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WISCONSIN NATURAL RESOURCES

OUR 25TH YEAR

April 2001 \$3.00

Bluebird
recovery



58
field trips

Photographing
waterfalls

25 years of
gobblers

SECRETIVE WOODCOCKS TAKE
CENTER STAGE FOR A FEW
WEEKS EACH SPRING.

Aerial show-offs

Anita Carpenter



The demure American woodcock sings and spirals through the air during spring courtship.

Those funny-looking brown birds with the long bills slip back into dense thickets and moist woodlands under cover of darkness. Returning in mid to late March, the secretive, well-camouflaged birds are inconspicuous until their familiar nasally peents break the twilight stillness of a warm evening in early spring. At last, courtship for American woodcocks (*Scolopax minor*) begins.

Each amorous male woodcock claims a favorite clearing in which to perform. He advertises his presence and tries to impress female woodcocks with song and a dizzying aerial display.

Leaping from his chosen spot, he ascends, spiraling up in ever-widening circles, his short rounded wings making a twittering sound as he rises. Higher and higher he circles until he is but a

rapidly-moving, blurred speck in the dimming twilight. At the upper limit of his ascent, about 300 feet, he bursts into song with exuberant liquid chirps — a song of pure joy in the spring warmth.

He sings as he returns to earth, wings twittering, sliding side to side with an upward swoop, and turns at the end of each giant pendulum swing. He looks much like a falling autumn maple leaf caught in a gentle breeze. He zips into the clearing with such speed that it looks as if he forgot to put on his air brakes, yet he lands upright and confident on the exact spot from which he departed. Stomping his feet, he circles and calls the unmistakable peent. Posture erect, he struts about as if to proclaim, "Look at me. See what I can do."

Then he's up again to repeat the spectacular display. A female woodcock could not but be impressed.

Spring is the only time that woodcocks become that obvious. After flight displays cease in about four to six weeks, the birds return to their secretive, nocturnal way of life on the forest floor.

Woodcocks are well-camouflaged for life among fallen twigs and strewn leaves. Their predominantly brown back color is broken up with gray and black markings, which give the chunky, short-tailed birds the appearance of dried leaves. Three wide black bands break up the solid buff on the back of a squarish head. The buffy chest is unmarked. When resting during the day, woodcocks blend in so well with their surroundings that they are very difficult to find and are seldom seen unless flushed.

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STEPHEN J. LANG



© LANCE BEENY

FRONT COVER: Eastern Bluebird (*Sialia sialis*) on a fence rail in Marathon County. See our p.10 story about its phenomenal population growth in Wisconsin.

STEPHEN J. LANG, Madison, Wis.

BACK COVER: Lichens on basalt at Centennial Bedrock Glade State Natural Area, Polk County.

©THOMAS A. MEYER, Mount Horeb, Wis.

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Governor Scott McCallum

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THE JOY OF FALLING WATER

Wisconsin rivers wend, wind and cascade over at least 70 waterfalls. Enjoy the best of them in every season.

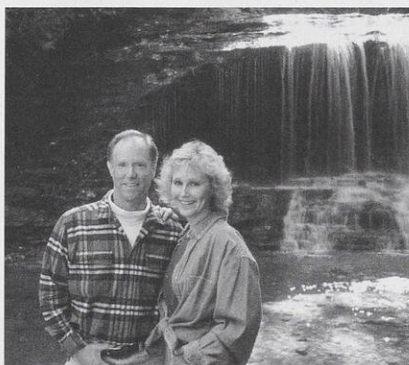
Patrick J. Lisi

My wife Marjorie and I are Wisconsin waterfall aficionados. The two of us have walked hundreds of miles on incredible, but desolate trails along moss-covered riverbanks that eventually guided us to sensational cascades of wild, untamed water.

For us, this need for adventure into the most primitive core of Wisconsin was born more from a search for solitude than a basic desire to simply see all our natural wonders in a short life span. It was also spawned from a strong curiosity about Wisconsin geology to learn how our state took on so many different shapes and forms.

Some falls are easier to find than others, and a hike to a waterfall in each season has its merits. In spring, most falls have their highest flows as snowmelt and thawing ground give up water, but the path is often soggy going. In summer, you can load the family van with small kids and a picnic basket and head out for some comparatively easy retreats. For those trips, see the list that Marjorie and I recommend as “must sees.” You can spend many splendid fall afternoons or cold winter mornings at places like Copper Falls State Park gazing as the rush of water slips over a two-million-year-old black and red lava bed of the Bad River. A short distance upriver, you also can visit Granite Falls or travel downriver past Tyler Forks to see the nearby Brownstone Falls.

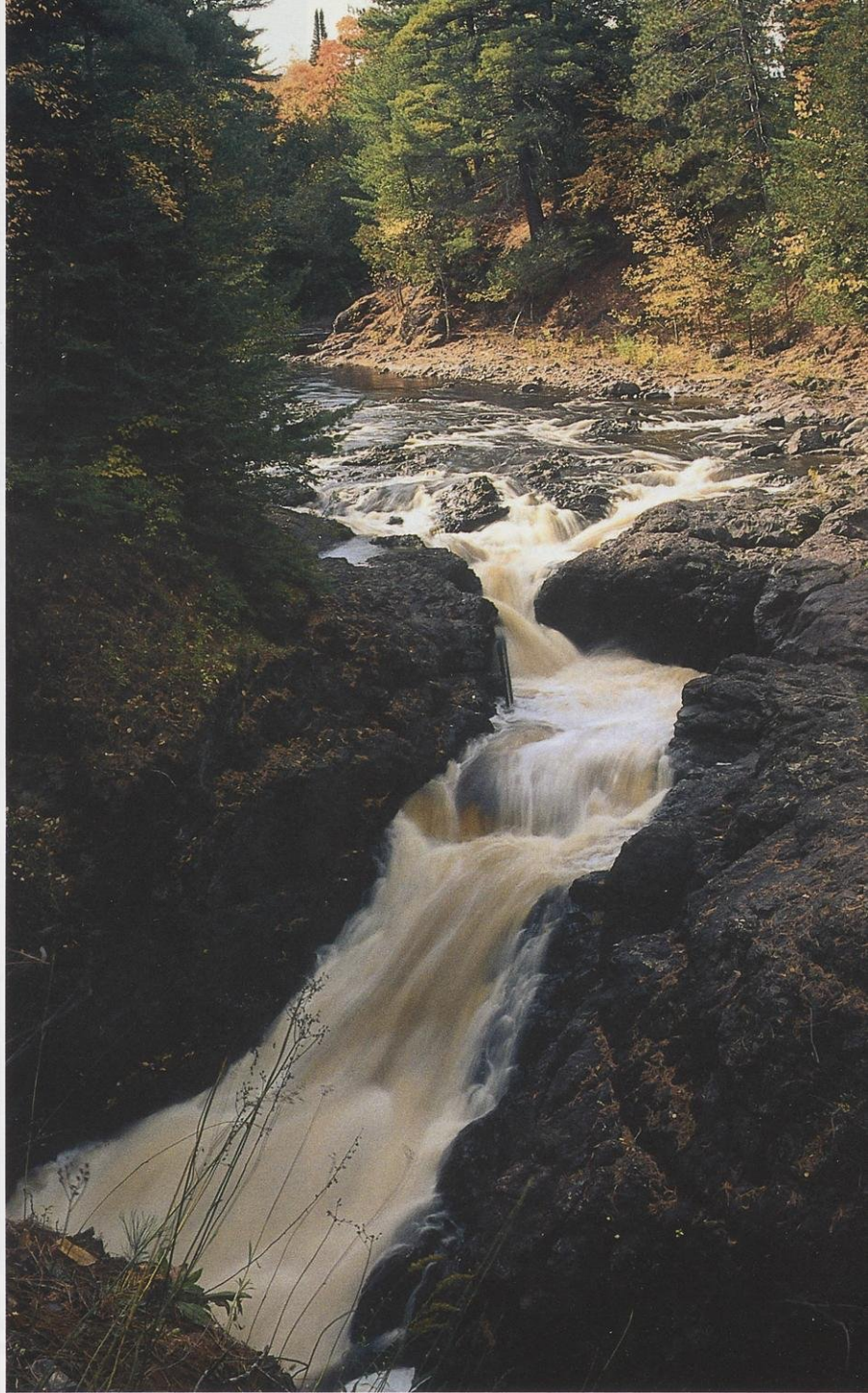
A willing body can add fortitude and escapade to life’s collective chapters with a more vigorous walk into such awesome falls as the cavernous canyon at Parfrey’s Glen in Sauk County, or Wren Falls, a spectacular pour of root-beer colored water that shoots 15



ALL PHOTOS THESE TWO PAGES BY PATRICK J. LISI

(clockwise from left) Pat and Marjorie Lisi tramp around the state exploring and photographing waterfalls. Some of their favorites include: Lost Creek Falls in Bayfield County, the several falls at Copper Falls State Park in Ashland County and Wren Falls in Iron County.





feet past its stony cap into the Tyler Forks River in the back country of Iron County.

A word of caution

When you venture out to see Wisconsin's waterfalls please keep in mind that there is a risk factor. State parks, such as Copper Falls and Pattison, provide steps, railings and secure vistas for you to view the falls. You must stay within these borders to protect yourself from injury. Certainly if you have small children you will want to be sure they are well within posted barriers.

At most other waterfalls you will not find guide rails or fences. Most times, in fact, you can get very close to the flow and, in the case of Lost Creek Falls in Bayfield County, you can actually position yourself *behind* and *under* the waterfall. Approaches to all waterfalls are extremely slippery and are adorned with jagged rock; perhaps nature's way of protecting her waterfalls from human beings who would get too cozy with them.

Hikers also should be cautioned about staying on established trails as they walk to the waterfall. In state parks, sticking to the trail is the law, as fragile plant communities barely flourish on the periphery of the paths. Parfrey's Glen east of Devil's Lake is a good example, where a very rare plant called scouring-rush has managed to survive centuries of various cultures that lived in the Baraboo Bluffs. Pioneers used this plant's sticky, silica center to scour their pots and pans. The glen also is blessed with other scarce species like mountain maple, red elder, clintonia and mountain clubmoss that would perish if picked or trampled by human traffic.

Photographing falls

If you happen to forget your camera at home or back in the car as you visit waterfalls, you will undoubtedly regret it. We've found that the falls are merely the highlight of our treks through the deep, dark forest and there are plenty of other sights to photograph. Keep your camera ready because the real bonuses



GORDON DIETZMAN

(above) Follow the cascading waters and brookside path at Parfrey's Glen all the way back to the falls. The cool canyon walls deepen on your journey.

(above right) Now and Then Falls at Amnicon Falls State Park is one of seven falls at the park.

often come as surprises, like when a mother porcupine and her litter of pin-cushions cross the trail in front of you, or when a black bear steps out onto the path 15 yards up trail (as Marjorie experienced one day on our way into Lost Creek Falls in Bayfield County). You will be treated to sights and sounds that previously resided somewhere in your imagination, so don't be caught off guard without your photo equipment.

Waterfall photography can be inexpensive or very expensive. My theory is that no matter what kind of camera you have, a good plan can help you collect fantastic memories from your days

afield. The secret is not how much money you have invested in your outfit. The trick to taking good photos is really built around three factors: film type, composition and technique. Here are some tips so you come home with "keeper" photographs.

1. For waterfall color prints, use either 200 or 400 speed (ASA rated) films.
2. For slides try slower films — ASA 50, 64 or 100 speed film.
3. For midday shots, use a polarizing filter if you can to cut glare. I also experiment with red, orange and yellow filters if I'm shooting black-and-white film on a bright day.



SCOTT NIELSEN

“Must see” falls

Some waterfalls are easy to get to and we think are “must sees” on your family outings. Certainly make time to visit the falls in our state parks such as Big and Little Manitou falls, Copper Creek Falls in Pattison State Park (13 miles south of Superior); all seven of the falls in Amnicon Falls State Park (10 miles east of Superior), the three at Copper Falls State Park (near Mellen); and those in some county parks like Potato River Falls in Iron County, Dave’s Falls and Long Slide Falls in Marinette County. Keshena Falls and Big Smokey Falls on the Menominee Reservation are very easy to get to by vehicle. I also think Parfrey’s Glen, a state natural area near Baraboo in Sauk County, and Morgan Falls in Ashland County (16 miles south of Ashland) are “must sees,” but they both require some modest hiking on easy trails.

4. First and last light of the day is exquisite for waterfall photography.
5. During first light, you will probably be the only one(s) at the falls.
6. Use a slow shutter speed to get the soft, “fleecy” look of cascading water; 1/15 to 2, 4, maybe even 8 complete seconds. Trouble can come your way, especially with slide film, if the lens is left open too long. Once you think you have the correct exposure, take a photo and also either open up your lens an f-stop or decrease the shutter speed by one stop on both ends of “correct” to bracket the scene. That way you won’t get home and find disappointment if the exposure wasn’t exactly right!
7. Take each shot as if you only had one chance and use a tripod!
8. Be sure to take spare film and batteries for your camera to the falls.
9. Dry your camera off immediately after you leave the spray.
10. Add something in the foreground to frame the waterfall and create interest.
11. Don’t always center your subject in the picture, use the sides of the frame, too.
12. Have someone stand near the falls to show scale.
13. Tilt your camera to shoot vertical as well as horizontal views.
14. Be patient and spend time at the waterfall, for the light changes constantly.

Great trips to great falls

Lost Creek Falls, Bayfield County

This can be a tricky waterfall to locate, but the hike in and the memory of this 15-foot gem will be etched in your memory forever.

There are three Lost Creeks in the neighborhood west of Cornucopia in Bell Township. This waterfall is located on Lost Creek No. 1.

Take Hwy. 13 west from Cornucopia about a mile and turn south (left) on Klemik Road, a dirt way that is passable without four-wheel drive from mid-May through September depending on local rains. Stay on Klemik Road until you reach the ATV/snowmobile trail crossing, about .75 mile down the road. A yellow gate on the left side is your indication of the trail. Park off to the side, put on your hiking boots and begin following the ATV trail *east* into the county forest.

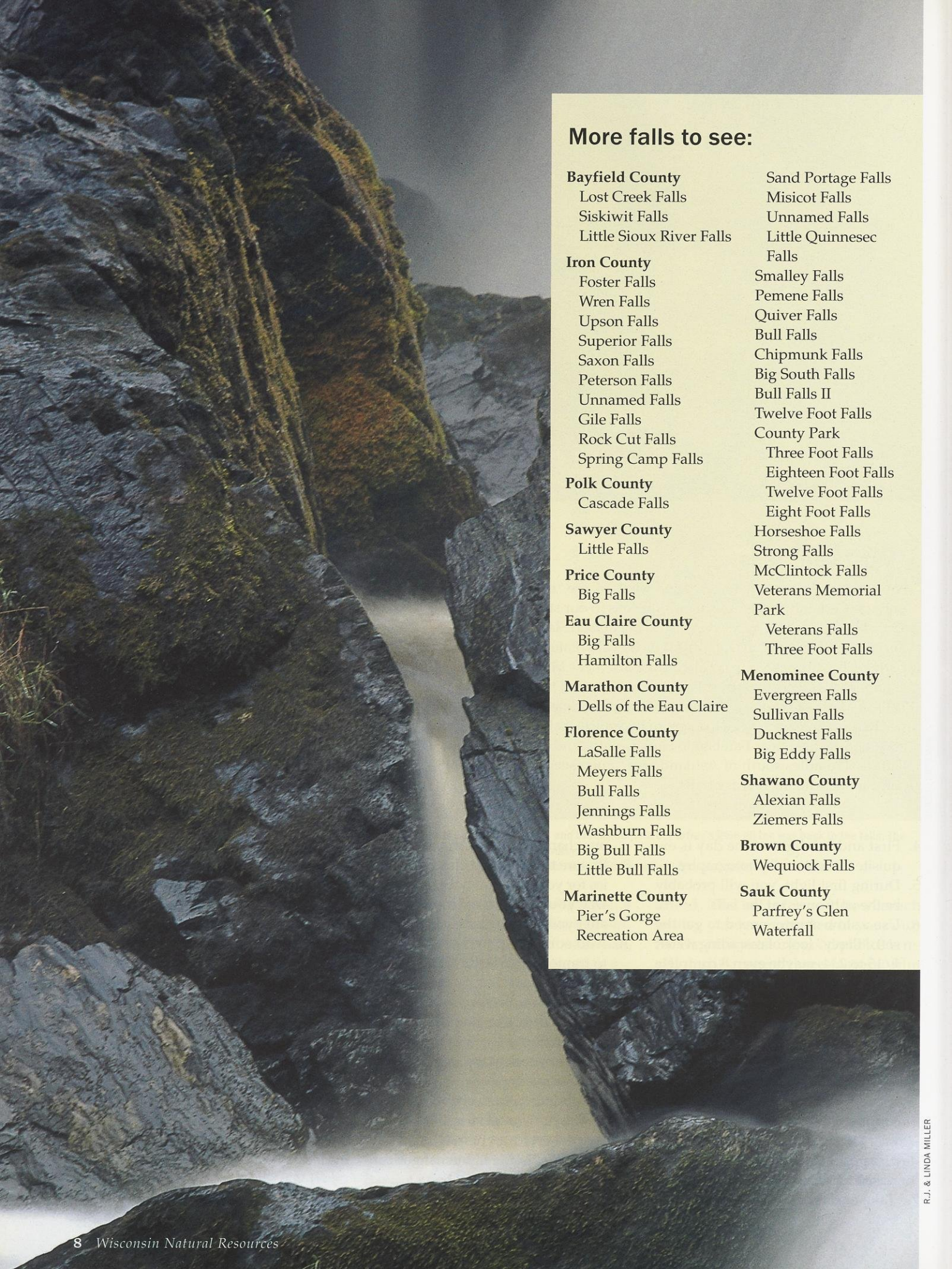
Be patient as you hike; after 15 to 20 minutes into the forest over easy to medium terrain you will come to an old bridge crossing Lost Creek No. 2 (the creeks are *not* posted with their numbers). Continue past this bridge and, in another ten minutes, you will reach Lost Creek No.1 spanned by another similar bridge.

From here, if you are really adventurous or are not sure of the way, you can simply follow the sandstone bank *upstream* and eventually you will locate the waterfall. Most of us stay with the trail, going through a couple of curves and up a moderate hill.

Follow the path and once you have cleared the hill, watch carefully for a narrow footpath that cuts into the woods and leads to the falls. Depending on the time of year and the amount of water running over the waterfall, you should be able to hear the clamor the closer you get.

May is the best time to see most waterfalls in northern Wisconsin at their gushing best as snowmelt and thawing ground release water. Fall is by far the most magnificent season to be in the hardwood forest where Lost Creek Falls is located.

If you visit Lost Creek Falls, be sure to see Siskiwit Falls, which is located



More falls to see:

Bayfield County

Lost Creek Falls
Siskiwit Falls
Little Sioux River Falls

Iron County

Foster Falls
Wren Falls
Upson Falls
Superior Falls
Saxon Falls
Peterson Falls
Unnamed Falls
Gile Falls
Rock Cut Falls
Spring Camp Falls

Polk County

Cascade Falls

Sawyer County

Little Falls

Price County

Big Falls

Eau Claire County

Big Falls
Hamilton Falls

Marathon County

Dells of the Eau Claire

Florence County

LaSalle Falls
Meyers Falls
Bull Falls
Jennings Falls
Washburn Falls
Big Bull Falls
Little Bull Falls

Marinette County

Pier's Gorge
Recreation Area

Sand Portage Falls

Misicot Falls

Unnamed Falls

Little Quinnebec
Falls

Smalley Falls

Pemene Falls

Quiver Falls

Bull Falls

Chipmunk Falls

Big South Falls

Bull Falls II

Twelve Foot Falls

County Park

Three Foot Falls

Eighteen Foot Falls

Twelve Foot Falls

Eight Foot Falls

Horseshoe Falls

Strong Falls

McClintock Falls

Veterans Memorial
Park

Veterans Falls

Three Foot Falls

Menominee County

Evergreen Falls

Sullivan Falls

Ducknest Falls

Big Eddy Falls

Shawano County

Alexian Falls

Ziemers Falls

Brown County

Wequiock Falls

Sauk County

Parfrey's Glen

Waterfall

only a quarter-mile east of Cornucopia off County Trunk C on Siskiwit Falls Road.

Wren Falls, Iron County

You will need a detailed Iron County map or the "Wisconsin Atlas & Gazetteer" to find your way into Wren (and Foster) falls, making this one of the most challenging and fun waterfalls in Wisconsin to visit.

Wren Falls is located in Anderson Township, Iron County, five miles northwest of Upson. From Upson, travel west on Hwy. 77 for 2.9 miles to Casey Sag Road, a dirt road heading into very primitive, heavily wooded country. Go north (right) on Casey Sag Road 5.25 miles to where it intersects with Sullivan Road (which is *unsigned*). You can turn right here and go .9 mile to view Foster Falls, or turn left for Wren Falls and drive 1.8 miles on Sullivan Road to a "V" where Sullivan and Vogues roads meet. Unfortunately, Vogues Road also is unsigned.

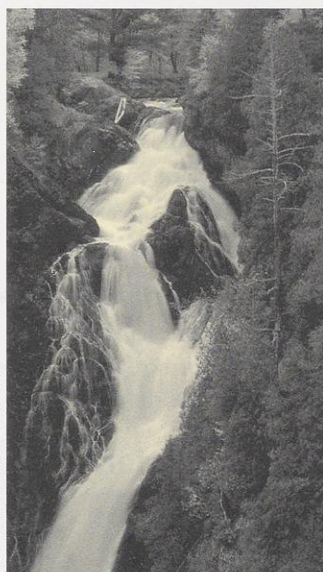
Stop the car and look for a brown sign at the head of another unsigned, narrower vehicle path running south, that indicates a cooperative venture between the Iron County Forest and the DNR. That road is the last one you'll need to get to Wren Falls. Follow it 1.3 miles to a fork in the road. Stop and park. Walk the right hand fork (just a footpath) .2 mile over a hill where you will first hear and then see Wren Falls.

Since you have gone through this much work to see Wren Falls, be sure to backtrack and look over Foster Falls, which is equally stunning. Also, visit Upson Falls located in Upson at the Community Park. Wren Falls is on Tyler Forks River, and Foster and Upson falls are on the Potato River.

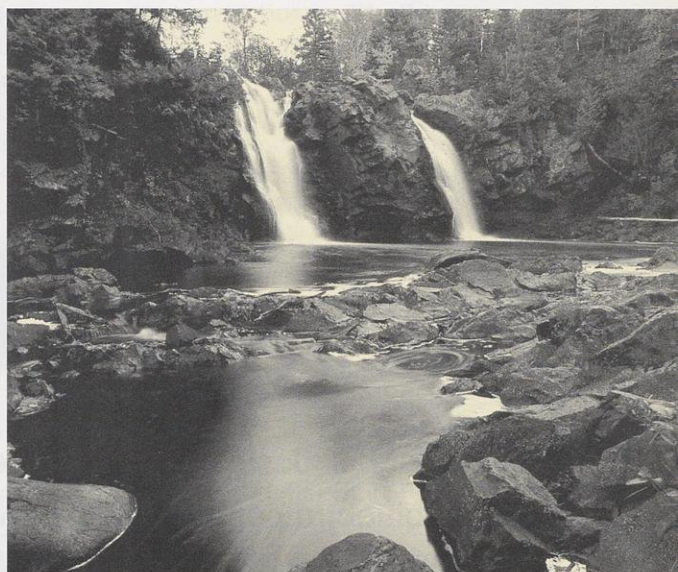
Parfrey's Glen Waterfall, Sauk County

Ever since first owner and namesake Robert Parfrey left here and moved to Minnesota in 1876, curious sightseers have flocked to this gorgeous little glen to picnic and to hike into the canyon to see the layers of sandstone and quartzite formations as well as Parfrey's Glen Waterfall.

To find Parfrey's Glen, take Hwy. 113 south from Baraboo approximately five



BOTH PHOTOS BY AL POWERS



(opposite) A 50-foot drop churns the waters at Long Slide Falls into a misty blast.

(above) Big Manitou Falls is 162 feet of foam and fury; the mightiest of Wisconsin's waterfalls, says the author.

(above right) Little Manitou, also at Pattison State Park, offers contrasts. Calm waters in a mossy shelf plummet over the jagged edge to form a peaceful pool at the bottom.

miles to County Hwy. DL. Turn east on Hwy. DL and follow the road 1.9 miles. Watch for a parking lot on the north side of the road. A state parks sticker is required to use the parking lot; there is a self-pay station at the park.

To reach the falls, you must hike about a half mile on an established, marked trail. Along the route you will notice several diverse plant communities, particularly as the path gradually winds its way higher into the fresh and sometimes chilly chasm of the glen. In fact, the flora in the gorge resembles that of northern Wisconsin because of the way the air settles in the bottom of the canyon and the way sunlight is limited by overhanging rock and the leafy canopy.

At the end of the trail, a railed viewing area faces Parfrey's Glen Waterfall, which gently flows over a six-foot drop 30 yards in front of you. The falls are at the very top of the canyon, and the creek flows through the woods, over the waterfall, and into the gorge.


This waterfall is one of our favorites not because of its size, but because of the incredible scenery as one approaches it. It is also one of the only waterfalls in southern Wisconsin and is easily accessible from Madison or Milwaukee.

Wrapping it up

Hiking out to a waterfall is something the entire family can do. Pack some sandwiches, fill the water canteen and take day trips or long weekends visiting some of Wisconsin's striking waterfalls.

As you explore these wondrous creations, do not rush to see them all. Spend time relaxing and contemplating as you sit on the rocks or a fallen tree along the riverbank. Try to imagine where all that water is coming from and follow the stream in your mind's eye to its final destination.

If travel isn't restricted to an established trail, be sure to explore the area around the waterfall: upstream, downstream and into the surrounding forest. There just might be another waterfall somewhere in the vicinity that you don't know about. For instance, there are seven waterfalls at Amnicon Falls State Park.

Have fun, be safe and enjoy the journey. 

Conservation Warden Patrick J. Lisi edits newsletters and has been an outdoor photographer for nearly 30 years. His book, Wisconsin Waterfalls: A Touring Guide, is available from Prairie Oak Press in Madison, Wis. It also highlights some of the more spectacular falls in Michigan and Minnesota.

Thinking out of the box

**A new nest box design borne of careful observation
boosted bluebird populations statewide.**

Joe O'Halloran

In the early 1900s, populations of the little bird that “carries the sky on its back” began to dwindle in the United States and Canada. Loss of habitat and nesting space, exposure to pesticides, and competition from European starlings, house sparrows and other non-native species had so diminished bluebird populations that the species needed human assistance to improve its chances for survival.

Fast-forward to the 1970s. Thousands of volunteers participating in a grassroots bluebird conservation movement began putting up nest boxes in hopes of strengthening the songbird’s numbers. The effort continued throughout the ensuing decades.

Bluebirds responded with equal zest. Today, populations of the bird Henry David Thoreau said “reflected the sky itself” are thriving. To the delight of bluebird monitors in Wisconsin, the number of bluebird babies reported flying out of nest boxes around the state recently doubled — from about 5,000 bluebirds in 1996 to about 10,000, in both 1998 and 1999. Curiously, the increase resulted from having fewer, not more, nest boxes.

The Bluebird Restoration Association of Wisconsin (BRAW), a nonprofit organization dedicated to the bluebird’s revival, believes the increase occurred due to some out-of-the-box thinking. When almost all of Wisconsin’s volunteer bluebird monitors switched over to a new style of nest box placed on a predator-proof post in a different configuration than what had been used in the past, the bluebird population blossomed.

Old nest boxes: Too deep and too many

Once the most widely used box in Wisconsin, the Hill Lake nest box was a “deep box,” sometimes with 9 to 12 inches from hole to floor. The depth was supposed to put the nest cup out of the reach of raccoons, but some bluebirds defeated this purpose by building very tall nests. Sometimes the nests went all the way up to the box opening, offering an easily accessible snack of eggs, nestlings and adult birds to hungry raccoons.

Although the Hill Lake was the most commonly used nest box, BRAW members were also testing different nest box styles and hole shapes to find the most effective means to attract bluebirds and deter



competitors. Nest-box monitors collected data on about 15 different box designs. From their data and observations, the BRAW monitors learned bluebirds preferred to nest in boxes with a smaller volume — the smaller the better. If tree swallows were around, bluebirds used very few of the deep boxes (in some areas, less than 10 percent).

A second part of the old method was to place nest boxes close to one another in pairs. The idea was that tree swallows would commandeer one box, leaving the other free for bluebirds. As it turned out, “box pairing” produced few bluebirds, but plenty of tree swallows and wrens.

Drs. Linda Wittingham and Peter Dunn, ornithologists at the University

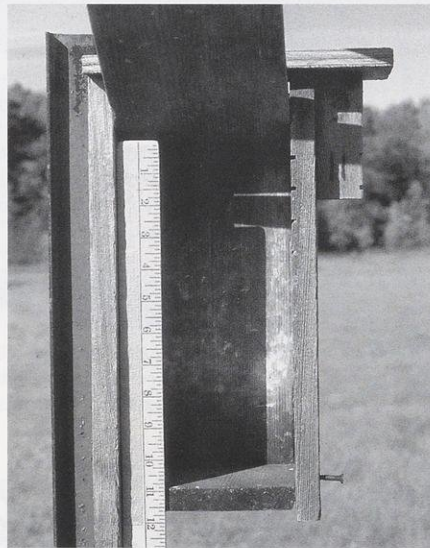
of Wisconsin-Milwaukee, understood the “why” behind the box-pairing data. The aggression of polygamous male birds, such as tree swallows and wrens, was heightened at paired box sites. The males tended to “protect” or reserve an extra nesting box within about 100 feet of their first nest, sometimes installing a second, simultaneous mate.

In 1996, at BRAW’s request, Wisconsin monitors began reporting paired-box data separately from single-box data. The numbers immediately showed tree swallow production was much

New nest boxes: Shallower, safer, and single

Almost all BRAW monitors now use small volume nest boxes, mounted on raccoon-proof posts and positioned as widely spaced singles. Typically, the small-volume boxes have only about 3½ to 5 inches from hole to floor. The “Peterson style” is the box most commonly used. On first impression, this box appears to be quite large. But of all the standard boxes, it has the smallest nest volume. The boxes work best spaced at least 100 yards apart — the early, traditional way of bluebird box spacing.

We protect nest boxes from pillaging raccoons and squirrels with what I call a

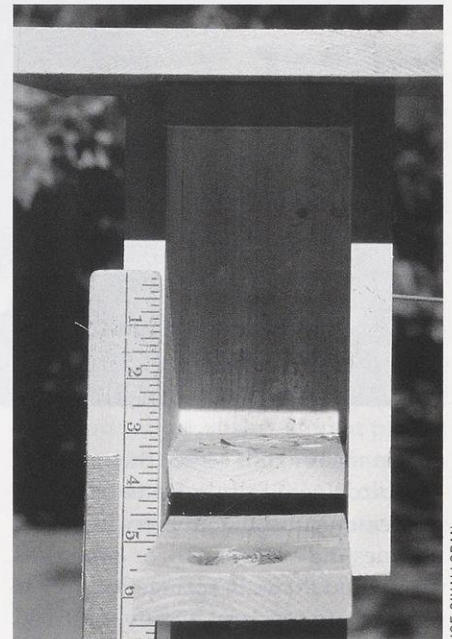


(left and above) Traditional bluebird nest boxes provided nine inches or more of space to keep eggs and nestlings out of reach from marauding squirrels and raccoons.

higher in paired boxes. Furthermore, 100 paired boxes produced little more than half the bluebirds produced from 100 widely spaced single boxes.

BRAW also discovered some very efficient craftspeople were crowding their sites with too many nest boxes, resulting in larger numbers of tree swallows, and ever fewer, sometimes zero, bluebirds. Surprisingly, adding more bluebird boxes in a limited area decreased, not increased, the number of bluebirds produced.

Regardless of the distance between paired boxes, the single boxes out-produced them again and again. The switch away from deep, paired boxes began. Five seasons and data from 20,000 boxes have convinced us that the new approach is the one to take.



Tests show bluebirds actually prefer a shallower box of 3½ to 5 inches from hole to floor.

“three-minute post” made from rebar and conduit pipe. I have about 40 nesting boxes on such posts, and for the past five years have experienced no raccoon predation. Unlike wooden posts, these posts show no sign of deterioration. Last year, those 40 boxes fledged 154 bluebirds.

Correct placement is important. If you put a box within a raccoon’s reach from a fence, tree or other climbable structures or objects, even the most raccoon-proof post won’t help.

In Wisconsin, the bluebird’s nesting

STEPHEN J. LANG

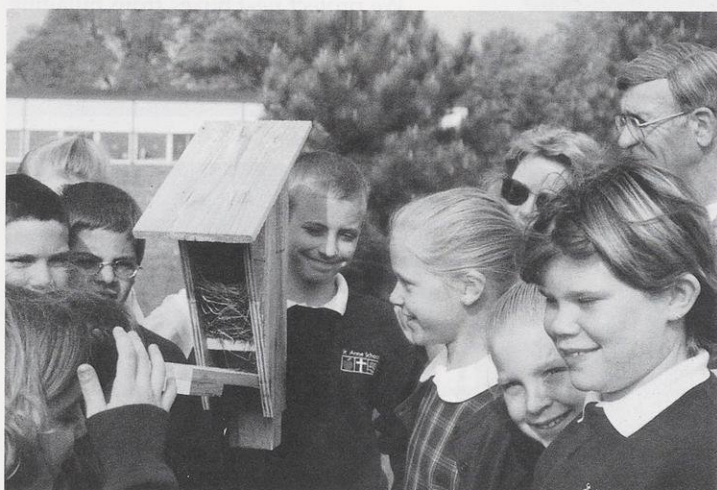
JOE O'HALLORAN

JOE O'HALLORAN



Join BRAW

Interested in becoming a nest-box monitor or in simply knowing more about bluebirds? Join the Bluebird Restoration Association of Wisconsin. Contact Don Bragg, BRAW membership services, 4303 Timber Lane, Rhinelander, WI 54501. Annual dues of \$10 include the group's quarterly newsletter "The Wisconsin Bluebird."



Building and placing bluebird houses makes a dandy class project. The fourth grade class at St. Anne's School, Somerset placed four nest boxes where 13 bluebirds fledged last year.

LOWELL PETERSON

season mainly runs March through July. The birds generally raise two broods per season. Most monitors try to put up new nesting boxes in fall, or as soon as the ground thaws in spring. Open areas with short grass and widely scattered trees, such as lawns, country roadsides, mowed cemeteries and golf courses provide excellent bluebird box sites. The sites should be well away from woods, large trees and livestock feeding areas.

Suburban and rural property owners, especially government and corporate property owners, tend to be very happy to give permission for the erection and weekly monitoring of bluebird nest boxes.

Renewing an old nest box

It's a simple matter to convert paired deep boxes to smaller-volume singles.

First, place blocks of 2x4 lumber inside at the bottom of the deep box until the top block is about five inches or less from the hole. Second, convert each pair of boxes to singles, by moving one of the boxes to a site at least 100 yards away from the other. (Simply plugging or taking down one of the boxes gives far less satisfactory results.) Third, switch to raccoon-proof posts. Follow these instructions and you're bound to double your bluebirding fun.

Become a bluebirder

It's not necessary to have a large quantity of nest boxes to enjoy monitoring bluebirds. A



Nest boxes to buy or build

Peterson nest boxes can be purchased almost at cost (shipping included) from BRAW members Tim and Terry Morgan, 798 St. Rose Rd., Cuba City, WI 53807; e-mail: tcmorgan@mhtc.net

BRAW encourages craftspeople to design and test their own nest boxes. Try using nominal 1x4 fronts and backs, sandwiched between nominal 1x6 sides. One panel should be easy to open. Try placing the floor between 3½ and 5 inches from the hole. To help thwart starlings and larger predator birds, a round nest box opening should be 1½ inches in diameter. The Peterson oval opening appears to be more preferred by bluebirds, and can be used on any type of box. Send us a self-addressed, stamped envelope and we'd gladly forward plans for this popular box. Write: Bluebird Box Plan, WNR magazine, P.O. Box 7921, Madison, WI 53707.

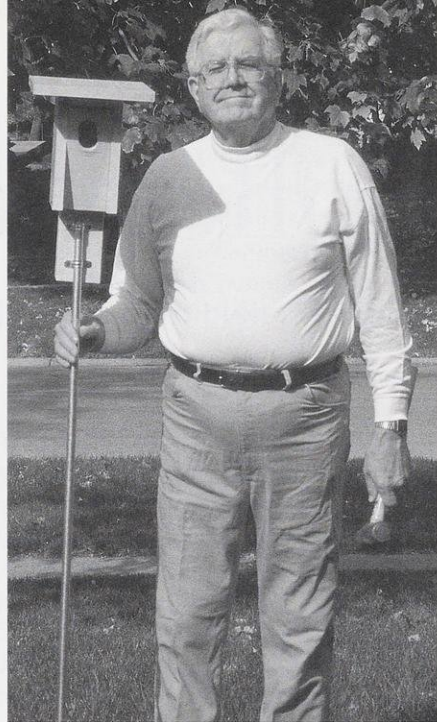
Mount your box on the "three-minute post." After making sure there are no utilities underground, use a five-pound maul to hammer a five-foot length of steel reinforcement rod ("rebar") half way into the ground. (Rebar is available from any concrete supply company.)

Next, slip a five-foot length of half-inch metal electrical conduit over the rebar. The nest box is attached to the conduit with a pair of two-hole, half-inch conduit clamps. (Conduit and clamps are available from any hardware store.) That's it!



Bluebird populations doubled in Wisconsin in about three years since the small nest box design has been used more commonly.

JACK BARTHOLMAI



JOE O'HALLORAN

The author shows the simple three-minute box pole made of rebar, conduit pipe and screw-in pipe clamps.

single Peterson nest box placed in my front lawn in Lafayette County has been producing double nestings of bluebirds for the last four years.

I get great pleasure out of sharing the discovery and surprises of nest box monitoring with children and grandchildren. When I have my grandchildren with me, I bring a short stepladder so the kids can climb up and see inside the boxes for themselves. They love it! Bluebird monitoring is a great project for schools, too — the investment required is minimal, and BRAW can provide volunteer coaches to guide the program.

Wisconsin has the land for many more bluebirds, and for many more bluebirders. A population of 10,000 bluebirds translates to an average of less than one bluebird every five square miles. The Bluebird Restoration Association of Wisconsin presently has about a thousand members, or about one member for every 54 square miles. We'd like to have more bluebirds and more BRAW members — and by using our new approach, we are confident that bluebird monitors will be twice as likely to witness bluebird-breeding success. ▀

Joe O'Halloran chairs the data analysis group of the Bluebird Restoration Association of Wisconsin.

Bluebirds on the web

Visit these websites for more information on bluebirds:

The Bluebird Reference Guide

<http://bluebird.htmlplanet.com/>

North American Bluebird Society

<http://www.nabluebirdociety.org/faq.htm>

Click on "nest box plans" to get blueprints for the six most popular designs.

Transcontinental Bluebird Trail

<http://www.bluebirdtrails.org/tbt/intro.htm>

HERBERT LANGE

Follow our lead

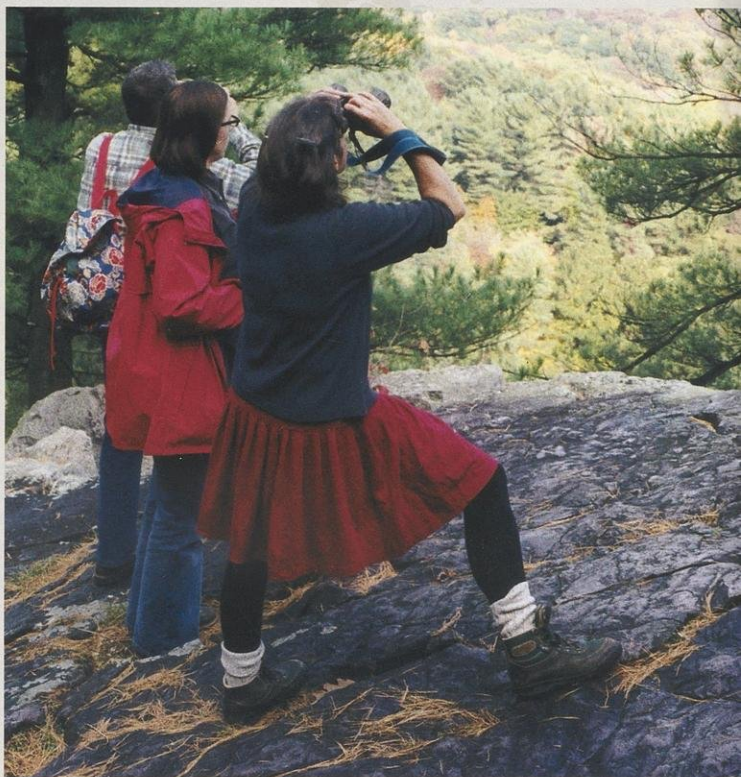
Join us on field trips spring to fall.

Christine Tanzer

Each spring, we are pleased to give you the opportunity to explore nature at its finest and learn about outdoor issues on field trips led by DNR experts. Each trip is a fun, relaxing day in the company of people who want to tell you about outdoor Wisconsin. On hikes, canoe trips, kayak adventures, cruises, by bike and bus — DNR staff share their enthusiasm and knowledge of Wisconsin's most beautiful properties and describe some vexing problems. Here you can see birds, fish and butterflies at peak migration, catch the prairie in full bloom, learn about invasive plants, bone-up on backpacking skills or try a new sport like mountain biking.

The Natural Resources Foundation of Wisconsin (NRF) coordinates these trips and takes registrations on a first-come, first-served basis. There is a modest registration fee and some trips have additional costs for transportation or meals. All trip fees are nonrefundable. Parties on waiting lists who cannot be accommodated will receive refunds in July or October.

Space is limited and we expect trips to fill quickly, so register as soon as possible. Details and directions will be sent to registrants two weeks before each trip. Costs listed after each trip are per person fees and are in addition to the registration fee. The flat registration fee of \$15 for NRF members and \$25 for nonmembers covers the overhead costs of providing



Wildlife observation is a favorite on these walks. On this trip birders learned about turkey vultures.

Field trip registration form

Name _____

Street address _____

City/state/zip _____

Phone (daytime) _____ (evening) _____

I will attend the following trip(s):

trip# _____	# of people _____	x trip cost _____	= \$ _____
trip# _____	# of people _____	x trip cost _____	= \$ _____
trip# _____	# of people _____	x trip cost _____	= \$ _____

Registration fee: NRF Members — \$15 / Non-members — \$25 _____

NRF Membership or renewal (\$15, \$25, \$50, \$100, \$150) _____

TOTAL ENCLOSED \$ _____

these trips. If you are not a member, consider joining. Membership isn't much more than the registration fee, and members have the chance to sign-up for these trips a few weeks before they are offered to the general public.

To register, clip or photocopy the form (left), fill it out listing trips that interest you by number, calculate the fees, make checks payable to the Natural Resources Foundation of Wisconsin, and mail completed forms with checks to: **Field Trips, Natural Resources Foundation, P.O. Box 2317, Madison, WI 53701.** If you have questions or physical limitations, call for trip details before registering (608) 264-8548.

Make checks payable to Natural Resources Foundation.

Mail completed form to: NRF Field Trips, P. O. Box 2317, Madison, WI 53701

1 Parfrey's Glen State Natural Area — Explore the natural and human history of this spectacular 100-foot gorge near Devil's Lake, full of delightful surprises. **April 28, 9–11 a.m. • Cost: State Park Admission • David Bouche, leader**

2 A Spring Evening Wetland Walk — Enjoy the sights and sounds of the Pheasant Branch Marsh at sunset! See cranes, waterfowl, songbirds, frogs and wildflowers. Learn about the oak savanna restoration of this unique area in Middleton.

Thurs., May 10, 6:30 p.m.–sunset • Tom Bernthal & Pat Trochlell, leaders

3 Glacial History of the Cross Plains Ice Age Reserve — Learn how a terminal moraine is formed and see impressive melt-water basins on the Shoveler's Sink Unit of the Ice Age National Scientific Reserve. **Friday, May 11, 9 a.m.–noon • Andrew Hanson & Danielle Valvassori, leaders**

4 Badger Army Ammunition Plant — Visit farmstead ruins and geological features. See the birdlife of this diverse 7,300-acre site between Baraboo and Sauk City. Discuss its possible future as restored prairie, savanna and oak woodland. **May 12, 8–11:30 a.m. • Mike Mossman, leader**

5 Hank Aaron State Trail and Menomonee River — Discover the history and future of the Menomonee River in Milwaukee and the Hank Aaron State Trail. Learn about the changes that are bringing this urban waterway back to life. **May 12, 9 a.m.–noon • Melissa Cook, leader**

6 Alien Invaders — Hike Lake Kegonsa State Park and learn to identify, locate, prevent and contain some of the worst weeds of southern Wisconsin. Land-owners and gardeners will especially enjoy this hands-on lesson in control methods.

May 12, 1–4 p.m. • Kelly Kearns, leader

7 Spring Flora of Mississippi Prairie Bluffs — See spectacular views of the Mississippi River valley. Learn how we identify and restore native spring flora at Battle Hollow State Natural Area near Victory.

May 19, 9:30 a.m.–1 p.m. • Ron Lichtie & Armund Bartz, leaders

8 Canoe Grassy Lake — Paddle the Grassy Lake portion of the diverse Hook Lake-Grassy Lake Wildlife and Natural Area near Oregon. Explore this alkaline deep-water marsh, home to a wide array of waterfowl. (Must supply own canoe or kayak.)

May 19, 9 a.m.–noon • Kelly Kearns, leader

9 Poynette Game Farm and MacKenzie Environmental Center — Learn the history of the game farm. See pheasant hatchery and rearing pens. Visit the Wisconsin wildlife exhibit, buffalo and restored prairies.

May 19, 9 a.m.–noon • Derek Duane, leader

10 Canoe the "Wild" Pike River — Discover the Pike Wild Rivers Project and state efforts to keep this river corridor wild. Paddle a seven-mile stretch of the river starting in Amberg with one short portage. (Must supply own canoe.)

May 19, 10 a.m.–2 p.m. • Daniel Heath, leader

11 Havenwoods Spring Bird Hike — Venture out to find spring migrants in this state forest in Milwaukee! See a variety of warblers, scarlet tanagers, northern shovelers and other birds.

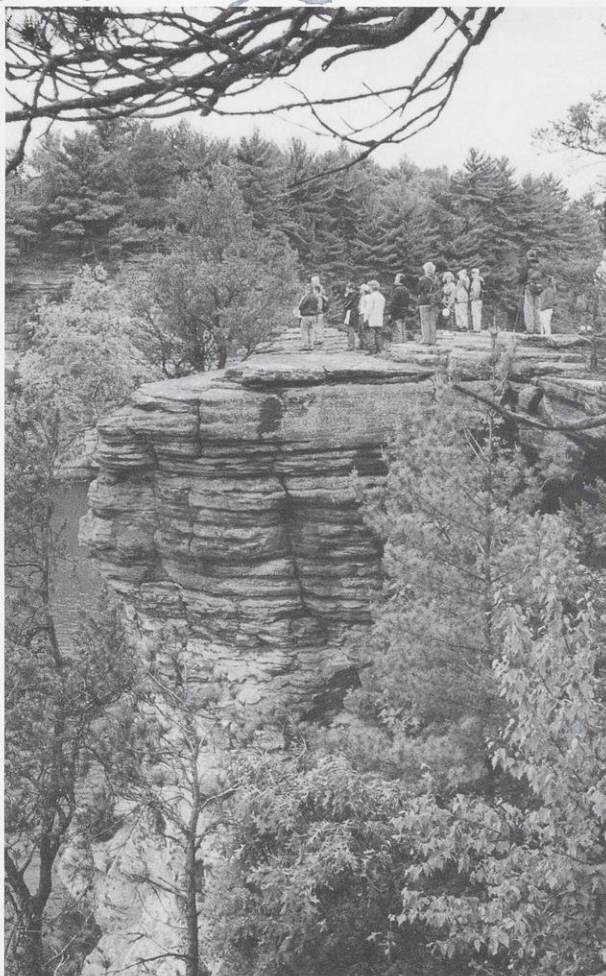
May 19, 7–9 a.m. • Susan McLarty, leader

12 Dells of the Wisconsin River — Hike through the Dells of the Wisconsin River State Natural Area. The terrain on this off-trail hike is rugged and not appropriate for small children.

Friday, June 1, 9 a.m.–1 p.m. • Thomas Meyer, leader

13 Big Muskego Lake — Tour this 2,200-acre shallow lake by jonboat to learn about wetland rehab, water quality and fishery recovery.

June 2, 8–11 a.m. • James Jackley, leader



Trips explore a variety of landscapes. The wild side of Wisconsin Dells is visited on trip 12.

CHRISTINE TANZER

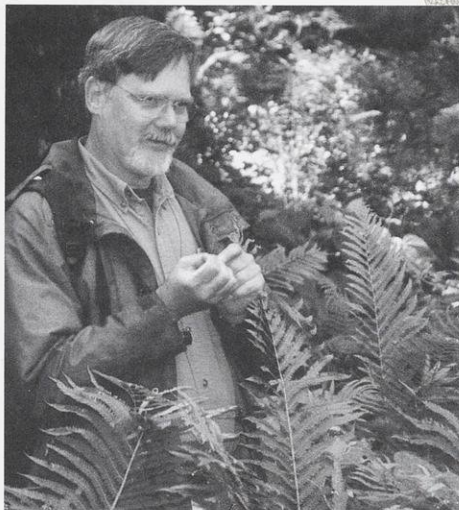
14 Rocky Run Oak Opening — Hike through this 300-acre state natural area to see rare plants and learn about ecology, management and restoration of prairies and oak openings. Picnic on a scenic bluff near Wyocena.
June 2, 9:30 a.m.–1 p.m.
 • Mark Martin, leader

15 Just For Kids: Geology of Devil's Lake — Join in an interactive presentation of the history of Devil's Lake designed just for kids ages 5–12. We'll use sand, water and rocks to illustrate the geologic processes that shaped these landforms. (Please note number of children and adults on registration form.)
June 9, 9–11 a.m. • Phil Fauble, leader



The shovel and bucket brigade has fun with geology at Devil's Lake on trip 15.

16 Old-Growth Hemlock Cathedral Forest — Hike the Plum Lake Hemlock Forest and learn about the birds, animals and plants of this state natural area. Learn the natural history of this old-growth area in the Northern Highland-American Legion State Forest.
June 9, 10 a.m.–2 p.m. • Sheri Buller, leader



Trip 19 — Hike through ferns and hemlock at Mt. Pisgah in Wildcat Mountain State Park.

17 Sea Kayak a Lake Superior Estuary — Explore the St. Louis River Stream-bank Protection Area, on a six-mile paddle. Steep wooded shores, unique wetlands and meandering bays await in this remote wilderness area near Superior. Sea kayaks and instruction will be provided by outfitter. (Beginners welcome.)
June 9, 9 a.m.–4 p.m. • Frank Koshere, leader • Cost: \$50 per person kayak rental; \$20 with own kayak and gear

18 Trees for Tomorrow — See how successful private reforestation and conservation in the 1970s is now creating a forestry education center near Burlington. Learn about private land trusts and perpetual easements.
June 9, 8:30 a.m.–noon • Randy Cooper & Jerry Lapidakis, leaders

19 Ferns of Mt. Pisgah State Natural Area — Hike along the cliffs of the Kickapoo River and learn the ecology of ferns in Wildcat Mountain State Park and Mt. Pisgah, a hemlock forest in the heart of unglaciated Wisconsin.
June 16, 9 a.m.–1 p.m. • Tim Kessenich, leader

20 Eagles and Osprey of the Willow Flowage — Explore the vast Willow Flowage and view nesting ospreys. Cruise the 6,400-acre flowage by luxury boat and hike through its northern forests.
June 16, 10 a.m.–4 p.m. • Kermit Traska & Ron Eckstein, leaders • Cost: \$15 each

21 Trout Spring Ponds and Habitat Improvement — Tour the Woods Flowage Fishery Area near Antigo and see how spring ponds are dredged to create trout habitat. Visit 27-year-old dredged sites and see how habitat improvements have stood the test of time.
June 16, 9 a.m.–noon • D. Seibel, P. Sergeson & J. Reissmann, leaders

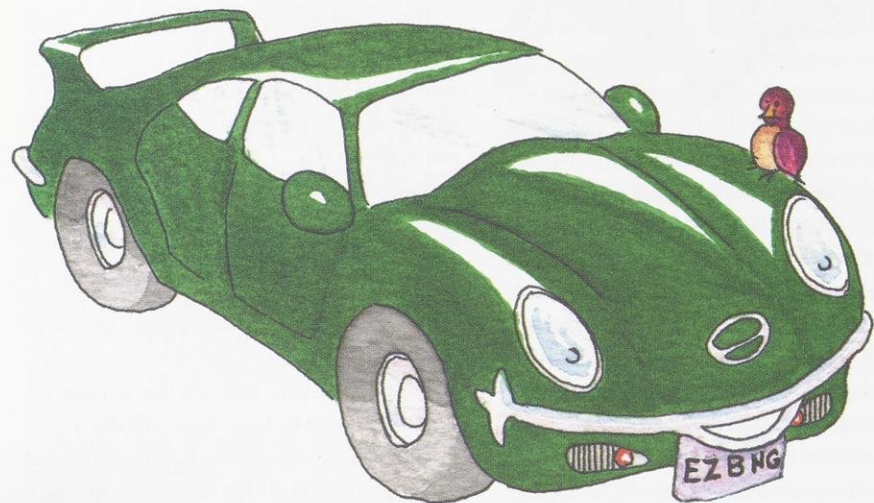


Don waders and dip into stream ecology on several trips.

22 Canoe Wyalusing — Join a naturalist canoeing the backwaters of the Upper Mississippi Fish and Wildlife Refuge and Wyalusing State Park. Canoe rental available on-site.
June 16, 1–4 p.m. • Lynn Scharr, leader

23 Avoca Prairie and Savanna — Take a closer look at the largest remnant tall-grass prairie east of the Mississippi! Learn about prairie diversity, management and restoration while viewing rare birds and plants on this treasured state natural area.
June 23, 9 a.m.–noon • Matt Zine, leader

THE GREEN(ER) MACHINE



MO • TO • RISTS, AN EX • CLA • MA • TION:

THIS BOOK HAS IMPORTANT IN • FOR • MA • TION!

ABOUT YOUR CAR, AU • TO • MO • BILE

AND WHAT YOU DO WHEN YOU'RE BE • HIND THE WHEEL.

WE'RE TALK • ING HABITS, FOS • SIL FUELS,

EX • HAUST E • MISSIONS, CLEAN AIR RULES.

SO TURN THE PAGES, TAKE THIS AD • VICE,

TO MAKE YOUR CAR ENVIRON • MEN • TALLY NICE.

IF YOU THINK ALL THIS IS ON • LY TALK

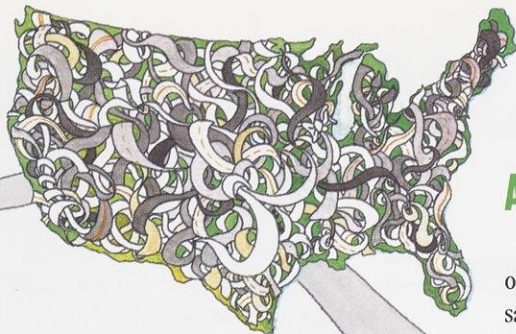
DO THE WORLD A FAVOR —

WALK.

From the roadsters of the Jazz Age, to the compacts of the Rap Age, to the SUVs of the Information Superhighway, cars have been at the center of American life. We favor the automobile over all other forms of transportation, chiefly for the convenience four wheels and an engine provide.

Convenience, however, is a transitory thing. The comforts of one age become the bane of the next. So it is with the automobile. We now know that the freedom to boldly go wherever the black-top leads comes with high, sometimes hidden, costs.

We pay dearly for the privilege to drive with smog, ozone alerts, and groundwater polluted by spilled gasoline and oil. We spend billions of public dollars to build and maintain roads and to defend foreign oil supplies, funds that otherwise might be spent on schools, health care or public transportation. We sacrifice urban neighborhoods and rural farmland for highways; lose precious hours commuting or idling in traffic jams; and burn a costly, imported nonrenewable fossil fuel just to pick up a quart of milk and a newspaper. If all the costs of auto transporta-



tion were passed on to drivers, a gallon of gas would run more than \$4.50.

Yet the gasoline-powered automobile is here to stay – for a while. Magnetic trains, and electric- and hydrogen-fueled vehicles will probably transport us in the not-so-distant future, but until then, we'll have to make do with the internal combustion engine.

This manual features tips and techniques for operating and maintaining your vehicle in an environmentally sound manner. Follow this advice and soon you'll be behind the wheel of a "green" machine.

AIR CONDITIONER

Turn it off! The A/C consumes nearly a gallon of gas per tankful to keep you cool. So you will save money and reduce your contribution to global warming by turning your A/C on only when you really need it.

Furthermore, many auto air conditioners contain chemical refrigerants that harm the atmosphere if they get loose. Pre-1995 models used about three pounds of chlorofluorocarbons (CFC-12, commonly known as Freon), compared to just a few ounces in a typical home refrigerator. When those CFCs leak out, they damage the stratospheric ozone layer. (see "OZONE")

International agreements have nearly phased out the production of CFCs worldwide, and since 1995 automakers have switched to hydrofluorocarbons (HFCs), which do not harm the ozone layer. BUT the HFC molecules are even stronger than CO₂ at warming the atmosphere,

so we still have to keep them under control. (see "GLOBAL WARMING")

What can you do with your current cooler? Have it checked frequently. If it's leaking, bring it to a reputable service station that collects and recycles the remaining refrigerants, as required by state and federal law. Wisconsin regulations don't allow the mechanic to "top off" a leaky system (right now it's the **ONLY** state with this law)—you can either have it fixed or disconnected, balancing coolness versus cost. Or consider converting old CFC systems to the new HFCs—it should cost about the same as a repair and you will gain energy efficiency.

Do-it-yourselfers take note: This is a job you should leave to the experts—not only do they have the right equipment and training, they're also the only people allowed by law to work on A/Cs.

If you insist on using the air conditioner, minimize the impact—drive a light-colored car with a light interior and park in the shade. And use those handy inside-the-windshield sun-blockers. It takes more energy to cool a hot car than it does to cool a medium-sized home in Atlanta during the summer!

One final note—make sure the refrigerant will be properly recovered and recycled when you bring your Green Machine to the junkyard. (see "SALVAGE YARDS")

BATTERY

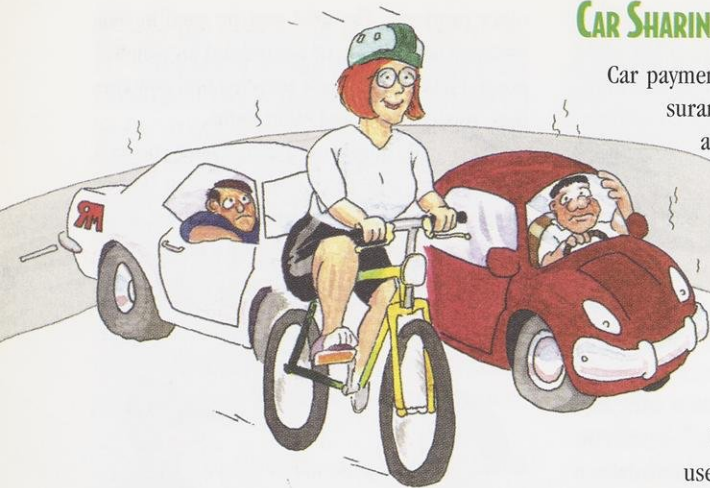
That bulky plastic box of lead, sulfuric acid and hydrogen generates electricity to start your car and run your car lights, heater fan, and stereo. If you have the kind of battery that can be opened, check the water level twice a year and add distilled water if it's low. Sealed units with "indicator eyes" will tell you when it's time to replace your battery. Auto batteries last from two to five years, depending on quality, use, and maintenance.

Recycling old batteries is a breeze. All vehicle battery retailers in Wisconsin must accept lead-acid batteries at no charge from people who purchased their batteries from them. If you bought the battery somewhere else, the retailer can charge you up to \$3; but depending on the price of lead, a retailer may pay YOU for the battery. The recycled lead is used to make new batteries, cable coverings, radiation shielding and

other products. The acid may be used in new batteries or fertilizer, or neutralized for safe disposal. Plastic casings are recycled into new casings, wastebaskets and other items.

Wear safety goggles and gloves when you pick up a battery, and carry it in a wooden box or leak-proof container. To avoid explosions, don't smoke near batteries. If you drop a battery, neutralize any spilled acid with baking soda or lime, and lots of water.





CAR SHARING

Car payments, repair bills, registration, insurance, traffic jams, parking hassles, and POLLUTION – who needs it?

Individual car ownership makes less sense when you learn about cheaper, greener options.

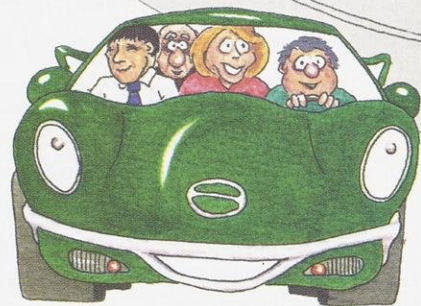
A car sharing service makes vehicles available to people on a per-use basis. Think of it as neighborhood-based, time-share car rental. You use the vehicle only when you need

it, and pay based on how much you drive. Cars are kept in small neighborhood lots within easy walking distance. When you need a car, simply ring up and reserve it. At the end of the month you receive a bill in the mail as you do for any other utility. Talk about convenient!

Check out the many new car share programs springing up all over the world by visiting <http://www.carsharing.net>. You might just get motivated to start a car share service in your community!

CAR WASH

When you give your ride a bubble bath, choose mild soaps without phosphates and use them sparingly. (Why? Aquatic weeds thrive on phosphates, and oxygen is used up when the overgrown weeds decompose, leaving little for fish to breathe.) Rinse the suds onto grass to let the soapy water be absorbed gradually through the soil. Avoid washing detergents down stormwater drains – few cities treat stormwater before it's flushed into lakes and rivers. Encourage your favorite car wash to use phosphate-free soaps. Wax the beast every now and then to hold rust at bay. (see "PAINT")



BICYCLE

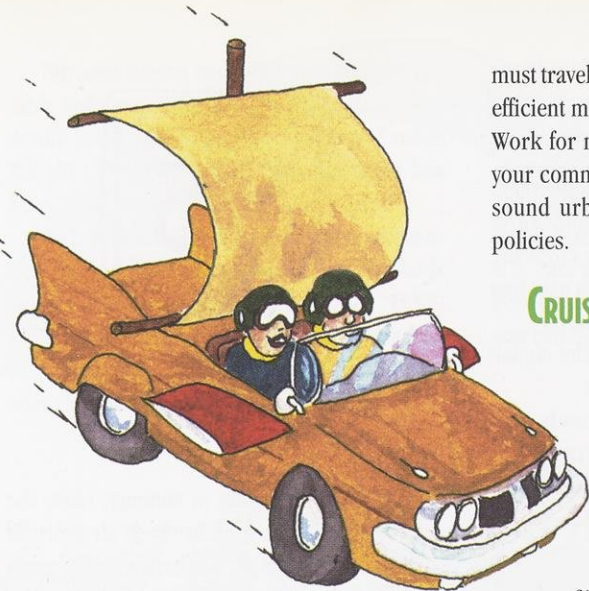
It's not just for recreation. This practical form of transportation deserves your respect and attention. Across the U.S., occasional biking can save more than 700 million gallons of fuel each year. Try biking to work once or twice a week. Add a wire basket and you can run errands on two wheels instead of four. When you do drive your car, give bicyclists a break – share the road!

CARPOOL

Here's a quick, easy, mathematically elegant way to eliminate rush hour and cut auto exhaust emissions by 50 percent: Put two commuters in a car instead of one. Besides doing everybody's lungs and blood pressure a favor, carpooling commuters save gas and cash; can be relieved of daily driving chores; meet new people; catch up on reading; and witness democracy in action when riders debate the choice of radio station. Some companies provide vans for ride-sharing employees and the Department of Transportation (DOT) offers loans to companies seeking to purchase carpool vans. Call (608) 266-8508 for details. For general ride-sharing information in the Milwaukee area, call 1-800-455-POOL, or visit the DOT website at <http://www.dot.state.wi.us>. In Madison, dial (608) 266-RIDE.

CITY PLANNING

Nearly half the space in American cities is used to accommodate vehicles. But six-lane highways and cavernous concrete parking ramps



make cities less livable and suburbs more accessible. Car commuters converge on downtown workplaces in the day, creating traffic jams and smog, then abandon the city at night.

More compact, pedestrian-designed urban spaces with a mixture of residences, offices, stores and parks shorten the distance people

must travel to work and shop. Safe bicycling and efficient mass transit then become more viable. Work for measures to control urban sprawl in your community and urge planners to consider sound urban design in future transportation policies.

CRUISING INTO THE FUTURE

The time when we all can say "no tanks" to gasoline may be coming sooner than we think. Cleaner burning fuels such as propane and natural gas are already being used in motor vehicles. Battery-powered electric and hybrid-electric vehicles (packing an electric motor, a gasoline or diesel engine, and a fuel tank) are available from several major auto manufacturers. Solar powered electric cars or fuel cell vehicles powered by hydrogen will whisk motorists down the road in five or ten years. Give new fuels and technologies a try as they become available. And encourage your elected public officials to support research into alternative fuels.

DRIVING TIPS

Idling wastes gas and can damage pollution control equipment. Most cars need only warm up for a minute or so to allow oil to circulate. Turning off the car and starting it again uses less gas than idling for a half-minute or more.

- Combine errands into one trip. The engine uses less gas once it's warmed up.
- Accelerate and decelerate slowly and smoothly – it'll save you up to 2 mpg. Anticipate stops and coast up gradually: It takes 20 percent less gas to accelerate from 5 mph than from a full stop.
- Drive the speed limit on the highway. At higher speeds, you'll burn more gas for each mile you drive.
- Cruise control: use it sparingly when traveling over varied terrain. In mountainous or hilly regions, you'll waste less gas if you hold a constant throttle position instead of using cruise control. To do this, just maintain a steady foot angle.



- When you're driving in summer, close the windows and turn on the fresh air vents. At speeds over 40mph, the drag caused by open windows eats up more gas than a working air conditioner.
- Shift a manual transmission into the highest gear as soon as possible to use the engine most efficiently.
- Keep your engine running at peak fuel efficiency with regular tune-ups and by responding promptly to the "service engine soon" light on your dashboard. (see "ON BOARD COMPUTER")

EXHAUST

Produced when gasoline is burned in an internal combustion engine. (see "INTERNAL COMBUSTION") The main offenders:

Carbon monoxide – An invisible, odorless, poisonous gas emitted when engines burn gas inefficiently and when cars are idling or moving slowly in traffic. Levels are highest in urban areas just after morning and afternoon rush hours.

Carbon dioxide (CO_2) – Humans and animals inhale oxygen and exhale carbon dioxide; plants take in carbon dioxide and release oxygen. Large-scale burning of coal, oil and gasoline have overloaded the air with CO_2 . (see "GLOBAL WARMING")

Hydrocarbons and nitrogen oxides – Cars discharge hydrocarbons (organic compounds present in gasoline) and nitrogen oxides (NOx). In the presence of sunlight, these compounds form ground-level ozone, the primary component of smog. Children, the elderly, people with respiratory ailments and healthy people exercising outdoors may have difficulty breathing when ozone levels are high.

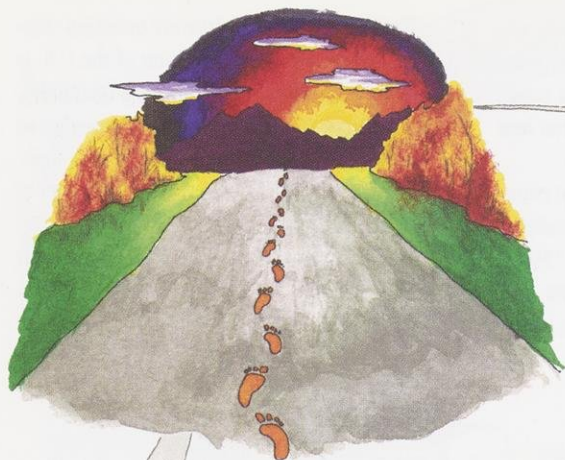
Particulate matter – Exactly what you'd think – particles. Burning any fuel – gas in a car, diesel in a truck, leaves in a pile, or garbage in a barrel – releases sooty particles. Some of the particles are so small that they are invisible to the naked eye. When you breathe in these fine particles, they clog your lungs. The smaller the particle, the more harmful it is because it can creep deeper into your lungs.

Nitrogen oxides and other compounds, notably sulfur dioxide, contribute to acid rain. Acidic precipitation destroys forests and raises the pH of freshwater lakes, making them less hospitable to fish and other aquatic life.

F.Y.I. Registered vehicles in Wisconsin counties that don't meet federal air quality standards are required to pass emissions tests. (see "TUNE-UP") If you aren't sure about your county, visit Air Management on the DNR website at <http://www.dnr.state.wi.us>.

The U.S. continues to improve emission standards, but the vehicle population of the U.S. is growing more than six times faster than the human population, offsetting most of the pollution reductions. And each time the laws are strengthened, years must pass before the entire fleet of U.S. cars actually meets the new standards. But how many cars will be on the roads then? Only you can decide.





FILL 'ER UP

Volatile hydrocarbon vapors are released into the air when you fill your tank. Whenever possible, patronize service stations with vapor-recovery nozzles on gas pumps. Take care when the tank is nearly full – those little drips and drops of spilled gas are a major source of pollution.

Did you know it's best to refuel by moonlight? (More romantic, too.) Gasoline generates fewer hydrocarbon vapors when it's cool and dark outside. Detergent gasolines keep engines running cleaner and emit fewer pollutants. And that dastardly gas cap you always leave on the roof of the car? Try to remember to screw it back

on, because it prevents vapors from escaping into the atmosphere. Also, if you forget to replace it or you don't tighten it until it clicks several times, it could signal your car's computer to turn on the "service engine soon" light on the dashboard.



FEET

Use 'em for transportation whenever you can. It's easy: Put one foot in front of the other and go. Best of all, you never have to worry about locking your keys in the car.

FLUIDS

Besides oil and gas, there are other essential automobile fluids, including antifreeze, brake fluid, and transmission or power steering fluid. Check all fluids regularly. When they need to be changed (see your owner's manual for the recommended maintenance schedule for your vehicle), collect the old fluid in a leak-proof container with a lid and bring it to a service station or auto repair shop for recycling. You may be charged a small fee. By the way – please don't mix these or any other liquids with used oil you want to recycle. (see "OIL") Easier yet, bring the car to the service station and let the technician change those fluids for you.

There's one more fluid worthy of mention. During the summer months, dilute your windshield wiper fluid with water. Half-and-half or even 75 percent water will still give the desired results. Don't forget to switch it back before the freezing fall temperatures!

GLOBAL WARMING

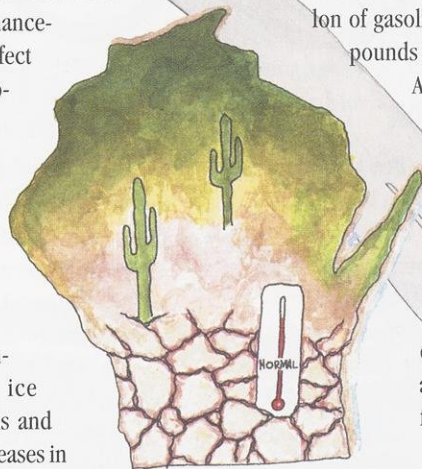
Burning gasoline, oil and coal releases carbon dioxide (CO_2) into the air. The CO_2 collects in the atmosphere, where it acts like the glass in a greenhouse, trapping heat and reflecting it back to Earth.

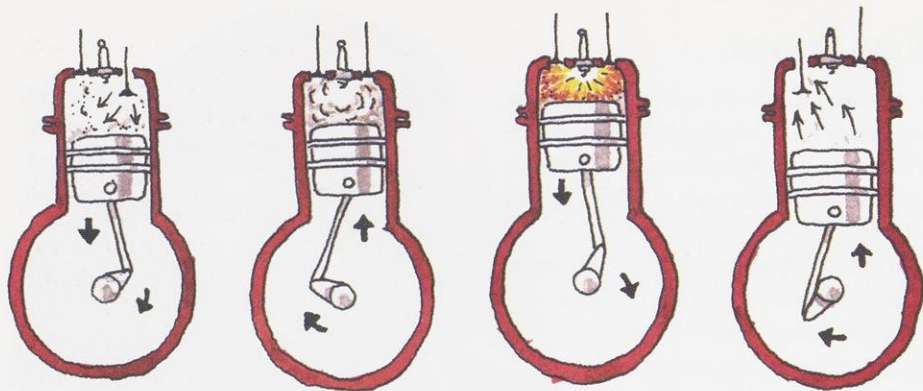
Scientists believe that the CO_2 collecting in the atmosphere from fossil fuel combustion has raised the planet's temperature and will continue to do so. This "enhancement" of the greenhouse effect not only tampers with the global thermostat - it confounds other climate cycles, too. While Wisconsinites might very well welcome warmer winters, climate changes caused by this warming could be devastating for many parts of the world, including Wisconsin. Polar ice could melt, raising sea levels and swamping coastal areas. Increases in global average annual temperatures of

only a few degrees could disrupt rainfall patterns and create deserts in major crop growing regions (like Wisconsin). This could seriously affect agriculture, water resources, forests, fish, and other living things.

Cars and other motor vehicles are responsible for about one-third of the CO_2 emitted into the atmosphere in the U.S. For every gallon of gasoline burned, about twenty pounds of CO_2 is emitted.

A car powered by fossil fuels emits more than its own weight in CO_2 each year (depending on its fuel efficiency and how many miles it is driven). Ever try to pick up a car? Take it easy on yourself AND the air—get the most fuel-efficient car you can afford.





INTERNAL COMBUSTION

This is what happens when a) you consume pizza, a jumbo burrito and a bowl of chili in a single sitting, or b) you drive. Briefly, here's what's going on in a four-stroke, internal combustion engine (like most cars have):

When you step on the gas pedal, volatile flammable gasoline, one of the many products refined from crude oil, is mixed with air. The vaporized gasoline is channeled into a cylinder, a tube sealed at one end and blocked at the other by a movable plug called a piston, which is at-

tached to a crankshaft that changes the piston's linear motion into rotary motion. Most cars have three, four, five, six or eight cylinders.

As the piston moves up the cylinder, it compresses the gas/air mixture. When the mixture is tightly compressed, the spark plug produces a spark that ignites the mixture trapped in the cylinder. The gas burns and expands, increasing the pressure on top of the piston and forcing it down, turning the crankshaft. The rotation of the crankshaft moves the piston up a second

time, an exhaust valve opens at the top of the cylinder and the gases created from burning the gasoline vapor rush out with a loud noise. These four cycles (intake, compression, power and exhaust) are repeated several hundred times a minute in each cylinder.

Gases that don't burn completely pass through a catalytic converter and other pollution-control features, where they are burned completely and the byproducts are released out the tailpipe. (see "EXHAUST" and "ON BOARD COMPUTER") These exhaust emissions are what give environmentalists (and anyone else who breathes) a different kind of internal combustion.

LEAKS

Slimy spots on the driveway mean it's past time to check the engine, transmission and radiator for leaks. When it rains, oil and other automotive fluids are washed off pavement and into storm sewers, lakes and rivers. And, automotive fluids aren't cheap — why let them drip away? Plug those holes!

MPG

Miles per gallon, a measure of how efficiently your car uses gasoline.

Lump America's gas guzzlers and gas sippers together and you arrive at an average of 24 miles per gallon (mpg) per car nationwide. That's better than the 10-mpg gashogs of the '60s and '70s but more people are driving more miles today, which offsets the benefits of higher mpg. Also, the popularity of SUVs (sport utility vehicles) and other large vehicles has exploded, and consumer demand for these greedy beasts is threatening to drive the national mpg back down to pre-1980 levels.

Our cars are thirsty rascals, soaking up billions of gallons of gasoline nationwide each year. Oil consumption has grown about seven percent per year for the past 50 years. At this rate, consumption doubles every ten years – an exponential growth rate. Here's the pitch: If each driver could reduce gas consumption by only 10 percent – a measly 10 percent! – we'd save more than eight million gallons every day.

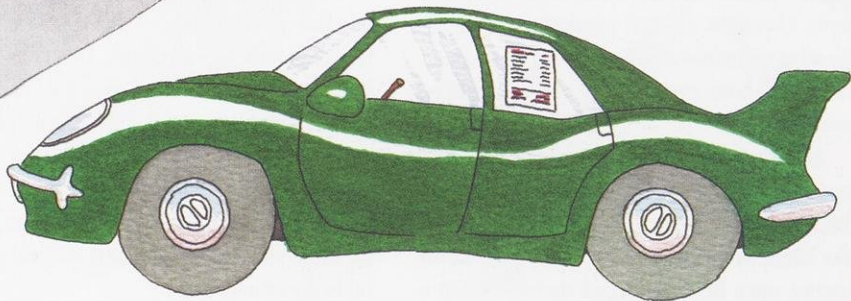
Keep tabs on your mpg. Fill the tank until the nozzle clicks. Write down the number of miles on the odometer. Next time you fill up, do the same thing. Then divide the number of miles you've gone since the last fill-up by the number of gallons you just put in. That's your mpg. When the mpg drops by more than 20 percent, it's time for a check-up – and by now your "service engine soon" light may be on to remind you. (see "ON BOARD COMPUTER")

New Car

Go for the highest mpg in the vehicle that will best suit your needs.

Avoid buying a light truck unless you really need it. Pickups, vans, minivans, and sport-utility vehicles (SUVs) are less fuel-efficient and pollute more than passenger cars.

If you have Internet access, check out EPA's Fuel Economy Guide (<http://www.epa.gov>) for your preferred model year to help narrow your search or to investigate a particular model. You can also browse other sites for various "green guides" containing information about emissions by specific vehicles and other helpful hints for choosing a car [e.g., Consumer Reports, American Council for an Energy-Efficient Economy (ACEEE), etc.].



Oil

Low or dirty oil (or low *and* dirty oil) hurts engine efficiency and may increase harmful emissions. Check the dipstick regularly and change the oil as recommended by your owner's manual (usually about every 3,000 miles or three months).

Americans use more than a billion gallons of motor oil each year. Over a quarter of that oil is discarded into places where it doesn't belong, like lakes, streams, wetlands, backyards, storm sewers, open fields and road shoulders. Not a



good idea – a single gallon of used oil, if improperly managed, has the potential to contaminate up to one million gallons of drinking water!

Most automotive service centers recycle used oil. With a minimum of reprocessing, oil can be used again in cars or burned as a high-energy industrial fuel.

Do-it-yourself (DIY) oil changers can recycle oil in four simple steps:

1. Drain the oil into a pan large enough to hold as many quarts as your vehicle's crankcase. (The average car uses about five quarts.) The pan should be clean, and not have been used for paint, solvents, antifreeze or anything else that might contaminate the oil.

2. Using a funnel, pour the oil from the pan into leak-proof containers with lids – clean plastic gallon milk jugs work well. Don't mix that oil with anything else. If you change the filter, empty the old filter by inverting it over the pan and letting it drain overnight. Plug the hole of the old filter with paper towels, and put it in the box the new filter came in. Put on the new filter, put in the drain plug (very important) and add the new oil to the crankcase.

3. Bring the old oil and the old filter to a used oil collection site. It may be at a service station, auto parts store, quick oil change business, oil retailer, or city or county vehicle maintenance shop. For the site nearest you, contact your county or town public works department.

4. Pour the oil in the collection tank, properly discard the old filter, cap your containers, save them for the next change, and pat yourself on the back for a job well done.

On Board Computers

Blink. Your car is talking to you. The light on your dashboard may say “check engine,” or “service engine soon,” or something similar. Your technician may refer to this as a “malfunction indicator lamp” or a “MIL light.” This is your car's way of telling you something is wrong.

Since 1986, cars have been factory-equipped with on-board computers designed to notify you at the first sign of trouble. Your technician may refer to these systems as “on-board diagnostic” (OBD) systems. OBD systems monitor your vehicle's operation and performance to keep it



running cleanly and efficiently. OBD can also give you advance warning to perform maintenance and help you avoid costly breakdowns. When your MIL light comes on, your car's computer will generate an internal code that will give a properly trained and equipped technician an idea of where to begin looking for the problem.

For proper service procedures, read your vehicle owner's manual. It is usually OK to drive your vehicle short distances with the MIL light on until it can be serviced, unless the light is flashing, another warning light comes on, you detect a strange noise or smell, or the vehicle is generally running poorly.

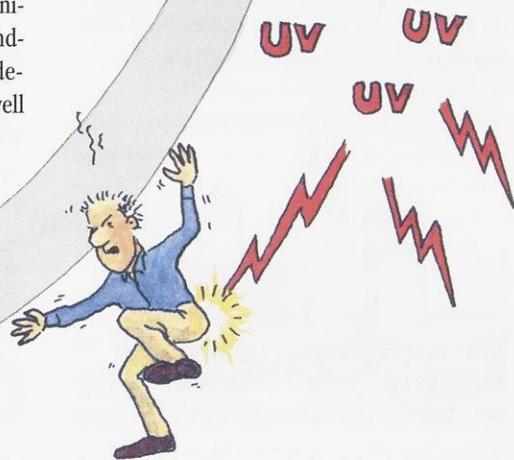
OZONE

O₃. There are two kinds, chemically identical: Good ozone, a naturally occurring layer in the stratosphere, and bad ozone, produced at ground level by car exhaust and other pollution. The stratospheric ozone layer prevents cancer-causing ultraviolet rays from reaching the Earth. Chlorofluorocarbons (CFCs) leaking from auto air conditioners poke holes in the layer, allowing more UV rays through. (see "AIR CONDITIONER")

On hot, sunny days, hydrocarbons and nitrogen oxides emitted from autos form ground-level ozone. (See "EXHAUST") Humans, designed to breathe O₂ (oxygen), don't take well to ozone's additional atom. Children, the elderly and people with respiratory ailments like asthma have difficulty breathing when ozone levels are high; many are forced to stay indoors. Even healthy

people exercising outdoors during ozone alerts may be gasping for more air than usual.

Clean Air Act: the 1970 law cleared much of the smoke from America's skies, but we can't stop there. Amended in 1990, the act sets tougher limits on auto emissions and proposes transportation controls, especially for southeastern Wisconsin and other urban areas where ozone is a problem.



PAINT, PARTS CLEANER, POLISH AND WAX

Buy small quantities of these automotive products. When possible, use biodegradable, low-phosphorus products packaged in recyclable containers. Share what you don't use with neighbors, community groups or school auto classes. Don't dump leftovers down the drain, on the ground or in a storm sewer. If you must throw these items in the trash, contact your local fire department, county government, or the Wisconsin DNR for safe hazardous materials handling and disposal procedures.



ROAD SALT

Here in the northern climes, winter presides over an annual conflict between slippery roads, driver safety and environmental degradation. Road salt pollutes surface and groundwater, kills trees and grass, corrodes auto bodies and metal bridges, rots underground cables and causes pavement to disintegrate. But road salt also makes car travel possible from October to March.

An insurmountable dilemma? Not quite. Use sand on your own driveway, if you need it after shoveling, and encourage your city and county highway departments to use less salt. The war against sodium chloride is not a stale one: the Wisconsin Department of Transportation regularly tests new deicing compounds, and hurries to apply treatments to highways before storms so that snow has less chance of bonding to the road in the first place. These efforts all reduce the amount of salt dumped on Wisconsin highways. The search continues for a safe, inexpensive, environmentally friendly deicing compound to replace salt.

Until then, wash your car in winter to remove encrusted salt and prevent corrosion. Better yet, hire a sled-dog team and keep the coupe in the garage until April Fool's Day.

SALVAGE YARDS

Old cars never die; they just rust away. So follow a regular maintenance schedule to keep your heap off the scrap heap. Ask for rebuilt or used parts when the time comes for repairs. And when you're buying a new car, why not write the automakers to demand that the auto industry use more recycled and recyclable materials in new car construction? The average 3,080-pound car contains about 2,310 pounds of recyclable metals (aluminum, iron and steel, copper, zinc, etc.), and 770 pounds of plastic, very little of which can be recycled. When it's time to park the car for good, take it to a salvage yard that reuses and recycles as much of the entire vehicle as possible, rather than just plucking off the major parts and grinding up the rest. Think of it as an auto "organ donation" program.

SHORT TRIPS

For short hops, try walking or biking. (See “BICYCLES,” “FEET”) If you must drive, combine errands into one trip. This reduces your total miles traveled and the fuel consumed.

TIRES

Inflation. It's a dirty word to economists, a necessity to green motorists. Americans waste two million gallons of gas each day because our car tires are underinflated. Gas mileage drops about one percent for every pound of tire pressure below the recommended level.

The solution: Regular check-ups. Keep a hand gauge in the glove box and check tire pressure twice a month when the tires are cold. Add air if necessary. (Look in the owner's manual for the proper psi, or pounds of air per square inch.) Check the pressure more frequently in winter — for every 10-degree drop in temperature, tire pressure decreases by one pound.



Besides increasing fuel economy and safety, properly inflated tires last longer, so there are fewer to add to the waste stream. If you rotate your tires as advised in your owner's manual, you can keep them even longer. Maintaining proper wheel alignment and chassis repair according to your owner's manual will also increase the life of your tires. And while you're at it, buy low rolling resistance radial tires — they'll give you better mileage. When it's time to buy new tires, make sure the dealer will recycle your old ones!



TRUNK

No ifs, anvils, or buttresses: You get four percent less gas mileage for every 100 pounds of excess weight carried in your car. Clean out that trunk today.

TUNE UP

A car in tune consumes 20 percent less fuel and spews less heat-trapping carbon dioxide into the atmosphere. Tune-up as recommended by your owner's manual to keep your machine green. And always respond promptly to your “ser-

vice engine soon" light. These key emission control parts should be inspected during a tune-up:

Charcoal canister – absorbs gasoline fumes from fuel system and routes them into the engine.

Positive crankcase ventilation valve – The PCV system recycles gases into the engine for combustion.

Exhaust gas recirculation – The EGR system cuts down on the formation of nitrogen oxides, which sunlight transforms into smog.

Fuel Injectors – Deliver the right amount of fuel to the cylinders.

Catalytic converter – Turns carbon monoxide and unburned gas into carbon dioxide and water. Newer converters also break down nitrogen oxides.



Other items to check during a tune-up: Dirty *air filters* cause the air/fuel ratio to be too rich. Clogged *fuel injectors* produce a mix too lean or too rich, which hurts your engine, your fuel economy and the atmosphere. Worn *spark plugs* *misfire*, causing fuel to pass through the exhaust system unburned. A *thermostat* that lets the engine run too cool or too hot wastes gas. Change or adjust these parts according to the schedule in your owner's manual to keep emissions down.

WINTER WHEELING

Avoid using quick-start aerosol sprays to start your car – many contain volatile organic compounds (VOCs), which are released into the air the moment you press down on the nozzle. Keep the engine tuned up and use a block heater to guarantee winter starts. If you keep the gas tank full, you won't need to pour in fuel additives to dry up the water that condenses in a half-empty tank. Instead of using petroleum-based solvents to loosen frozen locks, try an electric hair dryer.

CAN'T GET ENOUGH?

For more information about making your car a Greener Machine, visit the Wisconsin DNR website: <http://www.dnr.state.wi.us>



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24 Tribal Forestry Know-How — Discover why the Menominee and Stockbridge-Munsee Indian reservations have been recognized worldwide for sustainable forest management. Tour the reservation by bus to learn about history and forestry practices in place since the 1850s. Authentic Native American lunch included.

June 23, 10 a.m.–3 p.m. • Michael Schuessler, leader • Cost: \$10 each

25 Trout Management and Stream Shocking — See the electro-shocking truth of how many trout there are in the spring-fed streams of Wisconsin's Coulee Region near La Crosse.

June 30, 10 a.m.–noon • David Vetrano, leader

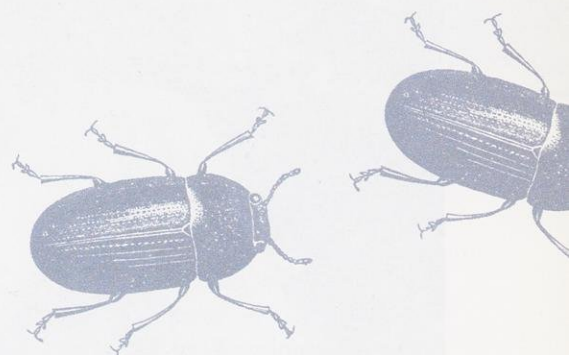
Hike the beaches and build replicas of the first Door County seaside homes on trip 27.

26 Beetlemania! — Discover how beetles are used to control the spread of purple loosestrife. Learn to identify this invasive weed, collect and distribute beetles, and see how effectively they control "the purple peril" in Barron County.

June 30, 9 a.m.–4 p.m. • Dave Blummer, leader

27 Ancient Peoples of Whitefish Dunes — Walk the dunes in search of natural history while exploring the ancient human occupation of Whitefish Dunes in Door County. Learn to recreate the tools, buildings and other items used hundreds of years ago.

June 30, 9 a.m.–1 p.m. • Carolyn Rock & Mike Madden, leaders



28 Old-Growth Forest Ecology and Management — Hike three old-growth forest stands of hemlock, pine and mixed species. Learn about the natural history, management and abundance of these pristine Wisconsin gems near Woodruff.

July 7, 10 a.m.–3 p.m. • Ron Eckstein, leader

29 Walk in the Pine Relics — Discover the wonder of pine relics in Grant County. Learn how pines evolved in southern Wisconsin and how many other plants and animals they host on this state natural area.

July 7, 9 a.m.–noon • Matt Zine, leader

30 Turtle Flambeau Flowage Tour and Osprey Banding — Take a scenic boat ride through the flowage (near Mercer) to watch wildlife and discuss outdoor management. Visit osprey nests and help with annual banding and color marking of osprey nestlings. This trip is a fundraiser for the eagle and osprey monitoring program — limit 24 people. July 14, 8:30 a.m.–4 p.m. • Bruce Bacon & Roger Jasinski, leaders • Cost: \$50 per person (includes lunch)

31 Canoe to Hidden Treasures — Discover buried treasure under the sands of the Bark River near Rome! Canoe and relax in the cool waters and venture into a story that mixes biology with history, money and science. See and learn about the hidden, yet glamorous, freshwater mussel. (Limited canoes provided. Write on registration form if you need one.)

July 14, 10 a.m.–4 p.m. • Kurt Welke & Lisie Kitchel, leaders



CHRISTINE TANZER



Help band osprey on trip 30.

JERRY SCHOEN

32 Wolf Howl — Learn about wolf biology and forest ecology during a hike/drive through wolf territory. Conduct an evening wolf howl survey near Park Falls.

July 14, 3 p.m.–midnight • Adrian Wydeven, leader • Cost: \$5 per person

33 Canoe/Kayak to Horseshoe Island — Paddle on an adventure to this undeveloped island off the shores of Peninsula State Park in Door County. Learn island history and ecology during a hike around the island. (Reserve canoe or kayak rental on reservation form.) Friday, July 20, 10 a.m.–12:30 p.m. • Kathleen Regnier, leader

34 Glacial Geology for Kids! — Bring the glaciers back to Mauthe Lake! Discover how glaciers created kames, eskers and more through hands-on activities at the beach. Take a bus ride to visit these real-life features located throughout the Northern Kettle Moraine. July 21, 9 a.m.–noon • Jackie Scharfenberg, leader • Cost: \$5 per person

35 Tallgrass Prairie Restoration at Goose Pond — Visit this 160-acre prairie restoration near Arlington at peak summer bloom! Inspect various prairie types and stages (including a 25-year-old planting). July 28, 9:30 a.m.–noon • Mark & Sue Martin, leaders

36 Prairie Ecology at Navarino Wildlife Area — Take a 10-mile wagon ride in Navarino to learn about prairie ecology and identify native plants. Aug. 4, 10 a.m.–2 p.m. • Tim Ewing, leader

37 Canoe the Flambeau River — See wilderness and wildlife paddling down a flat stretch of the Flambeau

River near Phillips. Learn about the history and management of this famed watershed. Canoes and lunch provided. Aug. 4, 9 a.m.–4 p.m. • David Olson, leader • Cost: \$17 per person

38 Sea Kayak the Pokegama Bay Wetlands — Paddle through diverse wetland communities of aquatic plants in a bay near Superior. See a variety of wetland wildlife and a stand of wild rice. Sea kayaks and instruction will be provided by outfitter (beginners welcome). Aug. 11, 9 a.m.–4 p.m. • Frank Koshere, leader • Cost: \$50 per person kayak rental; \$20 per person with own kayak and gear.

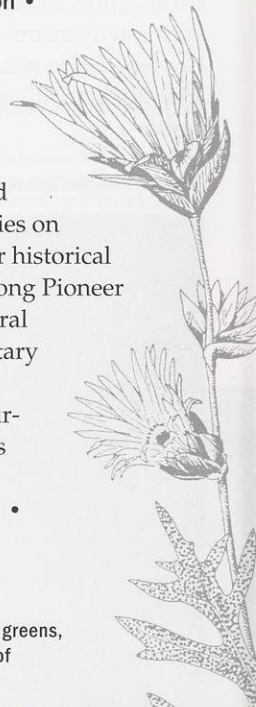
39 Shore is Important — Discover various techniques to restore shorelands in Lake Wissota State Park, including choosing plants, planting techniques and maintenance. See a variety of native trees, shrubs, prairie grasses and native flowers. Aug. 11, 10 a.m.–noon • Karen Voss, leader

40 Glacial Prairies Restored — Learn about native prairie and wetland restoration efforts on private and public land in the Glacial Habitat Restoration Area near Horicon. Aug. 11, 9:30 a.m.–3:30 p.m. • Eric Lobner, leader

41 Kohler-Andrae: Plant CPR — Explore the secret world of plants! Hike Kohler-Andrae State Park and search for injured native plants. You may be surprised how air pollution affects plant health. Aug. 18, 10 a.m.–noon • Ed Jepsen, leader

42 Abe Lincoln Slept Here? — Discover the unusual Indian legends and rare plant communities on Bald Bluff. Visit other historical sites such as Skoponong Pioneer Settlement and General Atkinson's 1832 military encampment. Learn about the rich and surprising history of this unique area. Aug. 18, 9 a.m.–noon • Ron Kurowski, leader

Several trips study the lush greens, varied smells and textures of Wisconsin's forests.



43 Protecting Trout and Bass at Roundtree — The Roundtree Branch Watershed near Platteville supports both trout and smallmouth bass fisheries. Discover how a watershed can be managed to control pollution and protect this precious resource. Enjoy a tour, water chemistry sampling and fish electro-shocking.

Aug. 25, 10 a.m.–3 p.m. • Jack Saltes, leader

Catch wildflowers at their blooming best on trips 35 and 36.



BILL AND KATHLEEN WEEGE



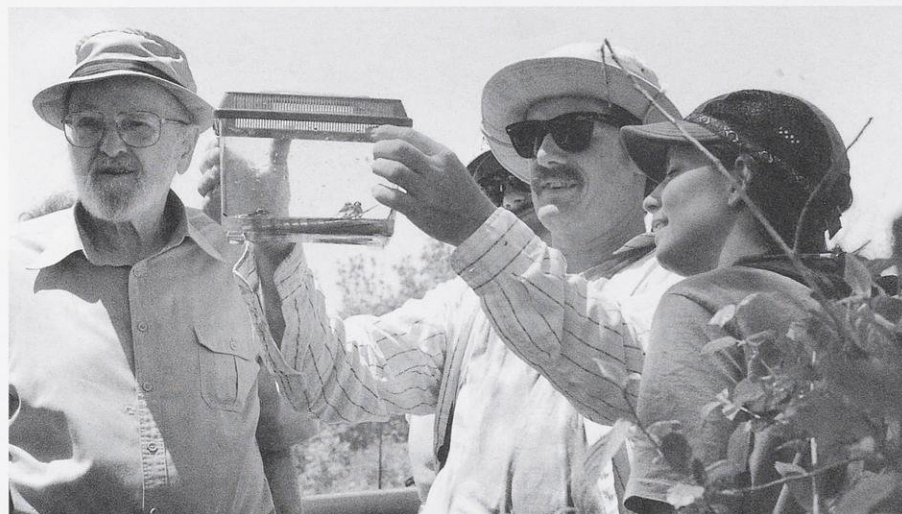
44

Canoe the Kickapoo

— Learn about geology, water quality and wetland ecology on one of Wisconsin's most scenic, winding and beloved rivers. Enjoy a paddle from Ontario to Wildcat Mountain State Park. (Limited canoes provided. Write on form if you need one.)

Friday, Sept. 7, 1–4 p.m. • Hank Kuehling & Dave Siebert, leaders

Look at colorful insects too on the prairie trips.



ANNIE SALMONA



REINHOLD HAASE

46 Off-Road Mountain Biking — Discover the fun of mountain biking on scenic off-road trails in the Southern Kettle Moraine. Learn basic biking techniques and the environmental impacts of this sport during a 6- or 10-mile loop. Beginners welcome!

Sept. 8, 10 a.m.–3 p.m. • Greg Delwiche, leader

47A or B. Trumpeter Swans — Learn about the ecology of North America's largest waterfowl species, the trumpeter swan. View these magnificent birds in the wilderness of Crex Meadows Wildlife Area and learn about efforts to restore these swans.

Sept. 8, (A) 9 a.m.–noon or (B) 1–4 p.m. • Pat Manthey, leader

48 Canoe the Mississippi — Paddle the Mississippi backwaters to learn about ecology and wildlife. Enjoy a BBQ lunch on a sandbar in Merrick State Park (canoes and lunch included).
Sept. 15, 10 a.m.–2 p.m. • Ceil Inman & Lois Larson, leaders • Cost: \$5 each

49 Geologic History of the Baraboo Hills — Learn about the geologic history of the Baraboo Hills! Hike the south bluff of Devil's Lake, then enjoy a van tour to Rock Springs. Explore Van Hise Rock, a rock quarry, and more.
Sept. 22, 9 a.m.–4 p.m. • Philip Fauble, leader



Paddlers explore Lake Superior's bays, the Mississippi, the Lower Wisconsin, Grass Lake, the Pike River, the Bark River, the Flambeau River, the Kickapoo River and the Door County shore this year.

50 Dune! — Learn about dune ecology and the special and rare plants that live on them. Discover the succession of the dunes of Whitefish Dunes State Park through hands-on activities for the young and young at heart.
Sept. 22, 10 a.m.–noon • Carolyn Rock, leader

51 Migrating Monarchs — Discover how tagged monarch butterflies unlocked the secrets of the species' migration. Capture, examine and tag some of these beautiful migrants as they pass through Bong Recreation Area in Kenosha.
Sept. 22, 1–3 p.m. • Donna Mosca & Beth Goeppinger, leaders

52 Wisconsin Waterfall Wonders: Pat-tison & Amnicon — Spectacular sights of Big Manitou Falls and the quiet charm of Amnicon's trickling pools await! Learn the geologic and cultural history of these state parks near Superior while enjoying the backdrop of autumn color.
Sept. 29, 10 a.m.–3 p.m. • Jen Punzel, leader

53 Bike Door County in Autumn Color — Catch peak colors while biking through Peninsula State Park. Discover park history, tree facts and folklore along the way, and tour Eagle Bluff Lighthouse. Terrain is easy to moderate and on-site bike rental is available.
Friday, Oct. 5, 10 a.m.–2 p.m. • Kathleen Regnier, leader • Cost: \$3 per person

54 Long Distance Backpacking & Low Impact Camping Workshop — Learn the basics of long distance backpacking: planning the right trip for you, packing, pitching a tent, and low-impact camping. Head outside to practice a hike through the Flambeau River State Forest.
Oct. 6, 9 a.m.–4 p.m. • Matthew & Stacy Davis, leaders

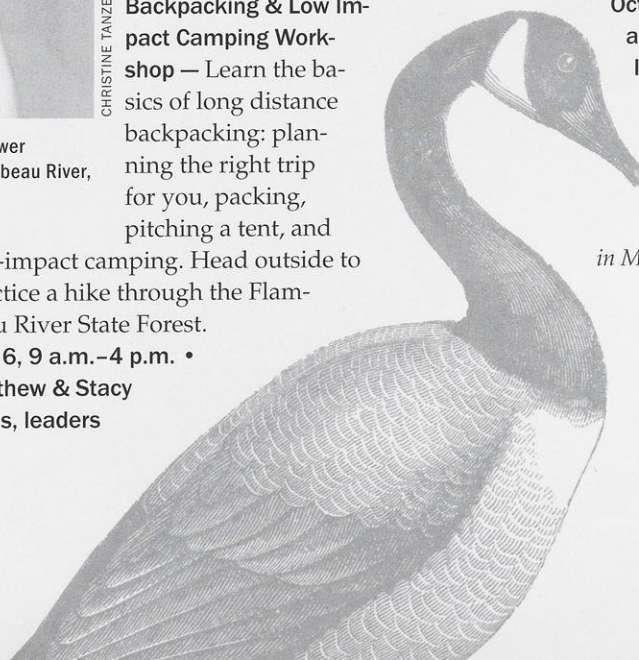
55 Canoe the Lower Wisconsin River — Paddle an eight-mile stretch of the river from Arena to Spring Green to enjoy a day of fall color, waterfowl and wildlife. Learn river history and find out about the efforts to preserve its natural beauty.
Oct. 6, 10 a.m.–2 p.m. • Wayne Schutte, leader • Cost: \$10.50 per person for canoe rental and shuttle; \$5.00 per person for shuttle only


56 Forest Management for You — Join a forester on a fall color hike through the Southern Kettle Moraine. Learn the details of aggressive forest management — from killing black locusts to thinning pines.
Oct. 6, 9 a.m.–3:30 p.m. • Michael Sieger, leader

57 Woodland Trail Design and Construction — Thinking about putting a trail through your forest, wetland or floodplain? Join this workshop to find out details of trail design, planning and construction. Enjoy the afternoon in the Flambeau State Forest practicing with various affordable trail tools.
Oct. 13, 9 a.m.–4 p.m. • Matthew & Stacy Davis, leaders

58 Autumn Wildlife Bus Tour — Visit three wildlife areas in Washington County during the peak of goose migration. Stop at some of the best wildlife viewing locations and learn about various habitat management practices.
Oct. 13, 8:30–11:30 a.m. • Thomas Isaac, leader

Christine Tanzer coordinates field trips for the Natural Resources Foundation of Wisconsin in Madison.





The art & science of seeing

An experienced wildlife photographer offers tips to improve your powers of visual observation outdoors.

Tim Christie

Some people have perfect vision, but they can't see. You know the kind. You and a friend are in the Chequamegon National Forest and a buck of epic proportions is standing at the edge of the timber. The conversation goes something like this:

"Look at the size of that buck!"

"Where?"

"A hundred yards away. Right next to the tree in the brush. It's facing us!"

"I can't see it..."

"Are you kidding? It's standing just to the right of the tree."

"That's not a buck! It's just another tree!"

Admittedly, the buck's tan body is subtly camouflaged in the shadows of a white cedar. The "branches" of the tree your compadre sees, however, are the antlers of the biggest deer north of Medford. In your eyes, it stands out like a neon sign. Your friend thinks you've lost your senses. You walk away shaking your head. Either your friend is blind or needs an ophthalmologist. Maybe both!

How can two people standing prac-

tically on the same spot see completely different things? The answer lies in that one person is *seeing*, and the other is only *looking*. It happens all the time because most people have not trained themselves to see. Vision and seeing are similar to hearing and listening. Just because we have the physical ability doesn't mean we know how to use the gift.

Success in the outdoor world — in birding, hunting, photographing or just enjoying wildlife — demands the ability to "see." As a professional wildlife



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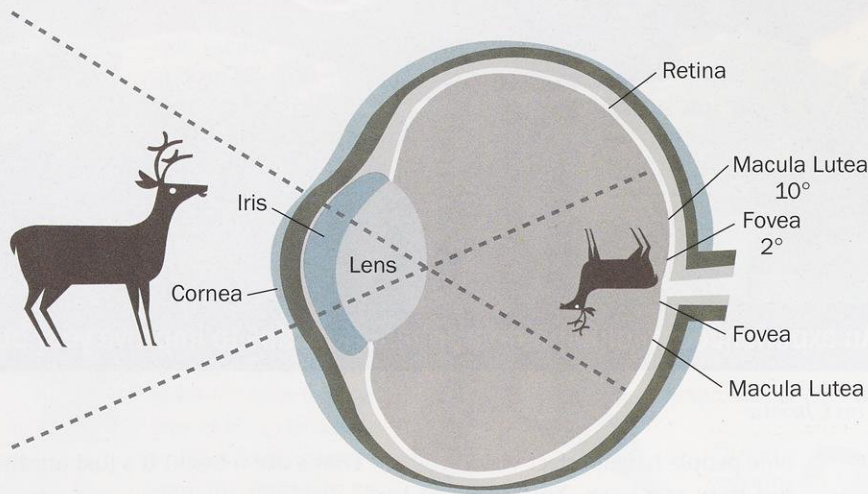
Look for the pieces to see the whole. A whitetail buck blends eloquently into its surroundings.

photographer, I have spent the past 25 years studying the “seeing” process to improve my ability to observe nature. It’s an attainable goal: Once you understand how vision works, acute observation becomes a matter of consistently employing several simple techniques.

The eyes have it

Let’s go back to that buck in the Chequamegon. You see it because light waves are bent as they pass through the cornea in the front of your eye. The lens focuses the image, turns it upside down, and projects it onto the retina, which is the back of the eyeball. It works something like a slide projector where the image is projected onto a screen. The retina is your screen. Once the image is transmitted onto the retina, it is passed through the optic nerve to the brain, where it is processed and put right side up.

Although many people assume they can see a field of approximately 180 degrees, humans only clearly focus on a

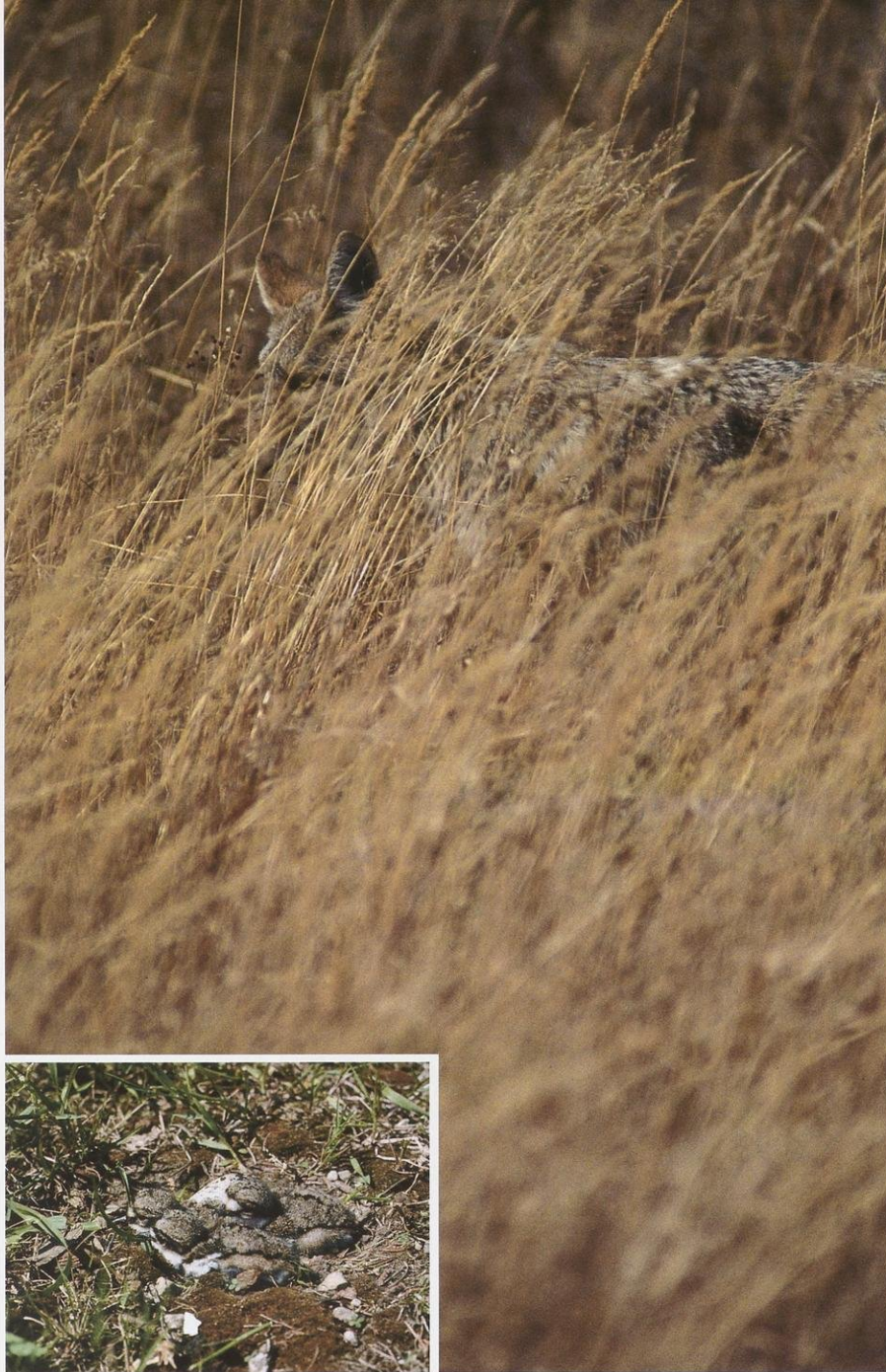


The retina interprets light as electrical patterns that are sent to the brain. The concentration of cone cells, responsible for perceiving color, are greatest in a small area of the retina at the back of the eye called the fovea. Muscles around the eye focus light here. Outside this area, our color perception is poor and images are out of focus.

zone of approximately ten degrees. The area where the image is focused is called the *macula lutea*. In the center of that area is the *fovea*, encompassing only two degrees of our vision. This area has the greatest sensitivity to form and color. So, although we have a wide field

of view, we focus only on a very narrow area within it.

To develop a perspective of how narrow our band of critically sharp vision is, extend your hands to arm’s length and form a circle with your thumbs and forefingers. Look at the space in that cir-



An ear and a bit of the snout show a coyote in tall grass.

(inset) Natural camouflage provides another kind of protection that requires a close look. These are killdeer chicks.

©LANCE BEENY (INSET) HERBERT LANGE

cle. The image within the circle is sharp, while the balance of your vision field lacks the same clarity. If you focus on something else in that vision field, the encircled image loses sharp focus.

Anytime you look at something, you unconsciously direct your attention to a particular spot by focusing your eyes. It is impossible to clearly see everything in your field of vision simultaneously, as your eyes limit what you can focus on at one time. We do pick up motion throughout the entire field of vision, but to truly see it, we must focus the eye on

the object that's moving to process the image. That's why you saw the buck, but your friend didn't: He was selecting different stimuli on which to focus his attention.

Whenever we are in a situation we focus on those things we determine are important. Research demonstrates that typically we select (see) the things that are the most obvious to us. If there is a bright color, a large tree among small trees, or a bird flying across our field of view, that is what draws our attention. For your friend, the trees were the obvi-

ous objects, so he saw trees. The old saying "First impressions are lasting impressions" applies here. Once your friend saw the buck as a tree, it was difficult for him to see it as anything else.

But you picked out different things to look at. Your experience and background guided what you saw.

Learning how to see

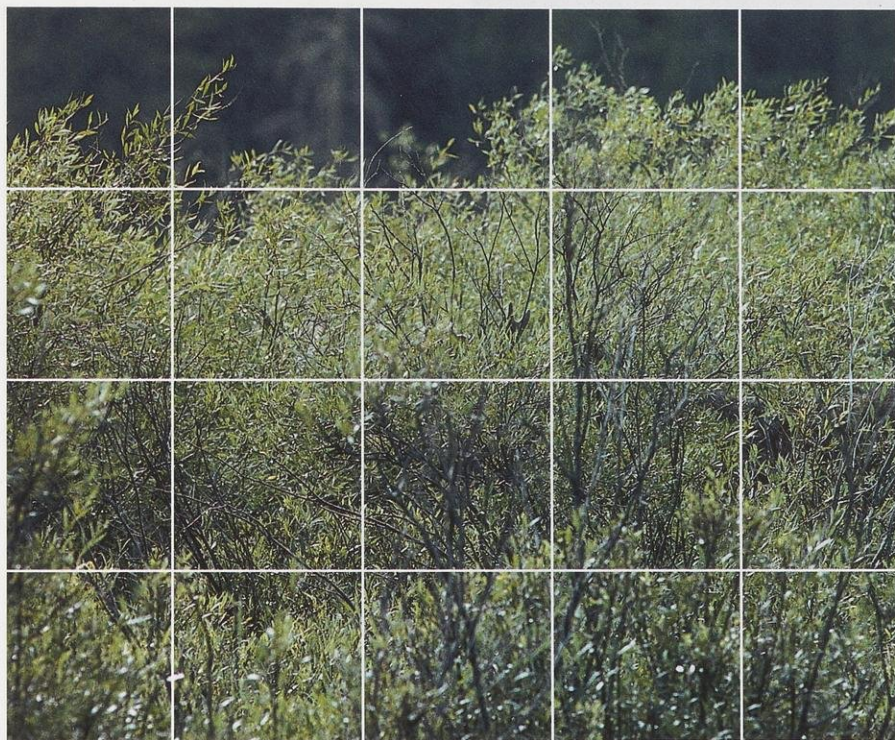
The mind's ability to process images occurs unconsciously and at light speed. In order to improve the perceptual abilities that will help us "truly see," three other factors must be taken into account: experience, motivation and expectations.

Experience changes how we perceive situations. The beginner in any complicated endeavor quickly discovers frustration, but with additional effort, frustrations move to understanding and success. When it comes to seeing wildlife, there's no substitute for practice out in the field. People are constantly amazed at my ability to spot wildlife in highly camouflaged situations. I have good eyesight, but any skill I have is a result of 35 years of outdoor experience.

Motivation is the second component in improving how we see things. If you believe you will be successful, you can be. Without that passion, it's easy to give up. All the great hunters, fishermen, photographers and birders I know are successful because of desire. With desire comes effort and success, hence positive experiences that hone one's talents to a higher level.

Expectations are the most powerful influence on why people have difficulty seeing wildlife. We tend to focus our attention on where we think animals will be. As products of a mass-media world, most of us assume, for instance, that all bucks stand in open meadows, just as they do in the glorious full-page photos found in every magazine, including *Wisconsin Natural Resources*. Believe me, it is seldom like that.

In the real world, animals are intuitively wary, employing their natural camouflage to stay concealed. If you want to improve your ability to see, focus on areas where the animals are



You'd think a moose was too big to hide. Mentally break the photo into grids, scan slowly, and you just may see the bit of moose antler near the center of the second horizontal row as the animal is cloaked in willows. Of course, moose are rarely spotted in Wisconsin and only wander in occasionally near our borders.

hardest to see. If an animal is in an obvious place, you'll easily see it. When you learn to spend your time looking in the shadows and the brush, you'll begin to find more animals. Don't have preconceived notions as to where an animal or bird will be. Look just as hard in the places you don't expect them to be.

Improving our ability to see involves more than just recording scenes; we need to use our eyes to dissect the environment. To do that, we must pay attention to what is before us. This sounds easy, but it requires practice.

Take a moment from reading this article and look at the room around you. What do you see? Try to see each item in the room. Don't just look at it — focus on it. Study it. Look at the texture, the color, the printing on it, if there is any. Quickly you realize how much is before us.

Now, recall that last glorious trip into the outdoors where you were bird watching, hunting or photographing. Recall the amount of country that you covered and what you saw. Consider what you probably missed! To truly see, slow down and spend the time to study what is before you. If, for example, you

are looking for an eagle, study everywhere it could be. Examine every aspect of that scene until you are positive nothing is there, then move on. It takes time, but it also doubles your chances of seeing what is really there.

Don't look for whole animals. Again, the videos and photos we all admire fool us into thinking animals spend most of their time completely exposed. Far more often, you'll see just an ear, the reflection of the sun in an eye, a flash of wing, the horizontal top of an animal's back in an otherwise vertical scene. Look for the unusual. Study. When something looks out of place, concentrate on determining what it is. Again, it takes time, but you'll quickly be amazed at the amount of wildlife you'll see in the process.

If you view situations as a whole, you miss those little things. To scrutinize a scene thoroughly, mentally divide the area into a grid, then systematically study each segment until you have thoroughly examined the entire scene. Above, there is a photo with a grid superimposed. Explore the scene, first by looking at the whole photo. Do you see the camouflaged animal? Now

examine the photo with the grid, one panel at a time. Does it make a difference?

Even with perfect 20/20 vision, there are limits to what you can actually see, even at relatively short distances. At 100 yards, approximately 10 feet of what you see is in critical focus where you can clearly see detail. It may be focused, but can you clearly see everything that is there? A twitching ear? The lower part of a deer's leg? Probably not.

A good pair of binoculars can help. If you look at the same scene with 7X binoculars, you have increased the size of the objects you are looking at seven times. The binoculars' magnification literally allows you to pull an animal out of its natural camouflage. Even with that, remember your eye can't focus on the entire field of view the binoculars provide. To really study the area, divide it into a grid and examine each segment for your quarry.

Obviously, binoculars are essential in open spaces, if you want to study distant subjects. But I also use binocs to examine the cover that is right in front of me in broad open spaces. Binoculars are equally indispensable in heavy cover. In brush and timber country, I use my binoculars constantly because the chance of an animal escaping detection increases with the amount of cover. Further, if the animal gets up and runs, I've missed an opportunity.

Learning to see means learning to focus your eyes on the entire picture, not as a whole, but in segments. Developing an "eye" for wildlife requires time afield, and fine-tuning your senses with experience. Our vision is a remarkable gift. Using it to casually peruse the world is like taking an Indianapolis racecar to the market for a loaf of bread. With work and experience, you can hone your senses and discover the world you've been walking by. ■

Tim Christie lives in Couer d'Alene, Idaho. He has photographed wildlife for 25 years and been a freelance writer for more than 15 years. A version of this story previously appeared in Wyoming Wildlife.

Memories of Gobbler's Nob

**How four guys and 25 years turned
45 wild turkeys into one of
Wisconsin's most successful
restoration projects.**

Ray Kyro

On April 23, 1983, four DNR wildlife specialists, three of whom also happened to be part-time farmers, waited for the early returns to come in: not votes, but reports from the first harvest of wild turkeys in Wisconsin in almost a hundred years. One farmer watching his hillsides in Harmony Township in the heart of Vernon County's Coulee Country was Beuford Baumgartner. He gazed out his kitchen window to the very spot where the state's turkey recovery program had started on a cold January afternoon seven years before.

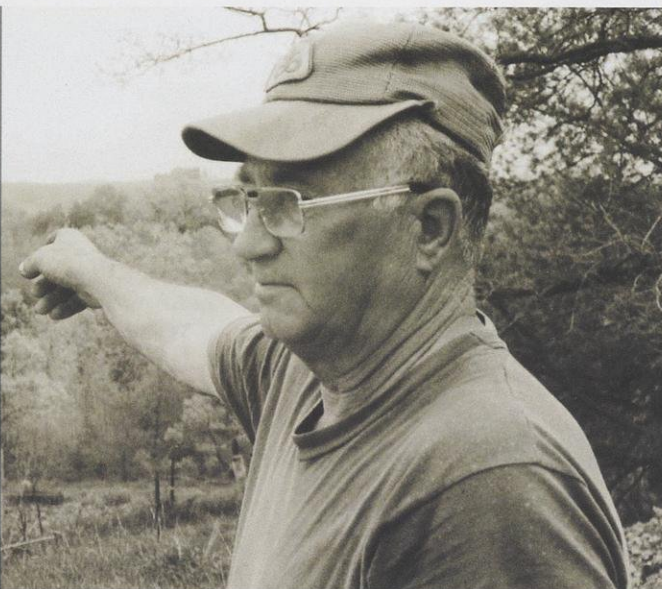
Baumgartner hoped for success. Since 1887, landowners, gun clubs and the antecedents of the Department of Natural Resources had spent time, energy and money trying to restore turkeys bred from "partly wild" stock. Each of these efforts had flapped, then flopped, like a big tom that had eaten one acorn too many.

The 1976 experiment was different. This time, real wild turkeys had been trapped one day in Missouri and stocked in Wisconsin the next. At early planning sessions, a university wildlife professor expressed concern that the Missouri turkeys might not make it through a rough Wisconsin winter, but the birds proved to be hardier and more prolific than anyone would have guessed.



See that hill over there? The DNR boys had a different area in mind, but I suggested that spot and they said ok.

Beuford Baumgartner



RAY KYRO



DNR BUREAU OF WILDLIFE MANAGEMENT

As turkey populations grew, some were captured and restocked to expand their range in Wisconsin more quickly.

Meet the “turkey boys”

Back in 1974 the Wisconsin Department of Natural Resources agreed to trade 135 ruffed grouse from the Coulee Region for 45 wild Missouri turkeys. The gobblers would be stocked in Vernon County’s Bad Axe River watershed. With luck, the offspring from these birds would be trapped and transplanted statewide.

Enter Baumgartner’s colleague and fellow farmer, Ron Nicklaus. If anyone could talk farmers into letting DNR swap Wisconsin partridge for wild turkeys that hadn’t survived in Wisconsin for a hundred years, it was Nicklaus. His credentials as a DNR wildlife manager were top-shelf: a biologist’s biologist who also owned and ran a hill farm.

Every bold new wildlife transplant program needs a bit of luck. Nicklaus’s luck was a series of mild, open winters

and a pair of assistants who could adapt, improvise and scrounge whatever was needed to get the job done. John Nelson and Charles Burke took to the wild turkey program like tom turkeys terrorizing a jake.

Nelson knew turkeys from his role as a farmer, a wildlife specialist and a champion turkey caller. I was the DNR wildlife manager in four western Wisconsin counties where turkeys were first stocked, and I asked him to share some recollections of that time.

“We were conducting gobbling counts to document survival and note movements of birds,” Nelson recalled. “As I stood along the roadside in the cool April air, I heard a sound off in the distance that had not been heard for a long, long time. It was the gobble of a wild turkey. That wild rattle of a call echoing down the Bad Axe gave me a chill. Our program was working.

“Over the next 12 years, a good share of my job responsibilities was tied into those birds and we lived and breathed turkeys,” he continued. “Even our house/field station became known as ‘Gobbler’s Nob.’”

Charles Burke, then a regional director for the National Wild Turkey Fed-

eration, came to the turkey program from graduate school. Like me, he had worked with Fran and Fred Hamerstrom, the famous prairie chicken biologists of Plainfield. Burke brought energy and creativity to the turkey project. He even talked my wildlife technician out of his cozy, warm office and into a trapping blind all winter!

When Burke left DNR, I inherited his turkey evangelist’s duties: teaching hunter education clinics, and spreading the gospel about turkey hunter safety and the importance of maintaining good landowner relations.

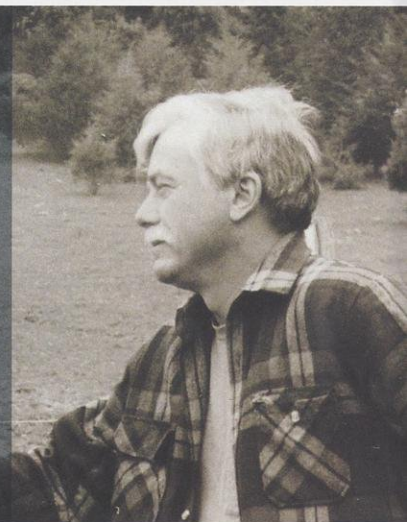
I asked Burke to recall some highlights from those early days of the turkey program.

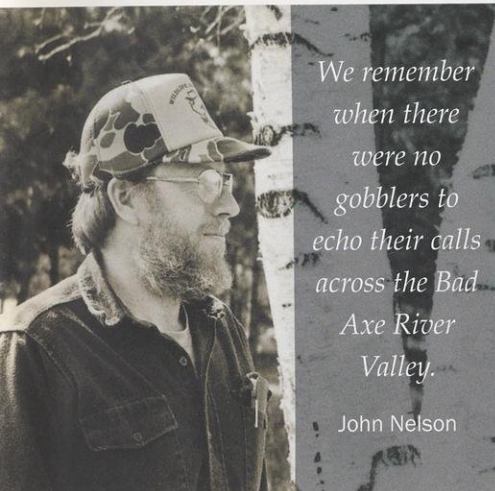
“Our daily and seasonal tasks ranged from trapping, tagging and transplanting turkeys to scripting a series of hunter safety videos to writing a manual to educate prospective turkey hunters,” Burke said. “That manual is still in use.”

“We had some funny moments,” he remembered. “Once, when we were trapping, our rocket-charged capture nets weren’t working. Turkeys are too wary to let us get close enough to throw a net over them. Places where turkeys gather are baited and once the birds are feeding, capture nets fired by small rockets are shot in an arc over their heads to trap the birds as they try to fly away. After some discussion, we decided to modify the rocket loads and set up a test. Come morning, we had the problem solved, except for one rocket that

I remember going to Madison to convince them that landowner preference was absolutely essential to a successful hunt.

Ron Nicklaus

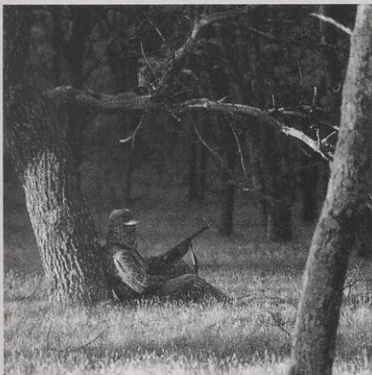




*We remember
when there
were no
gobblers to
echo their calls
across the Bad
Axe River
Valley.*

John Nelson

RAY KYRO



ROBERT QUEEN

Since hunters wear camouflage, use decoys and call-in birds, turkey hunters must be extra careful to avoid accidents.

A safe and satisfying hunt

Wisconsin's turkey hunts are among the safest in the nation, no doubt due to great training any turkey hunter can get at free spring Turkey Hunter Education Clinics sponsored by the DNR and the Wisconsin Chapter of the National Wild Turkey Federation. In 18 spring hunting seasons and 12 fall seasons, we've had only three fatal shooting accidents, and typically fewer than three injuries a year.

This year, at least 38 clinics were held from late February through early April. The clinics are widely advertised in area newspapers, sports shows and on the DNR website (www.dnr.state.wi.us) under the "wildlife" and "hunting" icons.



HERBERT LANGE

Wild turkeys readily adapted to Wisconsin winters finding food and cover in forests and fields.

we must have overcharged. It broke free from the net and for all I know, it's still in orbit!

"Another time, we were trapping during an unusually mild, open winter and the birds just wouldn't come in to eat," Burke said. "It was dry, acorns were abundant and the pressure was on to catch and transplant birds. I was in the office in the late afternoon when a call came in from our trappers. They had been in a blind since before daylight, about 30 turkeys had come in — but the rocket blast caused a small wild-

fire. I asked if they had caught the birds. After a long pause the tech said, 'Well, yes, kinda! We had them, but then the grass started burning. Then part of the net caught fire. As the net melted, the turkeys flew off!' I could only imagine the trappers' frustration, seeing five acres of grass burning as a flock of turkeys flew off into the sunset," Burke concluded.

In those early days, almost every hunter and farmer was keen on the turkey program. Sure, we had some crop damage, some hunter crowding,



JOSEPH BUTSICK

Wildlife ecology students were drafted to help capture turkeys with rocket nets for restocking in new turf.

some less-than-acceptable hunter behavior, some wrangling about licenses and stamps and the like. But today the turkey program is still on track, providing quality hunting and watching.

Nicklaus looked back on how management strategies formed as it became clear turkey populations were growing and could sustain a hunt. "We planned well," Nicklaus said. "I remember going to Madison before our first turkey hunting season in 1983 and having a long conversation with then-Wildlife Director John Keener to convince him landowner preference was absolutely essential to a successful hunt. At the end of that meeting, John concurred with my position — and so did the Conservation Congress, when attendees at the spring hearings overwhelmingly approved a turkey hunt."

Nicklaus praised the turkey program for its "bottom-up" organization. "The needs and desires of landowners and sportsmen were sought and considered from the outset, and their opinions shaped our course of action. We built relations with a key group of Vernon County farmers who liked and trusted



HERBERT LANGE

The magnificent and wary turkey delights wildlife watchers and hunters alike year-round.

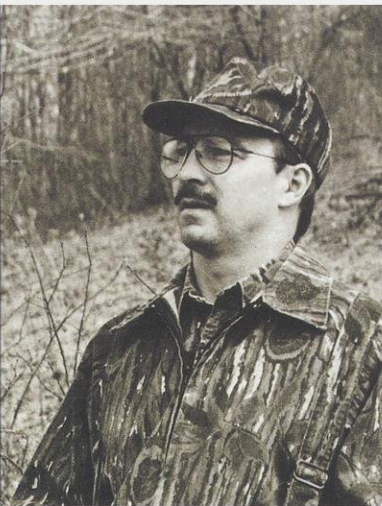
Springing for turkey

Wisconsin has come a long way since 1983 when 1,200 mostly green hunters bagged 180 turkeys in four zones. Last spring, 132,318 permittees bagged a record 38,621 toms, jakes and hens in 53 zones which included almost two-thirds of the state. Some 69,566 hunters participated in the fall hunt as well.

And this spring, a record 150,403 turkey hunting permits were issued. In 18 spring seasons, 871,234 hunters harvested a whopping 211,620 wild turkeys — a success rate around 24 percent.

Looking back at those early years, I thank the many landowners who opened their doors and their hearts to our turkey crew.

Charles Burke



RAY KYRO

local conservationists made the turkey program happen. Woe unto any poacher who thought about illegally shooting a wild Missouri turkey on a Bad Axe watershed farm!" Nicklaus said.

On a bright October day a few years ago, I drove through Coulee Country to the Baumgartner farm where the first wild Missouri turkeys were stocked so long ago. Beuford passed away in 1999, but the place still looks the same. I walked right to the spot where the first hens and toms thundered out of their shipping boxes into a snow-covered valley. Once again, I silently thanked my colleagues and rural neighbors for bringing a wonderful game bird back to Wisconsin.

Ray Kyro is a former DNR wildlife manager living in Onalaska, Wis.

Good camouflage is necessary because woodcocks nest on the ground. The nest is a slight depression surrounded by dead leaves, often located quite a distance from the peenting site. Four buff-colored eggs blotched with darker brown spots and splotches blend with their background. The leaf-colored female incubates the eggs alone, sitting on the ground where she is so vulnerable.

As she sits on her nest for 21 days, she is acutely aware of what's happening around her. Proportionately large black eyes set back on the head give her a panoramic view and allow her to see approaching predators. She sits tight on the nest and flushes only at the last instant. She bursts upward in a flurry of noise and commotion, wings twittering while zigging and zagging in her hasty departure through the woods. The unexpected explosion almost underfoot is enough to startle and distract any intruder. She later returns to the nest when danger is past. One brood is raised per year.

A woodcock's bill is its most prominent feature, seeming to cover its entire face. And what an extraordinary bill it is. Tapered and flesh-colored, the bill is about 2½ inches long. Unlike most bird bills, the woodcock's is soft and thin with a hard tip that is highly sensitive to touch. When feeding, a woodcock plunges its bill into soft mud and probes. The outer third of the upper mandible is flexible and can raise and curve up as it feels for food. If it touches an earthworm (a major component of a woodcock's diet), the bill seizes the unseen worm and pulls it from the ground. The food works up the long bill, aided by backward-projecting serrations along the upper mandible and by spines at the base of the tongue, and passes into the gullet.

Well-fed woodcocks leave their wooded surroundings, again under cover of darkness, from September into November. Their departure is dependent upon weather conditions. They spend winter in coastal marshes and swamps of the southeastern and southern states. Their return in March is a welcome sign that, despite remaining snow patches and chilly winds, spring is definitely arriving. ■

Anita Carpenter likes a front-row seat when nature performs near her Oshkosh home.

Woodcocks fledge about two weeks after birth and feed almost exclusively on worms and insects. The birds are excellent fliers zigging and zagging through aspen and young woods also favored by ruffed grouse.



PAUL PEETERS

READERS write

HOME AWAY FROM HOME

Our family has owned property and paid taxes on the shore of Chequamegon Bay since my grandmother bought the land and built her house in 1915. I inherited that home, and though my husband and I are in our eighties, we still have to buy out-of-state fishing licenses every summer. We fish the Kakagon Sloughs for northern pike, but throw them back because it's easier for us to go to a fish fry in Bayfield. We think at this point we should be allowed free fishing because we pay Wisconsin taxes and are over 65.

*Audrey and Edward Schultz
Springfield, Ohio*

If you were full-time residents here, you would certainly be entitled to free fishing as any Wisconsin resident born before 1927 can fish for free as long as he or she carries proof of age. In the past, many states passed such laws allowing their resident senior anglers to fish for free in their home state; not in other locales, even if they own property. These laws follow rules established by the Internal Revenue Service that require people to claim only one location as a primary state of residence.

FLOW CONTROL, NOT POWER

I read and liked the article on the Willow Flowage. However, the Willow Dam does not produce power and never did. The dam was not built by the power company, but by the Wisconsin Valley Improvement Corporation for flow regulation on the Wisconsin River.

*Bob Martini
Rhinelander*

PONDS WORTH THE WORK

Your article on building ponds in the December issue ("A Walden of one's own"), quickly caught my eye and I read the piece from beginning to end. However, it was only after an excited call from my son, Darin,

that we realized the wetland restoration project depicted in the photos on page 30 was our own land in Iowa County. This cost-shared project involving the County Land Conservation Service, the Wisconsin Dept. of Natural Resources, the Corps of Engineers and the U.S. Fish and Wildlife Service, was only the beginning. Since then, the land in the background of the photos has been enrolled in the Conservation Reserve Program with further wetlands restored as part of the approved plan. The next installment of this on-going effort next spring will be planting 1,000 red osier dogwood shrubs along the edge of these same ponds.

Despite the lengthy and complex planning involved, the enhanced value of the land as a refuge for wild creatures is well worth the effort — not to mention the enriched quality of life we enjoy each time we wander among the switch grass, cattails and recently planted white oaks of this wetland wonderland.

*Lee Fahrney
Five Oaks Farm
Hollandale*

DON'T FENCE ME IN

I hunted on a 40-acre plot of land owned by my husband's aunt in Trempealeau County. In November 1999, my husband shot a prize buck on this land while bowhunting. The owners of the surrounding land felt this was "their" deer since they had been watching it for several years and collected some of its shed antlers. These neighbors were so mad that they put up a 10-foot fence around the entire 40 acres. They started by fencing the land they owned, then got permission from the two other owners of the surrounding land to fence-in the rest. This year, I don't have a place to hunt because the only fence opening on the 40 acres is the driveway. There is no source of water on our land, so many animals have

COMMENT ON A STORY?

Send your letters to Readers Write, WNR magazine, P.O. Box 7921, Madison, WI 53707 or e-mail letters to sperl@dnr.state.wi.us.

left or something worse has happened.

We alerted the Department of Natural Resources to this situation. They advised us there is absolutely nothing they can do. I wonder how many people are going to buy 10 or 20 acres of land from farmers for hunting if they have no guarantee of not being fenced-in by their neighbors. I find it disturbing that other people can control my turkey or deer hunting activities by erecting fences. I didn't know people could "own" deer in Wisconsin.

Suzanne Marsolek
Whitehall



MEET THE DNR SECRETARY

On February 6, 2001, newly sworn-in Gov. Scott McCallum appointed Darrell Bazzell as Secretary of the Wisconsin Department of Natural Resources (DNR).

Bazzell served as the agency's deputy secretary for five years overseeing the daily operations and activities of 2,900 employees. From 1993 to 1996, he headed DNR's Office of Planning and Analysis, supervising bud-

geting, management, finance and licensing activities.

As Deputy Secretary, his duties included overseeing land acquisition, revising the agency's strategic plan and developing ways to measure agency performance.

Bazzell graduated from North Division High School in Milwaukee and received a Bachelor of Arts degree from the University of Wisconsin-Madison. He has been active in numerous community service and professional organizations. He is the current president of the Wisconsin Associa-

tion of Black Public Sector Employees Board of Directors and also is a Big Brother. In his free time, Bazzell hunts, fishes, bikes and hikes in Wisconsin's outdoors.

In his early conversations with employees, Bazzell said DNR will stay the course — managing resources by interpreting scientific data, enforcing state statutes, keeping the same important priorities and learning from our many constituents. Some of the first issues he will tackle include establishing state protection for wetlands that were

called into question by a recent U.S. Supreme Court decision, opposing legislation to split the Department of Natural Resources into two agencies, and assuring that opportunities for traditional outdoor sports, like hunting and fishing, remain available to all state residents.

SHANTY SHOTS

Remember to share slides and photos of your ice shanty's unusual features. Send in shots by June 30 with a short description of your hardwater home away from home.

UPDATES

PURPLE LOOSESTRIPE

There's encouraging evidence that our program to curb purple loosestrife in wetlands by releasing biological controls (beetles) is working. (See our story "An invasion beaten by eatin'," August 1998.) The beetles decrease flowering and seed set by feeding on loosestrife flower buds. In fact, flowering on small sites (less than an acre) often practically disappears after only two to three seasons of treatment. Since purple loosestrife disperses primarily from seeds, eliminating them should help stop the spread of this nuisance plant. Leaf feeding by beetles also can help native plants choke out purple loosestrife plants themselves.

Statewide, citizen cooperators have helped raise and release beetles into over 200 Wisconsin sites so far, and now you can acquire them for your local wetland, too. DNR can provide training and identify locations where beetle treatments may be effective. These insects feed exclusively on purple loosestrife. Trained groups are authorized to buy and release what they need (2,000 beetles for \$450), or better yet, they rear their own beetles through a process that is simple, cheaper and fascinating. Groups typically grow loosestrife outdoors in pots, enclose them with netting and produce 10,000 beetles for \$200-\$300. Most of the work can be done in just a few days plus, there are GREAT educational opportunities every step of the way. Consider this a must-do project for teachers interested in hands-on, real-life problem solving as part of their curriculum.

Late March or early April — as soon as local wetlands thaw — is the time to transplant loosestrife into pots, so if you are thinking of starting this year and would like help, write or

call me immediately at the Department of Natural Resources.

Brock Woods
Purple Loosestrife Biocontrol Project
DNR Research Center, Monona, WI 53716
608-221-6349 e-mail: woods@dnr.state.wi.us

DEER HUNTING CHANGES

Following presentations at its January meeting, the Natural Resources Board approved changes to the deer hunting seasons that incorporate recommendations of DNR staff and the Deer 2000 committees. These proposals will be reviewed by state legislators and the new framework could be in place this fall, dependent on legislative action. Significant changes:

- A permanent, statewide four-day gun deer season would begin two weeks after Thanksgiving in the southern three-quarters of the state.
- The muzzleloader deer hunting season would be extended three days.
- The bowhunting season for deer would open on the same day that small game hunting opens. A late bow season would begin the day after the nine-day gun season closes and end on the Sunday nearest Jan. 15.
- A streamlined process would allow DNR wildlife managers to determine deer management units eligible for the Zone T and issue tags for those units.
- A one-day youth hunt would be held for 12-15 year olds on the Saturday after the pheasant opener (except in units that already are open to all deer hunters that weekend under the Zone T program).
- As a consistency measure, all deer would have to be registered in the unit of kill or in an adjacent unit.

Flush with spring

Who cares if that blasted groundhog saw his shadow or not, whenever it was, six or eight or 52 weeks ago? Surely you are not the sort of person who lets a mere woodchuck — a common rodent, for Pete's sake — dictate the progress of *your* seasons. No. TRAVELER suspects you are the proactive type. Someone who snatches the mail from the postal carrier's hand before the beleaguered civil servant can even slip it into the box.

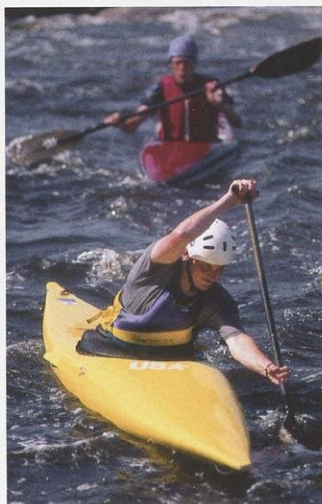


In other words, you'll have those paddles ready when the ice melts in the state's rivers and streams and the water is running faster than Marion Jones.

Early spring is an exciting time to haul out the canoe, kayak or raft and ply Wisconsin's waters. Flush with snowmelt, rivers and streams offer challenging action and

watch birds and wildlife. You'll get a jump on summer's boating throngs, too.

Those in search of liquid intensity will find the **Bois Brule**, the Wolf and the Peshtigo rivers worthy adversaries. The almost continuous rapids on the lower stretch of the Bois Brule, south of Hwy. 2 in Douglas County, will put your advanced paddling skills to the test. (If your courage should fail, take heart in knowing there are portages around the Class III-IV rapids at Lenroot and May Ledges.) Novices should stick to the river north of Hwy. 2, where the rapids are more...genteel. (715) 372-5678.



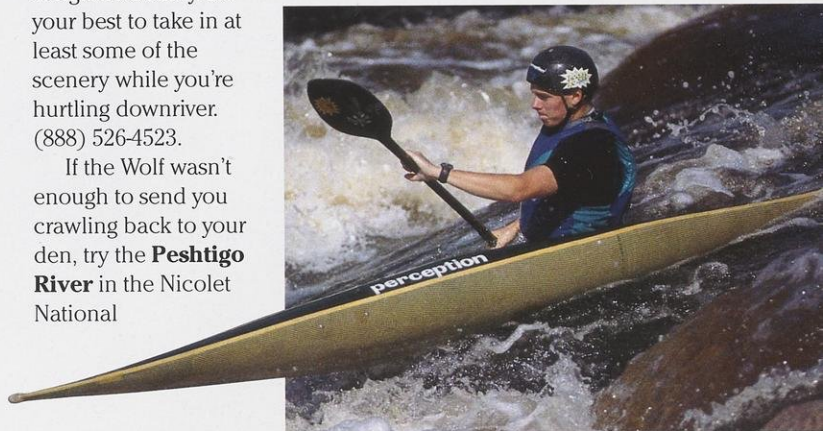
Thrill-seeking kayakers and canoeists hit the Wisconsin rivers during the spring thaw.

great fun. Top-notch rapids lie in wait for the bold, the brave and the bumptious.

If rapid wrangling isn't for you, there are plenty of slower stretches to provide quiet recreation and fine opportunities to

You'll howl with glee as you tumble down more than 20 miles of Class I-V whitewater rapids on the **Wolf River**. The unruly Wolf, designated as a National Wild and Scenic River, cuts a lively swath through Langlade County. Do your best to take in at least some of the scenery while you're hurtling downriver. (888) 526-4523.

If the Wolf wasn't enough to send you crawling back to your den, try the **Peshtigo River** in the Nicolet National



Forest, Marinette County. It's been said the Peshtigo's Class II-IV rapids offer the best whitewater in the entire Midwest. With rapids named "Toothache" and "Veg-O-Matic" it's difficult to doubt the veracity of that claim. When you've had enough thrills and spills, calm down in the river's quieter stretches near Crivitz. Check Peshtigo River

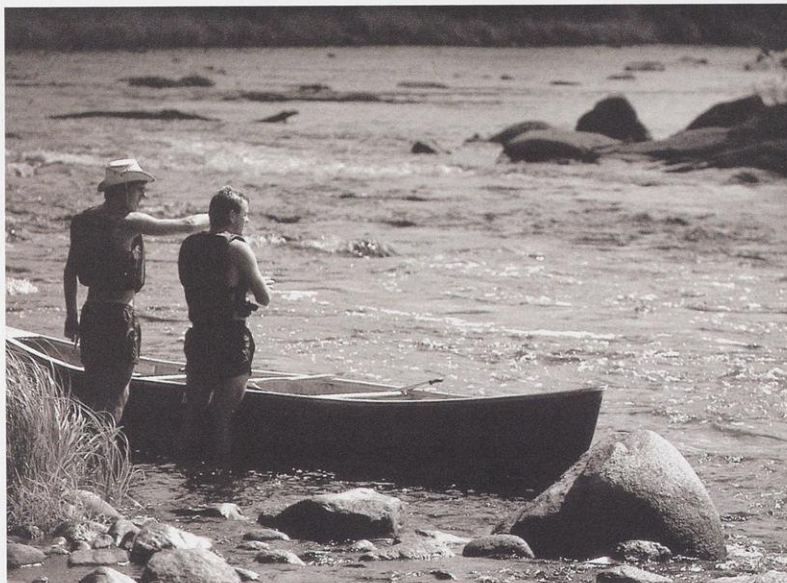
water levels on the web: www.silvercliff.com.

If you're in need of an outfitter to furnish canoes, kayaks, rafts, tubes, guides and courage, visit the Wisconsin Department of Tourism website, which has a

Waters in April and May are cold and fast. Wear protective gear and plan your trip.

complete list by region: travel.wisconsin.com/activities/canoeing.shtml

Take an extra measure of precaution when you're out on the water in spring. You will, of course, wear a PFD — personal flotation device, and a helmet if you're plying rapids. A spill in cold springtime waters may be momentarily bracing, but can lead to hypothermia. Notoriously unpredictable spring weather kicks up wind and waves. Dress in layers, keep your wits about you, plan your trip with a group, mind the weather and you're sure to enjoy the ride! ▀



ALL PHOTOS THIS PAGE BY ROBERT QUEEN

Wisconsin, naturally

CENTENNIAL BEDROCK GLADE STATE NATURAL AREA

Notable: One of our newest state natural areas, named in recognition of the 100th anniversary of Interstate Park which envelops this 17-acre gem. The site features an outstanding example of a bedrock glade perched atop a prominent exposure of basalt, or traprock, laid down by Precambrian lava flows. Small potholes "drilled" into the bedrock attest to the power of swirling meltwater from the drainage of Glacial Lake Grantsburg. The thin soil and hot, dry conditions support a variety of organisms adapted to the harsh microclimate, including many types of lichens, dry prairie plants and prickly pear cactus. The woodland surrounding the glade openings contains stunted, open-grown oaks.

How to get there: Within Interstate Park, Polk County. From the junction of U.S. Hwy. 8 and State Hwy. 35 in St. Croix Falls, go south on 35 a quarter-mile to the Interstate Park entrance. Inquire at the visitor center for directions to the glade. Wisconsin Atlas: page 70, grid A3. For more information, contact the State Natural Areas Program, DNR, Box 7921, Madison, WI 53707.



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