

INSIDE

CONSERVATION PATRONS: RENEW YOUR LICENSE

ACCOUNTING FOR YOUR INVESTMENT IN WISCONSIN'S FISH & WILDLIFE FUND

# WISCONSIN NATURAL RESOURCES

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

February 2011 \$3.50

## Seeing the NIGHT sky

Together for the winter sturgeon season

Adapting to a changing climate

Winter fun in state parks





## Accidents with deer leave a lasting impression.

Audrey Polichnia

I hit a deer with my car in early March; it wasn't my first deer hit, or my second, but in eleven years of driving through Shawano and Waupaca counties this was my most damaging collision. When the officer arrived at the scene north of Ogdensburg, he walked around my car with a flashlight. The grill was punched in, the hood was bruised, and fur rimmed the broken headlights on the passenger's side like an eyebrow. Fluids dripped underneath. The officer made a few notes and confessed that his cruiser was only a couple of days on the road again after a similar event.

I remembered a few years earlier when a sheriff's car was in for repairs in the shop bay next to mine.

"Deer hit too," the mechanic told me. "They just have no respect."

There are an estimated 55 deer per square mile in the area where I most often drive, and even though the car-deer crashes are down from well over 2,000 reported here in 2004, there is still nothing appealing about sharing a bad experience this year with more than 900 other drivers!

Not all of them are "repeat offenders" like me. Why was I honored with such a high rate of participation in this unwilling event? After two sleepless nights, I still don't know. Like so many other drivers, I had not hit the deer head-on, rather I'd been ambushed. When deer are on the move they bound from the woods like cheetahs that are late for lunch. They hurtle down

embankments like Jim Craig's horse in that film "The Man From Snowy River." They leap ditches like Evel Knievel's motorcycles.

Given my recent history and thinking about the motorcycle season, I decided I didn't want to test my luck with deer while I was on two wheels. I listed my mint-condition classic motorbike for sale and it was gone in just two days. I'd had eight years of pure enjoyment on it and sold it for slightly more than I'd paid. If the young man who bought it takes care of the bike, he won't lose a dime on it either.

The next day I watched as my battered car was winched onto a flatbed and taken away for repairs. We had just bought the car a couple months earlier and it had been a hard shop with a lot of negotiation; not between us and the dealer, but between

me and my husband. I wanted a small truck good for hauling groceries and the occasional sheet of drywall. My husband wanted a \$500 clunker for going to work. We'd settled on this little white wagon with a sun-roof and separate wipers over the headlights. It was cute, but probably not really functional in icy weather. The car was 10 years old but looked like new. The liftgate stayed up while you reached inside and the back seats folded down. I could haul a ton of groceries or a few two-by-fours, but probably not dry-wall. Now we were back to one vehicle and I was driving my husband to and from work in that older car. He talked again about buying a smaller, older truck so our "better" vehicle would not be sharing the road with deer at dusk and dawn.

A few days later my husband was dusting off his motorcycle and changing the oil. He assured me that having me as a passenger wouldn't be a problem...for him! Then we went to the cycle shop and this chromed-out red Suzuki with black saddle bags started whispering to me and luring me in closer. I ran my fingers along the handlebars and across the gas tank. Then, as the Bible instructs, I fled temptation.

My car is back from the shop now, thank you insurance company! We're still keeping the other older car and I believe that means other smaller house chores will outrank the drywall project for another year. However, I've added another prayer to my daily list:

*Now I slide into my car  
and pray "Lord, keep the  
deer far away."*

*For if I tag another,  
My insurance may not cover.  
Amen.*



Audrey Polichnia writes from Manawa.

## Vehicle/deer crashes by the numbers\*

**TOTAL REPORTED CRASHES  
ANNUALLY: 15,821**

**Includes 10 fatalities and 99  
incapacitating injuries to people**

### HIGHEST NUMBER OF REPORTED CRASHES

Dane County	<b>837</b>
Waukesha County	<b>683</b>
St. Croix County	<b>575</b>
Shawano County	<b>575</b>

### PEAK CRASH SEASONS AND TIMES

**Dawn and dusk in fall  
and spring**

**October-November 5-7 a.m.,  
5 p.m. to midnight**

**May-June 5-7 a.m.,  
8 p.m. to midnight**

**91% OF DEER CRASHES  
OCCUR IN RURAL AREAS**

**PERCENT OF ALL CRASHES  
INVOLVING DEER FROM  
1996-2008 AVERAGES**

**15.1%**

**MOTORCYCLISTS  
REMAIN ESPECIALLY  
ALERT.**



**Seventy-three percent of  
motorcycle-deer crashes resulted in  
a fatality or injury to a motorcyclist.**

**Seven of the 10 motor  
vehicle/deer crash fatalities  
reported in 2008 killed motorcy-  
clists. Only 3.3% of passenger cars  
and 1.6% of utility trucks involved  
in deer crashes resulted in a  
fatality or injury to an occupant.**

\*Compiled from the most recent crash statistics reported for 2008 to the Wisconsin Dept. of Transportation by law enforcement officers and summaries from the Division of Motor Vehicles Accident Database. Crashes self-reported by drivers and crashes caused by drivers avoiding deer are not included in these figures.



# WISCONSIN NATURAL RESOURCES

February 2011  
Volume 35, Number 1



© MICHAEL KENITZ



© BEN CANALES www.theStarTrail.com



TOM LAWN

## 2 Strike force

*Audrey Polichnia*

Car/deer collisions are a fact of life in whitetail country.

## 4 A small window for a big opportunity

*Lisa Gaumnitz*

The big sturgeon are impressive, but it is family, friendships and tradition that bring winter spearkers back to the ice each February.

## 10 The fading universe

*Kurt Sroka*

Communities have options to curtail stray night lights and take back a view of the evening sky.

**Center: Conservation Patron holders, it's that time.  
Please renew your licenses.**

**Your investment in Wisconsin's Fish and Wildlife:  
How your license dollars are spent**

*Natasha Kassulke*

## 17 A lifetime of skiing

*Tim Sweet*

Cross-country skiing is a great workout and readily accessible on trails in towns, parks, fields and forests.

## 20 Managing our future: Getting ahead of a changing climate

*Steve Pomplun, Richard Lathrop, Alison Coulson and Elizabeth Katt-Reinders*

The first reports from working groups of researchers suggest how Wisconsin can adapt to stave off some of the consequences of a changing world.

## 26 Hot picks for cold weather fun

Snow and no crowds make day trips and overnight stays at state parks in winter fun and relaxing.

## 29 Readers Write

## 30 Feeding the flock

Creature Comforts offers tips and a recipe to draw birds to your feeders this winter.

## 31 On the move in winter

Wisconsin Traveler heads out to races, hikes, a brisk plunge and a fish fry on ice!

**FRONT COVER:** Light from homes, roadways, businesses and recreation areas can all obscure our vision of the night sky. Ironically, these lights on the horizon are safety beacons atop modern windmills to warn planes and helicopters flying in the dark.

© Ben Canales. Portland, Ore. [www.theStarTrail.com](http://www.theStarTrail.com)

**BACK COVER:** A white pine leans over the frozen surface of Camp Lake at Camp Lake and Pines State Natural Area in Vilas County. **INSET:** Pipsissewa. For more information, or to order a guidebook to State Natural Areas for \$15.00 (postage paid), contact the State Natural Areas Program, Bureau of Endangered Resources, DNR, P.O. Box 7921, Madison, WI 53707 or visit [dnr.wi.gov/org/land/er/sna](http://dnr.wi.gov/org/land/er/sna).

© Thomas Meyer, WDNR

Inset photo by Donna Franklin, Shoreline, Wash.

**Editor** David L. Sperling  
**Creative Products Manager** Natasha Kassulke  
**Circulation Manager** Karen Ecklund  
**Art Direction** Thomas J. Senatori  
**Printing** Schumann Printers

*Wisconsin Natural Resources* magazine (USPS #34625000) is published bimonthly in February, April, June, August, October and December by the Wisconsin Department of Natural Resources, 101 S. Webster St., Madison, WI 53702. The magazine is sustained through paid subscriptions. No tax money or license fees are used. Preferred Periodicals postage paid at Madison, WI. POSTMASTER and readers: subscription questions and address changes should be sent to *Wisconsin Natural Resources* magazine, P.O. Box 7191, Madison, WI 53707. **Subscription rates are: \$8.97 for one year, \$15.97 for two years, \$21.97 for three years. Toll-free subscription inquiries will be answered at 1-800-678-9472.**

© Copyright 2011, *Wisconsin Natural Resources* magazine, Wisconsin Department of Natural Resources, P.O. Box 7921, Madison, WI 53707. [wnmag.com](http://wnmag.com)

Contributions are welcome, but the Wisconsin Department of Natural Resources assumes no responsibility for loss or damage to unsolicited manuscripts or illustrative material. Viewpoints of authors do not necessarily represent the opinion or policies of the State of Wisconsin, the Natural Resources Board or the Department of Natural Resources.

Printed in the U.S.A. on recycled paper using soy-based inks in the interest of our readers and our philosophy to foster stronger recycling markets in Wisconsin.

Governor Scott Walker

**NATURAL RESOURCES BOARD**  
Jonathan P. Ela, Madison, Chair  
David Clausen, Amery  
Preston D. Cole, Milwaukee  
Gary E. Rohde, River Falls  
Christine L. Thomas, Plover  
John W. Welter, Eau Claire  
Jane Wiley, Wausau

**WISCONSIN DEPARTMENT OF  
NATURAL RESOURCES**  
Cathy Stepp, Secretary  
Matthew S. Moroney, Deputy Secretary  
Steven C. Gunderson, Executive Assistant



PUBL CE-012  
ISSN-0736-2277



A woman wearing a black and purple winter jacket, a striped beanie, and black pants stands smiling in the doorway of a small, dark wooden cabin. The cabin is mounted on a metal frame with two large black tires and is parked on a vast, flat, snow-covered landscape. A long black pole leans against the side of the cabin. The background shows a distant horizon under a pale sky.

# A SMALL WINDOW FOR A BIG





# OPPORTUNITY

The short winter sturgeon season on the Lake Winnebago chain brings together family and friends. Dana Buckoski and Janell Wills fish from the new shanty that Matt Buckoski built for his newlywed bride. Matt also made Dana a pink spear for the occasion.

## The ice-fishing season for lake sturgeon is more about getting together and fishing together than harvesting a lunker.

*Story by Lisa Gaumnitz  
Photos by Michael Kienitz*

Newlywed Dana Buckoski and friend Janell Wills poke their heads from the ice shanty Dana's new husband built for his bride. "Matt knew he had a keeper when he knew she'd come out here and do this," Wills says.

Twenty-two-year-old Rachel Mathwig spears a fish and calls for her dad's help to pull it onto the ice just when her mother yells for help from another shanty where she's speared a monster.

And 92-year-old Aelred Schumacher lands his second fish in consecutive years. Four generations of Schumachers spill out of their shanties to congratulate the patriarch, take photographs and swap stories of the day's haul so far.

These scenes from opening day of the 2010 sturgeon spearing season on the Lake Winnebago chain crystallize why more than 10,000 Wisconsinites spend part of their February staring through a hole in the ice at a green glow for hours, waiting for a prehistoric fish to cruise into view.

In a season when the Lake Winnebago system gave up a record 212-pound sturgeon, big fish and the adrenaline rush that comes with spearing them may lure people out onto the ice, but it's family, friends, traditions and their rituals that keep them coming back — year after year, generation after generation.



"What really draws people is the camaraderie: all the preparation, the time they spend with their friends talking about where they're going to go, making their spears and getting their decoys ready. And the time in the tavern talking about these things over a beer, or families getting together and having fish fries," says Ron Bruch, the DNR fish biologist who has led the Winnebago management program for the past 20 years.

"If [the whole experience] just depended on going out there and spearing a fish every year, people wouldn't go at all," Bruch said. "The success rate on Lake Winnebago is only 13 percent. What keeps people coming back is the chance to spear as a group and having success as a group or family."

## Their stories

Aelred Schumacher is not sure how many sturgeon he's speared over nearly 80 seasons. He started when he was 12 with a neighbor. The Wisconsin Legislature had recently reopened the spearing season as an economic stimulus measure for communities mired in the Great Depression.

"We used to push those shanties out by hand," he recalls. "The sturgeon tags were five for a quarter."

The tags didn't always get filled. Sturgeon were relatively scarce, a casualty of dams, pollution and overfishing of the late-maturing, slow-growing fish. The first length limit was set in 1903 to protect sturgeon in Wisconsin and the harvest season closed statewide in 1915.

Working with citizens and groups such as Sturgeon for Tomorrow, DNR fish managers have since protected the sturgeon population that has grown into the world's largest, with an estimated 15,847 adult females and 31,748 adult males.

As Aelred and Madeline Schumacher's clan grew to an even dozen, he brought the children out on the ice with him, and they in turn brought their own young families. Aelred hand-made sturgeon spears for all the children and grandchildren. A treasured family tradition the day before the season opener is to cut holes in the ice, check their spears, ropes and other equipment one more time, and enjoy a fish fry at the homestead.

On this gray February day, 44 family members, including eight of his chil-



**Aelred Schumacher (center) has been fishing sturgeon each winter for 80 seasons. Forty-four members of his clan joined him on the ice last winter. The family collectively took six fish on opening day and nine for the season.**

dren, occupy 17 different shanties on Lake Winnebago. They are tied together by cell phones and sweatshirts proclaiming: Sturgeon Tag: \$20; Sturgeon Spear: \$150; Fishing with Aldie Schumacher: Priceless.

Dana Rhodes, 37, had already speared the first of six sturgeon her family would harvest that day when she made the trip over to her grandfather's shanty shortly after 7:30 a.m.

"I had to brag that I got my first fish," said Rhodes, now holed up in the shanty she's sharing with her cousins Kelly and

Amy Schumacher. "It was exciting."

"Besides the fact that she was jumping up and down and crying!" chipped in Kelly.

"I kept saying for a year that this is the year, this is the year — and now it is," said Rhodes.

A few dozen yards away, Betty Schumacher was staring intently into the eerie green light through the hole cut into the floor of her shanty. "I hope you don't mind if I'm not going to look at you," she told the reporter and photographer.





Betty Schumacher brought in this 60-incher, the first sturgeon she decided to keep in the last six years.



The group even dons Team Schumacher sweatshirts for the opener.



Dick Schumacher shows one of the sturgeon attractors his dad crafted. An attractor is gently jigged or fluttered to entice a sturgeon into swimming under the shanty.

Betty grew up spearfishing with her family. She has her own shanty — a key to both marital harmony and a higher spearing success rate. "That way she can fish in hers and we don't have a 'discussion' on who's going to throw the spear," her husband Dick Schumacher said earlier, before settling into his spot.

Already that morning, Betty had speared a 60-inch fish. She pulled up the decoy that helped her bring in the big fish: it's one that Aldie Schumacher made.

"The last sturgeon I got was six years ago," she said. "The last five years I let fish go. They're so beautiful...and once you get one, you want everybody to have that thrill."



Lori's phone vibrated: a text message has just arrived. "Corey just got a big fish," she said. And then, a few minutes later, "Granddad just got one — some 40 inches."

All is right in Schumacherville. Ninety-two-year-old Aelred speared a fish, hard on the success of the 125-pounder he harvested the year before. Four generations of Schumachers emerged from their shanties to congratulate "Dad" while the patriarch marveled at his good fortune.

"There have been lots of years without fish, and now I got two in a row. I don't know what to say. It's still a thrill, that's for sure."





Successful sturgeon spearmen wait for the weigh-in at a lakeside registration station. A crowd often gathers to congratulate their friends and hear a few good stories of the harvest.



Dana Buckoski and Janell Wills are just beginning their sturgeon spearing days.

The pink athletic bag and chairs bedecked with ribbons outside their black ice shanty are the first signs that this is not your typical sturgeon spearing party. Dana's husband made the shanty for the two girlfriends, and this is its maiden voyage.

The two young women emerge from the shanty when we knock on their door to inquire how they're doing. "It's fun," says Dana Buckoski. "We just haven't seen anything."

Both are teachers at Kiel Middle School who first came out onto the ice in 2009 to learn about the process by watching Dana's fiancée at the time, Matt Buckoski.

He's been spearing since he was a child, learning the tricks and techniques passed down from generations of spearmen on his mother's side. On this day, he is one of five Buckoski boys spearing, as is their father, Steve Buckoski of Darboy.

The teachers found they liked the excitement and the uniqueness of the



Dan Merbach landed a big one from his grandpa's old shanty. He fished in a family group of eight and plans to give his three children a chance to enjoy the sturgeon ice season.





Linda Muche hauled in her biggest fish ever, this 107-pounder. Her daughter, Rachel Mathwig, also brought in a sturgeon on opening day last year.

season: It's the only opportunity to spear a sturgeon through the ice, the only one in the United States open to anyone who wants to participate, and the only one with a significant chance to harvest a huge fish. Bruch is only aware of one other very limited sturgeon spearing season on Black Lake in Michigan. That season runs for five days or until a total of five fish have been harvested.

"I'm from the U.P. but this is actually something you don't do in the Upper Peninsula," Wills says. "You cut a big hole and wait for [a chance to get] a prehistoric fish."

So now the two are waiting and watching for that first shot.

"We've got 6th and 7th graders who are crossing their fingers for us," Buckoski says.



At the Quinney sturgeon registration station off the eastern shore of Lake

Winnebago, Dan Merbach, 37, was getting ready to pull out of the parking lot with a 104.7 pound fish in the back of his pickup truck.

"It's the biggest one I've ever gotten," says Merbach. "I grew up with my dad doing it, and watched him." Merbach uses his grandpa's old shanty. His grandpa just passed away in July so "I took over his shanty. I think he was looking down on us. Sometimes you sit a whole season and don't see a fish."

Merbach's father, brother and cousins all spear, and this year they had eight people in four shanties.

"I was sitting with my cousin in the shanty. I saw the fish, I got nervous, grabbed the spear, threw it, and it was all over."

He had success with his favorite spear, a stainless steel one his father made. "Everything is homemade," Merbach says, including his pike pole, spear and decoys. That is typical for a lot of the sturgeon set. They often build their own shanties and handcraft every

piece of their specialized gear.

When he was only seven, Merbach started coming out on the ice with his father. Now Dan has three little ones of his own at home.

I'm not going to force them to take an interest in sturgeon, but I will certainly show them what it is like and share the experience with them, Merbach said.

But that's later. Now, he's going to go show the fish to his uncle who helped him get started spearing.



Outside Wendt's on the Lake, a registration station on the west shore of Lake Winnebago, the spearing day has been over for more than an hour but the crowds are still thick. People are milling around watching DNR staff register harvested sturgeon on the shore and watching happy family members and friends snap photographs of the lucky spearkers who hang their prizes on a board.

Rachel Mathwig, 22, snaps a photograph as her mom, Linda Muche, 49, hugs the huge fish she speared. She joins in with her own fish for a mother-daughter shot that could happen only in Wisconsin.

"We were fishing together and all of a sudden, I speared mine," Mathwig says. "My brother was with me and he ran out of the shanty to get my dad to help me pull it in. All of a sudden, we hear my mom yell 'Torpedo!' She couldn't get hers out of the hole so my dad needed to help."

Rachel's fish weighed 38 pounds; Linda's was 107 pounds, her biggest fish ever, and she caught it on her 49th birthday to boot.

"I've been spearing for 31 years," Muche says. "My husband got me started and he got me out on the lake. My first fish was 24 pounds. This is a lot different! I was screaming. I was just shouting. The whole right side of my shanty hole was all fish. I grabbed the spear and threw it."

"They put the behemoth on the electronic scale and it went 70 pounds, 80 pounds and kept going up. I thought, that's cool and then it went triple digits!

"Every time you get one it's that same excitement all over again." ❧

*Lisa Gaumnitz is the public affairs manager for DNR's Water Division.*



# THE FADING UNIVERSE

---

Star-spangled nights should be available for all to see and enjoy, but for most are barely visible. Light pollution, like a milky cataract, is blurring our celestial vision.

---

*Kurt Sroka*

Sky glow reflects the city lights from Salem, Oregon and surrounding communities in the cloud cover near Mt. Washington, about 100 miles away from where photographer Ben Canales took this photo. Note the stark contrast between the yellowish glow from city lights and the sparkling stars shining above.









Global light pollution is easily seen in this digital composite of satellite photos.

**T**wilight waned as the night rose in the east. Acrobatic bats swooped and rolled for insects. My telescope, pointed skyward, was poised for an evening of stargazing. The night lights and constellations began to appear and brighten. Then a false twilight cast by communities near and far started to spread and intensify. Light pollution, way out here in the country. Bright enough at my location to severely dim the stars above the eastern and southern horizons, and erase stars altogether in the southwestern sky. Our dark skies and starry nights are much more faint.

Light pollution has been deleting our view of the Milky Way galaxy and the universe beyond since the 1950s. It's as though we've been building a shield of light around the planet afraid, perhaps, to view the infinite that surrounds us even as we seem to fear the

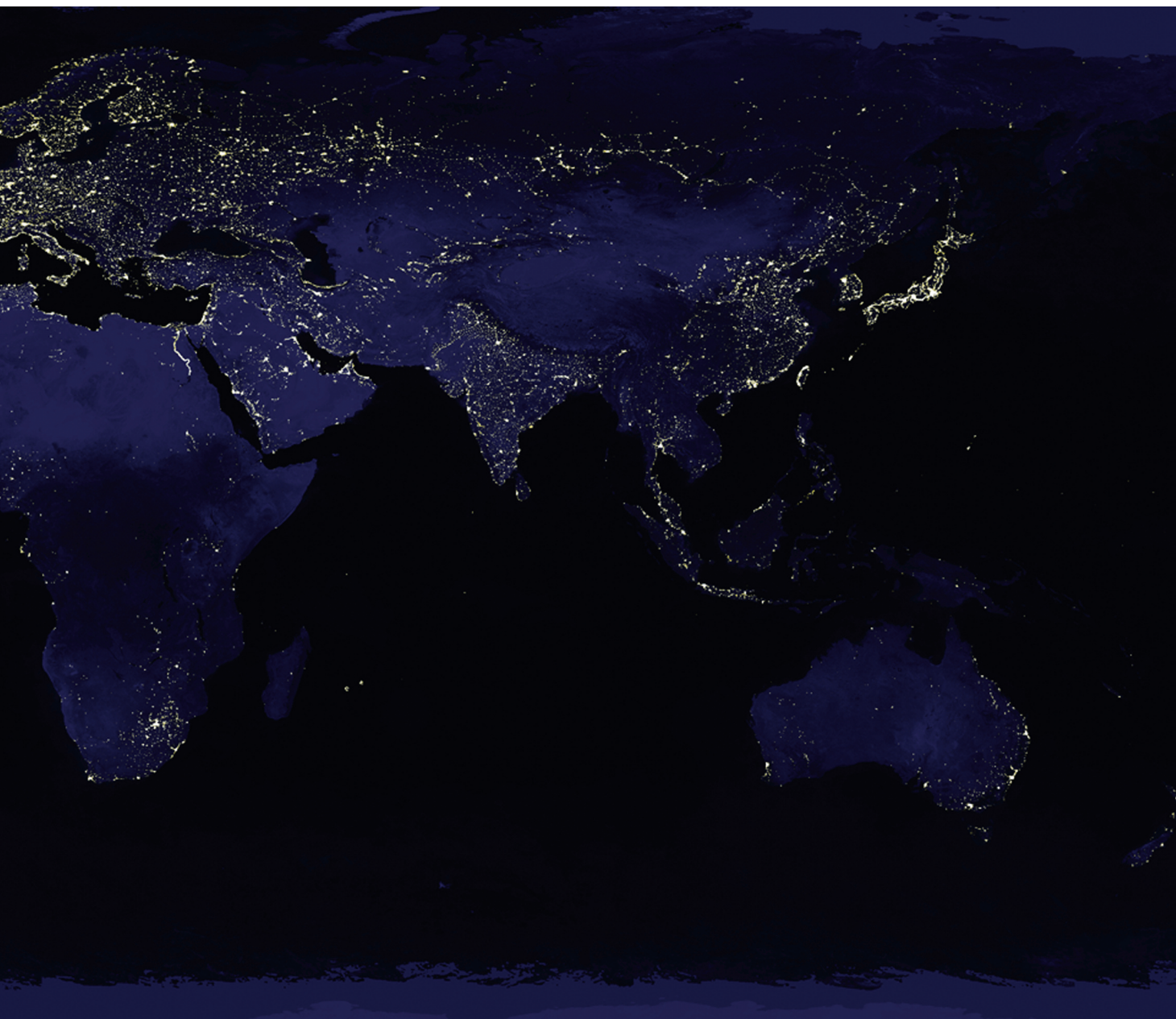
dark here on Earth.

Light pollution is evident everywhere. Even in a rural state like Wisconsin, the ubiquitous light domes of our communities are conspicuous. Far out to sea "the sky is not as dark as it was even 20 years ago," according to

marine ornithologist Dr. Richard Podolsky. Coastal cities, offshore oil rigs, cruise ships and fishing fleets all contribute to this phenomenon.

Though still considered a nonproblem by many, light pollution is more than a minor nuisance. It wastes money and energy. It contributes to global warming and is recognized as a health hazard. Here in the United States about \$2 billion a year is spent on lighting that creates useless sky glow. Wasted lighting is responsible for about 38 million tons of our annual carbon dioxide emissions. A lot of megawatts are generated, distributed and then thrown away on unwanted light. (Read more at [darksky.org](http://darksky.org), the website of IDA, the International Dark-Sky Association.) Studies of





C. MAYHEW AND R. SIMMON, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION/GODDARD SPACE FLIGHT CENTER

disrupted hormone production, brain activity, cell function and other changes in birds, bats, frogs, fish and people have been ascribed to light pollution.

Light pollution, defined by the IDA as “excessive and inappropriate artificial light,” has four components that can act independently or in combination:

*Light trespass* describes when light falls in places where it isn’t intended, wanted or needed. Examples include home security lights that spread a wide beacon and stray onto neighboring properties, street lights that are poorly collimated and illuminate much more than the streets, and parking lot lighting that wanders away casting light in too wide an area.

*Glare* is excessive brightness. This

causes visual discomfort and the overload will actually decrease visibility. So-called mercury vapor “farm yard” lights are dazzling sources of glare.

*Clutter* is a profuse grouping of light sources. Major tourism strips, outdoor sports arenas and other places with groups of attractions contain notable examples. Developed strings of commercial properties like Bluemound

Road between Waukesha and Milwaukee are very brightly lit at night. Indeed, you can find examples in the vast majority of communities with clusters of businesses, car lots and malls. The proliferation of clutter greatly contributes to light pollution.

*Urban sky glow* is the brightening of the night sky over inhabited areas. This is what I see from my rural home in

## GAUGING LIGHT POLLUTION NEAR YOUR HOME

An easy way to gauge light pollution levels near home is to look at the Little Dipper. Its stars are rather faint, except for Polaris, the North Star at the end of the handle, and the two stars in front of its bowl called the “Guardians of the Pole” because they march around Polaris like sentries.

The four stars in the bowl of the Little Dipper are composed of stars with magnitudes of 2, 3, 4 and 5. So, if you can see all four stars in the bowl, you have access to a good, dark sky. If you can only see the Guardians, your sky quality can be considered fair-to-poor.

Joe Rao, *SPACE.com Skywatching Columnist*



western Wisconsin. Because of sky glow, millions of people in the United States and billions worldwide are unable to see the Milky Way. Indeed, photographed from satellites, a poster entitled “Night View” shares a stunning image of Earth that clearly shows how urban sky glow interferes with our view of the heavens. You can see many such images by entering “Night Views of the United States” in a computer search engine.

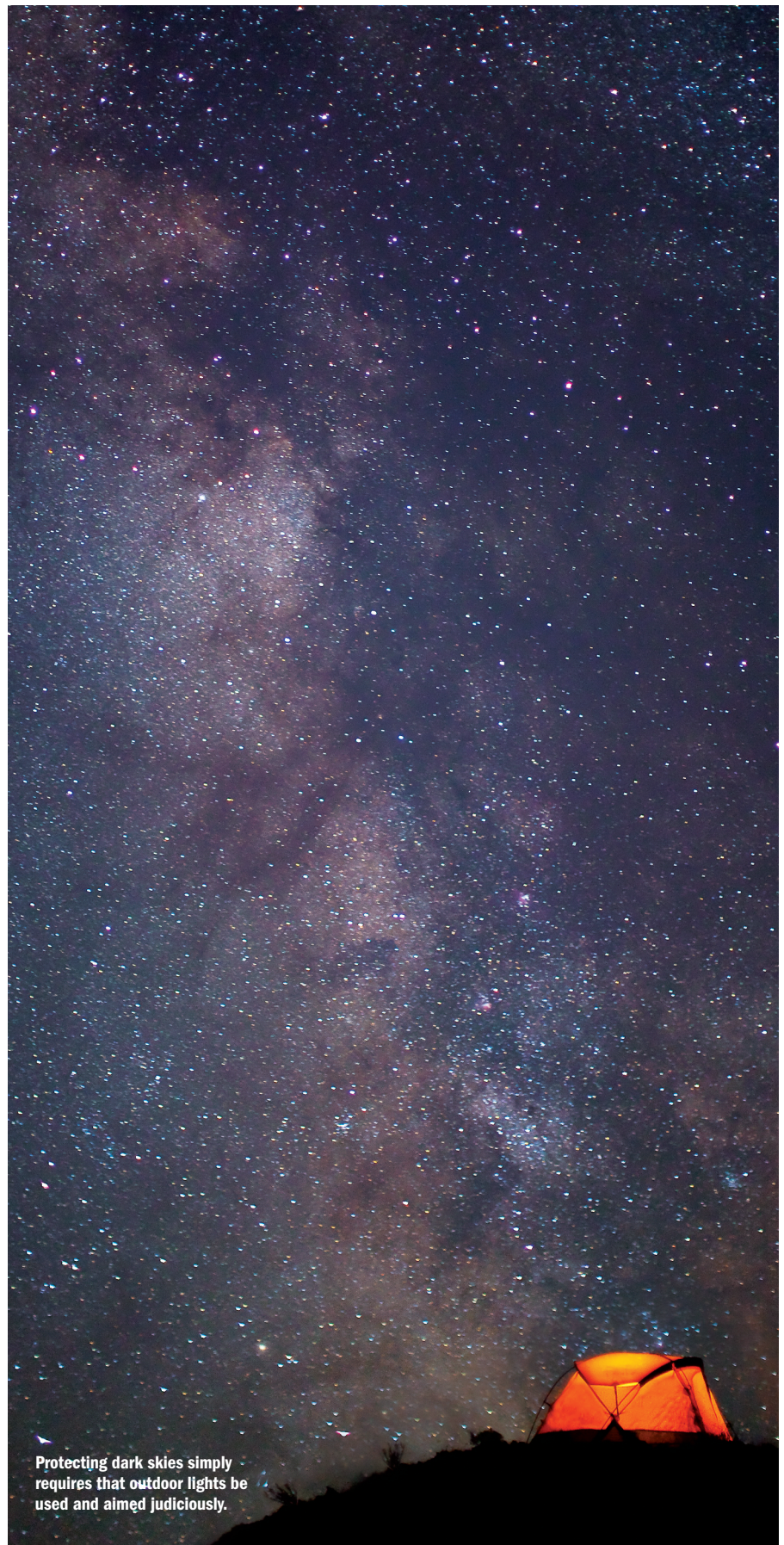
Given that light pollution can be expensive, wasteful and aesthetically unpleasant, how did this phenomenon come to be and why does the overlighting trend continue?

Since the first campfires and the feeling of safety and warmth they brought, people have practiced a philosophy that “more is better.” Homeowners, lighting contractors, builders and community officials alike are often still stuck in a rut that bright night lighting is “the way we’ve always done it.” We play on fears and believe that more lighting prevents crime. In fact, nobody really knows. Still, the ideas are well entrenched and it’s difficult to convince people to cut back or to contain night lights.

Education, of course, is a first step. Second, too few people have spent time far enough away from community lights to appreciate what a dark sky can reveal. Third, reclaiming the night sky is a long-term process. It can be expensive and time consuming to replace outdated street lights, residential lights and business lighting. It’s obvious that reductions will only occur gradually, just as the escalation took decades.

Still, some steps can be taken now. If you’re interested in reducing your own “photon footprint” while improving efficiency, search around a little and notice where you see softer, more pleasant lighting when you take night walks. Residential and commercial bulbs and fixtures are available. IDA offers helpful lighting tips.

Don’t overlook your local electric utility as a source of help. Many electric utilities and co-ops are actively promoting power conservation and efficiency. There are plenty of alternatives to inefficient, dusk-to-dawn mer-



Protecting dark skies simply requires that outdoor lights be used and aimed judiciously.

©BEN CAVALES, www.theStarTrail.com





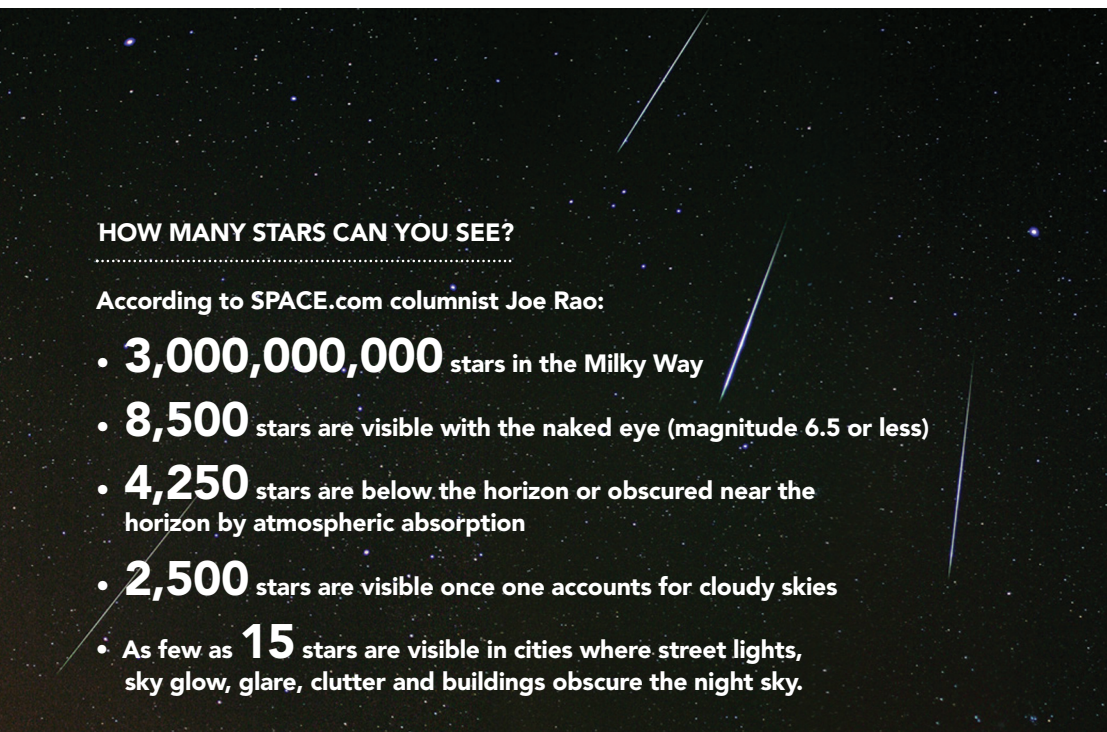
Night view of the United States dramatically shows how the concentration of lights in urban areas reduces our ability to see the wonder of starlight. Light shields designed into artificial lighting can focus night lights where we want them and save energy at the same time.

NASA GODDARD SPACE FLIGHT CENTER SCIENTIFIC VISUALIZATION STUDIO

## PRESERVING DARK SPACES

Parks and forests have few artificial lights and are often far enough from town to make wonderful places for stargazing. At Wyalusing State Park in southwestern Wisconsin south of Prairie du Chien, a local astronomy club has its own designated area for night viewing including an interpretive center. Diagonally across the state in the northeast, there's talk about taking steps at Governor Thompson Centennial State Park to install lights that preserve the darkness to maintain a stunning view of the night sky to the north. The park, about 15 miles northwest of Crivitz along the Caldron Falls and High Falls flowages, is far from city lights. The 2,800-acre park adjoins a 3,000-acre flowage and 9,370 acres of the Peshtigo River State Forest.

Dark sky preserves and reserves are a recent notion designed to maintain areas free of artificial lights so they remain superb places for astronomical observation. The world's first International Dark-Sky Reserve was designated in 2007 around Mont Megantic, Quebec, a few miles north of the border with Maine and New Hampshire. Natural Bridges National Monument in Utah was the first property designated as an International Dark-Sky Park.



## HOW MANY STARS CAN YOU SEE?

According to SPACE.com columnist Joe Rao:

- **3,000,000,000** stars in the Milky Way
- **8,500** stars are visible with the naked eye (magnitude 6.5 or less)
- **4,250** stars are below the horizon or obscured near the horizon by atmospheric absorption
- **2,500** stars are visible once one accounts for cloudy skies
- As few as **15** stars are visible in cities where street lights, sky glow, glare, clutter and buildings obscure the night sky.

THE GEMINID METEOR SHOWER, COMPOSITE SHOT, PIERRE MARTIN, ORLEANS, ONTARIO



cury vapor “security” lights that cast a pall of glare, light trespass and sky glow.

Convincing community officials of the need to enact outdoor lighting codes is an essential step on the road to taking back the night. It takes persistence and education. As of this writing, the Wisconsin Skies portion of the IDA website ([darkskywisconsin.uwex.edu](http://darkskywisconsin.uwex.edu)) lists only 33 Wisconsin communities that have enacted lighting ordinances, and the quality of those ordinances vary from comprehensive to a mere mention of the subject under the zoning subsections entitled “nuisances.” Until cities, villages and towns take meaningful, enforceable actions to halt and reverse light pollution, the chances for the widespread return of Wisconsin’s dark skies are slim, or should I say “dim?”

Yet practical solutions for halting light pollution are available now, further research and development isn’t needed. Communities can take practical actions to achieve the goal of efficient, effective and reduced outdoor lighting.

Ironically, though communities often think of extra lighting as providing a safer environment, there are safety concerns from overlighting as well. Communities should think about using only as much light as is needed. Glare is visually uncomfortable and reduces visibility. Too much light interferes with night vision, impeding one’s ability to see beyond an illuminated area. Reduced lamp wattage can actually increase visibility and safety while reducing costs.

Around your home, use lighting only where and when it’s needed. Timers and motion detectors can help achieve this end. Consider where and what you are illuminating and why you are doing so. Think about how your lighting affects neighbors just as you now try to control noise to minimize disturbances.

Shine lights down rather than up. Well designed fixtures aim light where it’s needed — towards the ground. They are fully shielded and can include “cut-off” units that don’t allow light to leak towards the sky. Such fixtures for residential and commercial use are featured in the IDA Fixture Seal of Approval program.

Use efficient light sources. Because

Tucson, Arizona is one such community where ordinances provide safe, night lighting while restricting light fixtures to minimize stray light and preserve a view of darker skies.



INTERNATIONAL DARK-SKY ASSOCIATION

fully shielded fixtures direct the light to only where it’s needed, lower wattage lamps can often supply sufficient light for the task. This is good for the environment, good for the wallet and provides more efficient, effective and pleasing outdoor lighting results.

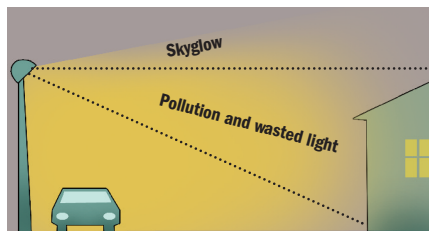
Light pollution can be stopped and reversed, but only if we exercise the collective will to do so. The glow from

our “campfires” can be dimmed without compromising our safety and security. Perhaps, over time, the fading universe will again be visible everywhere, illuminating our sense of awe and sparking our imaginations as it has done since humankind first gazed in wonder at the nighttime sky.

*Kurt Sroka writes from Somerset.*

## DARK SKY TIPS

- **Use light only when and where it’s needed.** Turn off lights when they are not needed and create a curfew for lights-out. Use timers and motion detectors to minimize light use.
- **Use only as much light as is needed.** Excessive lighting reduces the eye’s ability to see outside of the lit area. Excess light can also produce glare, which reduces visibility. Select the correct lamp wattage for your needs to increase safety and reduce energy costs.
- **Shine lights down, not up.** A well-designed fixture will direct the light where it’s needed most — at the ground. Select new fixtures that are fully shielded; retrofit or replace poor quality fixtures. Look for fixtures recommended by the International Dark-Sky Association Seal of Approval program.



Conventional floodlighting



Shielded lighting designed to direct light to the ground

- **Use efficient light sources for outdoor lighting around homes and businesses.**

Consider LED and compact fluorescents for good, energy efficient, economical lighting. Low-wattage lamps give plenty of light for most properties and applications, and in a fully shielded fixture, make an excellent choice. When higher wattage lamps are necessary, be sure that they are fully shielded and energy efficient.

*From the International Dark-Sky Association*



**To build a new winter habit or just stay healthy and get outside as the weather gets bracing, consider strapping on a pair of cross-country skis.**

# A lifetime of skiing



*Story and photos by Tim Sweet*

**T**here's an old black and white picture of my mother hanging on the wall in our living room. It shows her in a wool sweater with a snowflake pattern waxing a pair of wooden skis at Calumet County Park on the east side of Lake Winnebago in the late 1940s. Immediately above the vintage photo is an even older pair of marsh skis: really long, wide 10-foot skis that spread out your weight over a wider area to allow travel over cattails and marshy channels in a wetland. These skis date back a century or more and came from a farmer near Weyauwega who used them while duck hunting in out-of-the-way places. These reminders keep me looking forward to my favorite winter-time activity throughout the year.

I began skiing in the early '70s when my parents gave me a pair of wooden cross-country skis with lignostone edges. Three-pin bindings clamped the toe of the low-top leather boots firmly in place allowing the heel to move freely up and down. Bamboo ski poles helped to provide balance. We made many trips to Hartman Creek State Park near Waupaca where I learned to ski over the rolling hills through snow-covered woods and fields.





City parks, nature centers, public forests, county lands and private properties often provide cross-country ski trails. Ski shops and community recreation programs offer introductory skiing lessons and rent equipment so you can try different ski types and designs to find what is comfortable for you.

I still choose to use wood skis I have managed to hang on to for nearly 30 years. This year I replaced the three-pin binding system with a more up-to-date set of boots and bindings. The base of the skis is covered in pine tar to repel moisture and seal the wood. A layer of glide wax is applied to the entire base, and over that goes a kicker wax in the middle of the skis. This waxing combination allows the skis to slide easily along downhill and flat stretches, while providing grip to push off on the flats and uphill parts of the trail.

Those new to the sport may want to consider renting skis before purchasing equipment. A search on the Internet will yield numerous locations through-



Property managers and ski clubs groom trails that keep cross-country skiers on track on varied paths and terrains.





out the state of Wisconsin providing this service. Your local ski shop or nature center might be able to get you into a workshop if you would like some preliminary instruction. Renting skis is also a great way to try different kinds of boots, skis, ski bottom designs and bindings before you buy to see what is comfortable and what works for you.

In tough economic times, cross-country skiing is a relatively inexpensive way to enjoy winter. Equipment costs are much less than what you'd pay for downhill skiing gear. Area golf courses, parks, and trails are nearby and using them is often free or a minimal cost.

Cross-country skiing is great aero-

bic exercise too. Arms and legs both benefit from a good cardiovascular workout and it is a fun way to burn off calories and keep in shape.

If you're planning to ski at a fairly vigorous pace and if you want to be a bit more comfortable, it's important to dress in light layers that wick perspiration away from your body. Materials like polypropylene, polar fleece and wool help to keep you dry and don't chafe. A lightweight, breathable windbreaker is a wise fashion choice topped off with a hat to cover your head and ears, and gloves or mittens to protect your hands. A fanny pack is a handy item to bring along. It straps onto your waist and can hold extra wax, a cell phone, sunglasses, a snack and a water bottle.

If you get the skiing bug and are up to some competition, many skiers enjoy taking part in local races or work their way up to the American Birkebeiner ski race held each year at the end of February. The 50K skate and 54K classic marathon is a supreme test of personal endurance running from Cable to Hayward for both elite and recreational skiers. Anyone who has participated and crossed the finish line after skiing more than 30 miles along this challenging course feels rewarded with a true sense of accomplishment.


But don't feel that cross-country skiing is only for the well-trained athlete. You can thoroughly enjoy paths in local parks, county forest roads, on bike paths, and at local golf courses. I happen to like the trails at county and state parks that are a bit hilly and take you farther away from traffic and city noises. Last winter, a group of us headed north to Peninsula State Park in Door County. The park's 3,776 acres provide a variety of terrain for beginners as well as for those seeking more of a challenge. The trails are well maintained and the forest offers plenty of quiet winter solitude.

Just to the north on the "quiet side" of the Door Peninsula is Newport State Park. All 12.5 miles of their trails are rated for beginner or intermediate skiers. A pristine route to follow after a fresh snowfall starts from Parking Lot #3 and heads north along the Europe

Bay Trail. Some lovely views of Lake Michigan can be seen along here. This generally level route cuts through a majestic hemlock, beech and maple forest. A word of warning: hemlock boughs have the tendency to hold copious mounds of fluffy, white snow that can easily be dumped onto the heads and down the necks of unsuspecting friends with a nonchalant swipe of a ski pole. Leave some distance between skiers.

These days I find myself most often skiing close to home at the Navarino Wildlife Area located in southern Shawano and northeastern Waupaca counties. Volunteers help groom the 12 miles of cross-country ski trails that traverse the forested countryside. We've had some great ski trips there.


Last January a friend and I headed to Navarino for an evening of skiing by the light of a gleaming full moon. No wind was blowing on this crystal clear night, the temperature hovered in the positive single digits, and a fresh blanket of deep snow sparkled like millions of diamonds under the lunar brilliance. Perfect trail conditions allowed us to get into the rhythm of skiing on the icy fast tracks. Skiing through moon shadows forces one to rely more on feel and intuition especially when making turns on downhill sections. Never have I had a more exhilarating or memorable winter outing.

Cross-country skiing is a great lifetime sport that you can enjoy at any pace. I encourage all of you who are physically able to wax up your skis, find a friend, a neighbor, or a loved one to join you, and get out there! When the snow is beckoning through your living room window, and the trail groomer has laid down a perfect track, get out and take part in embracing Wisconsin's chilliest season. Fresh air, the invigorating feeling, rosy cheeks or a frosted mustache will do wonders for those of you who are suffering from a bad case of cabin fever. Skiing is both good for you and good for driving off any winter blues. 

*Tim Sweet writes and skis from his home in Clintonville.*



# Managing our Getting a

A photograph showing four people in waders and hats working in a shallow, rocky stream. They are using long-handled nets to sample the water. The stream is surrounded by a dense forest of trees with some autumn-colored foliage. The ground is rocky and uneven.

A fisheries workshop conducts a stream survey of Elk Creek. WICCI's Coldwater Fish and Fisheries Working Group recommends targeting efforts to restore trout streams that are most likely to benefit from a changing climate. Techniques like narrowing and deepening stream channels can promote the colder water temperatures trout need to thrive.



# future: head of a changing climate

**The first of a series of reports to be issued every four to five years suggests how Wisconsin can adapt to stave off consequences from an altered climate.**

*Steve Pomplun, Richard Lathrop,  
Alison Coulson and Elizabeth  
Katt-Reinders*

Over the next few decades, climate change could turn Wisconsin into a very different looking place. Winters will be shorter, warmer and rainier. Our northern forests could undergo a visible transformation, hosting an unfamiliar mix of trees. Trout streams could seriously decline, and aquatic and terrestrial ecosystems across the state could be disrupted in ways that favor invasive species over native plants and animals.

Climate change poses a growing challenge for Wisconsin's landscapes, waters, fish and wildlife. Managing our natural resources and maintaining the outdoor look and feel of our state will be increasingly complex in the years ahead.

"We need to think about what climate change means for our natural resources and get out ahead of this problem, and we're working hard to do that," says Jack Sullivan, who directs DNR's Bureau of Science Services. Sullivan coordinates efforts to evaluate how changing climate will alter the agency's management responsibilities and what strategies could minimize those changes.

He's also a key participant in the Wisconsin Initiative on Climate Change Impacts, or WICCI. Founded by the Department of Natural Resources and the Nelson Institute for Environmental Studies at the University of Wisconsin-Madison, WICCI has grown into a broad statewide project with more than 250 participants from the public and private sectors. The researchers lend their expertise to working groups that are preparing strategies for dealing with the consequences that climate change poses for soil conservation, water resources, public health, agriculture, coldwater fish-



MATTHEW MITRO



eries, stormwater management, wildlife, coastal communities, forests and other plant and animal communities in Wisconsin.

WICCI's first objective was to characterize Wisconsin's future climate. UW-Madison climate scientists, using data from the world's most powerful computer models, estimate that average annual temperatures in Wisconsin will continue to rise approximately six to seven degrees Fahrenheit by mid-century. According to their projections, an even greater percent of the warming will occur in winter. Growing seasons will be longer and summers will be hotter. Wisconsin will likely receive more total precipitation, especially in winter, spring and fall, and rainstorms are likely to be more intense (for a more detailed description, see our previous story "Preparing to Adapt," in the February 2010 issue, or visit [wicci.wisc.edu](http://wicci.wisc.edu)).

These changes challenge Wisconsin's fish and wildlife populations; forest and plant communities; and lakes, streams and wetlands.

### Impacts on Wisconsin's water resources

One of the earliest and clearest signs of recent climate change can be seen in records of ice cover on Wisconsin lakes, which have been kept for more than a century.

"The annual duration of ice on Lake Mendota in south central Wisconsin has declined by a full month, or 25 percent, over the past 150 years. Lakes across the state show a similar trend," says UW-Madison limnologist John Magnuson, who co-chairs the committee that oversees WICCI research. "Ice cover is a sensitive indicator or 'miner's canary' that reveals that climate change is already underway in Wisconsin."

Less ice also means shorter ice fishing seasons and has negative consequences for businesses and communities that bank on winter recreation.

WICCI's Water Resources Working Group also assessed an array of other potential climate change impacts on water levels. Lake levels have been lower in northern Wisconsin in recent



Land development for both agriculture and home subdivisions converts natural habitat and breaks up ecosystems. Plants and animals trying to migrate to more suitable habitat as a result of changing climate are further challenged as these natural corridors and pathways are fragmented.

RYAN O'CONNOR

years due to a prolonged drought; these droughts have occurred periodically during the past century, but warmer temperatures, reduced ice cover and increased evaporation rates could intensify the effects of drought on lakes and wetlands.

In other parts of the state, increased precipitation — both in overall amounts and in more intense rainstorms — is expected to push lake levels higher, and runoff from heavier seasonal rains could carry more sediment and nutrients into lakes.

### Loss of fish habitat

Fish habitat in rivers and streams could also be affected by rising water temperatures, changes in groundwater recharge rates and an increase in runoff from heavy storms. For example, Wisconsin is at the southern edge of the natural distribution of brook trout, a native coldwater fish. An increase in the average summer air temperature of just over 5° F could eliminate up to 95 percent of the brook trout habitat across the state.

"Climate change will likely cause reductions in all coldwater habitats

and coldwater fish species in Wisconsin's inland lakes and streams," says DNR fisheries biologist Matthew Mitro, who chairs WICCI's Coldwater Fish and Fisheries Working Group.

Scientists in the group modeled how 50 common stream fish species would respond to three different climate change scenarios. Twenty-three species were predicted to decline, with one coldwater (brook trout) and four coolwater species projected to vanish from the state's streams and rivers under a worst-case scenario. Northern pike and walleye would lose most of their habitat. Four warmwater species showed little change, but 23 are predicted to increase in range, including game fish such as channel catfish, smallmouth bass, largemouth bass and black crappie.

Nongame fish, including various minnows and darters, will also gain as Wisconsin's climate changes. However, WICCI experts say fishery losses will far outweigh these gains; most of the coldwater streams that will likely become warmer are too small to host warmwater game fish.

Other wildlife will also be affected





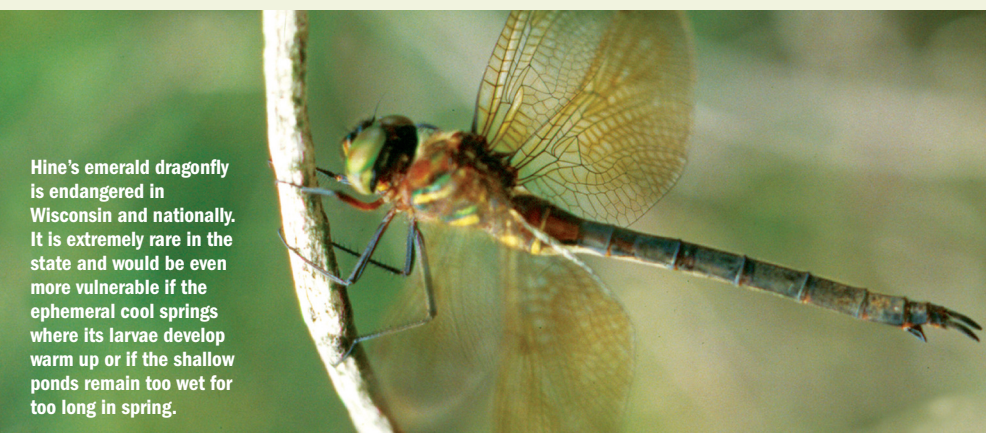
Dropping water levels on Lake Superior back in 2009 showed the consequences of recurring drought. Warmer temperatures projected for the decades ahead and fewer colder nights in winter would also decrease ice cover and increase evaporation rates on such waters.

AVERY DORLAND



Channel catfish would be one of 23 fish species whose range would likely increase in Wisconsin as climate warms since catfish can tolerate warmer conditions.

JOHN LYONS



Hine's emerald dragonfly is endangered in Wisconsin and nationally. It is extremely rare in the state and would be even more vulnerable if the ephemeral cool springs where its larvae develop warm up or if the shallow ponds remain too wet for too long in spring.

KATHRYN KIRK

as stream temperatures rise. Wisconsin is one of the few remaining states where the Hine's emerald dragonfly, a federally endangered invertebrate, is found. The dragonfly's larvae can only develop in ephemeral cool springs. If these waters warm or increased rainfall prolongs wet conditions, the insect may go extinct.

### Pressure on plants and animals

Many other state animals and plants could be harmed by climate change. As winter temperatures continue to warm, Wisconsin will see more precipitation falling as rain rather than snow, resulting in fewer days with snow cover. That threatens species that are adapted to and rely on snow cover for their winter survival. Climate scientists project that snow cover will drop by 40 percent in northern Wisconsin over the next half century. Snow is both a source of moisture and a thermal insulator for the fragile root systems of lowland conifers. Some wildlife, such as the American marten and voles, rely on layers of snow for insulation and protection from predators. A reduction in snow depth will subject martens and small mammals to greater risks of predation as well as more competition for food.

Statewide, reduced snow cover will increase opportunities for white-tailed deer to forage, resulting in more browsing damage to native vegetation, forests and croplands. Other animals that could benefit from climate change include the gray squirrel, European starling and Canada goose.

As Wisconsin winters become milder, spring will continue to arrive earlier, a trend already evident in the state. Spring weather arrives six to 20 days earlier than it did in 1950, extending the growing season by two weeks. Trees are budding and flowers are blooming sooner.

This earlier onset of spring and lengthening of the growing season will affect the timing of life-cycle events of plants and animals. Some respond to temperature as a cue to initiate growth and reproduction; others to length of day or to each other's life-cycle cues. These relationships may be thrown out of sync



as the climate continues to change.

In addition, changes in the timing of flowering caused by earlier spring arrival may disrupt interactions with insect pollinators. For example, some spring flowers are opening earlier than in the past, when the flies and bees that pollinate them may not yet have hatched. In the southern upland forests, the suite of ephemeral flowers like trout-lilies, trilliums, violets and blood-root growing on the forest floor is likely to be moderately to highly affected by climate change because of interference in pollination. These flowers bloom and drop their seeds before the forest canopy has formed its leaves. They have a very short window for reproduction, and alterations in the timing of pollination caused by climate change may adversely affect these species.

Wildlife migration behavior is also shifting in response to earlier snowmelt, warmer temperatures, more precipitation and other signals. In a recent study by Nina Leopold Bradley and others, researchers noted a shift in the phenology of 17 species in the state. The Canada goose now arrives a month earlier than in the 1930s and is a year-round resident in southern portions of the state, in some cases degrading water quality and damaging crops.

Another chain of climate impacts might be seen at ground level. A warmer climate will likely lead to a reduction in soil moisture. Hotter days — and more of them — will mean more water evaporation from the soil. Amphibians such as the American toad and eastern tiger salamander rely on humidity and moisture in the soil to maintain the water balance in their bodies.

Drier soils can reduce plant vigor and overall vitality; trees and other plants need this moisture to regenerate, and reduced soil moisture will make it more difficult for many plants to replace damaged cells. Forests such as the conifer lowlands — wet, boggy areas dominated by trees such as tamaracks, black spruce and white cedar — depend on very moist soils. A reduction in soil moisture would threaten these forests and potentially change the types of plants that grow in those regions.

As spring creeps in earlier and earlier, some blooms may be in flower before the insects that pollinate them have hatched and matured.



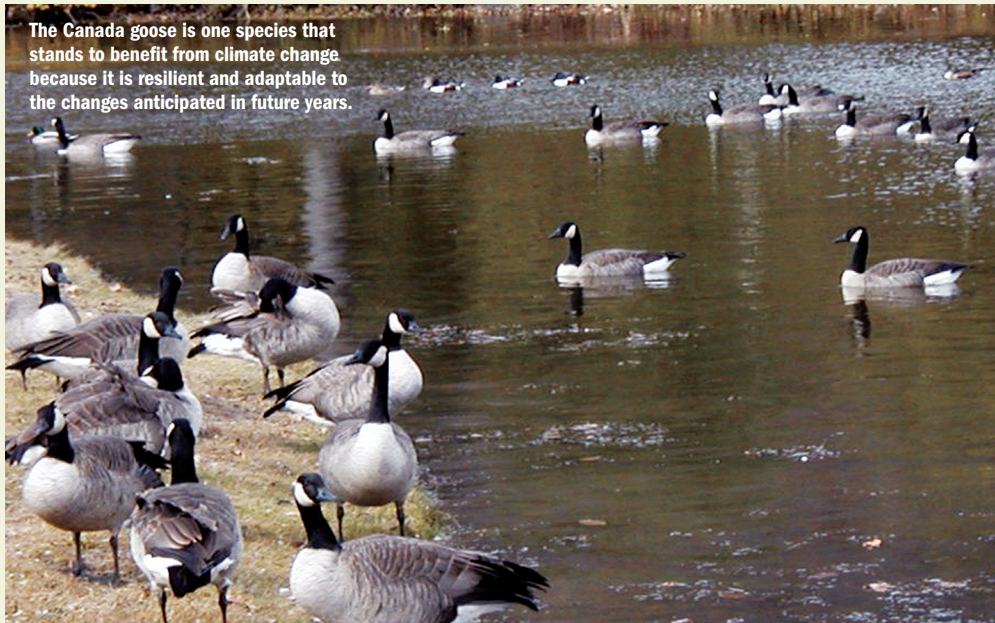
CALLIE HARTY

In warmer, drier weather species like the eastern tiger salamander burrow underground to prevent dehydration. If soils dry out, this important food source for birds, reptiles and small mammals would be less available.



A.B. SHELDON

The Canada goose is one species that stands to benefit from climate change because it is resilient and adaptable to the changes anticipated in future years.



JIM LORVAN





THOMAS A. MEYER

### Forest migration

Northern Wisconsin hosts a number of plant species that are at the southern edge of their natural ranges. If temperatures continue to rise, those ranges will shift northward out of the state, and plants currently growing in states to our south will expand into southern Wisconsin.

Furthermore, a warming climate will put pressure on boreal forest species. Birds and invertebrates within this ecosystem will be forced northward, followed by tree and plant species. By the end of the century, trees such as aspen, white birch, black spruce and balsam fir might find suitable remnant habitat only in northern Minnesota or the upper peninsula of Michigan instead of in Wisconsin.

Tamarack lowlands are particularly at risk because they persist at the southern extent of their range and are sensitive to reduced snow cover, which could allow their roots to freeze with-

out the insulating blanket of snow.

In addition, many of the invasive tree species in Wisconsin are opportunists and will probably be well adapted to grow in warmer temperatures and a carbon dioxide enriched atmosphere. Their ability to rapidly colonize disturbed sites will afford these plants an advantage in areas where floods, droughts and tree mortality open up growing space.

Some native trees and other plants will benefit from warmer weather. Hardwoods such as hickory, black oak and black walnut, might be winners in a warmer Wisconsin, expanding their range within the state as temperatures rise.


### Increasing resilience through adaptation

Designing and carrying out strategies that minimize the impacts of climate change will test natural resource managers in the years ahead. Wisconsin has taken its first steps on that path through

the efforts of WICCI. While many of the working groups are in the early stages of developing strategies, a number of ideas and recommendations have already taken shape to build resilience in Wisconsin's natural resources.

A few examples:

- Strengthen invasive species management and assist forest regeneration to reduce impacts of climate change.
- Manage vegetation with shoreland owners to promote stream bank and channel stability, reduce erosion and siltation, protect streams from high-flow events, and provide shade along coldwater streams to maintain lower water temperatures.
- Restore wetlands in upland areas to provide water storage, filtration and mitigate storm flows and nutrient loading downstream.
- Improve models relating the interactions of weather, soil hydrology, groundwater hydrology, and groundwater discharge to streams and use these models to evaluate vulnerable resources.
- Establish and maintain corridors of contiguous habitat to provide for animal migration.
- Relocate some plants and animals in anticipation of projected climate change.
- Build stronger relationships with the public to enhance knowledge of ecological communities.

These are but a few of the preliminary ideas WICCI participants are developing to meet the growing challenge of climate change to Wisconsin's natural environment. It's a good start on what is sure to be a long-term endeavor. 

### READ MORE ABOUT WICCI FINDINGS

A new WICCI report explores an array of potential consequences as our state's climate becomes warmer and wetter. The report offers strategies to help both human and natural systems adapt. "Wisconsin's Changing Climate: Impacts and Adaptation," will be published this month and is available online at [wicci.wisc.edu](http://wicci.wisc.edu).

The report covers a wide range of topics from coldwater fisheries, forests and wildlife habitat to stormwater management, agriculture and human health. It is the first in what is expected to be a series of reports that will be issued every four to five years.

"This report is the first comprehensive survey of climate change impacts in Wisconsin, and it provides information that will help decision makers begin to plan for the kinds of changes we're likely to see in the years ahead," says Lewis Gilbert, associate director of the Nelson Institute and a WICCI council member.

*Steve Pomplun directs community and alumni relations for the Nelson Institute and coordinates outreach for the Wisconsin Initiative on Climate Change Impacts (WICCI). Richard Lathrop is a DNR research limnologist and co-chair of the WICCI Science Council. Alison Coulson is the WICCI program manager and an outreach specialist at the Nelson Institute. Elizabeth Katt-Reinders is lead author of the WICCI report and a DNR publications editor.*



Heading out for a day of snowshoeing at Havenwoods State Forest in Milwaukee.

# Hot picks for cold weather fun

**Bright, sparkling snow, crisp air and no crowds make winter trips to the state parks fun and relaxing.**

State parks and forests that are bustling in summer offer their own charm in the winter months. It's a lot quieter. You won't be bugged by insects or many neighbors in the campgrounds that are open, and you can be more spontaneous when the forecast predicts a beautiful sunny day for an outing. Whether you just want to take a day trip and a light picnic, or warm up at a campfire on a starlit night, the state parks and forests offer wide open spaces you can enjoy without reservation.

The 28 state properties charted on page 28 offer campsites and overnight amenities year-round. Yes, it is a longer walk to a thawed out faucet this time of year and it's true that you'll have to wait 'til you're home to shower, but it's especially nice to follow a rabbit track in the snow, glide down a ski trail, then relax around the campfire with a warm mug of cocoa while you slip a tinfoil dinner into the embers. And you might just get the best night of sleep you'll



A sunny day is a biking day in all seasons at Peninsula State Park in Fish Creek on Door County.



have all year after a day with plenty of exercise in the brisk air.

Some of the best bets in winter might surprise you. For instance, state park and trail visitors this past year voted the Gold Seal to Pattison State Park in Douglas County. Visitors said the park's winterized campgrounds made a perfect place for a cold weather getaway. Also, the 165-foot Manitou Falls is a stunning sight any time of year! Pattison has 4.5 miles of groomed skiing trails ranging in difficulty from beginner to expert routes.

Your favorite snowshoe trail? This year the nod went to Mirror Lake State Park just southwest of Lake Delton and the Wisconsin Dells area. The park has 3.2 miles of snowshoe trails and 19 miles of cross-country ski trails. It is a park known for its winter fun with ice fishing, skiing and winter camping. Snowshoes and cross-country skis are available to rent. Please call the park office at (608) 254-2333 for more information and trail updates.

The top pick for the best candlelight ski events last winter? Kohler-Andrae State Park just four miles south of Sheboygan along Lake Michigan where the staff and friends group do it up light and bright by offering an illuminating, romantic experience on February 12, just before Valentine's Day. They fire up torches of passion setting out nearly 200 tiki torches along a two-mile cross-country ski route. After your exercise, round off the evening with a cup of hot chocolate by the fireplace. The candlelight events are a free add-on once you have purchased your park admission sticker.

Word of mouth from friends, park neighbors and avid outdoor users is a great way to find a hot spot for cold weather fun at the state parks. You can also start at the DNR website [dnr.wi.gov] searching under "Outdoor Recreation" in the left side navigation then just type "State Parks Winter" into the search box. You'll find plenty of links to winter campsite specifics, outdoor activities, dates and locations of remaining candlelight hikes and skiing events as well as other monthly programs at the parks.



A roaring campfire marks the end of the trail and a fine spot to warm up and share a candlelight ski at Lake Wissota State Park.

ROBERT QUEEN

Visitors share some of their all-around winter favorites too. One of the most popular is High Cliff State Park in Sherwood on the northeast side of Lake Winnebago, which has stunning overviews of the lake. The park has an interesting mix of sites to visit including a natural area, an old lime kiln and quarry, and Native American effigy mounds. Visitors can also rent snowshoes at the property. The 1.3-mile Forest Management Trail is especially popular with the snowshoeing set because it follows a 25-stop guided trail to learn a bit about woodland management. Visit the park website, click on the Park Map and you will find a special map for winter use of the facility.

Peninsula State Park at Fish Creek is a perennial favorite winter pick. Hardy campers can spend the night at the Tenneson Bay campground. There is good sledding on the big hill on the fairway of the 17th hole on the Peninsula Golf Course. You can ski on 16 miles of cross-country trails including six miles groomed for skate skiers. Five miles of trails are reserved for hikers and snowshoers — including the mile-long moderate Minnehaha Trail starting at Nicolet Bay, the 2.8-mile Sentinel Trail from the Eagle Tower area, and the more difficult 1.4-mile Niagara Snowshoe Trail that features a tough climb through a shoreland hardwood plot. For those who like to stay grounded in milder activities, the

White Cedar Nature Center is open most Saturdays throughout the year. Peninsula also boasts 17 miles of groomed snowmobile trails.

An up-and-coming winter hotspot among state properties is the 15,000-acre Navarino Wildlife Area in Shawano County where several ski and snowshoe trails converge near the modern nature center. Snowshoe rentals are available on-site. You might cross paths with squirrels and winter songbirds on a warm, snowy day.

Both the Northern Unit of the Kettle Moraine State Forest based in Campbellsport and the Southern Unit headquartered in Eagle and running 30 miles between Dousman and Whitewater, are favored spots for cross-country skiers from the southeastern metro areas. The Nordic, McMiller and Scuppernong trails in the Southern Unit are groomed when there is adequate snow and provide beautiful rolling scenery through woods, along wetlands and through pine plantations.

The Lapham Peak Unit of the Kettle Moraine State Forest in Delafield has just over 17 miles of cross-country ski trails including 2.5 miles that are lighted for night skiing.

Another best bet for winter fun is Blue Mounds State Park, which offers 89 winter campsites as well as hiking trails, snowshoeing trails, sledding hills and cross-country ski trails.

Devil's Lake State Park in Baraboo





DNR BUREAU OF PARKS AND RECREATION

The view of a snowy landscape is both beautiful and bracing at the observation tower at Blue Mounds State Park. Watch your step.

keeps 15 winter campsites open in the family campground as well as a sledding hill near the Quartzite Campground, five miles of cross-country ski trails and quality ice fishing opportunities for north-erns and trout on the lake.

Interstate Park at the Dalles of the St. Croix River in the bordering communities of St. Croix Falls, Wisconsin, and Taylor Falls, Minnesota, has more than 11 miles of cross-country ski trails and a few miles of excellent snowmobile trails that link to county trails and private club snowmobil-ing trails in the area.

The Red Cedar Trail between Meno-monie and Downsview running to the Dunnville Wildlife Area in Dunn Coun-ty features 14.5 miles for skiing along a rail trail that parallels portions of the Red Cedar River and connects to the Chippewa River State Trail. Snowshoers can also use and enjoy portions of the trail that are not groomed for skiers. Certainly a highlight is a wall of ice that forms from the seeping cliffs near the northern trailhead just outside Menomonie.

Join us while the snow is still a go and crisp days make a quiet day in the parks a special pleasure.

STATE PARKS OPEN FOR WINTER CAMPING				
Park or Forest	Sites	Electrical Hookups	Water	Reservations
Amnicon Falls	36 sites, one of them plowed	No	hand pump at covered bridge	No
Big Bay	5 plowed	Yes	hand pump	No
Black River	50-60 sites, 6-10 of them plowed, and indoor group camp	5 at Castle Mound	Yes	Group camp only
Blue Mound	89 walk-in	Yes (2)	Yes	No
Brule River	35 sites, 2 campgrounds	No	Yes	No
Buckhorn	3 walk-in	No	Yes (at office)	No
Copper Falls	6 plowed	Yes	Yes (contact ranger)	Yes
Devil's Lake	14 plowed 15 walk-in	Yes (11)	Yes	Yes
Glacial Drumlin - Sandhill Station	16 walk-in	No	Yes	No
Governor Dodge	10 plowed 23 unplowed 6 walk-in	Yes (4 plowed, 13 other sites)	Yes (at office)	No
High Cliff	8 unplowed	No	Yes (at office)	No
Kettle Moraine North	6 plowed plus 1 walk-in and 5 backpack	Yes (6 plowed)	Yes (near entrance backpack station)	No
Kettle Moraine South	99 at Ottawa Lake, 7 of them plowed, plus 2 walk-in sites and 3 backpack shelters	Yes (5 plowed)	hand pump and outside contact station	No
Kohler-Andrae	48 sites, 12 plowed	Yes	hand pump	No
Lake Wissota	81 walk-in or backpack	Yes (17)	Yes (at office and shop)	No
Lapham Peak	1 backpack	No	No	Yes, call (262) 646-3025
Mirror Lake	13	Yes (11)	Yes (at office)	No
Nelson Dewey	45 unplowed	Yes	Yes (at office)	No
New Glarus Woods	4 plowed 3 group camps	No	No	Yes
Newport	16 backpack 1 group backpack	No	Yes (at office)	No
Northern Highland - American Legion	6 sites plowed at Clear Lake	No	Yes	No
Pattison	62 sites, one of them plowed 3 backpack	Yes (18 including plowed site)	Yes (at office)	No
Peninsula	5 to 10 plowed	Yes	Yes	No
Point Beach	5 plowed	Yes	Yes (at office)	No
Potawatomi	4 plowed	Yes	Yes (requires hose)	No
Wildcat Mountain	4 plowed 10 walk-in	No	Yes (at office)	No
Willow River	6 plowed 72 backpack	Yes	Yes (at office or shop, hose required)	No
Wyalusing	32 unplowed	Yes	Yes	No



# Readers

## Write

### COMMENT ON A STORY?

Send your letters to: Readers Write, WNR magazine, P.O. Box 7921, Madison, WI 53707 or e-mail letters to [dnrmagazine@wisconsin.gov](mailto:dnrnmagazine@wisconsin.gov). Limit letters to 250 words and include your name and the community from which you are writing.

#### BACKWOODS MYSTERIES

Every issue of *Wisconsin Natural Resources* is read cover-to-cover as soon as I receive it. Thank you for the varied, educational and informative topics that are offered. I was especially interested when I found the "Wild Whodunits" article in the August 2010 issue. I crave new books by C.J. Box and cannot put them down once I start reading (or listening to) them so I was intrigued to read further. Thank you for the research to put this list together plus the synopses of the authors and their books. I look forward to many enjoyable hours of escaping into these mysteries tied to nature. Congratulations on a well-done magazine and good luck for continued success!

Sue Cowan  
Sun Prairie

#### BADGER RESEARCH

I want to commend you for an excellent article ("Digging up dirt about badgers," October 2010) about an important Wisconsin mammal which we know little about. The two discussed research studies are throwing light on the ecology of this little-seen animal. The concluding statement of the article comments: "In the end we'll have a better handle on this amazing mammal for which our state is named." Although the badger is indeed the state animal, according to the *Wisconsin Blue Book*, the nickname "Badger State" comes from the 1830 lead miners in southwest Wisconsin who dug like badgers. Also, my old research partner's last name is spelled "Peterson," not "Peterson."

Chuck Pils  
Retired Director, Bureau of  
Endangered Resources  
Madison

I would also like to add that this indeed is an excellent article. Now I just have to locate a badger in my part of the country to make a contribution to the genetics study. They are here and I have seen them. It may be of interest to note how our work on badgers came to be. Chuck [Pils] and I had just finished our predation field studies of red fox, red-tailed hawks and great horned owls near Waterloo in 1975. Since Pittman-Robertson federal funds did not recognize writing a research study as a legitimate job entitled to funding, we had to take on some new studies (the status of the badger, fisher and gray fox) to cover our salaries. We did not view the status reports as idle work, but as significant contributions to wildlife species in need of some sort of recognition. Badgers are fascinating critters and I am certainly pleased that the Department is finding a way to expand our knowledge of them. Keep it going!

LeRoy Petersen  
Research Biologist, Retired  
Rock Springs

Just read the article on badgers. After 80+ years living in Wisconsin and only a glimpse of two, I was surprised to see one in our back lawn about six weeks ago. We live in a rural area. My husband sets live traps for the raccoons that ruin our bird feeders. An unlucky gray squirrel was in it and the badger was headed right to it but when we went out on the deck it turned and went into the bushes. It reminded me of a dust mop with two bright eyes in a funny little head as it scurried across the lawn — don't know where it came from and don't know where it went.

Mavis M. Davis  
Ellsworth

#### WALLEYE HYPED

I have to take exception to Mr. Reed's letter in the October 2010 Readers Write regarding bass versus walleye. Poor table quality? Give me a break! I have caught and eaten hundreds of bass (skinned and filleted). My extended family enjoys them

as much as walleye. I live on Lake Wisconsin and have fished bass for 60 years. Most are caught in spring and fall. I fish basically for fun. Bass will strike surface lures and then jump. Walleyes stay deep and are vulnerable to trolling — I find it boring. Big walleye, like big bass, take on a strong fishy taste. If it would benefit your lake, catch and eat some bass. Walleye are over-rated.

Jim Cox  
Lodi

#### BILLS OR BEAKS?

Regarding the opening article on ducks ("When duck constitution matters," October 2010), Al Cornell says something about the ducks' "beaks" sticking out of the water. My late husband always said (and I checked my bird book) that songbirds have beaks and ducks have bills! Response?

M. L. Brott  
Plymouth

Good question! Most of the references we checked both online and in the office say the terms beak and bill (or rostrum) are interchangeable. One source distinguished beaks as "sharp and pointed" while bills were "generally wide and flat." Of course even bills have small notches on the end that aid ducks in dabbling, grabbing and grooming. Two of the books we consult — *Birder's Dictionary* by Randall T. Cox and *National Geographic's Birding Essentials* by Jonathan Alderfer and Jon L. Dunn — use the terms bill and beak interchangeably.

#### SANDHILL FLIGHT PATTERNS

On November 18, I happened to be outside in the morning and heard then saw large flocks of sandhill cranes migrating south. There were three distinct flocks and I watched them cover approximately six miles from north to south. I noticed something odd. Each flock was probably one to one-and-one-half miles high and each had 30 birds or more. They would fly about a mile or so and then go into an unpatterned complete turn-around. Then they would repattern, continue another mile or so and do the same thing. Can someone tell me if this is natural? Are they looking for others to join in or catch up?

Dennis King  
Oshkosh

#### 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.

Andy Paulios, Coordinator of the Bird Conservation Initiative for DNR responds: *What you saw is very normal. The cranes are more than likely finding a thermal updraft and then riding that elevational gain southwards until they find the next updraft. They behave more like hawks than geese in migration. A very fun observation!*

#### METAMORPHOSIS IN A JAR

Regarding the article on insect collecting ("Kids bugging you?" August 2010), our granddaughter captured a caterpillar and put it in a jar with a stick. It made a cocoon and 10 days later it hatched. Jessica proudly showed it off before she let it go.



(Grandpa) Jim Luxem  
Caledonia

Thanks for sharing! By the way, this is a great shot of a viceroys butterfly which is distinguished from its look-alike monarch by the horizontal stripe in the lower wings.

### UPDATE

#### SUCCESSFUL YEAR FOR STRAWBERRY CREEK

Each fall beginning in late September, staff at the Strawberry Creek Salmon Spawning Facility near Sturgeon Bay harvest eggs from Chinook salmon returning there to spawn. The facility is the primary source of Chinook eggs for Lake Michigan stocking. Last October, Lake Michigan Fisheries Biologist Scott Hansen reported that 230,000 eggs were taken by the last harvest day, enough to meet the quota needed for Wisconsin stocking in 2011, and with enough excess to supply eggs to Illinois and Indiana for their stocking needs.



# Comforts

## Feeding the flock



STEPHEN J. LANG

**Good eats are even better when they provide a little amusement for the friends and family who gather around the groaning board. That's just as true when feeding your feathered guests in winter.**

It takes more than good luck to attract a variety of birds you want to see and ensure there will be little waste under the feeders. Here's some advice on matching the right food in a proper container so the birds will flock in and feed on a cold day.

Most of the bug-eating birds flew farther south when it started getting cold. The insects skedaddled, laid their eggs and either died or crawled under the bark and into the duff to survive. A few of the hardier "meat-eating" birds stuck around. Creepers and woodpeckers that probe crevices and bark looking for larvae will warm up quickly to a suet feeder full of fat-rich blends. Jays and chickadees like suet too.

You can make your own mix of raw beef suet, shelled raw peanuts, dried corn and some bird seeds slowly rendered or melted and poured into a bread loaf pan to harden. Slice the suet into slabs just under an inch thick and slip them into a square suet feeder with coated wires to keep the squirrels at bay. When select-

ing fat for suet-making, try pure kidney beef fat or rendered fat from deer meat, both of which are highly digestible. Avoid any fat from smoked or cured meats like ham. Birds are put off by smoky, salty mixes and won't touch them.

### MAKE YOUR OWN NO-DRIP SUET

**Make a homemade mainly grain version of no-drip suet following this recipe that came from *Bird Watcher's Digest*.**

**½ cup peanut butter**

**½ cup lard**

**1 cup quick oats**

**1 cup yellow corn meal**

**¾ cup flour**

**Scant 3 tablespoons sugar**

**Melt peanut butter and lard in a pan or microwave in a glass bowl. Add remaining dry ingredients and mix. Smear mix into a suet log or feeder that you've drilled with a few inch-deep, inch-wide holes that have perches underneath.**

If you'd rather not cook, make it easy on yourself and just buy premade suet cakes at pet supply or feed stores. Most of these cakes cost about a buck and are preformed to fit in suet feeders. Also, the commercial

suet mixes are composed of fats that don't drip if the weather warms up a bit. You can leave them up all year if you like.

It only makes sense that most of the birds you see in winter are seed eaters. The favorite all-around seed is black oil sunflower — thin-shelled, high in calories and adored by a wide range of birds from cardinals and nuthatches to sparrows and other flocking birds. Platform feeders or V-shaped covered feeders that have a bottom trough are fine dispensers for these seeds.

Hang the feeder from a tree branch or on a pole equipped with a squirrel guard. These black oil seeds are much more palatable to birds than larger grey striped sunflower seeds and there will be far less waste under your feeder. On the other hand, doves and juncos would rather feed on the ground and appreciate a little scattered seed.

Tube feeders are fine for holding white millet and smaller seeds that attract a mix of birds, especially sparrows and juncos. Use tube feeders that provide small access holes and perches but are too small for squirrels to find a hold.

Small fine-wired tube feeders or feeders with fine slits can handle niger (also called nyger and thistle seed) that is irresistible to finches and chickadees alike. The seed is a

bit more expensive, but very little of the seed gets wasted as birds extract each seed from the feeder.

Safflower is a bigger off-white seed that tastes somewhat bitter. Cardinals like it and squirrels are definitely not fans of safflower, so it is an excellent choice if the bushytails regularly get into your feeders. It works well in both platform feeders and trough style bird feeders.

**Avoid the big cheap bags of bird seed that seem like too good a value to be true.** These seed mixtures often contain high percentages of less palatable seeds like red millet that many birds won't eat. A large percentage of such seed may just end up scattered on the ground under your feeder attracting rodents. Some birding organizations, like nature centers and local Audubon Society chapters, work with seed providers to blend high quality bird seed mixes that they sell seasonally as a fundraiser. Check that out in your area.

**Another important draw in winter is fresh water.** If you can provide a bird bath with a small heater to keep water thawed out and you place the source of water near your feeders, you will draw in far more birds.

**Cleaning feeders and bird baths every few weeks in winter also slows disease spread where birds congregate.** Change seed regularly if it gets wet or if birds defecate on the seed. Discard moldy seed in the garbage or bury it in a compost pile. When cleaning feeders and baths, wear rubber gloves, and scrape off any loose seed or feces outdoors with a wire brush, putty knife or paint scraper. Then take the feeders inside to a utility sink. Do not clean bird feeders and waterers in a kitchen sink and risk contamination of your dish washing and food preparation areas. Scrub feeders with hot water and a soapy solution. Rinse the feeders and bird baths thoroughly, and then rinse them again with clean water to which you have added a little household bleach. Rinse out this solution and air dry feeders and bird baths before refilling.



## Traveler

### On the move in winter

**If you're feeling a bit cooped up, let's see what we can do to get you out and about.**

If you are even a bit of a gear-head or history buff, you might enjoy the **Vintage Snowmobile Races** on Saturday, February 12 at noon in Curtiss. That's in northeastern Clark County about six miles west of Abbotsford on Highway 29 at the Boom Town Sno-Chasers Club House. "Vintage" in the snowmobile racing world means machines from the early 1970s, unlike the "vintage" watchers, who are considerably older! Admission: \$5. Call (715) 613-5353.

Would you rather stretch your legs on a winter's day? Consider the **Moonlight Guided Snowshoe Hike** at the Chippewa Moraine Ice Age Visitor Center, two miles east of the intersection of Highway 40 and County Road M. The center is seven miles east of New Auburn about half way between Bloomer and Chetek on the Chippewa-Barron County line. On Saturday, February 12, bring your dinner and roast weenies or heat up a romantic tinfoil-wrapped treat and s'mores around the campfire that's provided. Then cozy up inside the center around the fireplace for a 6:30 p.m. talk about snowshoeing from naturalist Rod Gont. The free



Take the Polar Plunge to support Special Olympics in several communities, including this event in Eau Claire.

hour-long hike under the full moon starts at 7. No snowshoes? No problem! The center owns 40 pairs that can be reserved ahead of time by calling (715) 967-2800.

No fish fry is more refreshing than the **Fry on Ice** held February 25 from 7-10 p.m. outside on Miller's Bay at Menominee Park in Oshkosh. The park is at the corner of Hazel Street and Merritt Avenue. Eat some steaming, flaky fillets, enjoy the live music and plot your strategy for the fishing contest that starts here 6 a.m. on Saturday morning and runs through 7 p.m. that night. Maybe you can convince the band to keep playing as you dance around with the spuds and ice augers.



Join the fun in Oshkosh of a Friday night fish fry on ice, Feb. 25, then come back Saturday morning (below) for the fishing contest.

Call (920) 303-9200 for more information or (877) 303-9200 for out of town inquiries. You can also e-mail [battleonbago.org](mailto:battleonbago.org) for details.

Want a more bracing outing? Jump over to Eau Claire on Sunday, February 27 for the **Special Olympics Polar Plunge**. Prizes will be awarded for the best individual plunge, best group plunge and the fastest plunge into the waters of Half Moon Lake from the beach at 100 Carson Park Drive. Call (715) 833-0833 for registration details.

Get ready for the on-water season at **Canoecopia**, the world's largest expo for self-propelled boaters at the Alliant Energy Center in Madison from Friday, March 11 through Sunday, March 13. Canoers, kayakers and rowers can glide down the aisles

looking over the punts and paddling craft. Talks and demonstrations run throughout the weekend. Whether you're eying up a plastic tender or a handmade, wood-stripped canoe, whatever floats your boat is on display and for sale from 4-9 on Friday night, 9 a.m.-6 p.m. on Saturday and 10 a.m.-5 p.m. on Sunday. Call (608) 267-3976. Admission is \$10 a day or \$15 for a three-day pass.

Has winter got you thinking that it's time for an exotic experience? Consider a day trip to the **Wisconsin Bird & Game Breeders Spring Swap** on Saturday, March 12 at the Fond du Lac County Fairground and Exposition Center, 601 Martin



Take a gander at exotic birds or jump in and try your hand at raising peafowl, pheasants and other game birds at the Spring Swap in Fond du Lac.

Avenue. Check out the exhibit and sale of peafowl, waterfowl, pheasants, cage birds and small mammals. You can buy, barter, sell or just take a good look at the colorful crowd of owners and feathered finery. If the early bird gets the worm, this crowd is full of wigglers. The show runs from 6:30 a.m. until noon. Call (800) 937-9123 or e-mail [bleueracres@hall3000.cx](mailto:bleueracres@hall3000.cx), or go to [wbagba.org](http://wbagba.org).







## *Wisconsin, naturally*

### CAMP LAKE AND PINES STATE NATURAL AREA

#### **Notable:**

This site features a small, but mature, dry-mesic forest bordering the east and south sides of Camp Lake, an undisturbed seepage lake. The canopy is dominated by large red pine and white pine with red oak, red maple, paper birch, balsam fir, big-tooth aspen and white spruce. Trailing arbutus, velvet-leaved blueberry and pipsissewa are common under-story species. The 37-acre lake has extremely soft, clear water and a sand and gravel bottom. The lake harbors a suite of stiff-leaved, bottom-hugging water plants known as "sterile rosette flora" that are adapted to the highly oligotrophic (infertile) water conditions. They include water lobelia, seven-angle pipewort, and small waterwort. Rare and uncommon birds using the lake include American black duck, bald eagle and common loon. Birds found in the surrounding uplands are Black-burnian warbler, pine warbler, pileated woodpecker and ovenbird.



#### **How to get there:**

Within the Northern Highland-American Legion State Forest. From the junction of Highways 47 and 51 in Woodruff, go north on 51 6.9 miles, then west on Woods Road two miles to the north end of Camp Lake. Boat access is afforded at a landing 0.7 miles farther along Woods Road. Visit [dnr.wi.gov/org/land/er/sna/index.asp?SNA=506](http://dnr.wi.gov/org/land/er/sna/index.asp?SNA=506) for maps and more information.

