired DNR warden Mike Young, a volunteer at Fisher's bird rehabilitation center near New London known as The Feather.

An injured raptor or crane in northeast Wisconsin has a good shot at returning to life in the wild if it makes it to The Feather Wildlife Rehabilitation and Education Center and the dedicated care of Pat Fisher. The 83-year-old Fisher lives bird rehab.

The Feather, a nonprofit, actually is Fisher's house north of New London and a series of large screened-in pens on the property where birds can regain the power to take wing.

"It's completely taken over my life. But what else would I do at this age?" Fisher said.

Fisher would have to stand on her toes to see over a 5-foot fence. Reddened eyes suggest permanent sleep deprivation. Tightly curled gray hair is cut to the practical length needed for someone who chops fish for ospreys and throws frozen rats to turkey vultures.

Here's how her days begin.

"I have cages to clean in the house. I have mice to thaw out and then I go into the Mouse House for three hours and clean mice.

"You have to raise rodents to feed hawks and owls," she said. "That's what they eat."

Devoted volunteers

Caring for injured eagles, cranes, owls, hawks, vultures and ospreys is not a one-person job. A crew of volunteers is dedicated to this woman.

Don Baumgartner, also the guy holding the eagle when I visited, met Fisher when he asked around about building a trail of bluebird houses. Before long, hardly a release took place without him.

If Fisher was banding a raptor, Baumgartner was holding it. He became one of her super volunteers. When Fisher asks, Baumgartner is there.

"Part of it is wanting to help, and then you see how she does it, how passionate she is and dedicated to every little detail," Baumgartner said. "I think that's what holds the people. When you see the dedication, you can't stop.

"I've never met anyone else like her in my life."

Three years ago, Baumgartner moved to Stevens Point, 25 miles away. He still volunteers plenty, but some of his duties have been picked up by a new super volunteer, retired DNR Warden Mike Young.

When Young was in the field, assigned to Shiocton, he relied on Fisher to take care of the many displaced or injured animals people bring to wardens.

"She's good at involving people," Young

said. "The warden comes off as the hero, even though Pat did everything."

Fly, eagle, fly

Young's adventures with Pat didn't always fit the formal definition of his job. Once, after spending part of a day pulling eaglets from their nest for banding, Young was asked about it by his supervisor. The proof was right there on the front page of the local newspaper — a photo of Young holding an eaglet.

While it may have seemed like Young had strayed from assigned tasks, the tide soon turned during a subsequent staff presentation by the DNR's chief warden. The chief held up the picture of Young and told the wardens he'd like to see more things like that.

"The older wardens have been absolutely phenomenal," Fisher said. "I knew them all and, boots on the ground, they're one hell of a group."

If you doubt Fisher and her band of volunteers can work miracles,



It didn't look good for this bald eagle after it was struck by a pickup and caught in the truck's grille, inset, but after a month at The Feather, it was ready to fly.

just ask DNR Warden Ted Dremel. He responded to a call early one morning in 2012, and it didn't sound hopeful.

A man was driving his pickup on U.S. Highway 10 near Weyauwega when a bald eagle swooped in to feast on a muskrat carcass on the road.

"He sees this flash of

brown and, before he knows it, it was in his grille," Dremel said.

The collision left the eagle embedded in the grille of the truck — its head, wings and one leg snagged by broken plastic.

Responding to the call for help,

Dremel was able to work the bird free and stowed it in a



Feather volunteer Don Baumgartner sometimes takes part in educational events involving ospreys and other birds being cared for at the rehab center.

dog carrier to deliver to Fisher.

James Ziegler, another prized Feather volunteer from Wolf River Veterinary Clinic in New London, examined the mighty bird. Incredibly, he found no broken bones, only damaged flight feathers, bruising and signs of a concussion.

It took a month of Fisher's care, but the eagle recovered.

To thank Ziegler for his gratis treatment, Fisher let him release the eagle on a Sunday morning in July. Ziegler held it up while wearing long leather gloves and released his grip.



Pat Fisher, 83, prepares to head up in a utility lift to check osprey nests, showing her tech savvy with a helmet cam for filming the experience.



Dr. James Ziegler has the honor of releasing a bald eagle he helped to heal at The Feather Wildlife Rehabilitation and Education Center. Ziegler, a veterinarian in New London, donates his time to the center.

The eagle flew out over a farm field, banked left and disappeared beyond a tree line. Fisher wiped away tears, as she does at every release.

Emotions in play

Fisher has seen a lot of harm to birds, some of it intentional, which riles her. She has saved many, but others have no chance of recovery and she must decide to end their lives humanely.

Asked about her emotions when she sees a bird released, Fisher answered with intensity.

"It makes all the crap worthwhile," she said. "It makes the Mouse House worthwhile. It makes the euthanasia worthwhile."

The Feather is getting by financially, Fisher said, thanks to donations generated by educational presentations and media coverage. Her dedication to it all

is unequivocal.

Being a rehabilitator is a job that tends to take over just about every corner of Fisher's world — if not the kitchen sink, then at least the refrigerator. Volunteer Ginny Heffernan said Fisher's refrigerator usually contains very little to support human life, but often a rodent to feed a raptor.

'Tireless' in her calling

Fisher's childhood didn't suggest she'd end up here. A robin was about the only bird she could identify. A mallard duck given to her by a friend got her interested in birds.

She worked for a bird rehabilitation group called the Aries Foundation before going off on her own. She supported her real calling with a series of part-time jobs, including school janitor and bus driver, and also worked at the New London newspaper.

Despite the many hours and skills Baumgartner has brought to Fisher, he feels he's gotten the better bargain.

"The things I've been able to do and the people I've been able to meet through her are unbelievable," he said. Those people include outdoorsman Jim Fowler and primate researcher Jane Goodall.

"The things I've learned from her that books could never teach you ..." Baumgartner mused.

"That woman's tireless," Young added.

No time to slow down

She's also adaptive, making full use of social media.

"It's my lifeline," she said. "I would be absolutely lost without that computer out there. That's how I communicate with everybody, anybody — 83-year-old people need a computer."


In addition to embracing technology, Fisher keeps apprised of all the requirements of wildlife rehab, licensed to band all birds except endangered species. She has been banding ospreys and tracking their travels for many years, and her banded birds have shown up in Puerto Rico, Costa Rica and Chile.

Fisher doesn't expect to retire, nor does she see anyone willing to take her place at The Feather. She may have only one way out of the commitment. "I'd have to die to get out of it," she said.

Baumgartner doesn't plan to let her out that easily. "We'll just throw the osprey bands in the coffin," he said.

Her main concern is for what will become of her teaching birds — injury victims unable to return to the wild. But she can't let those worries slow her down.

During this visit, there's a red-tailed hawk that was hit by a vehicle and embedded in the grille. A young man has brought it in for care.

Fisher will tend to it. If it survives, she tells the young man, he will be invited to release it. His eyes brighten and Fisher knows it's all worthwhile. 

David Horst is a former newspaper writer, editor and nature columnist now working at a nonprofit in Appleton. He has a blog about the outdoors, "Up on the Sandhill," found at uponthesandhill.blogspot.com.

>>> INFORMATION

For more about The Feather Wildlife Rehabilitation and Education Center, check its Facebook page at [facebook.com/147964821935787](https://www.facebook.com/147964821935787).



Mitigation matters for Wisconsin wetlands

DNR PROGRAM TACKLES RESTORATION, TARGETS GREATER CONSERVATION.

Andrea Zani and Raechelle Belli

Since the DNR's In-Lieu Fee Program, the Wisconsin Wetlands Conservation Trust, began five years ago, its work has centered on mitigation of wetlands — restoring vital wetlands as part of a process required by state law. Now, the WWCT has high hopes to do much more, holding true to its name and turning attention to broader water conservation goals.

"To date, the WWCT has focused on wetland mitigation, but going forward we hope to connect restoration opportunities for a wide range of aquatic resources," said Josh Brown, WWCT program coordinator.

Such a course would allow the WWCT to continue a strong foundation of wetland conservation in Wisconsin.

Wetlands provide numerous environmental benefits such as critical habitat for wildlife, natural purification for surface water and drinking water, and flood storage capacity. Because of their importance to the landscape, wetlands are regulated under state and federal law by the DNR and the U.S. Army Corps of Engineers.

In a nutshell, the WWCT's current




In Manitowoc County, wetlands are being returned to a 79-acre parcel at Woodland Dunes Nature Center. These photos show the restoration site and initial work of removing drain tiles put in place to enable agriculture.



CHRIS CAPLAN

SALLY JAROSZ

CHRIS CAPLAN



focus involves coordinating wetland mitigation projects as outlined by state statute. The WWCT operates in 12 service areas that align with major watersheds of the state, such as the Chippewa River, Rock River and Fox River watersheds.

Wetland mitigation projects are funded by fees paid to the program when wetlands are impacted by development. Mitigation is used to remedy lost ecological values and functions.

“Because of all of the great services wetlands provide, it’s important that we provide high-quality mitigation when they are impacted,” said Tom Pearce, WWCT projects manager.

Striking a balance for resources

A look at the short history and growing success of the WWCT must start with a basic primer on the mitigation process designed to ensure no net loss of wetlands.

To adhere to legal statutes when a development project impacts identified wetlands, the permit holder can be obligated to mitigate that impact. This is accomplished by restoring wetlands somewhere else in the same watershed.

The permit holder may complete their mitigation through the purchase of “credits” from a private wetland mitigation bank, where wetlands have already been restored. This is the preferred first

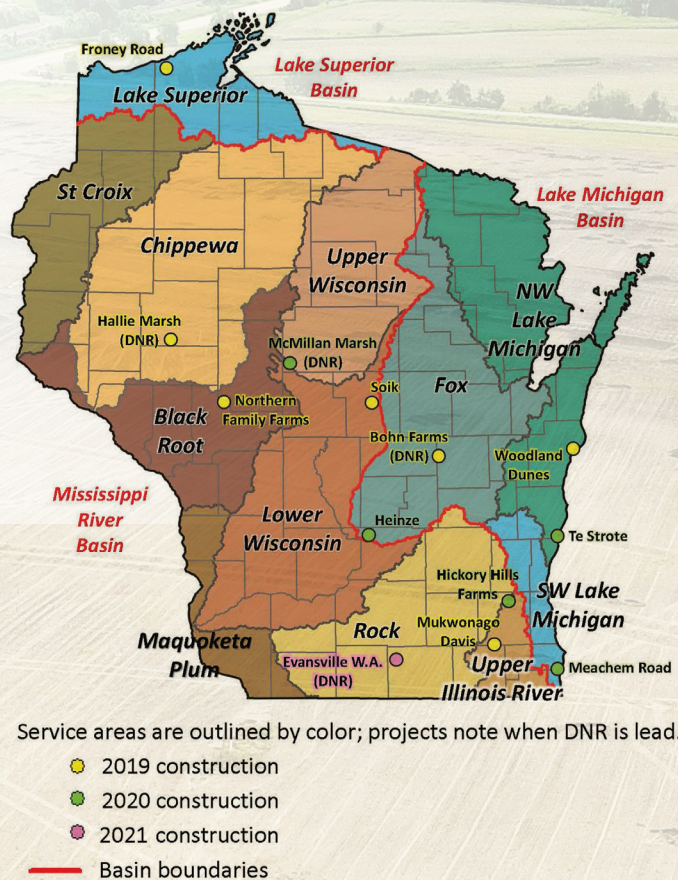
option. If no bank credits are available in a service area, the permit holder may purchase credits from the WWCT.

Private mitigation banks are typically run, as the name indicates, by private citizens. The WWCT has a different model, funding conservation organizations, municipalities or private groups that apply to complete wetland mitigation projects, including projects on DNR-owned lands.

The number of credits required for a project is determined by the Army Corps of Engineers and DNR as part of the permitting process. A mitigation credit is the equivalent of 1.45 acres of wetland impact.

The Northern Family Farms project underway in Jackson County involves restoring a 40-acre agricultural site to sedge meadow and hardwood swamp, with initial seeding of native wetland species shown here.

WWCT SERVICE AREAS AND PROJECT STATUS



When development projects must use the WWCT, funds from several WWCT mitigation credit sales in a service area are then combined and used by the DNR program to fund restoration projects.

The WWCT was established in 2014 when its program Memorandum of Understanding was approved by the Army Corps of Engineers and the U.S. Environmental Protection Agency. With this guidance in place, the DNR could begin to offer the sale of required mitigation credits to permittees, coordinate grant funding using sale proceeds and administer wetland restoration projects with partner groups.

Worth remembering is that wetland restoration handled by the WWCT and other mitigation banks is a very specialized type of restoration required by law when wetland impacts occur.

"Many organizations including Ducks Unlimited, the USDA's Natural Resources Conservation Service and other DNR programs have been doing great wetland restoration for years to also bring back habitat," Brown said. "The WWCT is another type of restoration program, but with a unique set of requirements."

The WWCT does mitigation work that's part of efforts to strike a balance between development and resource protection. Mitigation details are hammered out during the permitting process for a development project that impacts wetlands.

That permitting process involves many requirements and high standards for a simple reason: because wetlands are such a vital part of the landscape.

Keys to project selection

When it comes to undertaking mitigation projects, the WWCT has a selective process, said Zach Kron, project ecologist for the program.

"When looking for mitigation projects, we use a 'watershed approach,'" Kron said. "This means we target projects that have the most bang for their buck in terms of improving the ecological health of the watershed."

Projects are chosen through a quarterly review where each proposal is evaluated and ranked based on criteria that offer the best potential for long-term success. Mitigation projects may be considered for lands anywhere in the state, provided the project is protected by a conservation easement. Upon completion, the land must remain as a restored wetland in perpetuity.

Reestablishing the hydrology of a wetland and reintroducing native plants are key steps in wetland restoration. At the Davis Preserve in Waukesha County, Meghan Wersel, center, of the Waukesha County Land Conservancy works with volunteers to install monitoring wells.



WAUKESHA COUNTY LAND CONSERVANCY

WWCT funding for wetland restoration projects is available when the program sells its credits. Partner groups may then apply for funding from the WWCT to pay for the restoration work.

The WWCT has seven projects currently underway, accounting for about 400 acres across the state. Project teams include DNR staff along with partners such as land conservation groups, municipalities, landowners, consultants and other organizations.

"We have a diverse group of partners, ranging from land trusts to municipalities to private landowners," Brown said. "This diversity of partners is key to program success and finding the best projects possible. We also work with a great group of consultants who implement our projects in the field."

Strong partnerships are a big part of what will allow the WWCT to pursue more comprehensive program efforts going forward, Brown added. Overall conservation efforts beyond just wetland mitigation will be more successful with cooperation and commitment from many, he said.

"We feel that we've laid a strong foundation for not only wetland mitigation now, but hopefully for broader conservation goals in the future."

Improved habitat draws wildlife

Of the WWCT's current restoration projects, one of the most visible is the Davis Nature Preserve in southern Waukesha County, in the Upper Illinois Service Area. This project is adjacent to the Mukwonago River Unit of the Kettle

Moraine State Forest and includes 52 acres of wet cropland.

Waukesha County Land Conservancy is the lead for this restoration, with the Nature Conservancy also playing a major role. The WCLC bought the land as a habitat area in 2012, using grant funds from the Knowles-Nelson Stewardship Program and the North American Wetlands Conservation Act.

Much of the site features potentially restorable wetland, area that was drained for agricultural purposes. Restoration plans call for it to be returned to wet prairie and sedge meadow following construction this year.

"This restoration project will have a significant impact on water quality and aquatic habitat in the Mukwonago River and will allow us to create a wonderful wetland habitat," said Cheryl White, former executive director of the WCLC.

The Mukwonago River is home to 59 fish species and 16 species of native mussels, the WCLC notes, making it one of the most diverse mussel habitats in the state. As part of the restoration project, White noted, an endowment will be established to maintain this important wetland area for years to come.

Another of the WWCT's current projects is at the Woodland Dunes Nature Center in Manitowoc County, on 79 acres known as the Henry Preserve.

The project came together through a variety of partnerships, typical of many WWCT projects. The site consists of a land donation by one neighbor, a land purchase by Woodland Dunes from another neighbor, and purchase of a conser-



Wetlands are vital to Wisconsin's ecosystem, providing natural water purification, important habitat for a variety of wildlife, floodwater storage and other crucial benefits.



vation easement on yet another parcel.

The project will remove drain tiles used for agriculture and create shallow scrapes to restore wetland hydrology. The site will then be planted to wet prairie, sedge meadow and shrub wetland.


"Through a lot of patience and hard work, we were able to put together a great wetland restoration," said executive director Jim Knickelbine. "Woodland Dunes is very excited to watch the restoration grow and develop over the coming years."

Spotlight on restorations

Other ongoing WWCT work includes projects throughout the state.

- In Jackson County, Northern Family Farms, a wholesale tree nursery farm, is working with the WWCT on a project to restore hardwood swamp and sedge meadow to 40 acres of previously cropped field.
- At the western edge of the DNR's Hallie Marsh Wildlife Area in Chippewa County, 44 acres of wetlands will be restored from crop fields to mesic prairie and sedge meadow, better connecting

wildlife habitat. The Hallie Marsh Mitigation Project is a partnership among the WWCT, Pheasants Forever and the DNR Wildlife Program.

- Another project named Bohn Farms is located on DNR land at the southwest edge of Lake Poygan in Winnebago County. The project, which will restore 80 acres of wetland next to an existing DNR Glacier Habitat Restoration Area, is a collaboration between the DNR Wildlife Program and Ducks Unlimited.
- And in Plover, a project has broken ground on the former Soik family vegetable farm. The project consists of filling several large ditches and turning off a high-capacity well next to the headwaters of the Little Plover River. Several partners including the Village of Plover, the Wisconsin Potato and Vegetable Growers Association, Wisconsin Wetlands Association and Wisconsin Wildlife Federation have collaborated to make this project possible. 

Andrea Zani is managing editor of Wisconsin Natural Resources magazine. Raechelle Belli is a DNR communications specialist working with the WWCT.

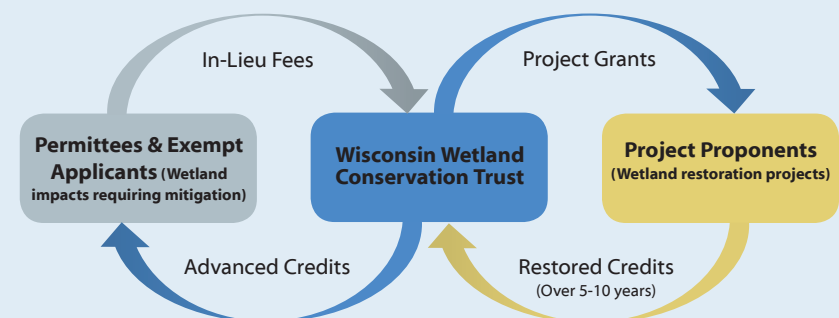
>>> HOW WWCT CREDITS WORK

When development work impacts a wetland, a permit may be issued that requires wetland mitigation. The permittee can satisfy their requirement by purchasing mitigation credits, the number of which is specified by the U.S. Army Corps of Engineers and DNR during the permitting process.

The credits typically are purchased from a wetland mitigation bank or the DNR's Wisconsin Wetlands Conservation Trust. Available credits are set by the Corps and vary across the 12 Service Areas, or major watersheds in the state.

Fees per credit also vary and are calculated by factoring in the costs associated with mitigation — land acquisition, project design and planning, construction, monitoring and other factors — as well as costs such as program administration. In the Rock Service Area, for example, 90 mitigation credits have been authorized to sell at a cost of \$69,400 each, while in the Lake Superior Service Area, 75 credits were authorized for \$60,200 apiece.

Once a permit holder completes a purchase for required credits, the WWCT holds all legal responsibility to complete the mitigation project.



ZACH KRON

TOM PEARCE

Intern Anna Mancheski, left, and George Jensen, a DNR conservation biologist, survey for endangered Poweshiek skipperling butterflies.

Preventive meas

WITH NATURE IN PERIL ON MANY FRONTS, PROACTIVE CONSERVATION MAY HELP WARD OFF EXTINCTIONS.

Lisa Gaumnitz

In a field of waist-high prairie grasses with the July heat and humidity beginning their daily choke hold, DNR conservation biologist George Jensen and intern Anna Mancheski slather on sunscreen and head out for the morning in search of one of the world's rarest butterflies, the Poweshiek skipperling.

A small orange butterfly with distinctive white veins on the underside of its wings, the Poweshiek was once common across the Midwest but declined as tall grass prairies gave way to farms, cities and roads. Its population crashed suddenly a decade ago throughout its range.

In recent years, the butterfly has been known from only a few sites in Michigan, Manitoba in Canada and this and another State Natural Area in southern Wisconsin.

Jensen and Mancheski slog through sedge and prairie grasses and knee-deep water in this "wet-mesic" prairie. Less than 1% of prairies present in Wisconsin before Euro-American settlement

remain, and wet-mesic prairies, characterized by tall prairie grasses found on wetland complexes, are some of the rarest left.

The Poweshiek was last documented here in 2011 and at a Waukesha County State Natural Area in 2012.

"This is our fifth survey this summer; we're really doing our due diligence for sure," Mancheski says. "Finding them is really like finding the needle in the haystack."

Historical records and satellite images suggest this site has never been plowed or developed. More than 130 species of plants have been recorded here, and the property is rich with bird and butterfly species,

including several that are federally or state endangered in addition to the Poweshiek.

As Mancheski and Jensen wade through the wet prairie, with GPS units recording their meandering path, they flush out monarch butterflies and eyed browns. Less often, they stir up skippers including Dunn, European and Delaware, that are in the same family as the Poweshiek skipperling.

To an untrained eye, these skippers all look alike, and even to experts, they can be difficult to distinguish. When a skipper floats up, Mancheski photographs it with her smartphone and compares the image to ones on wisconsinbutterflies.org.

The two surveyors call out the names of the species as they identify them and Mancheski records them on a sheet.

After several hours, with the sun now high overhead, Jensen and Mancheski end their search. There are no Poweshieks recorded on this day.

The possible reality is distressing: Poweshieks may have disappeared here, bringing this butterfly one step closer to extinction.

ures



JACK SILVERBERG



MIKE REESE

Once common in the Midwest, Poweshiek skipperlings are now found at only a few sites.

Sign of global crisis

The state of the Poweshiek skipperling is a sobering reminder that human-caused extinction of species is not an artifact of earlier eras, like the dodo bird in the 1600s and the passenger pigeon in the early 1900s, but is happening right now.

Worldwide, plant and animal species are vanishing at tens to hundreds of times faster than average over the last 10 million years, according to a widely publicized United Nations biodiversity report earlier this year.

One million species could go extinct in coming decades, the report concludes, if action is not taken to reduce factors driv-

ing them off the cliff: habitat loss or degradation, direct killing of species, climate change, pollution, and invasion by non-native plants, animals and pathogens.

"The health of ecosystems on which we and all other species depend is deteriorating more rapidly than ever," says Sir Robert Watson, a British scientist and chairman of the U.N. group behind the 2019 report. "We are eroding the very foundations of our economies, livelihoods, food security, health and quality of life worldwide."

In September, scientists from Smithsonian and the Cornell Lab of Ornithology released other startling findings in the journal *Science*. North America's breeding bird populations have dropped by 3 billion birds — nearly 30% — since the 1970s. Even juncos, swallows, warblers, orioles, meadowlarks and other familiar birds have declined.

Drew Feldkirchner, who leads DNR staff working to protect and restore endangered species, welcomes the recent

spotlight on the global extinction crisis and bipartisan legislation introduced in the U.S. Congress to more fully fund proactive conservation.

The Recovering America's Wildlife Act is aimed at rare and declining native species in the U.S., to keep them

from becoming endangered. It calls for directing \$1.3 billion annually in existing federal revenues to states to fund their science-based wildlife action plans. Another \$97 million annually would go to tribal fish and wildlife managers for work on tribal lands.

"Preventing species from becoming endangered is a win-win for all of us — no matter where we stand on conservation issues," says Feldkirchner, director of DNR's Natural Heritage Conservation Program.

"We're making some great strides in Wisconsin recovering endangered species, but the threats continue to mount," he



JACK SILVERBERG

Commonly seen during the Poweshiek survey, monarch butterflies have decreased more than 80 percent in the last 20 years, spurring voluntary efforts to add habitat for them.

says. "Now is the time as a society to ask whether we are willing to take a new approach.

"We can conserve our natural heritage for our children and grandchildren, sustain healthy fish and wildlife populations for hunters and anglers, reduce regulatory burdens and uncertainty for businesses, and safeguard the natural world so important to our quality of life."

Critical law but last resort

Though the term "endangered species" may conjure images of elephants, tigers and rhinos in far-off lands, Wisconsin has 232 plants and animals now "endangered" or "threatened" and protected under the 1971 state endangered species law.

That state law, one of the first in the country, makes it illegal for people to kill, transport or possess endangered animals in Wisconsin. Endangered plants have the same protections on public lands but not private lands.

The federal Endangered Species Act was passed in 1973 and covers declining species across the United States and internationally. Twenty-six species in Wisconsin are on the federal endangered and threatened species list, from the fingernail-sized Karner blue butterfly to the whooping crane, the world's tallest and rarest crane, to the delicate eastern prairie white fringed orchid.

The federal law carries the same prohibitions as Wisconsin's law but also

makes it illegal to “harass” listed species by, for example, scaring birds off their nests or entering caves when bats are hibernating. The federal law also can protect the “critical habitat” necessary for endangered species, while Wisconsin’s law is limited to protecting individual plants and animals, says Owen Boyle, DNR species management chief.

Both endangered species laws are very important in Wisconsin, Boyle says. Their combined protections helped bald eagles fly off the state endangered list in 1997 and the federal list a decade later.

Trumpeter swans, ospreys, Cooper’s hawks, gray wolves and plants including the yellow giant hyssop are among the species restored and removed from the state list, and the laws have collectively helped keep hundreds of declining species from disappearing entirely.

Recent U.S. Fish and Wildlife Service changes to the rules carrying out the federal Endangered Species Act are now tied up in court, but Boyle says it’s important to understand the federal law is meant only as a last resort.

“The federal law has never been enough by itself,” Boyle says. “When a species is listed, it’s because the species is really in trouble, but the focus should be to prevent that from happening. It’s so much more cost effective to conserve species before they need legal protection.”

Partnerships power key work

Surveys such as the ongoing hunt for the Poweshiek skipperling are the foundation for this sort of rare species work by DNR’s Natural Heritage Conservation staff and partners.

DNR uses species’ locations and population data to determine if species are rare, using standardized methods carried out internationally.

“We are responsible for knowing where many hundreds of rare species are found and for assessing their abundance, so we are fortunate so many partners like government agencies, university researchers and volunteers are pitching in,” Feldkirchner says.

“We also do our



Wisconsin, Minnesota and the central Canadian province of Manitoba are home to 95% of the world’s remaining golden-winged warblers, a declining species that could benefit significantly from the bipartisan Recovering America’s Wildlife Act.

RYAN BRADY



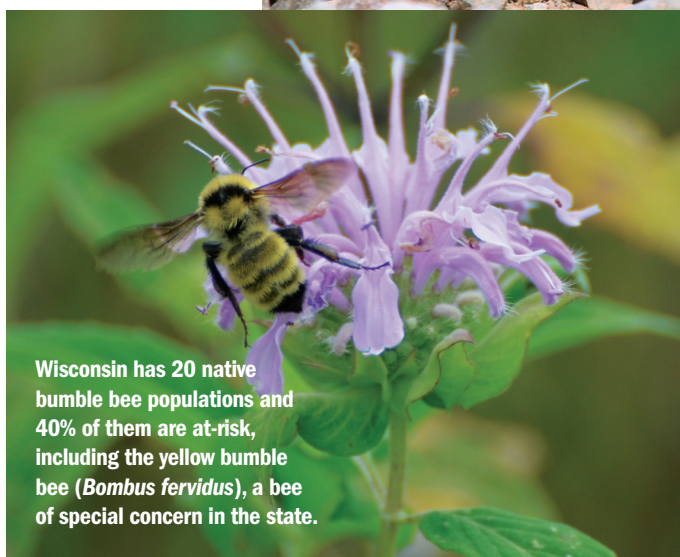
RYAN BRADY

Wood turtles are a state threatened species and are being considered for federal listing. Wisconsin research shows that protecting their nests and decreasing roadkills can boost their population.

best to determine why those species are rare. Then, if we can identify conservation actions to help them, we decide if we are the best organization to do the work, given our level of resources and our particular strengths.”

Partnerships leveraging resources and expertise are critical for getting things done.

For example, federal and University of Wisconsin wildlife health experts led development of a vaccine to treat cave



Wisconsin has 20 native bumble bee populations and 40% of them are at-risk, including the yellow bumble bee (*Bombus fervidus*), a bee of special concern in the state.

JAY WATSON



This prescribed fire may look intense but has been carefully planned and executed. Fire is a critical tool used to provide quality habitat for many species and for maintaining fire-dependent wetlands, prairies, savannas and barrens.

BOB MANWELL

bats infected with white-nose syndrome. The fungus has killed 6 million bats in eastern North America since 2006 and has reduced bat populations to zero at some Wisconsin hibernation sites and decreased others by 72% to 97%.

DNR bat biologists helped with laboratory and field testing of vaccines, and this fall worked with partners to vaccinate bats in the wild at two hibernation sites.

Benefits of habitat management

Rare species often rely on rare habitats, so restoring and managing habitat are very important tools. DNR's NHC, wildlife management and forestry staff, as well as many partner organizations, are responsible for managing State Natural Areas. These sites are known to support 90% of the plant species and 75% of the animal species on Wisconsin's endangered and threatened list.

State Natural Area crews control invasive species, use prescribed fire to maintain fire-dependent landscapes such as prairies, oak savannas and barrens, and restore native plants on dozens of sites annually, helped by volunteers at some 43 sites and growing.

At the State Natural Area Jensen and Mancheski surveyed for Poweshiek skipperlings, Jensen and other crew members have been trying to curtail the hybrid cattail and invasive phragmites to encourage growth of native wetland plant species.

The work has been paying off with increased use of the habitat by secretive rails and egrets. Crew members also control invasive buckthorn and garlic mustard on parts of the property, and a pre-

scribed burn is on the horizon.

Recent research by UW-Madison's Amy Alstad shows the value of such work for rare species and rare landscapes, particularly for prairies. Those not converted to agriculture continued to degrade through a lack of invasive species control and prescribed fire.

Alstad's resurvey of 47 prairies studied by famed botanist John Curtis 50-plus years earlier found that while native plant species were vanishing at an accelerating rate overall, those sites that best retained plant diversity and rare species were receiving regular prescribed burns

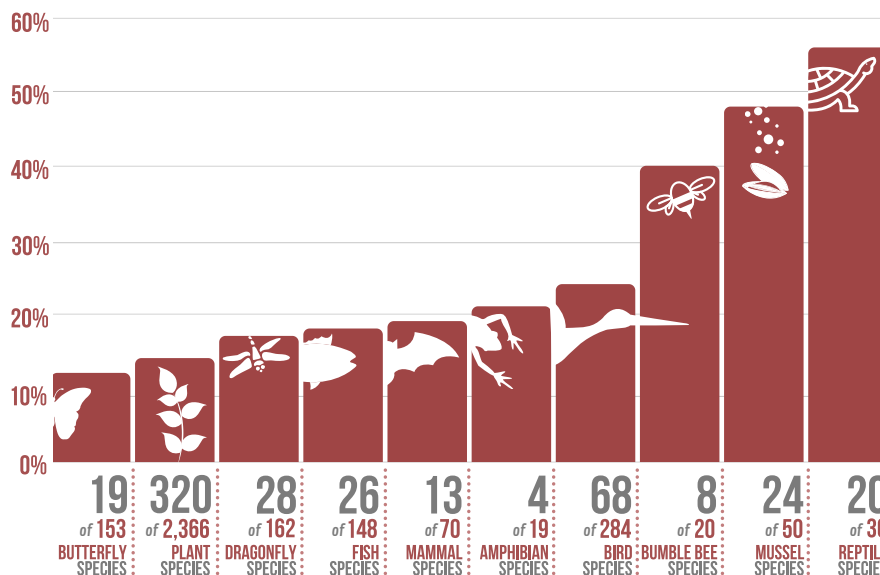
— and most were sites managed by State Natural Area crews.

"Now, more than ever, we need this kind of preventative care for our declining species," Feldkirchner says. "We need efforts to conserve them before they become so rare that they need life-saving measures."

Putting state plans to work

The federal Recovering America's Wildlife Act may be a first step, based on recommendations from a national blue-ribbon panel co-chaired by Bass Pro Shops founder John L. Morris. The panel included representatives from the outdoor recre-

WISCONSIN NATIVE SPECIES AT RISK BY THE NUMBERS



ation industry, energy companies, conservation groups, governments and more.

The group's recommendations, reflected in the proposed legislation, aim to keep wildlife from becoming endangered by providing states money to implement their Wildlife Action Plans identifying species and their habitats with the greatest conservation need.

The group estimated that \$1.3 billion of dedicated funding is needed annually to implement states' Wildlife Action Plans so states can make lasting progress. Current congressional funding is unpredictable and renewed annually averaging only a fraction of that, about \$61 million.

Under Recovering America's Wildlife Act (RAWA) legislation, each state would receive between \$13 million and \$65 million annually, with the total amount determined by the state's size and population density. Wisconsin would receive an

estimated \$20 million; currently DNR receives under \$1 million annually for the 416 wildlife species addressed in its Wildlife Action Plan.

Gov. Tony Evers and other Great Lakes governors offered "enthusiastic support" for RAWA and urged quick action to pass it in an Oct. 15 letter to Congress.

"We know this model of conservation works," Feldkirchner says. "Deer, wild turkey, waterfowl and other game species thrive because we've invested in their conservation for many decades, largely through hunters' and anglers' support."

"We can repeat these conservation successes for many more species with dedicated funding and sustained attention."

Going forward, Feldkirchner sees fledgling regional and state partnerships to save monarch butterflies as an example of the kind of proactive conservation RAWA could foster.

Midwestern states and groups within each state are working collaboratively to voluntarily restore monarch habitat and reverse a more than 80 percent decline in populations of the iconic butterfly over the last 20 years.

RAWA could help put more funding behind the habitat work, accelerating efforts to add 120 million native milkweed plants by 2038. That, in turn, could help monarchs avoid the more sorrowful fate of the disappearing Poweshieks.

With RAWA garnering bipartisan support, it just might be a welcome shot in the arm for conservation work, Feldkirchner says.

"Together we can keep monarchs and other species we love out of the emergency room."



Lisa Gaumnitz is a natural resources educator and program and policy analyst for the DNR.

6

SIMPLE ACTIONS TO HELP NATURE AT HOME



1 HELP PUT WISCONSIN'S WILDLIFE ACTION PLAN TO WORK.

Share your opinion with your U.S. senators and representatives on the proposed Recovering America's Wildlife Act, which would redirect existing federal funds to states to help implement their Wildlife Action Plans. Learn more through the Alliance for America's Fish and Wildlife, ournatureusa.com.



2 PLANT NATIVE PLANTS.

Plant a few milkweed and other native plants in pots on your balcony, in your yard or on your back 40. Native plants feed insects, which feed birds, bats, fish and other wildlife. Get started by searching dnr.wi.gov for "native plants."



3 MINIMIZE USE OF CHEMICAL PESTICIDES.

Avoid applying pesticides on or near flowering plants used by insects and birds. Minimize use elsewhere, and always follow label restrictions on pesticides.



4 PARTICIPATE.

Help care for State Natural Areas at volunteer workdays or join a citizen science project and get trained to identify and help count birds, bats, bumble bees, dragonflies, rare plants and more. See dnr.wi.gov/volunteer.



5 DONATE TO THE ENDANGERED RESOURCES FUND.

Donate to the state Endangered Resources Fund through your Wisconsin income tax form and your gift is matched by the state, or buy an Endangered Resources license plate. Private donations are critical for conservation work for rare species not eligible for grant funding.



6 LEARN AND TELL OTHERS.

Visit dnr.wi.gov search "NHC" to learn more about Wisconsin's diverse native and rare species and State Natural Areas and to subscribe to our periodic electronic updates.

DNR plays key role in addressing climate change and clean energy

Preston D. Cole

Climate change is one of the defining issues of our time. From shifting weather patterns to heavier snowfalls, a changing climate directly impacts Wisconsin.

Most of the state has warmed since the 1950s. It is also becoming wetter. Changes in temperature and precipitation could affect Wisconsin's growing seasons and even dairy productivity. Plants and animals of the forests maintain themselves based on specific climate conditions and may be vulnerable to temperature and season changes.

As the climate discussion grows, so too does the importance of the DNR's role in addressing climate change and clean energy in the state. Throughout the agency, there is a focus on building resiliency as we strive to adapt to the profound impacts of climate change on our citizens.

The DNR is entrusted to protect the people's resources, a job we take very seriously. As a result, we are working on pinpointing the factors that drive change so we can plan accordingly.

Because the DNR does not do climate change research, nor do we issue climate change permits, we rely on and remain committed to the Wisconsin Initiative on Climate Change Impacts (WICCI). Created in 2007 by the DNR and UW-Madison's Nelson Institute for Environmental Studies, WICCI brings DNR experts and other agencies together with the knowledge and research of academia to assist in decision-making.

In August, Gov. Tony Evers signed Executive Order #38 to address the issue of clean energy in Wisconsin. The order also created the Office of Sustainability and Clean Energy to ensure our energy is carbon free by 2050. This new office

will coordinate with the DNR and others. Although the goal date is 2050, the work starts now.

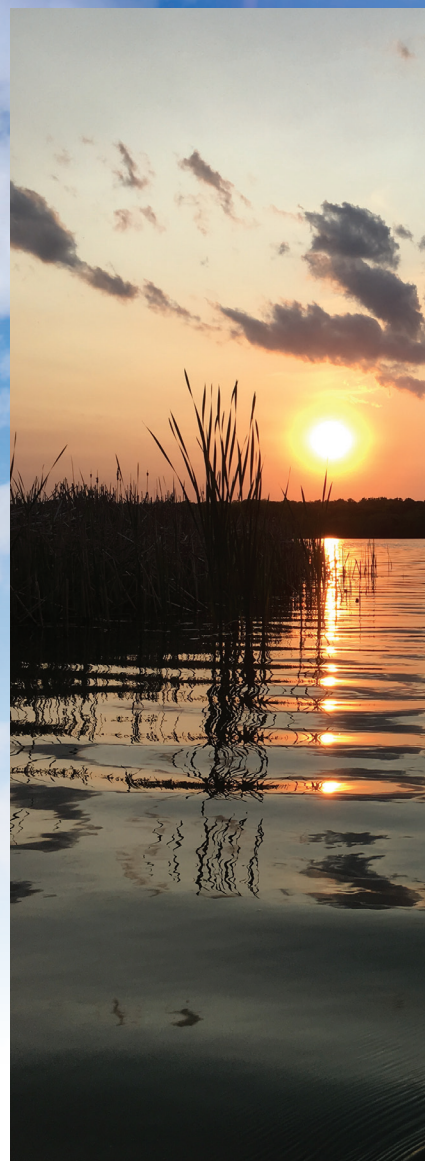
In October, Gov. Evers signed Executive Order #52 establishing the Governor's Task Force on Climate Change. Working closely with the Office of Sustainability and Clean Energy, I will serve on the task force along with other cabinet members, leaders from the First Nations and other community, environmental and business leaders. We will also travel around the state so we can hear from local municipalities, farmers, parents and community leaders on what they think the state should do to address climate change.

In September, I sent a memo to all DNR staff reaffirming our commitment to addressing the impacts of climate change on Wisconsin's natural resources. At the heart of the DNR mission is bringing together diverse perspectives and relying on science to inform decision-making. Additionally, the department's mission requires the department to ensure the right of all people to use and enjoy Wisconsin's natural resources.

We all can agree, things are changing. The world is getting hotter. The ice is melting. Oceans and Great Lakes are rising. Rivers are flooding. In some areas, water is disappearing.

And as Wisconsin's climate changes, our communities will need to change along with it. Moving forward, we have a lot of work to do, but I firmly believe there is cause for hope.

Know that we at the DNR are commit-



DNR FILES

ted to finding thoughtful solutions by relying heavily on science. We are stronger together.

Preston D. Cole is secretary-designee of the Department of Natural Resources.

Readers Write



SUNSET FISHING

I took a picture of my oldest son fishing at Franklin Lake and thought it would be very neat to be in the magazine. Thanks for your time.

David Sackett
Rhineland



BLACK EARTH BEAVERS

This photo was shot along Black Earth Creek, 2 miles west of Cross Plains, during a high water event. It shows an adult beaver and four little ones. Enjoy!

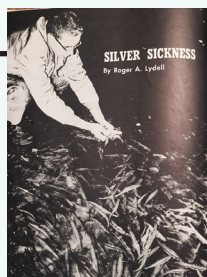
Dan Buckland
Cross Plains

SMELT YEARS AGO

It took me a while to find this picture (smelt was featured in Spring 2019 "Back in the day"). It was taken by Earl Johnson, my godfather, who was chief photographer for the Duluth Herald and News Tribune. He and others had been trying to get a picture of the smelt in the water for some time.

He was finally able to get this picture in the spring of 1959, I believe, but it could have been a year either way. It was taken on the Lester River on the east end of Duluth. That's me in the picture. I think this was published in a Minnesota outdoor periodical.

Jim Morris
Berlin



REMEMBERING THE CCC

I found the write-up on Perrot State Park (Summer 2018) while searching for info on the Civilian

Conservation Corps' Camp Perrot. My father, Orvis E. Fry, was there in late 1930s and he saved a picture, which I'm attaching for your use.

He was training as an orderly/medic with the doctor. He was from Salem, Illinois, and was born in 1918. Camp Perrot must have made a lasting impression on Dad, as he stayed in the medical field for the rest of his life. He ended up as a surgical X-ray technician and finally retired in 1988 from Mount Sinai Hospital in Miami Beach.

Kenneth D. Fry
DeLand, Florida



PERSONAL CONNECTIONS

I was pleased to see several articles with a personal connection in the Summer issue. Mary Kohler ("A comeback for the ages") is a sister to a longtime bird hunting and fishing friend, the late David Stewart, whose family built summer homes on Pine Lake east of Chetek over 100 years ago. They also had a home on the Brule ("Life's better on the Brule"). I was lucky enough to go on some adventures with Terry Kohler and Dave.

When I turned to "Back in the day," I was reminded of my favorite outdoor author, Wisconsin native Gordon MacQuarrie. He mentions the Pierce Estate in several stories. At 80, my legs do not allow me to go into places like the Van Vliet Hemlocks ("Outside in Wisconsin"), but we made trips in there several times in the past.

Bill LaVelle
Belvidere, Illinois

GREAT READ — AND MAKE IT A 185

The cover on your Summer 2019 issue caught my eye when retrieved from our mailbox. Trumpeter swans are something I get to see mostly in the fall, as our bush cabin on Quartz Lake, Alaska, is a big staging area for these birds on their return trip south.

I will never forget a trip on Oct. 5 in the '90s to check the cabin before lake freeze-up. When I arrived, the lake was fogged-in, but I quickly realized I was assuredly not alone. These big birds were everywhere and their calls and "talking" drowned out my outboard. By the time I was ready to return, I was able to see fairly well. I could not believe my eyes — not hundreds but thousands of swans! Every year since I try to make that late run to the cabin.

And then the big surprise when I had a chance to read the article ("A comeback for the ages"). I had left the University of Wisconsin-Whitewater to venture "north to the Last Frontier" and the University of Alaska in Fairbanks. Over the years, I had my most incredible waterfowl hunt in Minto Flats. So I really appreciated the timely article going back 30 years.

But I do want to point out: Knowing of pilot Rod "Sky" King and also having been involved in a world-class fishing lodge using Cessna 185s and 206s, the reference to a "Cessna 187 float plane" should be a 185. I believe there was only one 187 made and the probabilities it somehow was converted to floats, well, make it a 185.

E. Thomas Robinson
Fairbanks, Alaska



NICE FEEDBACK FOR FALL ISSUE

Many thanks for the wonderful Fall issue. It is full of interesting articles on a wide variety of subjects, as well as important information about the resources and how to become involved in specific efforts or places. Under the leadership of Secretary-designee Preston Cole, whose essays I greatly appreciate, there is obviously a renewed commitment to the mission of the Department of Natural Resources. Carry on, please.

Sharon Gaskill
Black Earth



NATURALLY TALENTED

My name is Halley, and I recently graduated from the University of Wisconsin-Madison with a degree in conservation biology and environmental studies. In my free time, I have always enjoyed drawing and painting, and have recently completed this piece representing "Mother Earth" and the intersection of water (blue waves that make up the hair) and land (animals, leaves, branches).

This piece is not like others I have done. Rather, it is esoteric. It explores the relationship between ecology and human nature. Our environment is just as much a part of us as ourselves.

My family and I love your magazine. I grew up in Appleton, preferring to play in the grass rather than on the carpet. I am very passionate about the environment and working to present the natural world as something the public will take interest in, advocate for, and appreciate. I hope to use my passion for the environment to preserve biodiversity in parks and ecosystems around Wisconsin.

Halley Feil
Madison

After sending in this submission, Halley ended up coming to work at the DNR as a natural resource program specialist in the Division of Fish, Wildlife and Parks. Welcome, Halley!



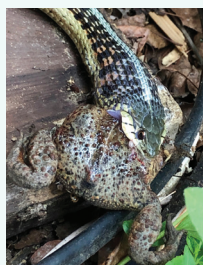
BUILDING A BETTER BIRD NEST

I thought you might be interested in this picture. I started cleaning out a wren house from our back yard to get it ready for next spring. When I opened the bottom to clean out the sticks and fluff, I also found aluminum nails. There turned out to be 35 of them. Our neighbors were putting on new siding, and I assume the wren "borrowed" a few to glitz up the nest.

Gary Rhines
Walworth



DNR conservation biologist Ryan Brady replies: "It is typical of house wrens to fill cavities with small sticks. Often, one male will do this in several cavities or boxes within his territory, even though the female will ultimately only nest in one of them. In some cases, nails, tacks, hairpins, paper clips and other metal items that mimic the size and structure of small twigs will be used. So while it's not common to find a nest box full of nails, it's not entirely rare or unexpected either."

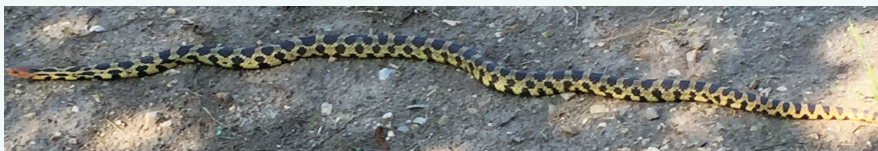


ONE BIG GULP

I relocated to the beautiful Northwoods last August. I was in Colorado for 27 years and thought that was a beautiful state, but Wisconsin is beyond amazing! I came across your publication at the Marshfield Clinic and immediately subscribed. There is so much great information.

I wanted to share a cool picture I caught. I only wish I'd had a chance to grab my camera — thank goodness for cell phones! The timing was amazing. I included an after shot as well. Thank you for such a great magazine. It's a wonderful resource for newbies!

Marlowe Hodge
Land O' Lakes



MORNING VISITOR

This bullsnake was at our front door this morning! We just moved to the Town of Sevastopol and built a new house. It is a fun time experiencing new flora and other life forms in our new home.

Merry Demske
Door County

Rori Paloski, DNR conservation biologist who specializes in herpetology, replies: "The snake in the photo looks similar to a bullsnake (also called a gophersnake) but is actually an eastern foxsnake. The eastern foxsnake is found throughout Wisconsin, while the bullsnake is restricted to the west-central portion. The two species are differentiated by their patterning — the bullsnake has patterning on its head, whereas an adult foxsnake has a solid colored head. The spot pattern on the body also differs slightly between the two. Both species are non-venomous but are considered rattlesnake mimics; when threatened, they will 'rattle' their tail, hoping to scare off any potential predators. Not only do they look like a rattlesnake when they do this, but the vibration of their tail against dry leaves, gravel or vegetation often produces a rattling noise that can sound very much like a rattlesnake — just what they are hoping for!" To report sightings of snakes and other species, visit wiatri.net/nhi.



GARDEN COMPANIONS

My flower gardens are filled with many common garter snakes. They slither away quickly when I'm weeding the garden and they ignore the dogs or vehicles as long as they stay a few feet away. They seem to know they are safe. But when my husband, Jeff, comes out to the garden in the morning, the snakes come out to greet him. Some even follow him to the compost pile and wait to be given a worm. They seem to recognize him.

Snakes are great! They eat garden pests and some unfortunate toads and frogs. Feeding snakes is less messy than feeding birds and it does not attract bears. Here's a picture of the snakes that live for the summer in our yard.

Diane O'Krongly
Mercer



SUMMER TANAGER SIGHTING

I was just reading about the summer tanager on your website. This guy was at my feeders in Jacksonport.

Kathy Navis
Jacksonport



BOUNTIFUL BIRD WATCHING

On May 25, we spotted a pair of whooping cranes at the Horicon Marsh Wildlife Refuge. We have attached a photo. We also spotted a black crowned night heron on Ledge Road, which is just south of Highway 49. Later, we spotted an eagle and a couple of juveniles just south of 49.

Jim and Bonnie Halper
Kewaskum

RARE RACCOON

Is this an albino raccoon? I saw it on the east side of Highway 38 south of Four Mile Road (in Caledonia). The Root River meanders a short distance from that side of the road and there are natural areas around the river.

Steven Sandberg
Racine



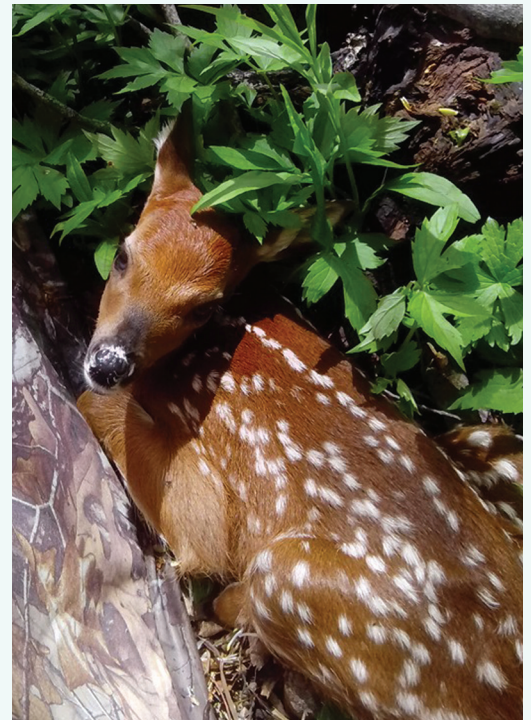
Curtis Twellmann, DNR furbearer ecologist, replies: "This aberrant pelage pattern is commonly referred to as a 'blonde' raccoon and is an example of leucism — or the reduction of, but not complete elimination of, melanin/pigment. While not as rare as albinism, this is still pretty rare. Leucistic animals can generally live normal lives, as they usually lack the other related genetic deficiencies like poor eyesight that hamper true albino critters. Neat find!"



SHY HEN STAYS OUT OF THE PICTURE

I am attaching a photo of turkey eggs I spotted along our road. The hen didn't want to be in the picture.

Margie Novak
Kennan



FAWN FINDS PERFECT COVER

When getting back to our cabin to pull my spring turkey hunting blind, I found this little one still using it. Just wondering, are the Wisconsin deer getting wiser and using "deer blinds," too?

Doug Kurschner
Almena

Thanks for the photo, Doug. And it serves as a good way to remind everyone to help Keep Wildlife Wild. Early on, fawns move very little and rely on their camouflage coat and lack of scent to hide them while the mother largely stays away to keep possible predators at a distance. If a fawn is found lying alone, unless obviously sick or injured, Keep Wildlife Wild and simply leave it be. Learn more at dnr.wi.gov, keywords "Keep Wildlife Wild."

Magazine makes a great gift!

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Send your letters to: Readers Write, WNR magazine, P.O. Box 7921, Madison, WI 53707. Or email dnrmagazine@wisconsin.gov.

— Back in the day —

DNR's Janet Hutchens, a regular magazine contributor and coordinator of state property Friends Groups and volunteers, recently discovered this Telemark ski area photo taken by her grandfather, George Jull of Madison. Jull was an avid amateur photographer, according to Hutchens, who estimates he captured this scene circa the late 1960s at Telemark, near Cable.

Telemark and Tony Wise: A little background before the Birkie

Andrea Zani

In just about two months, the American Birkebeiner cross-country ski race will once again bring thousands of top athletes and ski enthusiasts to northern Wisconsin from all over the world.

The Feb. 22 Birkie features a 50-kilometer skate-ski and 55K classic ski from Cable to Hayward. Events leading up to this “greatest show on snow” include the shorter Kortelopet and Prince Haakon races, Junior Birkie and Barnebirkie for younger skiers, adaptive ski races and more.

The Birkebeiner is steeped in Norwegian history, dating to the early 1200s, when civil war in Norway put baby Prince Haakon in peril. Two Birkebeiner warriors — so named for the birch bark leggings they wore — skied a treacherous journey through rugged forests and mountains to smuggle the young royal heir to safety.

The Birkie celebrates this history with reenactors portraying warriors Torstein and Skjervald along with Inga, mother of Prince Haakon. They ski the entire Birkie classic course on wooden skis and in period costumes.

Synonymous with the American Birkebeiner is the place where much of it takes place: Telemark. The 713-acre property adjacent to the Birkie's starting line includes trails for cross-country ski, snowshoe and mountain bike pursuits.

In July, the American Birkebeiner Ski Foundation signed a two-year lease to continue using Telemark trails for the Birkie, and the foundation is studying op-

tions for future use of the property.

As for Telemark's past, that's quite a story in itself.

Back in 1947, with the country rebounding from World War II, a young entrepreneur named Tony Wise opened a ski area near Cable. Wise, a Hayward native with a Harvard MBA, had admired Alpine skiing while in Germany during the war and wanted to bring something similar home with him.

Named in honor of Wise's Norwegian heritage, Telemark took off. Nordic skiing was introduced in the early 1970s, and Wise created a cross-country race to feature the sport. From 35 skiers at that first Birkebeiner in 1973, it has grown to more than 13,000 participants.

The heyday of Telemark was the 1970s and early '80s. A giant lodge was built in 1972, joining an existing chalet and other development. In 1975, the U.S. Ski Team held a training camp at the site, and a year later Wise's brainchild, the Gitche Gami Games, began drawing the world's top Nordic skiers.


Wise continued to invest in Telemark. In 1980, he opened a massive facility he called the Colosseum, featuring indoor tennis courts and a huge arena meant for ski races to glide right through. Even

Sports Illustrated took notice with a column in the March 16, 1981, issue (the same one with the Milwaukee Brewers' newly acquired Rollie Fingers on the cover).

Over time, Telemark struggled as easier travel made the larger ski resorts of the West more accessible. The property entered bankruptcy for the first time in 1984, then was in and out of solvency over the next three decades.

Eventually, the Colosseum was dismantled, and Telemark Lodge fell into disrepair. The most recent attempt to open on-site lodging ended in 2014.

The legacy of Wise, who died in 1995, is undeniable. The Birkie and Gitche Gami Games go on, and more than 100,000 visitors use the Birkebeiner Trail System each year. Wise also started the ongoing Lumberjack World Championships in Hayward, where he once was mayor.

Visitors to the Birkie foundation offices in Hayward will find the Tony Wise Museum of the American Birkebeiner, opened in 2016. The free museum pays homage to the man who put a ski race in northern Wisconsin on the international map. 

Andrea Zani is managing editor of Wisconsin Natural Resources magazine.

>>> INFORMATION

For details on the American Birkebeiner race, Birkie history, the Tony Wise Museum and information on passes (required December-March) for using Birkie trails, check birkie.com.



BIG FOOT BEACH STATE PARK

And so Wisconsin awaits another winter — eagerly, or maybe not so much, depending on your point of view. While a trip to the beach can mean a warm getaway, there's an alternative “beach trip” worth considering in winter.

Big Foot Beach State Park in Lake Geneva offers fun in any season. The 271-acre park borders Geneva Lake, which accommodates waterfront picnics and swimming during warmer months at a beach with 900 feet of shoreline.

But what about winter? A visit at this time of year can mean a variety of activities.

Hiking is allowed throughout the park in winter, with 6.5 miles of trails through forest and open meadow. Most of the trails are short and feature level to gently rolling terrain, considered easy walking for most visitors.

Snowshoeing is permitted throughout the park as well when conditions allow. A good snow day also encourages sledding at this park setting so close to the city and adjacent to two schools; any little slope will do.

Cross-country skiing is available in designated areas when conditions permit. With enough snow, park staff create a track for traditional cross-country skiing at the east end of the park. During ski season, the DNR keeps tabs on state properties' cross-country ski trail conditions at dnr.wi.gov/trailconditions.

For those who enjoy fishing, it's available at Geneva Lake and within the park on the 6-acre Ceylon Lagoon. Try ice fishing when weather hits the deep freeze. Usual fishing regulations and bag limits apply; check dnr.wi.gov/topic/fishing.

The park's campground is closed for the winter. In-season, Big Foot Beach has 100 campsites in its family campground. Reservations can be made online at wisconsin.goingtocamp.com or by calling 888-947-2757 (888-WIPARKS).

Big Foot Beach State Park is open year-round from 6 a.m. to 11 p.m.; office hours vary by season. Find the park entrance at 1550 S. Lake Shore Dr., a mile south of Lake Geneva.

For more about the park, check dnr.wi.gov, keywords “Big Foot,” or call 262-248-2528. For general information about the Wisconsin State Park System, see dnr.wi.gov/topic/parks.

— Andrea Zani

