

INSIDE

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WISCONSIN NATURAL RESOURCES

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Amazing ways animals
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Back in the day

Wisconsin's deep-freeze winters are perfect for sports powered by varying sources — from wind and muscle to petroleum.

Kathryn A. Kahler

Some winter recreational pursuits haven't changed much over the years. Wisconsinites still lace up skates, link arms and "shoot-the-duck" over frozen lakes and ponds. Most women these days, though, are more into warmth than fashion than this member of the University of Wisconsin figure skating team, shown below gliding arm-in-arm with her companions across a Madison lake in February 1941.

The need-for-speed pursuit of iceboating looks much the same today as it did when the photo on the right was taken on Green Lake in January 1964. Though made of more lightweight materials, modern ice craft still rely on sail shape, ice quality, the derring-do of its pilot and, of course, wind speed.

Wisconsin has the distinction — albeit dubious in some peoples' minds — of being situated in the "ice belt," between latitudes 40 and 50 degrees north, where it gets cold enough to freeze several inches of ice for several months in duration. That makes large lakes like Lake Winnebago,

Lake Geneva, Green Lake and the Madison area lakes — Mendota, Monona, Kegonsa and Waubesa — world class venues for iceboating aficionados.

Iceboating has several classes but the most popular in North America is the International DN class because the craft are small, light and relatively inexpensive. Two classes — the Skeeter and the Nite — were developed in Wisconsin. Walter Beauvois of Williams Bay is credited with building the first front-steering Skeeter in the 1930s, and Dick Slates of Pewaukee with the first Nite prototype in 1968.

Regattas have been held by local clubs or international associations almost annually for more than a century. The Northwest Ice Yachting Association held its 100th anniversary regatta in 2013 on Green Lake. Because conditions have to be just right, regatta dates aren't set in stone and are almost impromptu affairs. Depending on the design and class, racers can reach speeds up to 100 mph, or five times the speed of the wind. Regatta racers get points — one for



DEAN TVEIT

Ice boats at the start of a race at a regatta held on Green Lake in 1964.

first place, two for second, and so on — for each race over a three-day weekend, and whoever ends up with the lowest score wins their class.

One winter sport that has seen dramatic change over the years is snowmobiling. We had to laugh when we came across the photo below of three men on a "snow sled," taken in January 1940 in Sayner, the birthplace of the snowmobile. Not much other information is available for the photo, but it appears to be an Eliason Motor Toboggan built by Carl Eliason of Sayner.

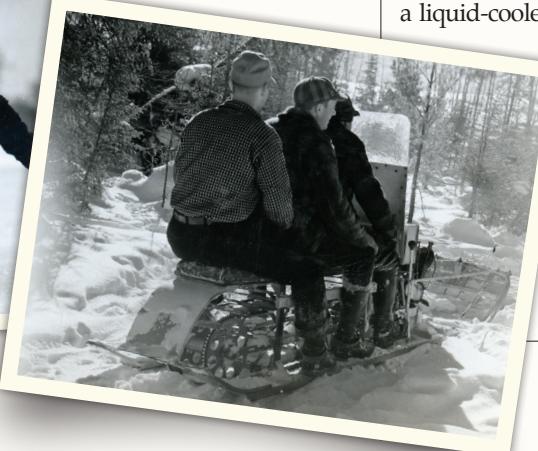
Spurred by a desire to join his sportsmen friends in the deep snow areas of the Northwoods, and to overcome a foot deformity, Eliason used his mechanical ingenuity to design the first snowmobile, which he patented in 1927. Eliason built his first model using bicycle parts, a liquid-cooled 2.5 horsepower outboard

engine, rope-controlled steering skis, downhill skis to act as running boards and a modified Ford Model T radiator to cool the engine. You can find Eliason's story online at sayner-starlake.org/sayner-history/. 



Above: University figure skating team members in 1941.

Right: A snow sled in Sayner in 1940.



DOROTHY CASSIDAY

Kathryn A. Kahler is an editorial writer for Wisconsin Natural Resources magazine.

WISCONSIN NATURAL RESOURCES

MIKE AND KAREN MCFADZEN

February 2015 | Volume 39, Number 1



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FRONT COVER: Animals have to be creative to survive Wisconsin's harsh winters. Some head below the frost line while others, like this fox, take their chances on the snowy terrain.
Rich Phalin

BACK COVER: Rime ice (often incorrectly called "hoarfrost") enrobes the forest at Johnson Hill Kame State Natural Area in Sheboygan County. **INSET:** Cardinals call this SNA home. For more information, or to order a guidebook to State Natural Areas for \$18.00 (postage paid), contact the State Natural Areas Program, Bureau of Natural Heritage Conservation, DNR, P.O. Box 7921, Madison, WI 53707 or visit dnr.wi.gov and search "SNA."
Thomas A. Meyer, DNR
(Inset) Herbert Lange

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Owls feast on other wintering animals such as grouse and rabbits.

Toughening it out when the temperatures drop

ANIMALS AMAZINGLY ADAPT TO WISCONSIN'S WILD WINTERS.

Richard Staffen, Bill Smith and Rori Paloski

It can be tough for humans to stay warm in the winter. Imagine having to go it alone with just the fur, fins or feathers on your back? How do animals survive Wisconsin's winters? We asked some of DNR's conservation biologists, Richard Staffen, Bill Smith and Rori Paloski about animals that have adapted to these cold climates.

FROGS

Staffen:

Some Wisconsin frog species (such as the leopard frog, green frog and bullfrog), overwinter underwater, buried beneath mud or debris, while others (such as the spring peeper, chorus frog and wood frog), overwinter in leaf litter or under rocks and logs near their breeding ponds and are able to withstand freezing.

One species in Wisconsin, the American toad, overwinters by burrowing into the soil below the frost line. Both the gray tree frog and Cope's gray tree frog are species that can overwinter above ground and are able to withstand freezing conditions. These species have natural, glucose-based antifreeze in their bodies that protects their cells from freezing and bursting. They then can defrost come warmer weather. It is a very amazing adaptation!



INSECTS

Smith:

For insects that don't migrate (and there are relatively few that do), they can either avoid freezing, or tolerate freezing, by controlling how fast it happens. Avoidance is achieved by picking protected microhabitats like under bark, in the soil or constructed shelters.

Ants are colonial burrowers and construct extensive underground cities which offer protection from the elements. They remain in these burrows until conditions above ground are unfrozen.

There also are many kinds of wasps. Most are predators of other insects. The adults of many species lay eggs in their host where they develop and overwinter underground. Some species, like paper wasps or mud-dabber wasps, build nests above ground. These wasps overwinter as larvae or pupae in cells which were provisioned with food by the adults before they died.



WORMS

Smith:

There are a lot of worm species. For earthworms the answer is simple — they live underground below the frost line. Many worms are aquatic and live in environments that don't normally freeze. Many worms are parasitic and live in their hosts, which hopefully have their own winter survival strategy figured out.



FISH

Smith:

Fish survival depends on what kind of frozen waterbody they live in. In rivers there is usually plenty of oxygen because the water is moving and mixing and cold water holds more oxygen than warm water. Lakes can be a different matter. Deep lakes are usually okay unless there is a prolonged period of snow cover and aquatic plants cannot photosynthesize. Shallow lakes frequently experience winter fish kills because there is too little water below the ice. Only very tolerant fish species like mud minnows and bullheads can survive these conditions. All cold-blooded predators like fish have greatly reduced feeding rates during winter.



BACKYARD BIRDS

Staffen:

Chickadees and other small birds that do not migrate can fluff out their feathers to increase air pockets, adding more insulation. They also shiver like people

ICONS: THOMAS J. SENATORI



rita and ellen hawley

Turtles burrow into the substrate.

do, increasing muscle activity and metabolism. They need to continuously feed as they are burning many calories to maintain body temperature. Shelter in conifers and brush protects them from harsh environments. Birds can eat snow but it takes them much more energy to process it. Finding a reliable open water source like a spring or running water is critical. Providing heated water baths is a great way to attract birds to your yard and help them survive.

GESE, TURKEYS AND PHEASANTS



Staffen:

Geese are opportunistic migrants and will move only as far as they need to. Depending on what water remains open during the winter months, they will move south or stay put. Migration has high risk, so if they do not need to migrate they won't. Both turkeys and pheasants can dig for food under the snow, but this becomes increasingly difficult as snow accumulates or ice forms on the ground. Pheasants and turkeys stand a greater chance of survival where they have access to adequate food resources and protective cover.

OWLS



Smith:

In Wisconsin, snowy owls are usually only seen in late fall and winter and in open areas like fields and along large waterbodies. Some of the best places are cities on the shores of the Great Lakes, including Ashland or Superior on Lake Superior and almost any city on Lake Michigan.

EAGLES

Staffen:

The best places to view bald eagles in Wisconsin during winter are near open water where they can find fish. Some of the best places are along the Mississippi River locks and dams and the lower Wisconsin River near Sauk City.



Bald Eagle Appreciation Days

Bald Eagle Appreciation Days in Prairie du Chien are Feb. 27 and 28. Some hotels also offer Friday educational programs. Other events are co-sponsored by Effigy Mounds National Monument and the Prairie du Chien Chamber of Commerce/Tourism Council. Saturday programs run 9 a.m. to 3 p.m. and are held at Hoffman Hall, Prairie du Chien. Visit prairieduchien.org/?q=visitors/eagles or call (800) 732-1673.

AQUATIC INVERTEBRATES

Smith:

Some crayfish live in streams and hide under rocks. The moving water usually has plenty of oxygen. Other crayfish, like the devil crayfish, live in wetlands and overwinter in burrows that they dug down into the water table before things were frozen solid.



Many aquatic invertebrates overwinter in their immature form or adult form and may be gill breathers or grab air from the surface. If the surface isn't available because of ice cover, they may still be fine as their metabolism (and oxygen demand) is extremely low at these temperatures.

Snails don't generally burrow and remain protected, to some extent, by their shells.

TURTLES

Paloski:

Turtles are cold-blooded, which means when they are cold in the winter their body's metabolism slows down. During the winter, turtles will take fewer breaths and also absorb small amounts of oxygen through their skin. Aquatic and semi-aquatic turtles burrow into the substrate in the winter. Wisconsin's one terrestrial turtle, the ornate box turtle, spends all year in sand prairies and overwinters by burrowing itself in the sand below the frost line.



MAMMALS

Smith:

Many mammals will seek out springs

and other areas of open water in the winter. If open water is not available, many will eat snow.

Foxes are active all winter and usually hunt by night. They may have burrows dug before the ground was frozen or other comparable daytime shelters.

Like foxes, wolves are active all winter and this is when they hunt in groups called packs. They may sleep together in protected areas, but not in dens.

Mink do not hibernate and can be seen out and feeding throughout the winter.

Staffen:

Deer seek out dense conifers or other shelter to survive winter. These are referred to as deer yards, where they congregate to avoid exposure.

Weather plays a large role in when bears head to their dens, but typically it is in November. They are not true hibernators, are capable of shuffling away if disturbed and can be out during a warm spell. A black bear stores a considerable amount of fat during autumn in preparation for winter torpor, when its heart rate declines from 40 to 10 beats per minute and its body temperature falls from the usual 104 degrees to 91.4 degrees. Females give birth over the winter to young in the den.

Flying squirrels do not hibernate but may utilize torpor during winter and typically take shelter in dens/nests in tree cavities during extreme weather events. They are known to huddle with as many as 20 other flying squirrels to share body heat for survival.

The true hibernators are bats and some mammals in the rodent family like ground squirrels, chipmunks and woodchucks.



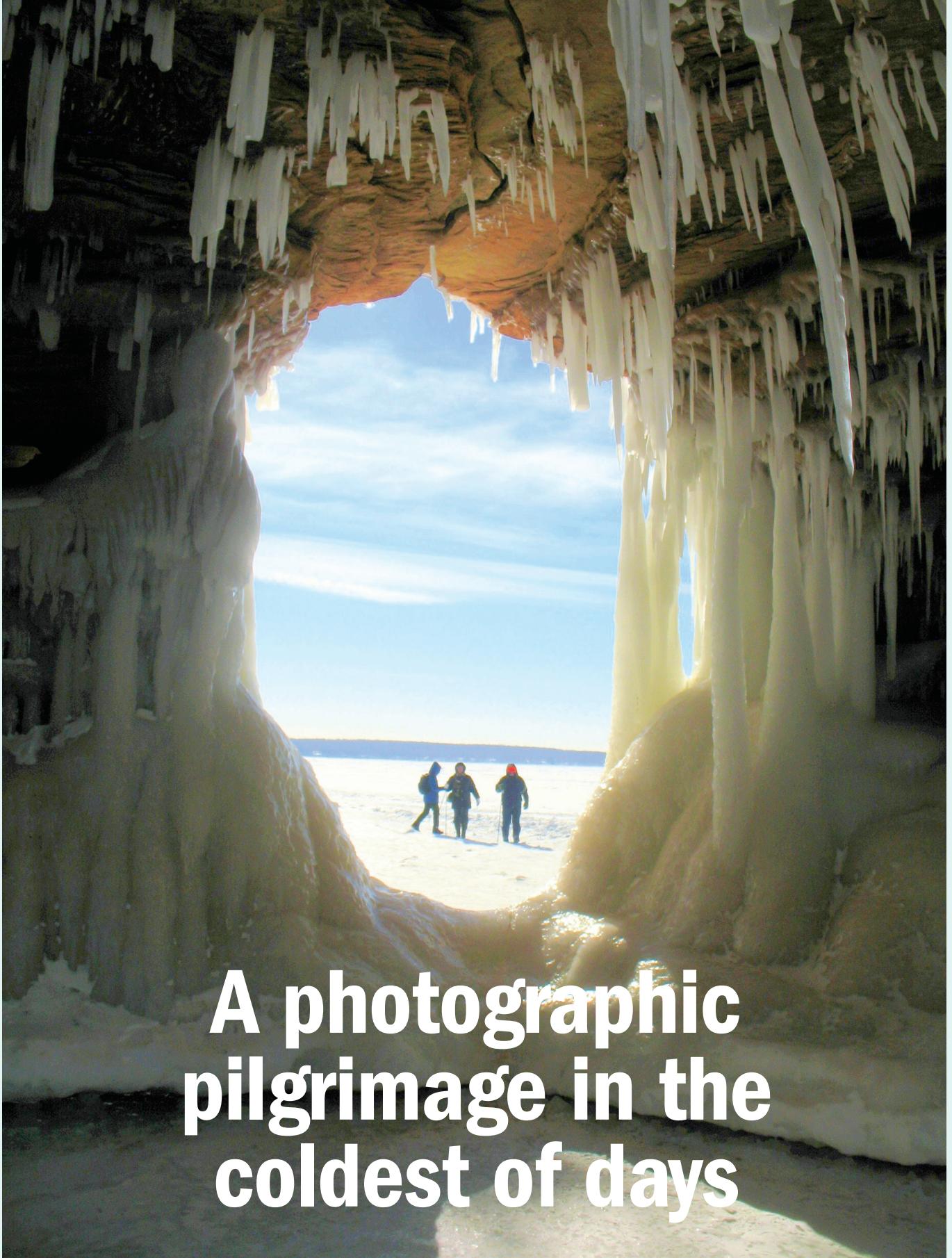
SNAKES

Paloski:

Overwintering locations for snakes vary by species, but most overwinter in crayfish burrows, small mammal burrows, old root channels or rock crevices. Snakes feed in the fall before overwintering, but because they are so cold in the winter, their metabolism slows down, and they do not need much food and can go long periods without eating.



Bill Smith retired from the Department of Natural Resources. Richard Staffen and Rori Paloski are conservation biologists in DNR's Natural Heritage Conservation program.



A photographic pilgrimage in the coldest of days

APOSTLE ISLANDS' ICE CAVES CAPTURED ON CAMERA.



Story by Mike McFadzen, photos by Mike and Karen McFadzen

Last year's cold and snowy winter was superb for winter recreation in the upper Midwest. Frozen lakes and rivers gave access to unique areas for ski and snowshoe trips. Winter grandeur doesn't get any better than the Apostle Islands' mainland sea caves.

The frozen waterfalls take on myriad colors depending on the mineral content. Huge icicles hang over 30 feet, with gorgeous ice formations formed by the meltwater. Big ice-filled chambers take on different colors and hues based on the daylight and reflections. This is a bucket-list trip.

Over 120,000 visitors made the jaunt to explore this remote and frozen natural wonder in 2014 according to Neil Howk, Apostle Islands' Assistant Chief of Interpretation. But is it safe?

"To keep it (ice caves) open, we make a determination of low-risk ice safety based on several variables. This includes having no open areas nearby and at least 8 inches of ice for at least two weeks," explains Howk.

The last time the ice was safe enough to provide access to the sea caves was in January and February 2009.

The Apostle Islands National Lakeshore is about as far north as you can get in the Midwest without bumping into Canada. This U.S. National Lakeshore is an archipelago of 21 islands and shoreline encompassing 69,372 acres on the northern tip of Wisconsin.

The best access to the mainland sea caves is from Meyers Road, located four miles northeast of Cornucopia, Wis. on State Highway 13. The sea caves start one mile from this parking lot. Call the Apostle Islands Ice Line at (715) 779-3398 ext. 3 for current ice conditions before attempting this trip. **M**

Mike McFadzen writes from Greenbush, Wis.

IF YOU GO

The best nearby lodging and restaurant choices are in Bayfield, 17 miles east of the sea caves on State Highway 13.



A river, a kayak, a friend

ADVENTURES ON THE
WILLOW FLOWAGE AND
TOMAHAWK RIVER ARE
BETTER TOGETHER

Bonnie Jolly and Nancy Lietzau
are friends and kayak companions.



NANCY LIETZAU

**Deer didn't seem to mind that we were
watching from the river, explains Jolly.**

as we were simply lost in the gentle flow of the river and in awe of what each new bend revealed. As we approached each bend, paddles went down and cameras came up.

We were greeted by turtles sunning, a young buck munching, ducks swimming along our kayaks, herons fishing, eagles drying their wings and loons feeding their babies.

There was often an adventure just in finding the put-in and take-out spots. We also saw porcupines, raccoons, grouse, sandhill cranes and turkeys along the way.

On the longer trips, we would say, "Take out is just around the bend!" Only to discover — another bend.

We kept journals of the trips including times, weather, highlights and dozens of pictures. Each trip had its own unique qualities and if we didn't see wildlife, we still saw wildflowers.

We took lots of pictures and anxiously waited to use them to identify the plants when we got home. We saw turtlehead, broadleaf arrowhead, water smartweed, fragrant water lily, marsh marigold and Joe-Pye weed.

We would be on a "kayak high" when we got home and then to come down from it, we would sit on the porch with glasses of wine and recount the day's highlights. Documenting the trip was just as rewarding as the actual trip. We shared our stories and pictures with friends and family, who now look forward to kayaking when they visit.

Our shared love of nature and photography has given us a deep appreciation of our natural resources and all that this area has to offer.



into a kayak in waist-deep water doesn't work, as I found out.

I came up sputtering, "Get the camera!" Nancy still loves to tell that story.

Each new trip led to the planning of another and before we knew it, we had kayaked the Tomahawk River from Minocqua to Tomahawk. Not all at one time, and over the course of three years, but we did it.

On some trips not a word was uttered,



A little ice isn't going to stop Nancy Lietzau.

BONNIE JOLLY

Bonnie Jolly writes from Minocqua, Wis.

TACKLING THE TOMAHAWK RIVER FROM MINOCQUA TO TOMAHAWK SECTION-BY-SECTION

Kawaguesaga Dam to Mercer Lake Road:

Put in at the dam boat landing in Minocqua and take out at Highway 70 and Mercer Lake Road. There is plenty of room for parking at both sites. In the beginning of the trip, the river flows north under Highway 70 and through the wildlife park where you can hear tropical birds reminiscent of a rain forest. There also is a large marshy area with many duck blinds. Just before the river turns to the south, there is an area on the right to take out and stretch. Here, the river flows south with sections of large pines and marshy areas. The take out is on the right just after the Highway 70 bridge. It's about a 3-hour trip.

Mercer Lake Road to Blue Lake Road:

Put in at Mercer Lake Road and Highway 70 (parking available) and take out at Blue Lake Road (parking on road). This is one of the most scenic and photographic sections of the river. There are lots of tall pines and a rock garden near the end of the trip. We went over a small beaver dam using paddles. The highlight was seeing a spike buck munching on weeds in the shallow section of the river. The take out is on the right just after the Blue Lake Road bridge. It's about a 2 1/2-hour trip.

Blue Lake Road to Camp Nine:

Put in at Blue Lake Road (parking on road) and take out at Camp Nine (parking on road). We were able to take one vehicle and walk back to Blue Lake Road about 2 1/2 miles. The start of the trip takes you through a farm where you can hear piglets in the spring. Watch out for wires going across the river. This also is a very curvy and narrow section of river with lots of fallen trees and debris. The section might not be accessible in low water years. The take out is on the right just after the Camp Nine bridge. It's about a 1-hour trip.

Camp Nine to Cedar Falls Road:

Put in at Camp Nine (parking on road) and take out near the Cedar Falls Rapids at Cedar Falls Road (parking on road). During the first hour of paddling expect low, marshy areas. There are eagle nests and we saw a green heron, eagles, ducks and turtles. Watch closely for the take out, which is on the left by Cedar Falls Road with the Cedar Falls Rapids just ahead. It's about a 2 1/2-hour trip.

Willow Flowage-Cedar Falls Campground to the beach boat landing:

Put in at the private campground on Cedar Falls Road (north end of Willow Flowage). There is a \$2 boat launch fee. Take out at the Willow Flowage beach landing on Willow Dam Road (northwest of boat landing). Parking is available at both sites. The first section is narrow but opens up to the flowage about 30 minutes into the trip. Watch for brown signs indicating campsites. Grills, picnic tables and primitive toilets are available. We had to portage around the Four Islands area because the water was low. Bring a map of the flowage and stay to the left so that you can find the beach boat launch (if lost you can always ask fishermen). It's about a 3-hour trip.



Wildlife watching is one of the best parts of the adventures.

Prairie Rapids Road to the Point of Pines Landing at Lake Nokomis:

Put in downstream of the rapids on Prairie Rapids Road (parking on road) and take out at the boat landing on Point of Pines Road (parking available). We were able to take one vehicle and walk back to put in on Prairie Rapids Road (about 2 1/2 miles). We put pink ribbons in the trees at the destination boat landing so we could find it from Lake Nokomis. We were unable to see them from the water and wound up asking fishermen to point us in the right direction.

There is fast moving water and riffles at the start of the trip. Along the way, we saw eagles, loons, ducks, geese and sandhill cranes. It's about a 1 1/2-hour trip.

Note: Bring a map of the area. It's a good idea to look at take-out sites before the trip. Beware of fast water under bridges and stay to the right or left for take out before you go under a bridge. The times provided here are approximate as we stopped for pictures, lunch and stretching whenever possible. There are three rapids we avoided: Cedar Falls, Half Breed Rapids and Prairie Rapids.

When the St. Croix National Scenic Riverway calls

HE ANSWERS WITH 180 MILES OF SOLO PADDLING IN AN ALUMINUM CANOE.

Story and photos by Bruce H. Manske

The St. Croix National Scenic Riverway was a historic travel route of the Ojibwe, the Dakota, explorers and loggers. Its pathway then, and now, consists of the St. Croix and Namekagon rivers and the riparian setting through which the rivers transverse on the way to the Mighty Mississippi and the Gulf of Mexico.

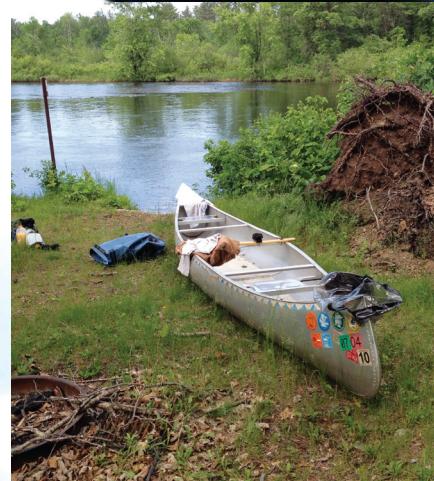
The riverway is a natural wonder and has a rich and extensive history. Recognizing its significance, the federal government in 1968 established the St. Croix National Scenic Riverway under the National Wild and Scenic Rivers Act.

Today, recreation enthusiasts like me get their turn to enjoy this exceptionally rich riverway. Here is my story of traveling the riverway — solo and in an aluminum canoe — constantly reminded of Leif Enger's best-selling novel, *Peace Like a River*.

When I began my trip, though, the Namekagon River was anything but peaceful. It was running high, fast and cold due to the above average spring rainfall; yet, it was time



Paddling into Stillwater, Minn.



Camping on the Namekagon brings a new set of sounds to the trip.

Five days of reflection on the riverway brings the author peace and a whole lot of paddling.



to travel. My goal? Paddling Hayward to Stillwater. It was time to let the past school year drift away, self-reflect and take in history.

After the Hayward landing, the river became rocky and narrow, with a few small rapids. I found *Peace Like a River* along with herons and good fishing opportunity. Eagles made their homes in 100-year-old white pines that were left behind from the logging days. Songbirds made for a pleasurable morning: woodland music, quirky flybys and colorful flashes kept this solo paddler alert and tuned in to nature.

After Big Bend Landing, a couple of miles south of Springbrook, the river widened and time seemed to slow. I witnessed white-tailed deer and an occasional black bear frolicking on the river's edge — finding their own *Peace Like a River*. It was also prime time for turtles including wood, snapper, painted and soft-shelled that were making their nests in the sand. Although the river was high, these turtles were not to be denied a prime nesting area... persistence wins; nature wins.

The Trego Flowage was a disappointment with mucky water, motorboats and a long pull to the Trego Dam. The Trego Flowage portage was a welcome sight. It featured a well-marked portage path and a well-deserved rest stop.

The Namekagon River and its primitive and reclusive glory were back, along with *Peace Like a River*. As night settled in, the wilderness erupted with a new set of sounds. Surrounding the evening camp I heard owls on the hunt, nocturnal mammals on the prowl and thunder in the distance. Of course, mosquitoes also made a showing and drove me into the tent to read, write and watch the sun slowly set over the glistening riverway.

A new day saw me traveling downstream from the Trego Dam. Here, the river narrowed and I discovered a variety of downhill riffles. According to the map, sandbars and islands are frequent, but during the high-water season the river flows with reckless abandon. Ah yes, *Peace Like a River*.

Morning also brings river sunrises, which are spectacular as the mist dissipates. The solitude of morning offers time to reflect on history, change and new beginnings.

I joined the St. Croix River in the Upper St. Croix flowage in Douglas County. From here, the St. Croix River flows 164 miles to its confluence with the Mississippi River near Prescott, Wis. The majority of the river creates the state boundary between Minnesota and Wisconsin; whereas, the upper St. Croix River flows past heavily wooded banks and islands.

This is a breath-taking stretch punctuated by second growth forests of birch, maple, oak, aspen and basswood in the valley. But stands of white pine forests that once cloaked the riverbanks are nearly gone, felled by the lumberman's ax. Still, eagles, osprey and falcons make their homes in the few left standing — giant lookout posts for magnificent birds of prey.

The Namekagon River joins the St. Croix River in northern Burnett County and it is at this point where both rivers become significantly wider. This river-joining is a special location on the riverway. It's where two powerful rivers grasp hands.

It is not difficult to imagine the fur trading industry excelling here, for beaver and otter are still prevalent; although, most likely not to the extent of the 1700s. It's also not difficult to imagine loggers

of the past finding success here.

Heading south, the names of various canoe and boat landings, as well as other historical points of interest help to preserve history and provide insight into past river eras: the Soo Line Railroad Bridge, Thayers Landing and Norway Point Landing.

St. Croix State Park in Minnesota and Governor Knowles State Forest in Wisconsin have kiosks to inform travelers of travels gone-by, including the history behind settings such as Old Railroad Bridge Landing, Sunrise Ferry Landing and Nevers Dam Landing.

Continuing south, past meets present as motorboats hum along the river, power lines are visible overhead and automobile traffic parallels the river.

The Taylors Falls area was an adventure. Excel Energy has a hydroelectric dam here and one must portage meandering 1½ miles through the streets of Taylors Falls. But I was reminded that if I was patient, I would be rewarded. Curiously, the portage was not as daunting as I imagined. It was a 2-hour trip, a quick tour of town and then into new canoe territory. I soon discovered glacier cliffs and Class II rapids that helped me forget the rigors of the urban portage. *Peace Like a River*.

After portaging, I found the river wide, fast and cold — all factors that kept the average boater to a minimum, and, ah yes, the power of a "no wake ordinance" to keep boaters at bay.

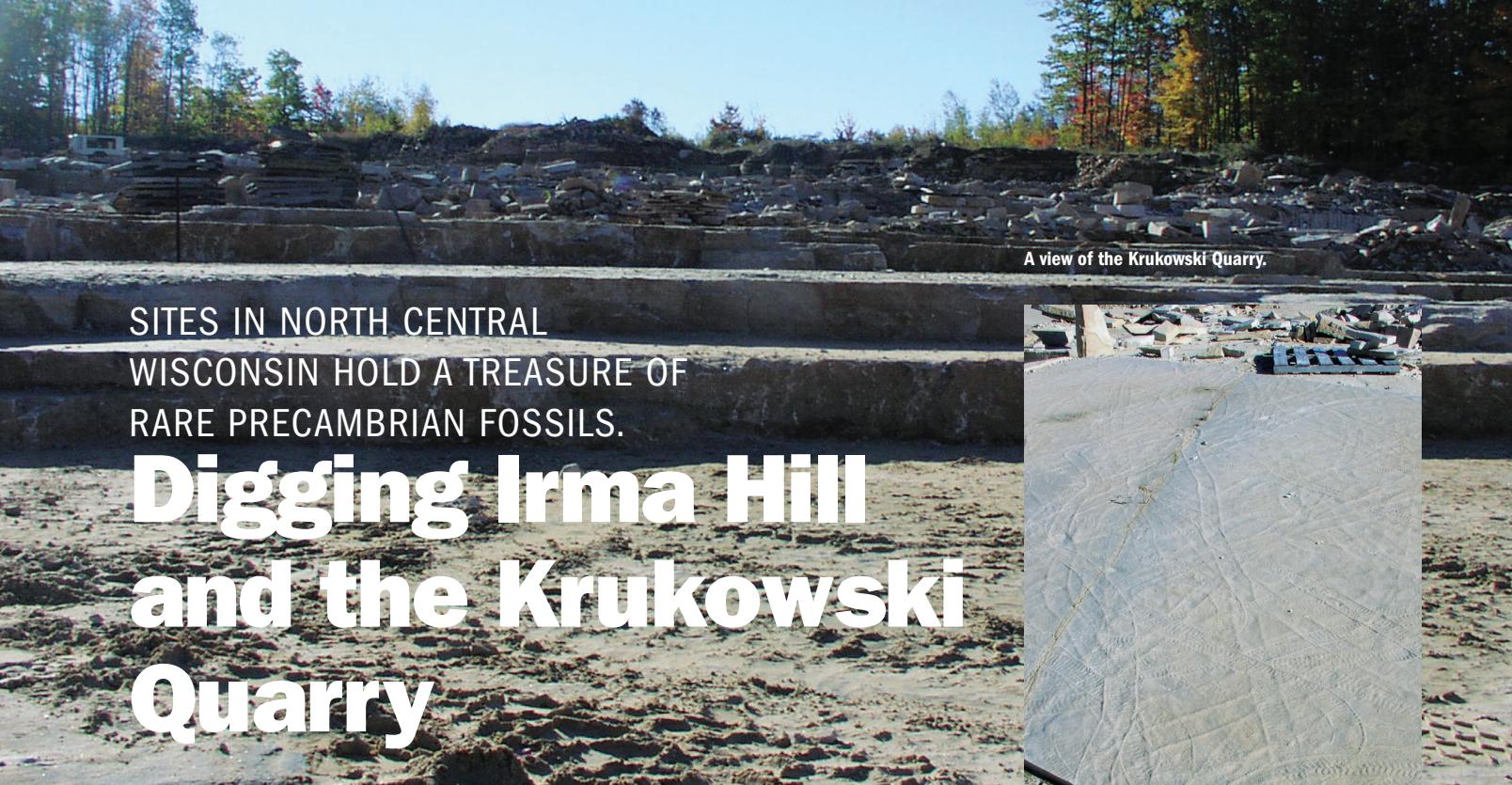
The St. Croix River south of Taylors Falls also featured many islands, bayous and subtle pathways through flooded forest islands. It was easy to avoid motorized boats.

William O'Brien State Park on the Minnesota side and the St. Croix Island State Wildlife Area were amazing and canoe- and kayak-friendly. The pathways were narrow and intriguing with abundant wildlife. It was an urban wilderness, only accessible with small, non-motorized crafts creating *Peace Like a River*.

The High Bridge marked a significant change in St. Croix National Scenic Riverway life. Here, boats of any size are allowed in the river, but they are not allowed to cross the High Bridge line traveling north.

And my trip came to an end. It was a fast, furious and reflective five days on the St. Croix National Scenic Riverway. It brought me *Peace Like a River*. 

Bruce H. Manske writes from Stillwater, Minn.



A view of the Krukowski Quarry.

SITES IN NORTH CENTRAL WISCONSIN HOLD A TREASURE OF RARE PRECAMBRIAN FOSSILS.

Digging Irma Hill and the Krukowski Quarry

Abigail M. Bostwick and Anna N. Hess, Photos by Abigail M. Bostwick

More than 500 million years ago, shallow seas licked at the shores of the landmass including what is now known as Wisconsin. The continent teemed with life.

Evidence of these shallow marine soft-bodied forms from this time is few and far between. And yet, fossils have been preserved in a very unlikely location of the Badger State — Irma Hill, the third highest point of the state and an isolated sandstone outlier in a heavily glaciated region south of Tomahawk.

The former Irma beach today is a hill owned by the state and private property owners. The fossils found here have been compared to similar, though better-preserved, fossils in the Krukowski Quarry, located about 50 miles to the south in Mosinee.

Site specifics

In Wisconsin, the sea waters of the past left behind layer-upon-layer of sandy, sedimentary rocks such as sandstone, limestone and shale, which were home to a variety of soft-bodied organisms.

During the last 300 million years, the landmass containing Wisconsin shifted its tectonic position to the northern hemisphere, above sea level. The existence of patches of sandstone, such as Irma Hill, means that the Cambrian sea covered most, if not all, of northern Wisconsin at one time.

Irma Hill was near the center of the

Wisconsin dome, which was higher in the landscape during Paleozoic time. Located at least 50 miles north of any other Cambrian rock outcrop, it's believed the sandstone was deposited on top of the former Penokean Mountain Range. Irma Hill stands today at 1,650 feet.

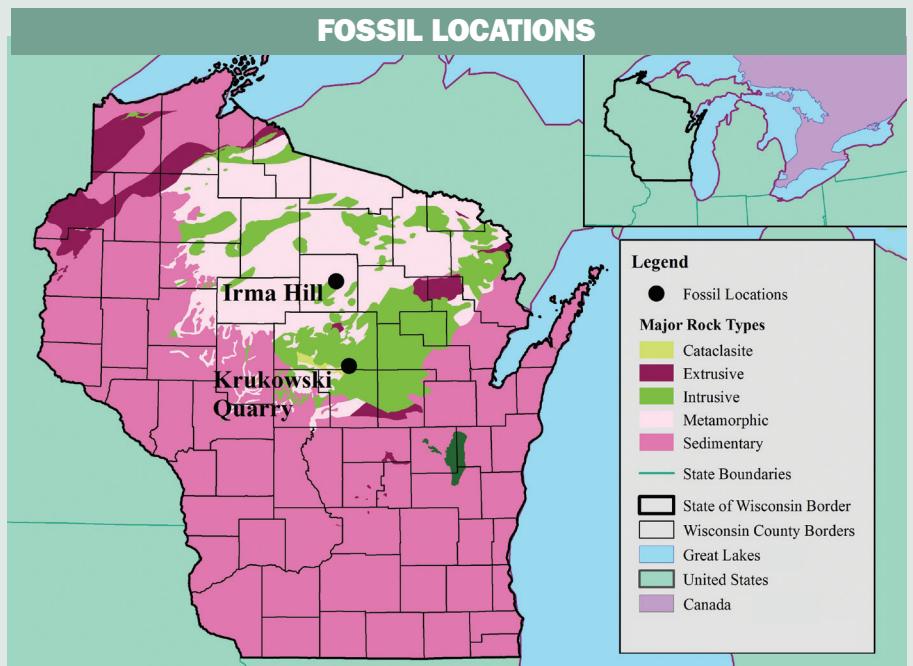
Irma Hill sandstone is comprised of



Climacticinite movement patterns.

medium- to fine-grained silica sedimentary rock and is one of the most isolated patches of Cambrian sandstone in the state. Most other sandstone patches have been wiped out due to erosion and glaciation.

Irma Hill is along the end moraine of the most recent Wisconsin glacia-



ANNA N. HESS

tion. Glaciers moved across the Lincoln County area several times after the Ice Age began more than 1 million years ago. The glaciers transported vast loads of rocks and pulverized material as they scoured their way across the landscape. When the ice sheets melted or stagnated, glacial drift was deposited in the form of till, outwash and lacustrine deposits. Today, the drift is several hundred feet thick in many areas of Lincoln County where the moraine marked its furthest extent. Around 20 to 30 feet of glacial till covers the top of Irma Hill.

But glaciation did not completely cover, nor take away, all of Irma Hill's trademark sandstone. Rock outcrops show ripple marks, cross-bedding and grading, in addition to the trace fossils — all evidence of a past marine environment. The exposed layers along the road show at least six layers.

In comparison, Krukowski Quarry is comprised of upper Cambrian Mt. Simon-Wonewoc quartz arenite sandstone. In the late Cambrian period, this area was a beach and shoreline, and the quarry is well known for abundant fossil impressions. The area also was glaciated, though less till was deposited here than at Irma Hill.

The fossils

Preservation of the soft tissue organisms that lived so long ago is exceptionally rare. Their lack of hard body parts, likelihood to quickly decay and reworking of sediment all mean these fossils were often obliterated. Erosion and glaciations also removed much of what survived.

At Irma Hill and Krukowski Quarry evidence of these organisms has survived and they are home to some of the world's best known soft-bodied fossils and trace fossils.

No shell animals have been recorded, but earlier soft-tissue life ranging from jellyfish, arthropods, Climactichnites and other unknown ichnofossils, possibly worm trails, can be found.

Jellyfish

While evidence of jellyfish has not been found at Irma Hill, the Krukowski Quarry shows several stunning sandstone horizons of mass jellyfish stranding events.

Jellyfish were mobile, carnivorous animals at the time seas covered Wisconsin. Jellyfish were not often fossilized, though, because of their soft body parts. They also decay quickly. But at the site



Asymmetrical ripples found at the Krukowski Quarry.

of Krukowski Quarry jellyfish likely became trapped when they settled on the surface in shallow water. As they moved their sub-umbrella down and pumped their bells to escape, their stomach and external cavities filled with sand. Stranded jellyfish have only been found in two locations worldwide — Krukowski Quarry and New Brunswick, Canada.

Climactichnites

Perhaps one of the most spectacular trace fossils of Cambrian time is the Climactichnites, a tire-like trail found thus far exclusively in sandstone. It has never been seen in other rock types or periods. The trail is considered to be exceptionally unique and one of the oldest fossils ever to have been discovered.

Climactichnites have been observed in Australia; Ontario and Quebec in Canada; and New York, Missouri and Wisconsin.

In Wisconsin, they've been seen not only at Irma Hill and Krukowski Quarry, but also Chippewa Falls, Eau Claire, Black River Falls, New Lisbon and Mauston.

This track-maker lacked a skeleton and did not leave a fossil. What is left behind is the classic form of paired, lateral ridges that may be smooth or rough. Between these ridges are a series of alternating bars and furrows. Based on this appearance, the organism was named in 1860 after the Latin "climacis," for their "ladder-like" appearance.

It's believed the animal crawled at night or during times of low light rather than during sunny days because temperature and ultraviolet radiation from the sun likely would have hurt the Climactichnites. It likely crawled on the sand when it was damp but not full of water.

In every instance where Climactichnites traces are found, trails are overlain by another bed of sandstone without any film or layer of clay being deposited in between. This observation is true for Irma Hill Climactichnites fossils.

It's uncertain how old the Climactichnites is. It's often dated via trilobites, the species that most often occurs in the next overlying stratigraphic rock. One of the classic features of Climactichnites is the constant width. Trails display a small turning radius, indicating the animal didn't stretch out much when moving.

Climactichnites on Irma Hill range in width from 6 to 10 millimeters wide. Climactichnites seen at the Krukowski Quarry have been far more numerous, with around 30 trails in a 200-square-foot area.

Interpreting these trails is difficult and debate between scientists continues: Is this indeed a trace fossil or is it an impression from a very long, earthworm-type organism?

Ichnofossils and ripple marks

The final trace fossils observed in Irma Hill sandstone remain unidentified. Similar trace fossils are present at the Krukowski Quarry and are referred to as undescribed track way ichnofossils, or possibly worm trails.

Ripple marks also have been recorded at both sites but are not fossils, rather a record in the rock of the coastal environment.

Researching fossils found at Irma Hill and the Krukowski Quarry provides critical evidence of the history of life and shows some of the earliest prints left by the first life on earth. While collecting fossils from state lands is prohibited, they provide a rich understanding of Wisconsin's natural history.

Research outlined in this story was done with input from Kevin Hefferan and the University of Wisconsin-Stevens Point Department of Geography and Geology. All photos were collected by Abigail M. Bostwick, who graduated from the University of Wisconsin-Stevens Point with a bachelor's degree in earth science. She lives near Tomahawk and is the author of the middle grade novel, *The Great Cat Nap*, with a young adult novel also forthcoming in fall 2015. Graphics and map were developed by Anna N. Hess, district manager for the Minnesota DNR Division of Ecological and Water Resources.

A historic bird survey

WISCONSIN BREEDING BIRD ATLAS II
WILL BE THE LARGEST AVIAN CITIZEN
SCIENCE PROJECT EVER IN THE STATE.

Lisa Gaumnitz

In Waushara County, the woods around Jeffrey Wolk exploded with the insistent, crescendoing call — Tea-cher, Tea-cher, Tea-cher!

Wolk, a dentist by profession and a birder by passion, scanned the trees and the ground for 45 minutes.

"I heard it, waited, watched and finally saw it," he says. The effusive, elusive chorister was an ovenbird, a warbler so-named for its dome-shaped ground nest.

In Marinette County, Bettie Harriman moved slowly and quietly for hours through the shrub and grasses of Dunbar Barrens State Natural Area. Her patience was rewarded by finding some newly hatched upland sandpipers, a threatened species in Wisconsin. "It was just revealing," she says. "Very educational and very peaceful."

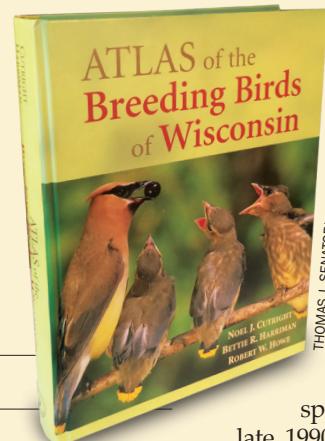
In Green Lake County, renowned Wisconsin bird illustrator Tom Schultz picked his way around the tamarack swamps and wet meadows of the White River Marsh State Wildlife Area seeking avian amore, and found inspiration for his next paintings.

"I find birds endlessly fascinating," he says. "They demonstrate such a diversity of activities and interactions."

Twenty years after the three searched Wisconsin fields, forests and fens as part of a historic statewide bird survey, they're planning to do it again. United by a desire to keep birds a key part of Wisconsin's identity, the three will pull on their boots, grab field guides and binoculars and join other Wisconsinites this spring in search of breeding birds.

Known as the Wisconsin Breeding Bird Atlas II, the effort will be the largest avian citizen science project ever in the state and the first in the country to use eBird, the wildly popular bird reporting and analysis website, to help carry it out.

"The second Wisconsin Breeding Bird Atlas is critically important to help us understand how Wisconsin bird popula-



most birds in Wisconsin nest, owls and some other species can begin nesting with snow still on the ground.

The WSO spearheaded the first atlas and provided key financial and volunteer power to get it done. Harriman was the project director,

spending much of the mid- to late 1990s crisscrossing the state with Noel Cutright to make presentations to birding groups to recruit members to do surveys.

They and their regional coordinators successfully recruited more than 1,600 people who submitted over 172,000 records of birds engaged in some kind of breeding behavior. The "atlasers," largely volunteers but with a handful of paid staff, confirmed 226 species of breeding birds and recorded another 11 as probable breeders in the state.

Harriman, Cutright and Robert Howe wrote and edited information together into a 600-plus page book, the core of which are two-page write-ups on each bird confirmed nesting in Wisconsin and maps showing the species' location.

That first atlas provided a rich data set that has been very important in confirming what birds breed in Wisconsin and where, and helping shape conservation efforts on the state and federal levels.

"This is the raw data a lot of DNR



House wren carrying the food it will feed its young.

tions are changing, and how the changing landscape and climate affect their numbers and distribution," says Bill Mueller, who directs the Western Great Lakes Bird and Bat Observatory, one of three key atlas partners along with the Department of Natural Resources and the Wisconsin Society for Ornithology (WSO). "And, it is fun, and a great way to learn more about the natural world."

Adds Nick Anich, the DNR conservation biologist coordinating the survey for the agency, "The strength of the project is it mobilizes so many skilled observers and everyday Wisconsinites. We're looking for people to volunteer. We won't turn anybody away."

Field work for Wisconsin's first atlas began 20 years ago this spring, a time when many other states were also conducting their first bird atlases. Atlas surveys look for specific behaviors ranging from birds on a nest, to male birds singing their hearts out to potential mates, to mother birds feeding their young. Though June and July are the months when



The rose-breasted grosbeak is a neotropical migratory bird that breeds statewide.

RYAN BRADY

bureaus use when making decisions about property management and species worthy of conservation," Anich says.

Tapping birding's rock stars and broadening the base

This go-round, the atlas effort will build on the strengths of the first but also capitalize on advancing technology to increase participation and collect more information.

The Wisconsin Society for Ornithology, the driving force behind the first atlas, remains a major partner but the Department of Natural Resources and the Western Great Lakes Bird and Bat Observatory will play even greater roles.

"Having three organizations lead the second effort will make for an even more robust atlas project," says Kim Kreitinger, WSO president. Each brings different skills and resources to the table.

"Because WSO is an all-volunteer organization with no paid staff, I feel it is really a necessity to forge strong partnerships for a project as massive as the breeding bird atlas," Kreitinger says.

Noel Cutright, the well-known Wisconsin ornithologist who was twice president of WSO and founded the Western Great Lakes Bird and Bat Observatory, was intimately involved in planning for this second atlas before his death in November 2013.

"When Noel knew he was dying, we held meetings every other day or so for the last four months of his life," Mueller recalls. "His charge to me, as I was about to take over as director of the observatory, was to help push this new atlas project forward."

Mueller is well-known himself for having walked across Wisconsin in 2013 to raise money for bird protection.

"Now is the correct time to re-do the atlas," he says. "Much has changed in terms of birds' geographic range, abundance, and the factors affecting bird populations."

Technology eases birders' task

For the most part, the second survey will follow the same basic methods used 20 years ago. That consistency allows ornithologists to compare bird populations over time and also over statewide, regional and national scales, Anich says.

Wisconsin has been divided into thousands of roughly 3.3-mile by 3.3-mile square blocks, with 1,130 priority blocks the organizers want to complete to pro-



A female red-winged blackbird feeding her young.

vide a good picture of what's going on statewide.

County-level coordinators will work to recruit citizens to claim the blocks; a kickoff meeting that is open to the public is set for Feb. 27 through March 1 near Wausau. This symposium will feature a chance to meet atlas planners and county coordinators, get familiar with atlasing protocol and learn about some of the useful analyses that are being done with the data, Anich says.

The "atlasers" will go to the priority block they commit to and record on a paper checklist the different birds they see, documenting for each species the breeding behaviors that were observed. Seeing a singing male in suitable habitat is a sign that breeding is possible; observing a pair of birds in suitable habitat during the breeding season is a sign that breeding is probable; seeing a bird on a nest or a bird feeding its young are confirmed signs of breeding.

Volunteers can visit the same block many times over a single breeding season to get a good representation of the birds that use that habitat over that period, or they can spread their effort on the same block over multiple years.

People with less time and fewer bird identification skills can still turn in more casual reports on the birds they see engaged in breeding behavior.

"Any bird you see on a nest, as long as you know where you are and what

the bird is — we'll take it," Anich says. People can upload bird photos for help on identification.

Birders will be asked to enter their data into a specifically customized eBird portal at the end of a surveillance day. That will add useful functionality to the atlas process, with real-time maps making it much easier for atlas coordinators to keep tabs on incoming surveyor effort, Anich says.

GET INVOLVED

- **LEARN MORE:** wsobirds.org/atlas.
- **SIGN UP** for email updates or to volunteer: wsobirds.org.
- **ATTEND** the kick-off meeting:
Feb. 27-March 1, Stoney Creek Hotel and Conference Center, Rothschild.
Register (\$10) at wsobirds.org.

Volunteers with GPS units or GPS-enabled smartphones can mark immediately where they find birds, and the DNR is building an interactive map to aid birders in finding their way around their block and locating all of the different habitats that hold birds.

There are also plans to incorporate a survey method called the "point count." Observers stand at a particular spot and write down everything they see or hear for three minutes. Then they move another half-mile and do it again. Analyzing data collected from this standardized protocol allows for more rigorous calculation of the abundance of some species.

"The first atlas provided a lot of basic information on the distribution of common and uncommon birds. This next atlas will collect quite a bit more data and at a finer scale," Anich says.

Exceptional diversity with easy entry

The Cornell Lab has been looking for ways to harness eBird to be used for specific projects, and Wisconsin's atlas is a great candidate.

"There is just such a strong team and tradition with such greats as Aldo Leopold, Frederick and Frances Hamerstrom, Sam Robbins, Noel Cutright. Wisconsin is at the leading edge of bird conservation," says Chris Wood, an eBird project leader.

The state has "exceptional bird diversity. Wisconsin is a transition zone where you find all of these species. There's really no state that's better to appreciate warbler migration."

Wood knows, having gone to Ripon College in the 1990s and being involved in the original atlas as one of its core paid surveyors. He recorded more than 150 breeding bird species in his surveys of blocks in Adams and Grant counties and in the Chequamegon-Nicolet National Forest.

Now, eBird allows people to record the species they see year-round, regardless of where the birds are and what they're doing.

The customized eBird portal for the Wisconsin Breeding Bird Atlas II will be tailored to specific information atlasers will be collecting: the highest level of breeding behavior, location, habitat type and more.

WSO is funding development of this customized portal and the Wisconsin atlas portal will be accessed through WSO's website. All of the atlasing materials, guidelines, project updates and



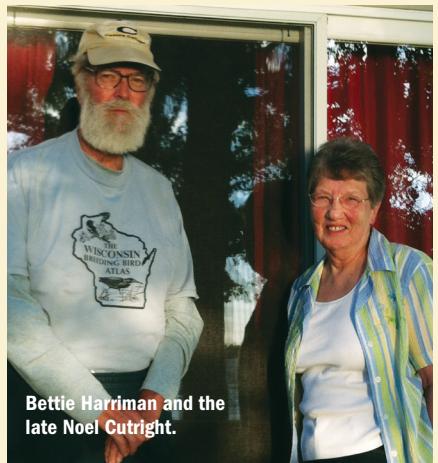
Spruce grouse male in Ashland County exhibiting a courtship display.

more will be found at wsobirds.org; partnering organizations like the Department of Natural Resources, and the Western Great Lakes Bird and Bat Observatory will have links to that website from their own.

Based on the fact that 3,500 Wisconsin birders submitted their checklists on eBird last year, organizers expect at least twice the number of people helping with the atlas this time around, if not more.

The proverbial canary in the coal mine

Anich expects the Breeding Bird Atlas II to reveal some shifting ranges and abundances in bird species. When the first



atlas was done, wild turkeys were primarily in the southern half of Wisconsin. Now, they've spread pretty much across the north as well.

People report fewer Connecticut warblers, black terns and western meadowlarks. The atlas will test if those anecdotes hold true. Thirty percent of Wisconsin's native birds have been identified as species of greatest conservation need.

Anich and Wood say the atlas will yield important clues about the health of Wisconsin beyond its birds.

"Birds are truly the canary in the coal mine, an indicator of what is happening on the landscape," Wood says. "It's a very cost-effective way to learn about the larger environment."

Birds are found in every imaginable habitat.

"Each of the species has the potential to tell us something about ecosystems and help us understand the relationships we have with the natural world," Wood says. "The purpose of the atlas is looking and comparing in one of the states with the richest diversity. The atlas will help us understand what has happened in the last 20 years and start thinking about changes that might need to be made or not."

Birding for a cause, finding personal benefits

Wood got into birding in Wisconsin the way many do: when a veteran birder took him under his wing. Tom Schultz was his mentor when Wood was a student at Ripon College studying economics, politics and government and environmental biology.

Schultz was a regional coordinator for the atlas, charged with recruiting other birders to complete blocks. He also wrote articles for 10 species of birds and collected and edited the photos of species throughout the atlas book.

Though Schultz had been painting birds for nearly 20 years, by the time he surveyed his first block, including doing some of the illustrations for the *National Geographic's Field Guide to the Birds of North America*, he says the experience definitely enriched his experience as a field birder. "When you're in the field for many hours and looking for those behaviors you tend to learn a lot more details," he says.

Bettie Harriman developed her passion for birds after taking John Kaspar's ornithology class at UW-Oshkosh and discovering she enjoyed identifying birds.

"Why do people love birds? It's because they fly," Harriman says. "Humans are so envious of the ability of birds to fly. Birds are very visual and a lot of them are colorful. For many people it's probably the wild creature that attracts them more than any other."

Harriman, while serving as overall atlas director the first time around, conducted breeding bird surveys herself.

"I had a splendid block in Marinette County by the Town of Dunbar. I worked three seasons and it was so much fun to do. The atlas really gives a birder another way to appreciate birds," she says.

Harriman's descriptions of her survey work while visiting her dentist, Jeffrey Wolk, inspired him to get involved. He too, had taken John Kaspar's ornithology class.

The atlas sounded interesting so he went to the meeting and signed up to survey a block in Waushara County on land around his family's cottage on Porters Lake.

"I like getting out in the woods and learning things. When I see something I like to figure out what it is — plants, flowers, trees, birds, fish."

Wolk wasn't able to get involved in the first atlas as fully as he would have liked to because his children were young, but he enjoyed what he was able to do to help Wisconsin's fine feathered friends.

"It was a good project. It was a worthwhile project, useful," he says. "It can be fun, it can be good exercise, and it can just be getting outside."

What we cherish the most

The Cherish Wisconsin Outdoors Fund exists to ensure the future enjoyment of the state's remarkable natural wonders.

BENJAMIN PIERSON

CHERISH



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P.O. Box 2317
Madison, WI 53701-2317

Your donation is tax deductible to the extent allowable by law.

BACKGROUND

The Cherish Wisconsin Outdoors Fund was created through unanimous and bipartisan legislation signed into law by Governor Scott Walker in March 2012. The law enables the Department of Natural Resources to request over-the-counter voluntary contributions from the four million citizens who currently purchase annual services such as licenses. The Fund is committed to enhancing our public lands and waters and to sustaining and expanding their recreational, biological, aesthetic and economic value.

The Fund is a successful example of a public/private partnership. The Cherish Wisconsin Outdoors Fund is held and managed by the Natural Resources Foundation of Wisconsin, an independent 501 (c)(3) organization established in 1986.



FUELING THE CHERISH WISCONSIN OUTDOORS FUND.

Carly Darrow

Whether it's a cross-country ski through snow-covered trails or the first casts from the boat on a foggy morning, each and every one of us appreciates Wisconsin's natural resources differently.

We cherish not only the favorite places of our childhood, but also the memories we will make with our friends and family in the seasons to come.

The question is how can we ensure that future generations will have the opportunity to create these same memories?

One way is through the Cherish Wisconsin Outdoors Fund.

The Cherish Wisconsin Outdoors Fund is a permanent endowment for habitat improvement and management on public lands throughout Wisconsin. From improving forest health to restoring prairies, the Fund was created to last lifetimes because our precious lands, waters and wildlife must also last lifetimes.

A little bit goes a long way

In September 2014, the Cherish Wisconsin Outdoors Fund celebrated its first year. On the one-year anniversary of the Fund, your donations contributed through the DNR licensing system accumulated to more than \$64,000. By saying yes to donating only \$2 while purchasing a license at one of DNR's 1,300 license vendors, you made a difference in protecting and enhancing the natural resources you enjoy the most.

No matter what the size of the donation, you truly are making a difference toward ensuring the natural resources that you love will thrive for the next generation and the others after that.

When you go to renew your hunting

or fishing license, or state park sticker and trail pass this year, consider donating \$2 or more to the Cherish Wisconsin Outdoors Fund to ensure the future enjoyment of our state's remarkable forests, wildlife areas, parks and waterways.

The Department of Natural Resources and Natural Resources Foundation want to thank you for a successful first year of the endowment. Because of your generous donations, the Cherish Wisconsin Outdoors Fund has accumulated over \$90,000 through license sales, campsite reservations on state properties and online at CherishWisconsin.org.

Looking ahead

As we look forward to a successful future of managing and conserving our resources, the endowment will distribute approximately \$50,000 per year for every \$1 million in the Cherish Wisconsin Outdoors Fund, which will go towards habitat management on our state lands. The remainder of the money stays in the endowment to grow for future years. Management projects include restoring, protecting and improving habitat for Wisconsin's plants and animals.

Thank you for your continued support of the Fund. Little by little, year by year, by working together in a partnership, we will make a difference. Give now. Enjoy forever.

Carly Darrow is a communications specialist in DNR's Office of Communications.

Wisconsin's Deer Management Assistance Program

Deer herd on Matt Stieve's Sauk County DMAP property.



MATT STEIVE

BENEFITTING WILDLIFE, HABITAT AND PEOPLE.

Meredith Penthorn and Bob Nack

When Dan Holehouse wanted to learn how to increase the number of deer and other wildlife on his property, he decided to give the new Deer Management Assistance Program (DMAP) a try.

Holehouse, who together with his brother owns land in Iron County, understands that improving property for deer often requires a team effort.

"In my neck of the woods, the deer populations are bad at best," Holehouse says. "What I am trying to accomplish through my involvement in DMAP is, quite simply, to make my property the best it can be with the resources I have available to me. If I have access to personnel and knowledge that can help me achieve this goal, why wouldn't I?"

Matt Stieve, a DMAP cooperator in Sauk County, wants to bring deer numbers to a healthier level for the property.

"Because the deer numbers are high on our farm and are negatively affecting tree regeneration, crop harvest and other flora and fauna, I wanted to get involved in DMAP so we could get additional antlerless tags at a reduced cost," Stieve says. "I am hoping to maintain a healthy herd of deer on our property to have continued quality deer hunting experiences. This healthy deer herd will ultimately help establish a healthy forest and profitable cropland."

Most landowners enrolled in Wisconsin's new Deer Management Assistance Program are certainly passionate about deer and deer hunting; however, not all are deer hunters. Some non-hunting DMAP cooperators are equally passionate and concerned about the impacts of deer browse on forest regeneration and other wildlife species.

Cooperators recognize that deer and other wildlife thrive on healthy habitat

— and habitat improvement is a central component of DMAP.

A partnership for healthy deer and healthy habitat

The program's foundation is a partnership between landowners, hunters and the Department of Natural Resources that recognizes the relationship between healthy deer and healthy habitat.

In fact, 95 percent of applications accepted in 2014 indicated that habitat improvement was a common motivation for landowners to sign up. While deer certainly benefit from better access to food and cover, landowners may also begin to notice more game birds, small

mammals, songbirds and other wildlife as a result of habitat management activities. The potential diversity of plants and animals that results from proper habitat management can also enhance the aesthetic value of the property and increase opportunities for outdoor recreation.

Cooperators in each of DMAP's three enrollment levels receive access to educational resources rooted in wildlife habitat and deer management — these materials help explain the connection between wildlife and the habitat they need to survive.

Level 1 cooperators receive property management advice from their local wildlife biologist and invitations to attend workshops that will help develop their management ideas, while cooperators at levels 2 and 3 also receive an onsite visit with local DNR staff and a site-specific management plan.

Management plans include recommendations for habitat improvement practices that align with land use activities, like timber and agricultural production.

Level 2 and 3 cooperators may also receive reduced-price antlerless harvest tags, to assist in achieving habitat and deer management objectives.

Group cooperatives, with multiple landowners working together, encourage landowners to reach out to neighbors with common goals, and can allow cooperators whose properties do not meet the minimum acreage requirements for Level 2 or 3 to qualify for these benefits. Group cooperatives extend wildlife and habitat management practices over a larger area, which can improve recreational experiences, reduce habitat man-



DNR forester Brad Hutnik and a DMAP landowner conduct a site visit.

BOB NACK

agement expenses, allow a broader range of management activities and potentially attract a wider variety of game and non-game wildlife to the property.

First year enrollments

In 2014, the DNR accepted all Level 1 applicants and as many Level 2 and 3 landowners and group cooperatives as was practical while still preserving a high caliber of customer service.

The Department of Natural Resources enrolled 167 properties representing 47 counties and close to 50,000 acres of land in 2014. The agency dedicated staff time to developing program details, conducting site visits, writing management plans and communicating with landowners. The agency worked with many motivated landowners over the past year, and it has been a good learning experience for staff as well.

For example, staff developed a browse index, ranging from light to severe, to provide a standard of comparison for levels of browse across all DMAP properties.

During site visits, biologists and foresters estimate the percent of stems browsed at random locations in habitat blocks to assess the level of browse impacts on a given property. High browse impact suggests that past or current deer numbers may not be in balance with their available habitat. Information collected on the site visit, including the browse index and landowner property goals, will help DNR staff determine if DMAP antlerless tags should be issued.

During a site visit in Taylor County, DNR forester Brad Hutnik identified a layer of ironwood in the forest understory that could be removed to allow more sunlight to reach the forest floor.

"Identifying and removing the ironwood will allow regeneration of more desirable tree species for wildlife, such as oak or maple," Hutnik explains.

Oak trees produce hard mast (acorns), which is important for multiple wildlife species, while young maple trees provide important browse for deer.

Mature forest was disadvantageous for deer on the Holehouse property.

"It was discussed almost immediately that a portion of our woods had too much old growth timber, which needs to be harvested. This in turn will stimulate new plant growth and ultimately provide a better food source for our deer and other wildlife," Holehouse says. "This will offer better hunting opportunities while maintaining Managed Forest Law rules and

getting the most profit from our timber."

DMAP management plans, presented to most landowners in January 2015, contain habitat and wildlife management recommendations that help guide landowners through short- and long-term habitat maintenance and restoration. Recommendations for responsible deer herd management seek to find a balance between maintaining quality habitat while at the same time providing an enjoyable hunting experience. Cooperators are asked to record their wildlife observations and collect biological data on harvested deer, which may include jaw bones for aging, dressed weight, lactation status or antler measurements.

Not only does data collection provide biologists with a more complete picture of deer health and productivity, it may also allow landowners to monitor their progress toward achieving property management goals.

However, habitat and deer management resources are only the tip of the iceberg. The department intends to further engage DMAP cooperators through educational programs and focus groups.

The Department of Natural Resources recently wrapped up the first year of the program, and is working with cooperators to determine what went well and where improvement is needed.

Regional workshops and field days will further involve local DMAP landowners and target deer and habitat issues that matter most to them. Slated for later this year, these events will provide networking opportunities for landowners to share information and advice as they accomplish property goals. These outreach opportunities will keep cooperators apprised of new DMAP initiatives and the latest in deer and habitat management innovations. Citizen science projects may also become available to interested landowners.

While DMAP enrollment was limited to private land in 2014, the department anticipates that the program will be available for public land in 2015. DNR staff and public land managers will work together to identify property habitat goals and opportunities to increase public hunting enjoyment.

The application period for 2015 is cur-

rently open for all levels of enrollment and the deadline for applying as a Level 2 or Level 3 individual or group cooperative is March 1.

All Level 2 and 3 applications that are not accepted in 2015 will receive Level 1 benefits so they can learn more about the program at no cost.

Level 1 applications will be accepted on an ongoing basis.

Interested landowners can apply by visiting the DMAP website for more information at dnr.wi.gov, keyword "DMAP."

From managed forests to small suburban backyards, DMAP offers tools to improve the land for wildlife. All landowners can receive guidance on cost-sharing through government and nonprofit programs. Landowners may also attract new wildlife species to their property and lay the groundwork for long-term conservation and recreation. This begins by providing quality habitat to support healthy wildlife.

"If you enjoy the outdoors and the resources Wisconsin has to offer, it's everyone's obligation to work together



DNR assistant big game ecologist Melinda Nelson discusses deer with a DMAP landowner during a site visit.

to make our state's lands and resources even better," Holehouse says. "For my brother and me, being chosen as a DMAP property gave us new enthusiasm for our land."

Whether you want to enhance hunting opportunities, improve the variety of plants and other wildlife on your property or learn other ways to contribute to the preservation of Wisconsin's natural heritage, DMAP is a great place to start.

W

Meredith Penthorn is a communications specialist for DNR's big game management program. Bob Nack is DNR's DMAP coordinator and chief of the big game management program.

Fox (Illinois) River Summit is a start

PARTNERS DEFINE PROBLEMS, DETERMINE OPPORTUNITIES AND FIND SOLUTIONS.



The Wisconsin portion of the basin supports water supplies and economic opportunities for about 400,000 people in the state.

DNR FILE

Tom Slawski

"For many amphibians no wetland is too small," Bruce Kingsbury emphatically told those who attended the second annual Fox River Summit held last March.

Kingsbury went on to describe habitat management for amphibians and reptiles. Working from the basic science of amphibian and reptile life cycles, as well as highlighting key aquatic and terrestrial connections, he was able to provide guidance on how we can work together to protect these unique creatures and the habitats they need to thrive under the stresses of agriculture and urban landscapes.

Kingsbury is a herpetologist from Indiana and was one of several expert and keynote speakers who presented at the summit. These speakers and the variety of topics were brought together with the simple goal of addressing shared challenges of protecting and improving the Fox River and celebrating the successes of projects and programs that work.

For information related to the partnership, projects, and past and future Fox River Summit speakers and talks, visit fyi.uwex.edu/southeastfox/.

History

The Southeast Fox River Partnership was formed in 1998 as part of a Department of Natural Resources statewide initiative. The partnership's boundaries are coincident with Wisconsin's portion of the Fox (Illinois) River located in the southeast corner of the state.

Members were selected to represent a variety of interests: federal, state, county, and local agencies, nonprofit organizations and private business. The partnership was designed as a forum where citizens, environmentalists, conservation groups, businesses and local govern-

ments could share resources, provide input to the Department of Natural Resources and work toward common goals.

In other words, the partnership was formed with a diverse membership to improve dialogue and help the department define problems, determine opportunities and find solutions to improve the Fox River.

The partnership quickly developed the following mission statement in collaboration with the Department of Natural Resources and University of Wisconsin-Extension: "To protect, restore, and enhance the natural resources of the Fox River Basin through a cooperative team effort by partners representing federal, state, municipal and private entities. Team efforts are focused on actions that address this vision."

The partnership subsequently identified the following priority issues of concern and began working to address:

- Public education about local natural resource issues
- Land use planning and zoning with inclusion of open space
- Protection of groundwater quality and quantity
- Loss of wetlands
- Loss of wildlife habitat

One of the major products developed by the partnership is the "Options for Open Space" manual. This handbook continues to be a valuable resource for people who manage undeveloped land, including farmlands, prairies, woodlands, wetlands, large lawns and shoreland areas, to help improve land management.

A second major product focused on creating and printing a map that identifies outdoor recreational opportunities throughout the Fox River Basin. This is a great tool that can be downloaded to help people enjoy recreation in the basin.

The issues listed above continue to be a priority for the partnership. The partnership tries to raise awareness of the interdependency of water quality and quantity interactions and ways that we can best manage these resources to ensure the preservation of the quality of life among all the communities within the watershed.

Quality of life includes water quality and recreation (such as fishable and swimmable) as well as adequate water for human consumption and residential use, agriculture, businesses and industries which are all necessary for healthy economic growth.

Watershed size

The total basin (watershed area) is shared by Wisconsin and Illinois, and comprises nearly 2,700 square miles.

In terms of size, the Fox River is a 200-mile-long tributary that generally flows in a north to south direction to the Illinois River, which originates in Sussex, Wis. and ends in Ottawa, Ill. This river system is part of the larger Mississippi River Basin that discharges to the Gulf of Mexico. The upper 35 percent of the basin is entirely contained within Wisconsin (about 934 square miles).

In fact, it is the largest single major watershed that is fully contained among the seven counties of southeastern Wisconsin: Washington, Ozaukee, Milwaukee, Waukesha, Walworth, Racine and Kenosha.

The remaining 65 percent of the basin is located within Illinois.

The majority of Waukesha County is within the Fox River Basin and can be considered the headwaters (top of the watershed) for this entire river system. Additionally, significant portions of Walworth, Racine and Kenosha counties are also included within the watershed. Some of the cities included are Brookfield, Pewaukee, Waukesha, Mukwonago, East Troy and Burlington. The Wisconsin portion of this basin includes whole or portions of 10 cities, 33 towns and 23 villages, thereby supporting water supply and economic opportunities for about 400,000 people in Wisconsin.

Similarly, the Illinois portion of the watershed encompasses the entirety or portions of nearly 135 additional municipalities and local units of government, Fox Lake being the largest city in the area. The area surrounding the Fox River, known as the Fox Valley, provides water supply and economic opportunities to more than 1 million people in Illinois.

Overall, the Fox River in its entirety supports the economy, water supply, recreation and wildlife of more than 200 municipalities and about 1.7 million people. There are highly urbanized areas within this watershed, but agricultural lands also dominate the landscape in many areas. Despite this development there are significant amounts of natural areas, environmental corridors and preserves which help to protect the integrity of the river system and its

associated water quality and wildlife habitat.

Resource quality

Recreational opportunities, such as hiking, fishing, kayaking, boating, biking and cross-country skiing are abundant in the watershed. Some locations to note include the Southern Unit of the Kettle Moraine State Forest, Richard Bong State Recreation Area, Vernon Wildlife Area, Hackmatack National Wildlife Refuge and numerous other state parks and county forest preserves.

The Wisconsin portion of the basin also includes 78 named lakes and impoundments. Additionally, once the Fox River enters Illinois, it widens into a massive area of interconnected lakes known as the Chain O'Lakes recreation area. In the summer these lakes support an average of 26,000 boaters per day.

Hundreds of endangered, threatened and special concern plant and animal species have been documented within all areas of the watershed, as well as designated outstanding or exceptional resource waters by Wisconsin and Illinois DNR staff. This basin also contains numerous rare aquatic and terrestrial communities such as calcareous fen and

bog wetland habitats, along with numerous large and small wetland-upland complexes.

The 200-mile-long main stem of the Fox River is sustained by thousands of miles of tributary streams that support abundant and diverse cold, cool and warmwater fishery communities.

For example, the Mukwonago River is a significant tributary to the Fox River within the upper part of the basin, and contains some of the most diverse fish and mussel species per linear foot of any river within the state of Wisconsin. Visitors will find longear sunfish, tadpole madtom, starhead topminnow, mottled sculpin and brook trout to name just a few.

As the main stem of the Fox River gets naturally deeper and wider within the downstream reaches of Illinois, it also contains unique larger river fish species such as the flathead catfish, quillback carpsucker and American brook lamprey.

Dam removal projects on tributaries to the Fox River such as on Brewster Creek, Ill., have demonstrated that improving fish passage connectivity leads to a more abundant and diverse fishery in this watershed.

Shared challenges

The U.S. Environmental Protection Agency (EPA) and Illinois EPA have designated many miles of the Fox River and its tributaries in both Wisconsin and Illinois as impaired waters, commonly called the 303(d) list.

These impairments are due in many cases to a combination of both point source and nonpoint source pollution from agricultural and urban land uses. Impairments include elevated water temperature, sediment/total suspended solids, total phosphorus and contaminated sediments. These issues can cause a variety of water quality, habitat, recreational and fish consumption impairments.

Hence, there is much work to do in this watershed on both sides of the state line.

Additionally, continued population growth throughout the watershed, combined with the unpredictable changes in precipitation and temperature, has



put notable stresses on water supply to the system, particularly in McHenry and Kane counties in Illinois and Waukesha County in Wisconsin.

The City of Waukesha, for example, is evaluating alternative sources of water, such as increased withdrawals from shallow wells and a possible diversion from Lake Michigan, to meet the growing demand for potable water. Other communities in the Fox River Basin are likely to face similar problems associated with water supply in the future. Increased reliance on shallow pumping could imply decreased base flow to the Fox River and its tributaries as well as put increased stresses on humans, lakes and wetlands downstream.

Shared concerns in the Fox

River Watershed include:

- water quality
- fisheries and wildlife habitat
- invasive species management
- sediment deposition
- contaminated sediment
- stormwater and agricultural pollutant runoff
- water supply (both quality and quantity)
- groundwater recharge
- sustainable environmental flows
- sustainable recreational flows and safe recreation
- streambank erosion
- flooding

A river system cannot be managed through regulations alone and it cannot be done by a single person or community. The quality of the Fox River Watershed will ultimately depend on the entire collective of communities and folks living within them and the actions they take. People are both the problem and the solution.

For example, a recent U.S. Geological Survey report concluded that it is possible to maintain and restore healthy stream ecosystems, despite significant human disturbances that have negatively impacted the biological, chemical and physical nature of these systems.

Increasing demand for the limited water resources in the Fox River Basin will put pressure on water resource agencies to balance the competing needs of ecosystem health among municipal, agricultural and recreational uses in both Wisconsin and Illinois.

In other words, adequate water flows are an essential part of a healthy stream and healthy economy, because water qual-



Shared concerns in the Fox River Watershed include fisheries habitat.

ity is not independent of water quantity issues. Therefore, it is the hope that the annual summit will become an event to continue the commitment and vision of the founding members of the partnership by providing a forum to keep dialogue open among all the communities, so that we can collectively work together to balance these competing needs.

We are not alone

It is easy to think that no one cares or is concerned about the Fox River outside of their community or state, particularly if they do not know what is happening beyond their own farm, backyard or municipal boundary. However, one of the best outcomes of the inaugural summit was getting to know the dedication and commitment at the federal, state and local levels as well as learning about examples of numerous projects that have been implemented to improve water quality, wildlife and recreation throughout the watershed.

That first summit culminated with a unanimous adoption of the "Declaration of Partnership" that was designed to highlight common interests, concerns and commitments to advance an integrated approach to managing resources to meet human needs and maintain aquatic ecosystems for present and fu-

ture generations within the Fox River Basin. In a word, it was very "inspiring" by the end of the day and there was much interest on both sides of the state boundary to keep the summit going.

The state line is an important jurisdictional, economic and logistical boundary affecting federal, state and local government programs and funding. However, the partnership has opened up a dialogue and has begun to develop trust among governmental and non-governmental organizations and public citizens across this line.

Knowing the people from communities who live upstream and downstream from them will likely make a difference in the decisions a person makes to protect water quality. Knowing that the people from communities who live upstream and downstream are working just as hard to protect and improve water quality builds the trust and confidence necessary to collaboratively manage the Fox River Basin, so as to maintain ecosystem integrity and meet human needs.

A great program is established for the upcoming third annual Fox River Summit on March 20 in Burlington, Wis. Consider joining in the discussions.

Tom Slawski is president of the Southeast Fox River Partnership and chief biologist for the Southeastern Wisconsin Regional Planning Commission.

STEVE PESCITELLI, ILLINOIS DNR

An unlikely discovery

A COVERT CABIN LEAVES A LASTING IMPRESSION.

Story and photo by Bruce Brennan

About 10 years ago, while grouse hunting in northern Wisconsin, I decided to try a section of public land that I'd probably passed hundreds of times since my youth.

It was a crisp but clear day. I had been carefully walking for an hour, when a ruffed grouse flushed, winging its way low through jack pine and dense brush, before descending abruptly into a very small opening. I decided to change my course and pursue this bird, since it did not seem to be too startled by my presence.

Upon making my approach, the co-mingled gnarly old trees and limber new sapling growth slowed me down. A hand-like branch snatched the hat off my head, purposely slinging it to the ground. I came to a rather nasty briar patch and some angry looking tree limbs wanted to smack my face. I avoided the encounter by ducking under the bows of a rotund spruce.

As I popped out on the other side of the tree, out of nowhere a small log cabin greeted me. I rested the butt of my shotgun on the toe of my boot. The scene demanded a special silence and observance. It was obvious that this cabin had been abandoned for some time. I dared not move any closer to it without defiling the natural beauty of this antiquated little structure cuddled inside a camouflaged barrier of myriad trees and fall foliage.

There wasn't any man-made debris lying about, as one would expect. The grayed cracked cedar shake shingles and log walls blended in perfectly with the autumn surroundings.

Whoever owned this cabin had thinned out a modest amount of vegetation around it before departing, only never to return again. From this clearing, new life had sprung forth in various stages of maturity. Just off to the left, stood a weathered but proud tree that soon would suffer the final ravages of time. The once rustically regal cabin was doomed to fall, as well. The tree and the cabin seemed to keep vigil on one another.

At that moment, the setting depicted a calm wildness that could not be embellished or duplicated. Luckily, my camera was handy and I quickly snapped a picture before any aspect could change in the slightest. Walking up close to the cabin would leave a human path of presence. Worse yet, snooping around or looking inside would have been disgraceful in my eyes. I did not want to see anything that might ruin the ambi-

ance. Decidedly, this was a special place. I felt lucky to have stumbled upon it and only observed from a distance.

I couldn't help wonder what type of person owned this far-away place. The owner must have enjoyed the outdoors tremendously and respected this woods. There weren't any signs of an old road or pathway. The cabin looked shuttered and secure from the view I had. It appeared even the animals held it in a mystical reverence for there weren't any runways leading to or near it.

Pondering all of this, I decided not to seek out another perspective view of the cabin. My mind was made up to quickly turn away and not look back. Within a few steps, it was like this event had never occurred, as the woods swallowed me.

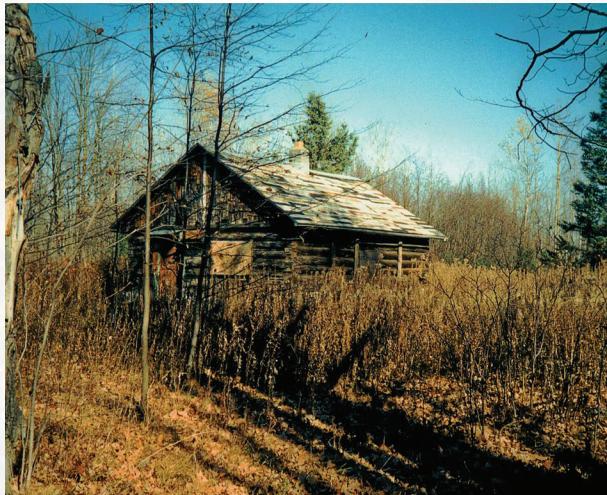
The thick forest and undergrowth obliterated the cabin from my view. I wanted to remember it as first discovered, without the sad prospects.

A snappy branch slapped my face as another whisked the hat off my head and held it dangling, as if teasing me to go after it. I made a wide loop to avoid seeing the cabin again. The terrain gradually sloped, indicating a valley. Descending further, I could hear a gurgling brook. The creek was clear and pristine as it serpentine through old mossy forest beckoning me to follow. Various wind-fallen trees crisscrossed the stream, further enhancing this picturesque setting.

Up ahead were remnants of a small one-man wooden bridge, dilapidated and rotting away. It was located over a rocky area of the creek that perked forth from an icy cold bubbling underground spring. A severely rusted square spike protruded from one of the old bridge posts. Hanging from it was a sturdy long-handled stainless steel dipper. Taking the dipper off the nail, I dipped it into the sparkling spring water. I stood up, turning in the opposing direction from the bridge and drank a final toast to the covert old cabin, its protecting forest and all the spirits that once held sacred this delightful place.

Placing the dipper back on the nail, I wondered whether anyone else would be as fortunate as me to experience these discoveries before it was too late.

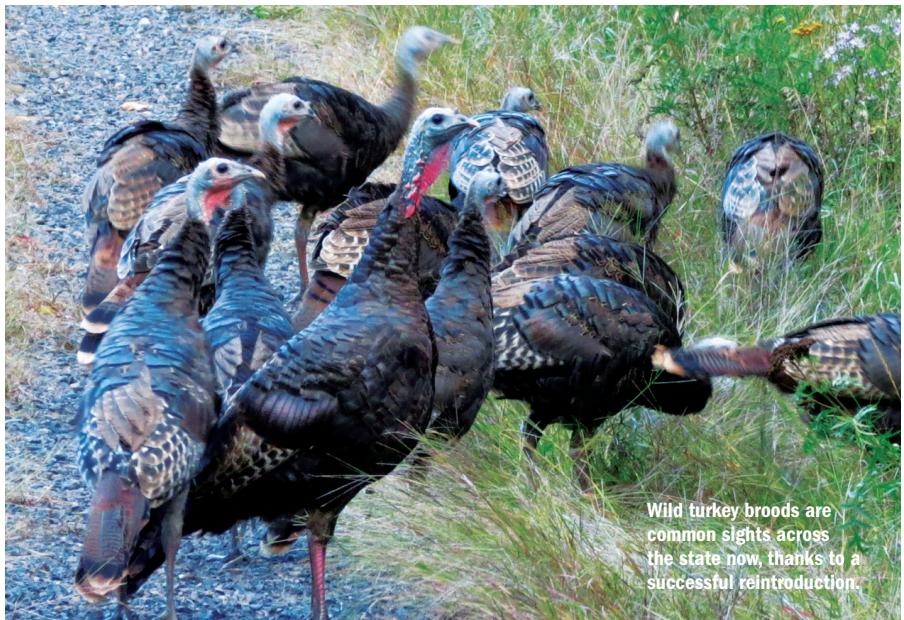
To this day, I have never gone back and don't plan to. I have the physical picture to look at and remind me of that day. More importantly, the memories imprinted in my mind are still clear and more meaningful.



Bruce Brennan writes about his Wisconsin outdoors memories from Satellite Beach, Fla.

Trading ruffed grouse for wild turkey

A HISTORIC EXCHANGE THAT HAS HUNTERS SMILING TODAY.



Wild turkey broods are common sights across the state now, thanks to a successful reintroduction.

DNR FILE

R.J. Longwitz

It was 1980 and I had one semester to go to complete my Bachelor of Science degree at the University of Wisconsin-Madison. I was majoring in natural resources, but had a double minor in wildlife ecology and poultry science.

I enjoyed studying and working with birds so my academic advisor suggested I try an internship as a stepping stone into the “real” world and to fulfill some credit needs. I discovered an opportunity involving the wild turkey reintroduction program in the southwestern part of the state working with UW-Madison and the Department of Natural Resources. It had something to do with birds, so I thought I’d give it a try.

I travelled through the Wisconsin River Valley to Spring Green — the central area where the internship work would take place — and met the wildlife manager for Sauk County who would become my field supervisor. He found me a place to stay a few miles west in the tiny town of Lone Rock. An elderly

widow had a big farmhouse and was looking for some company and someone to cook dinner for.

Once settled, I got busy studying all the work that needed to be done. I could tell I’d be kept busy.

Wild turkeys were once native to Wisconsin (the northern edge of their range) occurring south of a line from Prairie du Chien to Green Bay. The last native bird in the state was sighted in 1881 one county south of where I was assigned to work.

Clearing of mature oak forests and unregulated hunting led the list of factors contributing to their demise. But I found that those very slow-growing oaks were growing back.

In February and March, 40 wild turkeys were captured in southeastern Mis-

souri and transported to Wisconsin to be released at two sites in northern Iowa County, just south of the Wisconsin River from where I was working. Missouri birds had first been stocked two and four years prior in Vernon and Buffalo counties and appeared to take hold.

The goal of the “trap-and-transfer” program was to reestablish a native species back into its former range and it was a mutual effort on the part of both states.

What was Missouri getting in exchange for the turkeys? Wisconsin answered with ruffed grouse and would send Missouri three wild-caught “ruffs” for every wild turkey received.

My internship centered on the grouse trapping program with the goal of supplying Missouri with the 120 grouse we owed them and hopefully more, for a total of 250 grouse.

The first couple weeks centered on building traps and gathering supplies for setting them up. Most of the land around us was privately owned so we met with landowners, many of them farmers, to offer program details and ask permission to trap their land. Most of the people we talked to were just as excited about the program as we were and agreed to let us take a few grouse off of their property. They understood the eventual payoff.

We hired two grouse-trapping crews, one of which included a local farmer who knew the land and who also knew other farmers who knew many more. Trapping took place throughout northern Iowa County and parts of southern Sauk County. Trapping was scheduled so it would end largely before the grouse were to undergo their natural and annual fall dispersal.

I spent three days at a wildlife refuge in central Wisconsin under the guidance of the DNR’s ruffed grouse biologist who happened to be running a grouse trapping program in order to band birds and study their population patterns. It gave me an excellent basis to work from. We were assisted by a university professor who specialized in game bird biology. He suggested the trap design that eventually proved most successful.

My background in poultry science was put to use in designing holding pens for the birds that would be used for the three to eight days the grouse were held prior to becoming Missouri-bound. They were predator-proof and held drinking water.

Before and even during trapping we

hiked the forested hills, field woodlots and river bottoms to locate areas with multiple birds or multiple bird possibilities. Sometimes we flushed two or three birds, sometimes a brood, and sometimes an area looked so promising that a trap was set without having flushed a bird.

Once an area was deemed "trap-worthy," we used machetes and shovels to clear the area and then placed the traps. It was hard work, sometimes on hot days, usually in the accompaniment of mosquitoes, deer flies and gnats. We faced hillside inclines and I loved it all. It reminded me of my grouse-hunting days.

There were other obstacles. We encountered ground-nesting yellow jackets, thorn-covered brambles and the prickly ash shrub. The tiny fruits of the prickly ash shrub have a pleasant aroma and the shrub provides good grouse cover in the understory. On the down side, its branches are covered with large thorns. By the time we completed our work, our forearms looked like roadmaps of scars. Some braved the heat and wore long-sleeved flannel shirts for protection.

My supervisor had to take a week off during our 43-day trapping effort because of a severe reaction to poison ivy. I also recall hiking a field edge one day and hearing a rattling noise before the crew member next to me yelled, "Snake!" I saw a 3-foot long timber rattle coiled up and ready to strike.

But once the traps were set up, the most time-consuming activity became checking them on a daily basis. In fact, we checked them twice each day to lessen the amount of time the birds were actually out in the traps. This made for some long days.

Single birds were easy to gather, while a brood of 10 to 12 birds in one trap made the work much more interesting. The state game farm lent us field boxes to use in transporting the birds to the holding pens.

Occasionally, we'd have to release a non-target animal that had happened into the trap. We trapped thrushes, robins, catbirds, squirrels, raccoons, opossums and even an ornate box turtle. I was working alone and near the end of a trap line one evening when I heard an animal growling at me. It was a raccoon.

A competitive spirit developed between the two trapping crews, which made the work more fun and productive.

Based on field observations, we deter-

mined that the broods began to break up in late August and the fall dispersal took place in early September. We advertised through wanted posters, newspaper articles and radio and television spots that we were looking for turkey and grouse brood sightings. Talking to landowners helped spread the word about our activities. Public involvement was key to the program's success.

I got to ride along with one shipment of birds. The 4 a.m. flight lasted just over two hours and we landed in northwest Missouri. It was hot — over 100 degrees. The birds were weighed and fitted with leg bands that would be used to monitor their health and survival.

I met with Missouri state wildlife staff who came to inspect their birds and prepare them for release.

Ruffed grouse were once common in Missouri — the southwestern edge of the species' natural range. But due to habitat degradation, they were essentially eliminated from the forest habitat there by the 1930s. Reintroduction efforts came on the heels of regrowth of the bird's habitat.

On Sept. 15 we loaded our sixth and final shipment of grouse to Missouri. Wildlife managers there seemed content with the 202 grouse they'd received as a result of our efforts.

We sent thank you letters to participating Wisconsin landowners since 63 percent of the grouse sent to Missouri came from private land. Two years after our efforts, Wisconsin and Missouri had their first hunting seasons in the modern

era on each respective species. Restocking efforts would continue in both states for the next few decades.

Today, the wild turkey reintroduction — especially in Wisconsin — is arguably the single-most successful recovery story ever. There are now self-sustaining populations in all 72 counties. It is a tribute to the bird's hardiness and adaptability that it now inhabits the northern half of Wisconsin — an area where they didn't even exist in the 1800s.

Appreciation goes out to all those who helped with the reintroduction including hunters whose dollars financed much of the effort. Wild turkeys are now here to stay.

I was rehired as a DNR limited term employee in the summer of 1982 for three months prior to beginning graduate school, undertaking a research study of, what else, ruffed grouse. I returned to Spring Green as a consultant and to help set up another season's trapping efforts. During one notable afternoon, I was by myself, hiking a forested hollow of some private land set back in the forested hillside, looking for spots to set more grouse traps. I was more than startled by the thunderous wing beats of a huge bird flushing. And then a second one. Rising up to the top of the treetops and then out of sight. Wild turkeys! It was something I'd never, ever seen before.

I smiled and felt a tinge of satisfaction. I'd learned what it means to turn a ruffed grouse into a wild turkey. W

R. J. Longwitz writes from Fall Creek, Wis.



JERRY DAVIS

Wisconsin ponied up ruffed grouse in exchange for turkeys.

Anatomy of a wetland restoration

BUILD IT AND THEY WILL COME.

Story by William Hirt, photos by Jack Hirt

It was late in the afternoon before the second opener of Wisconsin's southern waterfowl zone. Standing on the front porch of Bill's small cabin I watched in awe, with the sun fast-setting over the neighborhood's rolling farmlands and the cloudless, deepening blue sky above his wetlands filling with swirling flights of mallards. Ranging in size from five to 150, the flocks — happy ducks all — scooped hard, rushing to settle onto the security of "their" roost ponds, soon covering any open water I could see.

Then the geese joined the fray. Pumping in low and slow in family-sized flocks from feed fields to the west and south, surely more than 200 Canadas in total eventually muscled their way into the marshlands. Aw, it was a beautiful thing!

So the stage was set. Or was it? If we went out and gunned this roost — the one great shoot aside — it would be party over. The birds would be outa' there. And even worse, the ever-gratifying "show" would be over for the year.

"Well, we sure can't hunt this!" I offered to Bill as he finally rolled in, typically late from work. He grinned and nodded in the affirmative, relieved, no doubt, that I understood.

"But we can hunker down in the corn and maybe pass shoot a

late-rising goose or two," he replied.

After thrilling to the sights and sounds of dawn's heart-warming, duck-filled spectacle, that's just what we did. Getting out of the field and giving the wetlands back to them before the birds returned from the morning feed; it made for a short, but oh-so-memorable hunt. One that I, anyway, would never have imagined after first laying eyes on the property a couple years earlier.

I was glad to be asked to tag along; but all I could see when Bill dragged me out to see the roughly 100-acre chunk of ground in northern Wood County that late winter day was one big, basically featureless piece of snow-covered cropland. With his professed interest being acquiring a property he could work with — a property he could develop from a wildlife habitat and wetland perspective — I was hardly impressed. Layman that I am, I just couldn't see it.

But Bill had done his homework. And he wasted little time explaining the then subtle, but potentially stunning beauty, in the case of this property, lay more than skin deep.

By Jack Hirt

My father, Jack Hirt, wrote that story, recapping his initial reactions to what would later become our family property in Wood County. The stage was set. The potential was there. I set out to do my part and went about restoring the artificially-drained farmed wetland to about nine acres of shallow water marsh.

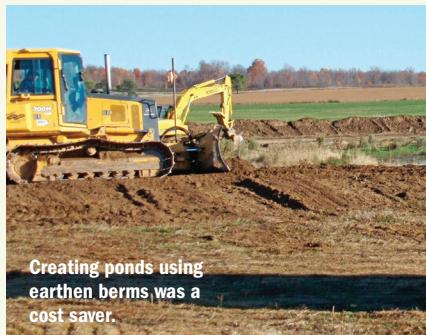
Vision and implementation

Following our property's purchase in the spring of 2004, I slogged out across the soggy fields, and in boots pleasantly caked with heavy, reddish-brown clay mud, gazed across a gridwork of straight-line ditches put in place years earlier to expedite runoff through what were basically two natural, but parallel drainages.

It was then that I began to envision plans to plug these ditches, thereby restoring the natural hydrology, and to strategically site low-head earthen berms across the two main drainages to create the classic, shallow, marshland pond

habitat ideal for wetland-oriented wildlife. After doing some preliminary design work and on-site soil investigative work, my hopes would be confirmed later on that fall after the crops were harvested. Through elevation surveys, it was shown the farm would easily support a pair of 4- to 5-acre wetland basins.

In a two-phase, learn-as-we-go, process we built one the next year, and the second, roughly parallel to the first, the summer following.



The upland component

With the wetland construction complete and the marshes filling, we could turn our attention to the wildlife habitat potential of the adjacent uplands. My background as a waterfowl hunter and natural resources professional weighed heavily into the decision to establish quality upland grass and forbs cover on the lands surrounding the two wetland basins.

Natural prairie cover would play many ecological roles. First, it would provide secure nesting cover for waterfowl (often second to wetland habitat in terms of what is needed for waterfowl production, yet mighty important). Next, grass cover would filter runoff and prevent erosion, protecting the wetland from excessive nutrient loading.

Furthermore, native prairie would provide habitat for a multitude of wetland edge species and upland species including white-tailed deer, wild turkeys, prairie chickens, amphibians, turtles, American bitterns and upland songbirds.



An overview of the Hirt property.

Agricultural diversity

Another important habitat component to the farm, one which wasn't made fully apparent to us until after wetland construction work began in 2006, was the presence of agricultural crops.

After the first wetland began to fill during the fall of 2006, we witnessed a large flock of mallards (500-plus birds) feeding on waste grain left in neighboring harvested grain fields. The birds would make numerous trips per day from our pond to these harvested grain fields to feed. They began to use our newly created pond as a day roost and, eventually, a night roost.

What we witnessed that first fall opened our eyes to the potential value of retaining some of our farmland in agricultural production. More specifically, we would work with neighboring farmers willing to rent our land for grain crop production, including small grains like winter wheat or oats. Having some small grain production on our farm seemed important because these crops are often harvested in late summer and provide feed in the form of waste grain for waterfowl early in the fall staging period.

By 2013, I had witnessed our wetland and grassland restoration work mature into a highly functional habitat. It seemed that with every passing year, I saw more and more species calling it home. From the small and reclusive sora rail to the large and stately tundra swan, we welcomed them all.

We have observed successful Canada goose, mallard, blue-winged teal and wood duck production. The wetlands shine in their role of staging waterfowl in the spring and fall. We have had every migratory species that funnels through central Wisconsin stop to feed and rest for a time in the spring. In the fall we see

periodic buildups of local ducks starting in early September. Geese come and go all fall long.

The upland cover has produced turkey and white-tailed deer hunting opportunities. We apply relatively little hunting pressure overall, content for the most part to enjoy having the critters — the fruits of our labor — around.

It should be noted that we are proud hunters. And we do hunt the waterfowl that use our wetlands a couple of times per season.

Annual maintenance

The work continues, though, as annual maintenance is key.

Berms are mowed annually to maintain vegetation and eradicate tree growth. Wetlands are surveyed annually for the presence of invasive species such as purple loosestrife and reed canary grass. We control the invasives by chemical (spraying) and mowing. At times berm repairs are needed to address muskrat and groundhog tunneling and we've used local trappers for rodent control. With the exception of an initial planting of 10 pounds of wild rice seed, the lush stands of native aquatic perennials currently present (broad-leaved arrowhead, burreed, soft-stem bulrush, sago pondweed and water plantain) have occurred naturally.

The whole process, from early design stages to finished product and continuing maintenance, though not always



The author, William Hirt, with his dog, Maggie.

easy, has been one of the most gratifying experiences I have ever had. Dad's field of dreams is a wetland restored. 

William Hirt is a DNR wildlife technician at the Mead Wildlife Area.

NOTABLE WILDLIFE VISITORS

Tundra swan	Sora rail
Mallard	Greater yellowleg
Scaup	Black bear
Sandhill crane	Green-winged teal
Northern pintail duck	Pied-billed grebe
Ring-necked duck	Otter
Great white egret	Hooded merganser
Widgeon	Bobolink
Northern shoveler	White-tailed deer
Bald eagle	Bufflehead
Gadwall	Meadowlark
Wood duck	Turkey
American bittern	Great blue heron
Redhead	Northern harrier
Blue-winged teal	

COSTS FOR RESTORATION

Total out-of-pocket costs were about \$10,000. Key cost savings came from creating the ponds using earthen berms. Dug ponds of equal size would have increased the project cost by 50 to 75 percent.

The U.S. Fish and Wildlife Service's "Partners for Wildlife" Program cost-shared one-fifth of the project for \$2,000. The Conservation Reserve Enhancement Program (CREP) cost-shared the seed and planting in the conversion of 20 acres of uplands at the rate of 50 percent and leases that acreage at the rate of \$55 an acre per year throughout a 15-year contract.

Readers Write

Write



WENDEL AND JUDITH JOHNSON

GREEN BAY MARSH SANDHILLS

Phragmites management efforts by the Department of Natural Resources offer new habitat in the Green Bay marsh for a variety of wetland organisms. In mid-May, directly in front of our house nearly 50 feet from shore, a pair of sandhill cranes built a nest from nearby vegetation. Although somewhat exposed to waves from the northeast, it was a substantial effort. Shortly after, two eggs were visible from shore.

Incubation proceeded, but water levels in the Bay were rising from spring runoffs. On June 20, strong northeast winds accompanied by a seiche rapidly moved more water into the marsh. Gradually the nest began to float away and disappear with more wave action. Judith Lintereur, daughter of former career DNR wildlife biologist LeRoy Lintereur, decided we needed to help this crane project along and waded out toward the former nest site now in about three feet of water. We reconstructed the nest, shored up the new nest and kept the eggs warm. We left the nest with the two eggs tucked in and waded back ashore. About 30 minutes later, our neighbors called and said "they're back on the nest!" On June 26, the

first chick hatched and about 24 hours later, the second chick appeared. The precocial chicks were soon swimming and feeding with two very attentive parents. As a rule, it is not good to interfere with wildlife nesting efforts, but in this case, we had a positive outcome.

Wendel and Judith Johnson
Marinette



SUBMITTED BY MITCH BABIC

BACK IN THE DAY

Just thought I would send a couple photos from "Back in the day." I caught the bear [in this photo] in 1948. Around this time I trapped 21 bears in two seasons. I trapped before I was 15 years old. I believe the trapping picture was around 1950. I remember a program where small beaver were trapped and shipped live to Idaho to populate Idaho with beaver. My name is Mitch Babic and I used to live in Mercer. I am now 96 and living in Villa Marina Rehab Center in Superior. My daughter reads me some of the articles from your magazine and I really enjoy them.

Mitch Babic
Superior

COMMENT ON A STORY?

Send your letters to: Readers Write, WNR magazine, P.O. Box 7191, Madison, WI 53707. Or email letters to dnrmagazine@wisconsin.gov. Limit letters to 250 words and include your name and the community from which you are writing.

NO ACCESS TO THE WEB?

Don't have access to a link we mention in a story? Let us know when you want to follow a link we list. We'll do what we can to get you a copy of the material if it is available free of charge and is relatively short in length.

WOLVES WERE NOT REINTRODUCED

As an "outdoorsman," I have been looking, for a long time, for a qualified answer to this: who came up with the idea of reintroducing wolves in our state? What was the projected benefit? I'd like answers. So far, no one seems to have any idea. Someone please enlighten me!

Jim Cox
Lodi

Wolves were not reintroduced to Wisconsin in the same way as other species like whooping cranes, trumpeter swans and elk. Wolves are native to Wisconsin and roamed all of Wisconsin in numbers of 3,000 to 5,000 before our state was settled in the early 1800s. Mostly because of bounties enacted in 1865 and continuing until 1957, wolves were extirpated from the state and only a few hundred remained in the lower 48 states, mostly in Minnesota. Wolves were given protection under the Endangered Species Act in 1974 and Minnesota's population began to increase and disperse into Wisconsin. Monitoring in the 1980s and 90s showed the population continued to grow and the Wisconsin Department of Natural Resources wrote a management plan in 1999 that set a delisting goal of 250 wolves. Wolves were removed from the Endangered Species List in January 2012. In December 2014, a federal judge ordered the U.S. Fish and Wildlife Service to return the gray wolf to the endangered species list restoring its protected status. For more information about the status of wolves in Wisconsin, visit dnr.wi.gov and search "wolf management."

POWDER HILL TOWER A HIGHPOINT

We received your August 2014 issue from a friend and enjoyed it. But I am wondering why the article about highpointing ("A quirky excuse to roam Wisconsin") did

GOING THROUGH A PHASE

Thought you might be interested in this frog, caught and released on Finger Lake in Vilas County. Although it has a tail, it was a great jumper and was extremely hard to catch. Thank you for a great magazine.

Sue Sazama

The frog in the photo is a green frog. Because it still has such a long tail and is likely still living in the water, this guy is still considered to be a tadpole. Once they emerge from the water onto land, that life stage is called metamorph or froglet. They can still keep a small tail stub for a while, even after they have emerged onto land. The DNR's EEK! website for kids has this explanation: "Baby frogs or toads are called tadpoles. Many different kinds are found in Wisconsin. Some turn into adults in two weeks, while others take two to three years. If you find a large tadpole in the pond it is probably a young green frog. Small black tadpoles found swimming in large groups could be called 'toadpoles,' as they'll turn into toads. Many species of frogs can be found in rivers, especially backwater areas or bends in the river/stream, but the bullfrog tadpole is the largest of all Wisconsin tadpoles and the strongest swimmer. A tadpole eats only plants, especially algae, while a frog eats insects and small animals, even tadpoles."

not include what is supposed to be the second highest "highpoint" in southeast Wisconsin — the Powder Hill Observation Tower at the Pike Lake Unit/Kettle Moraine State Forest near Hartford. We visited there a week ago. This is yet another beautiful state park.

Roger and Jeannine Kaufman
Greendale

We're glad you enjoyed the park and the story on highpointing. We can't mention every high point in a story of that length but we're happy to print your observation to let others know about the treasure that you found.



JEAN WHITLOCK

TWO-FOR-ONE CATCH

While fishing one morning in July on a lake in Washburn County, my father, 76-year-old Ed Whitlock of Green Bay, was reeling in what he thought was the first fish of the day. But to his surprise there were two largemouth bass on his favorite lure the "Big O." One fish was 13 inches the other was 15 inches. Both fish were released. He has been fishing for over 50 years and this has never happened to him before.

Jean Whitlock
Green Bay



SUE SAZAMA



VINCENT THOMALLA

HUNTER'S EYE

While turkey hunting this spring I decided to change my location and walk through some young red pines to set up at a different spot when I noticed a black shiny dot that just didn't seem right. It turned out to be the eye of a woodcock hen on its nest. She never moved and accommodated my quick photo. Lucky that my "hunter's eye" was switched on!

Vincent Thomalla
Marshfield



ALLAN BARNETT

WINTER SERENITY

I subscribe to *Wisconsin Natural Resources* magazine and enjoy it very much, in particular the pictures. I have attached a winter picture of my lake property with pier from January 2014. It is Simpson Lake in Marinette County, near Crivitz. It's really captivating with the sun coming through the trees. It shows how the "dead" of winter can be a beautiful time of year too.

Allan Barnett
Crivitz

WHY ISN'T 50-POUND LAKE TROUT A STATE RECORD?

[Editor's note: Reader James Mattson sent us a photo from the July 1941 issue of *Sports Afield*, which we were unable to print. It shows a man holding a large lake trout with the following caption: 50-lb. Lake Trout. "When you come up to Bayfield, I hope you catch one 50 pounds," says J. P. O'Malley of Bayfield, Wis., holding Wilfred Boutin's record 50-pounder, taken off Brownstone Island, in Lake Superior, 20 miles northeast of Bayfield. The fish weighed exactly 50 pounds, was 47 inches long and 32 inches girth. Bayfield, gateway to the Apostle Islands, will hold its trolling tournament June 29.]

Here is a picture of a 50-pound lake trout caught off Bayfield, Wisconsin's Brownstone Island. The Wisconsin record lake trout in the Wisconsin fishing regulations for 2014-2015 is only 47 pounds. How come the 50-pound fish is not the state record?

James Mattson
Ashland

Karl Scheidegger, head of outreach and marketing for DNR's fisheries management bureau, provided this response: *A record fish can only be recognized if the angler submits a record fish application. We can only speculate, but maybe the angler who caught the 50-pound fish didn't file the proper paperwork or maybe there were circumstances that called into question the legality of the catch (all record fish must be caught by legal methods). The fish was caught so long ago that we don't have verifying information on the catch. I would say that over the past 20 years, there have been reports of a handful of fish that would have bettered the existing state record for that species. If an application would have been completed and received by the Department of Natural Resources.*

Scheidegger adds that if you think you or someone you know has caught a fish that might be a state record, there are a number of things you should do:

- don't clean or freeze the fish
- keep the fish cool — preferably on ice
- get the fish weighed as soon as possible on a certified scale (found in grocery, hardware stores, etc.) and witnessed by an observer
- contact the nearest DNR office to get the fish species positively identified and to find out whether the fish is a state record
- obtain and complete a record fish application with the DNR

KUDOS FOR OCTOBER ISSUE

Congrats to you, your staff and freelancers for the quality and scope of the October 2014 issue. There was something for everyone and loved the added links. Please keep up the programs and content on getting kids involved in outdoor activities and education. Also loved the family stories and those about women and careers in outdoor sciences. This issue should be receiving many awards.

Donna Goodwin
Hartford

**DON'T DO AWAY WITH
IN-PERSON REGISTRATION**

I enjoyed reading "Back in the day" in the October issue. Wisconsin deer hunting is a huge tradition that most people (hunters and non-hunters) recognize as a part of our heritage. As the author writes there have been changes during the years including the replacement of wool red plaid clothes by blaze orange, party permits

have been replaced by group hunting and deer draped Chevies have been replaced by SUVs. Other changes include that hunters can hunt out of trees, ground blinds and in some cases, small houses. Group hunting rules allow a hunter to shoot a deer for another hunter if he or she is close by.

Another change that may be coming is the replacement of registration stations with electronic and/or call-in registrations. It's sad to think about the loss of the experience of the physical registration at local service stations and businesses may no longer be used. The registration stations have become gathering spots where hunters gather and view deer being registered. Some of the registration stations, like Otter Lake Bait Shop, north of Stanley, photograph every deer and bear that is registered and put the pictures on their website. The station serves as a funnel of news where hunters and non-hunters can view the pictures of animals that were taken and know when and in some cases where they were killed.

Group hunting rules created a big loophole for hunters to shoot more than one deer. The proposed elimination of physical registration stations creates an even bigger loophole wherein not all harvested deer will be registered prior to butchering and additional deer may be shot. I urge the Department of

Natural Resources to reconsider and continue the tradition of local registration. It's a rich part of our hunting tradition that is viewed as a positive not a negative. Many have said "if it isn't broke, don't fix it." Well in this case the physical registration of deer works well and is an enjoyable experience. To do away with it takes away from our great hunting tradition and creates the opportunity for many violations.

J.B. Sensenbrenner
Appleton

CRAWFISH BOIL, LOUISIANA STYLE

I grew up in Wisconsin and knew crayfish (or crawfish) only as fish bait. However, after living in Louisiana for nearly 50 years, I know they are delicious to eat and that crawfish boils are a big thing in the springtime. I could not help laughing at the picture on page 3 (contents) in the October 2014 issue of *Wisconsin Natural Resources* magazine that showed a large mound of corn and potatoes with a few scattered crawfish. A Web search shows pictures of what a Louisiana crawfish boil looks like — mounds of crawfish with scattered corn and potatoes.

Gordon Holcomb
Baton Rouge, La.

SUBMITTED BY GEORGE PORTER

**HANK HERON**

In June of this year I was fishing on a small lake near Minocqua, when a great blue heron flew over and landed on the front of my canoe. I waited for a few minutes thinking it would immediately take off, but it stayed long enough for my sister-in-law to snap this photo. Meanwhile, I pulled up my stringer of fish and found a small dead perch which I tossed into the water near the heron. Only then did the bird fly from the canoe, scoop up the fish, and fly to the lakeshore where it proceeded to eat it. After that, the heron flew to a nearby pier and continued to watch me fish. We named him Hank Heron!

George Porter
Greendale

**HUNTING, FISHING AND OTHER
RECREATIONAL LICENSES**

Wisconsin offers numerous resident and nonresident licenses. Licenses are valid from April 1 through March 31 of the following year. The 2015 licenses go on sale March 4.

Consider becoming a Conservation Patron — it's convenient and can save you money. The Conservation Patron License is for the avid sportsperson. Purchasing this license offers many different privileges, including licenses, stamps, applications, park admission, a subscription to *Wisconsin Natural Resources* magazine and more. Learn more at dnr.wi.gov/permits/conservationpatron.html.

Visit dnr.wi.gov and search keyword "License" to find locations where you can purchase a license or to purchase a license online.

Traveler

The American Birkebeiner: A Wisconsin classic.

Story by Erin Gordon, photos provided by Gordon family

As the end of February approaches, many Midwesterners have caught a case of spring fever while anxiously waiting for the snow to melt and temperatures to rise. But for a distinctive group of skiers that fever is a special kind, known as Birkie fever.

It's this fever that brings participants back to the Northwoods of Wisconsin year after year to partake in a piece of tradition and history by competing in our nation's largest cross-country ski race.

The camaraderie of fellow skiers, combined with the accomplishment of completing a challenging course, and an unwavering love for the sport is the reason this race has become a part of my family's legacy, as it has with so many others.

The Birkebeiner, which runs from Cable to Hayward today, was founded in 1973 by Tony Wise, who also established one of the state's original cross-country ski destinations, the Telemark Lodge. Wise, inspired by his Norwegian heritage and motivated to promote the sport, created the Telemark ski trails in 1972 and the race was instated the following year.

Each year, in addition to the 10,000 racers, over 20,000 spectators and volunteers line the trail and fill the streets of Hayward to cheer and encourage racers as they ski. Family, friends and loved ones travel from every inch of the globe to witness the triumph and magic that is the American Birkebeiner.

The "Birkie" commemorates the historic journey of two soldiers, called "Birkebeiners" because of their birch-bark leggings, through Norway to carry the infant prince to safety amidst a civil war. Prince Haakon would later go on to become the King of Norway.

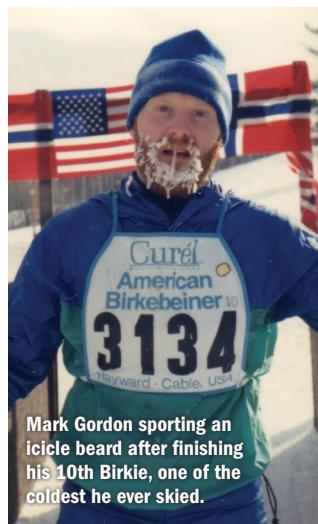
The Birkebeiner soldiers became a symbol throughout the



Spectators provide the extra encouragement for both elite and citizen skiers during the 30-mile journey to the finish line.



Although Main Street in Hayward is the most popular viewing spot, spectators can catch a glimpse of the race in action midway at County Road "OO" and off Mosquito Brook Road.



Mark Gordon sporting an icicle beard after finishing his 10th Birkie, one of the coldest he ever skied.

country of courage, perseverance and character in the face of adversity.

In 1978, Wise established the Worldloppet League, uniting the American Birkebeiner with the other most prestigious ski marathons in the world. Today, over 20 international races are recognized as part of the Worldloppet, which was driven by Wise's idea that you could travel the world through skiing. According to Ben Popp, the Birkebeiner's executive director, over 30 years later they are still compelled to provide these experiences and more.

Leaving the legacy of lifestyle

Popp, a native of small town Phillips, like many other long-time skiers, grew up with the sport. After coach-

ing and starting a nonprofit organization, which promoted an active, outdoor lifestyle that aimed to overcome obstacles and boundaries, he found his way back to what he always loved: skiing.

"The Birkie drives a lifestyle. It has become a leader in promoting and creating a healthy lifestyle," explains Popp. "It created a medium through which people could really engage in this lifestyle in their everyday life and that is bigger than you or me or the race itself."

This is one aspect that Popp has been devoted to throughout his life, and even more so now that he is directing the American Birkebeiner Foundation. Our conversation echoed the sentiment that is evident among racers and familiar spectators: the Birkie experience is unparalleled to many of its kind. So many races have come

and gone, but the iconic trail through northern Wisconsin, the hospitality of a small town and a story with rich history continue to make the Birkie legendary.

"There is a sense of pride among everyone involved, from volunteers, families, friends and racers," says Popp. "They share a sense of community, togetherness and accomplishment through the unique experience they have year after year. It's all encompassing."

While the Birkie continues to be the Foundation's largest event year after year, Popp and his team have worked hard to promote other year-long events: from marathons, relays and 5Ks to mountain biking and fat bike racing; the trail truly serves the community each season.

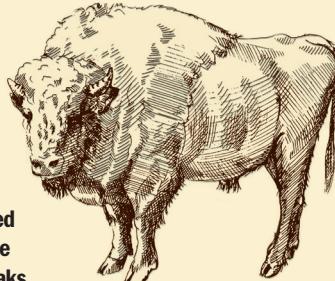
"Ideally, we want to give citizens access to a wonderful

What's cooking?

BISON NEW YORK STRIP STEAK WITH GINGER LIME MARINADE

Marinating is the best way to bring out the flavor of great cuts of meat. The New York strip is a fabulous cut of bison, especially when combined with this very special marinade of brown ale, fresh ginger and limes.

1 (12 oz.) bottle of honey brown ale
1/2 cup dark brown sugar, packed
Juice from 2 limes
1/2 medium red onion, minced
6 garlic cloves, chopped
2 tbsp. Worcestershire sauce
2 tbsp. whole grain mustard
2 tbsp. vegetable oil
1 tbsp. peeled fresh ginger, minced
2 tsp. Tabasco brand pepper sauce
4 (8 oz.) bison New York strip steaks



SHUTTERSTOCK.COM

DIRECTIONS

For marinade:

1. Whisk brown ale, sugar, lime juice, onion, garlic, Worcestershire sauce, mustard, oil, ginger and Tabasco sauce in large bowl to blend.
2. Place thawed strip steaks in a shallow baking dish. Pour marinade over steaks.
3. Cover tightly with plastic wrap and refrigerate for at least 6 hours, but preferably overnight, turning steaks at least once to fully marinate.

For New York strip steaks:

1. Preheat cast iron skillet on high for 3-4 minutes.
2. Cook the first side of the steaks on high heat for 5 minutes, and then turn and cook for an additional 3 minutes, reducing heat to medium high.
3. Remove from pan, and let steaks rest for 10 minutes before serving to allow the juices to settle back into the meat.
4. Serve with your favorite side dish. Enjoy!

Recipe provided courtesy of The Bison Council.

For additional bison recipes go to thebisoncouncil.com/.



SHUTTERSTOCK.COM

STRAWBERRIES DIPPED IN DARK CHOCOLATE

8 oz. dark chocolate, chopped into 1/4-inch pieces
18 large fresh whole strawberries, with stems

DIRECTIONS

1. Microwave chocolate in a small bowl on medium for 1 minute. Stir, and continue microwaving on medium at 20-second intervals until completely melted, stirring after each interval. Or place in the top of a double boiler over hot, but not boiling, water. Stir until completely melted.
2. Holding the strawberries by the stems, dip strawberries in the melted chocolate until they are about three-quarters covered.
3. Set the dipped strawberries on baking sheets covered with parchment paper. The chocolate will harden in about 1 hour at room temperature.

Dark chocolate is good for your heart. Studies show that eating a small amount of dark chocolate two or three times each week can help lower your blood pressure. Dark chocolate improves blood flow and may help prevent the formation of blood clots. Eating dark chocolate may also prevent arteriosclerosis (hardening of the arteries).

Recipe submitted by Ellen C. Corso, Wisconsin Natural Resources business manager.

piece of land year-round and take advantage of the other outdoor activities," says Popp. "It's about providing events that are social, fun and not intimidating. This is how we create that gateway to a lifestyle of being active for everyone."

A family tradition

Reflecting on my own childhood, I can vividly remember looking forward to the Birkie every year. For as long as I can remember, the Birkie was always more than a ski race, but rather symbolized a special time spent with family.

My dad, Mark Gordon, first started skiing the Birkie in 1981 after being convinced by a friend to give the race a shot. Having never skied more than six miles, the 30-mile trek was difficult at best, and halfway through, he thought about giving up. A volunteer on the trail encouraged him to finish, assuring him the second half would be easier.

Nearly 34 years later, my dad is now a member of the distinguished Birch Leggings group, an honor that recognizes skiers who have participated in more than 20 races. Over the years, it has become much more about the family and friends than the miles.

"It's one of those things you tell yourself you're never going to do again when you're actually skiing," dad says. "But after the second year, more and more people started joining our group and it became a tradition we looked forward to sharing with our friends every year."

It's also a tradition that will continue in my family's next generation. On my dad's 30th year of skiing, my brother along



Deb and Mark Gordon in 1981 after Mark finished his first Birkebeiner.

with his University of Minnesota classmates, skied his first Birkie and has continued to participate in the race in the years since.

"Participating in the race has had a major impact on our family to have a more healthy lifestyle year-round, including a love and celebration of winter and the outdoors," my mom, Deb Gordon, says. She has also participated in the Birkie, Kortelopet and even a jack rabbit race while pregnant with me.

"It has always been a family event, whether someone skied or supported the active skiers," mom says.

While I've never skied a Birkie myself, the experience is inclusive of spectators and those who support the skiers in many ways, from rest stops along the trail to cowbell ringers at the finish line. For all those involved, it truly is an event that celebrates tradition, pride and the outdoors.

A couple of years ago, my parents made the move out west to Seattle, but my dad continues to make the trip back to Wisconsin every year, not only for the race but also for a special trip with his daughter and friends. 

Erin Gordon is a communications specialist in DNR's Office of Communications.

2015 BIRKIE TRAIL EVENTS RUN FEB. 19-22 (BIRKIE ON FEB. 21)

- **Feb. 21: The American Birkebeiner.** Beyond the legendary 50/54K Birkie, skiers can also sign up for the 23K Kortelopet, 12K Prince Haakon Race, Barnebirkie for kids, Elite Sprints, Junior Birkie, Nikkerbeiner and more. No matter how you wish to participate, the Birkie has something for you and your family.
- **March 7: 47/20K Fat Bike Race: National Championship.** Take advantage of this once a year opportunity to ride your fat bike on the groomed, snow covered Birkie Trail!
- **Sept. 26 and 27: Birkie Trail Run and Trek: Marathon, Marathon Relay, Half Marathon, 12.5 Birkie Trek (Nordic Walk) 6K Fun Run/Walk and 1K Kids.**



Wisconsin, naturally

JOHNSON HILL KAME STATE NATURAL AREA



Thomas A. Meyer
State Natural Areas Program

Notable: Winter is perhaps the best time to explore the glacially-sculpted terrain of the Northern Unit of the Kettle Moraine State Forest. When leaves are off the trees and the ground is cloaked in white, the rough and jumbled landscape stands in starker contrast. Revealed is a world-class illustration of the combined power of glacial ice and meltwater, and their ability to create and mold surficial landforms, some bearing whimsical names. Here you find sinuous, gravelly ridges called "eskers," deep potholes — often filled with water — called "kettles," teardrop-shaped hills named "drumlins" and "kames" — steep, conical hills of rocky glacial debris. Johnson Hill is an excellent example of one such kame, created near the wasting edge of the ice sheet by a meltwater stream that swirled downward through a cylindrical hole in the glacier. It carried not only water, but a load of unconsolidated sand, gravel and boulders that accumulated at the base of the cylinder. When the surrounding ice eventually melted away 10,000 years ago, a 150-foot high, dunce cap-shaped mound remained. Today, the kame is forested with red and white oaks, sugar maple, beech, hickory and basswood and provides habitat for a variety of songbirds and mammals.

How to get there: Located within the Northern Unit of the Kettle Moraine State Forest. From the intersection of State Highway 67 and County Highway C in Plymouth go south and west on 67 for 8.8 miles, then south on County Highway U for 50 yards. Then continue south and east on Woodside Road 0.75 miles, then south on Shamrock Road for another 0.4 miles. Park along the road and walk west 0.2 miles to the natural area.

