



Wisconsin natural resources. Vol. 29, No. 2

April 2005

[Madison, Wisconsin]: Wisconsin Department of Natural Resources, April 2005

<https://digital.library.wisc.edu/1711.dl/WDI475V4RNI5J9D>

<http://rightsstatements.org/vocab/InC/1.0>

The libraries provide public access to a wide range of material, including online exhibits, digitized collections, archival finding aids, our catalog, online articles, and a growing range of materials in many media.

When possible, we provide rights information in catalog records, finding aids, and other metadata that accompanies collections or items. However, it is always the user's obligation to evaluate copyright and rights issues in light of their own use.

WISCONSIN NATURAL RESOURCES

www.wnrmag.com • April 2005 \$3.50

Coulee trout

75 field trips

Milwaukee River on the rebound

SPECIAL INSERT: SPREADING LIKE WILDFIRE



Stealth on silent wings

Barn owls' deadly accurate nighttime flights are an all too rare sight.

Ann Bailey Dunn

The Common Barn Owl is one of Wisconsin's rare birds, a remarkable bird of prey that can silently and accurately find its way and capture prey in total darkness.

The barn owl can turn its head more than 270 degrees, almost completely around, in order to see its surroundings. Its fearless brown eyes are fixed within the sockets and are as large as a human's. Extremely large retinas give the barn owl binocular vision that is from 50 to 100 times more efficient than human sight at distinguishing small objects in dull light. Sharp vision is matched by unequalled hearing. The barn

owl's ears lie under its round facial disks. Its ears are slightly different sizes and one is located a little higher on the head than the other. This asymmetrical placement enables barn owls to sense direction and distance with incredible accuracy. This owl can detect a mouse stepping on a dead leaf from over 75 feet away. Its dinner menu includes mice, shrews, moles, rats, birds, frogs, insects, lizards, bats and baby rabbits.

A creature of the night, the barn owl's unmistakable high-pitched screeches and eerie hiss-screams are occasionally heard throughout the southern third of the state. On a still night its calls travel for miles.

continued on page 29

WISCONSIN NATURAL RESOURCES

April 2005
Volume 29, Number 2



AL CORNELL



DNR PHOTO



TIM SWEET

2 Stealth on silent wings

Ann Bailey Dunn

Its nighttime screech is a rare hair-raiser, but this owl is a beautiful sight.

4 Coulee trout

Judy Nugent

The lure of trout fishing southwestern Wisconsin streams.

8 A lesson in patience

Dan Rudebeck

Spring comes in its own sweet time.

10 Time to travel!

Christine Tanzer

Choose from 75 field trips from spring through fall.

16 Spreading like wildfire

DNR Division of Forestry

Planning fire prevention as communities grow into wildlands.

20 River on the rebound

Kathleen Wolski and William Wawrzyn

The Milwaukee River and the city are enjoying a remarkable comeback.

25 Keepers of the flame

Tim Sweet

Come to the tippy tip of Door County to see the light and take a trip to the past.

29 Readers Write

31 Hawks and herps

Maureen Mecozzi

Join Traveler at a spring reptile show and on some bird walks.

FRONT COVER: Restored and improved trout streams throughout southwestern Wisconsin provide ample opportunity to pitch a line in beautiful surroundings.

Judy Nugent, Waukegan, Ill.

BACK COVER: Quincy Bluff and Wetlands State Natural Area, Adams County. For information, or to order a guidebook, contact the State Natural Areas Program, Bureau of Endangered Resources, DNR, P.O. Box 7921, Madison, WI 53707 or visit www.dnr.wi.gov/org/land/er/sna.

© Thomas A. Meyer, WDNR

Editor David L. Sperling

Associate Editor Natasha M. Kassulke

Contributing Editor Maureen Mecozzi

Circulation Manager Kathryn A. Kahler

Business Manager Laurel Fisher Steffes

Art Direction Thomas J. Senatori,

Waldbillig & Besteman

Printing Royle Printing



PUBLICE-012

ISSN-0736-2277

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

© Copyright 2005, Wisconsin Natural Resources magazine, Wisconsin Department of Natural Resources, P.O. Box 7921, Madison, WI 53707. <http://www.wmrmag.com>

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

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

Governor Jim Doyle

NATURAL RESOURCES BOARD

Gerald M. O'Brien, Stevens Point, Chair

Herbert F. Behnke, Shawano

Jonathan Ela, Madison

Howard D. Poulsen, Palmyra

Christine L. Thomas, Plover

John W. Welter, Eau Claire

Stephen D. Willett, Phillips

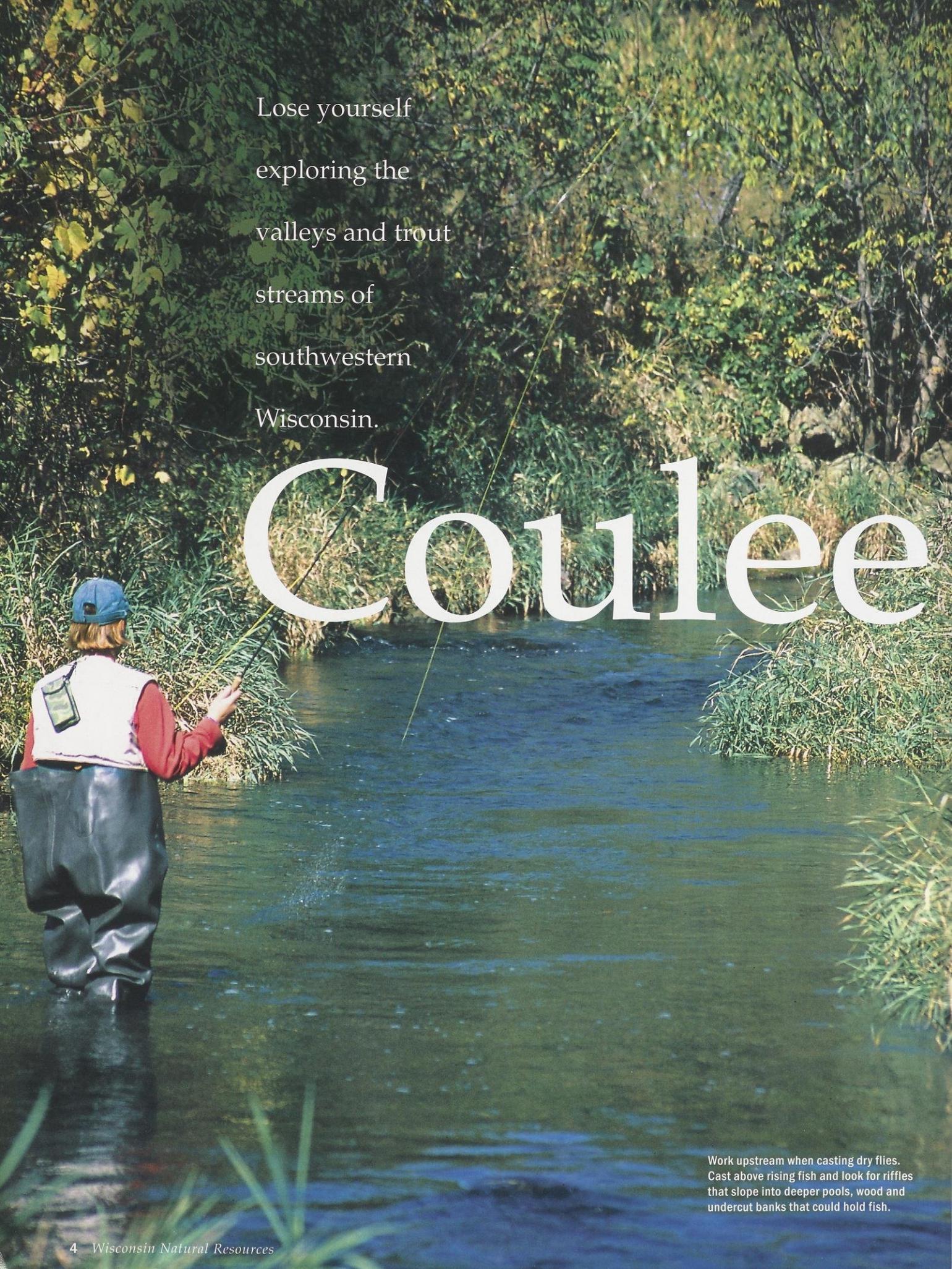
WISCONSIN DEPARTMENT OF

NATURAL RESOURCES

Scott Hassett, Secretary

William H. Smith, Deputy Secretary

Mary W. Schlaefler, Executive Assistant

A photograph of a person fly-fishing in a river. The person is seen from the back, wearing a blue cap, a red long-sleeved shirt, and black waders. They are standing in the water, casting a fly line upstream. The river is surrounded by lush green foliage and trees. The water is clear and reflects the surrounding environment.

Lose yourself
exploring the
valleys and trout
streams of
southwestern
Wisconsin.

Coulee

Work upstream when casting dry flies.
Cast above rising fish and look for riffles
that slope into deeper pools, wood and
undercut banks that could hold fish.

trout

Story and photos by Judy Nugent

My fly rod thumped vigorously as I stripped line on a native trout that engulfed my homemade fly. I was in Grant County in late April casting for trout on the last day of the early season. I spent the previous night in a tent next to a gurgling brook and was awakened at first light by a rousing chorus of gobbling turkeys. The cool morning air soon gave way to warm breezes and a heavy hatch of insects. I heard this trout before I saw him. Fishing just downstream, I heard his loud splash as he aggressively inhaled an unsuspecting insect. Even as I fought this trout, his cousins continued to feed, greedily taking advantage of the spring bounty.

Trout fishing in southwestern Wisconsin hasn't always been this good. There were days 30 years ago where I'd be lucky to get two fish a day. Now, thanks to combined efforts of DNR staff, local Trout Unlimited chapters, landowners and others, I can catch and release ten times that number of trout in a day. And the best part is most of these fish are homegrown.

Native trout need quality habitat to reproduce, and the great recovery of these streams is due to sustained conservation. A historical marker west of Coon

Valley on Hwy. 14 commemorates the nation's first watershed project started here in 1933. The Soil Conservation Service and the University of Wisconsin partnered with local landowners to develop and use better land management practices. They focused on reducing erosion, flooding and cutting fertilizer runoff while improving agricultural practices, timber stands and wildlife habitat. Farmers were encouraged to use the now ubiquitous contour stripping for their crops. A growing land ethic only grew stronger. It is not uncommon to drive

through this area in March and see volunteer sportsmen working to stabilize streambanks or improve trout habitat.

Lots of tools improve streams

A key to improving water quality is controlling polluted runoff. Some practices include engineering like dry dams to help control floods and slow pollution before the deluge reaches the stream. The water slows behind the dam and slow moving water drops most of its sediment load and pollutants before it enters the stream.

Other strategies include putting in vegetative buffers. The Conservation Reserve Enhancement Program is buying 160-foot easements on both sides of streams to plant buffers to filter harmful pollutants before they reach the water. Cooperating landowners are compensated with an upfront payment as well as a yearly payment as long as the land remains in an easement. The cost of planting buffers is reimbursed 100 to 110 percent.

Other improvements aim to stabilize soil. The combination of erosion and cattle can send hundreds of tons of soil downstream. Streambanks are stabilized by placing riprap to prevent damage. The rock is then covered with soil and seeded with grass seed. Often the bends in the stream will have a lunker structure underneath. This artificial structure provides cover and shade for growing trout. The lunker is composed of several long oak boards nailed to form a wooden pallet with a hollow center area and a top lip that extends over the water to create shade. The lunker is anchored to the bank and streambed with rebar and heavy face rock. Soil and vegetation are restored on top.

Stream crossings are set up for the cattle, generally in shallow straight sections that are convenient for the farmer. In this way conservation practices and pasturing can work hand in hand.

In streams where adequate habitat has been lost or degraded, pea-sized gravel can be shoveled on the bottom to simulate the natural substrate that fish choose to use when reproducing. Rocky bottoms in fast-moving current provide plenty of oxygen, food and spaces where fertilized eggs can lodge and develop. Fisheries biologists also look to ensure that there are no obstructions downstream like dams that would impede upstream migration to the spawning ground.

Once DNR crews and partners have finished stream improvements, it usually takes two years or so for the land to heal and for the fish to move in. Sometimes the Department of Natural Resources will stock the area to encourage the recovery. Teams will come back in subsequent years to monitor fish density, survival and reproduction.

When you are planning your fishing trips, it is best to avoid fishing the newly improved streams. For one, you'll run into many more fishermen who have also read about the new improvements. Second, it takes a while before fishing will meet your expectations. Those stream segments were improved because they were marginal waters that needed help before they could hold



Eroding streambanks can be lined with rock then covered and seeded to stabilize soil, restore a natural look and improve fishing.

significant numbers of trout. Make a note in your logbook or on your trout stream maps. Mark the date when streams were improved, wait two or three years and you are more likely to find fish when you return.

The fish you'll find

The most prolific trout in the region is the brown trout. Brought from Germany and introduced in the U.S. in the 1880s, brown trout were more adept at dealing with warmer water, lower oxygen levels and more sediment in the water. These beauties can vary in color especially when compared to Great Lakes browns. In general, stream fish are olive green to brown color on their backs and are golden yellow on their sides. Most of their body has black spots surrounded by light circles with red spots along the lateral line. Their tails are square with few, if any, spots. Fishing these trout requires stealth, cunning, accuracy and light tackle. They tend to live longer and grow larger than brook trout, but it is rare to see a brown trout larger than 22 inches. A 26-incher is a once in a lifetime experience; most tend to be between 12 and 16 inches, but with light rods and many hungry fish, it is a fishing experience

that will keep you coming back for more.

Brook trout differ from browns in appearance and water preference. Brookies have worm-like squiggly markings on their backs and red spots surrounded with bluish halos. The most distinguishing features are white-tipped fins along the bottom of the trout. These fins will also have a distinct red, orange or yellow tint depending on the season. During mating season, the colors will be most vibrant. Brook trout need clean, cold streams to survive and reproduce naturally. They are most abundant in the headwaters and upper tributaries of the streams.

Angling tactics

When looking for trout on a stream you have never fished before, wear polarized sunglasses to cut glare on the water as you scout for fish with square tails. Concentrate on pools under the bridges or in deeper pools at the ends of riffles. Don't spend time exploring the shallow flat water. These areas are the first to warm up and offer no cover for wary trout. Often you will see chubs and other rough fish dimpling the water. Don't be fooled; these are not trout. Instead, look to the pools at the foot of riffles, deep water, rapids and undercut banks. Don't dismiss rock walls. Fish hold tight against a wall and



This scrappy brown trout was released to fight another day. All trout must be released in the early season. Handle them gently and release them quickly.



often can't be seen even with polarized glasses. Any fish with a forked tail is not a trout, but if you catch one, put it back in the water. These bait fish are groceries for the trout over 18 inches. The more chubs, the bigger those feeding trout grow.

For dry fly fishing, cast upstream a few inches above where you see a rising fish or expect a fish to be. Let the current carry your fly back downstream and reel in the extra slack so you can react if you get a strike. If your dry flies aren't working, let them sink slightly under the water as fish rise just under the surface. When nothing else seems to work, switch to a terrestrial imitation. Small crickets fished on and under the surface do well.

When casting nymphs, fish downstream and let the current pull your fly through the water. On water that has been improved, try to sneak the fly underneath undercut banks and lunker structures. Some of these structures can go three feet back under the bank, so allow for extra line. The DNR and local chapters of Trout Unlimited have invested both dollars and hours putting lunker structures into hundreds of streambank miles. They've brought many streams back from the brink of destruction by combating poor land practices, erosion, animal waste problems, and fertilizer runoff. Thanks to a joint effort between fishers and farmers,

these waters are reaching their prime.

For spincasting, bring spinners (size 0-2) and small floating crankbaits. Use an ultralight rod with 6-lb. line.

I think it's best to avoid fishing with live bait. You can't use it in the early season, and undersized fish are more often gut-hooked after swallowing live bait.

Planning a trip

Detailed maps of all the Wisconsin trout streams, including regulations, minimum size, bag limits and stream designation, are provided to DNR license outlets and usually can be found where you buy your license.

Don't limit your fishing experiences to a few waters. Exploring new places is what Wisconsin trout fishing is all about. Drive around to the different streams, see the abundance the coulee region has to offer and don't judge a stream by what you see at a bridge. Water that might look too narrow or too full of obstructions can have terrific pools just upstream. I know one stream that looks awful at every bridge that crosses it. On a beautiful spring day I decided to have an adventure exploring this creek. I didn't expect to catch a thing; I was just going to enjoy the sunshine and the singing birds. Not more than 50 yards upstream from the first bridge, I came upon a deep pool the size of an average closet. On the first cast I had a 16-inch brown, and I caught similar fish on the next five casts. I had to keep tight casts and change flies once they stopped hitting, but that day still remains one of my best on the water.

Pay attention to the lower stretches of these watersheds. There may be fewer fish, but they are worth the wait. The largest fish I ever saw on a coulee creek was one I was never able to hook. I was fishing with a #10 hare's ear in a deep pool next to a mature willow tree. Under a knot of roots in the river I caught a 10-inch brown and was enjoying the tussle. As he fought back, a 5- to 6-pound trout came out from under the roots and attempted to eat the 10-inch trout. Now that was an experience! I quickly landed my fish, cut my 5x leader back to the 2x, tied on my biggest streamer and went after him. Cast after

cast coaxed the fly under the roots. Nothing. I have been back several times for that trout, but I've never seen him again.

More and more trout anglers religiously practice catch-and-release. They understand the fragility of fisheries and the pressure of more and more anglers. They are committed to keeping the sport in sportfishing. They are encouraged by foresighted DNR officials who have recommended barbless hooks, a catch-and-release early season and an artificial bait restriction. Proper release guidelines help too: don't play a fish to exhaustion, handle a fish in a net gently, turn the fish belly up to remove hooks and don't remove swallowed hooks — just cut the line — and don't keep a fish out of water for more than 10-15 seconds.

Savor the whole region when you fish

Wisconsin is made up of some of the friendliest people I have ever met. If you see trout water you would like to fish but you don't see a public access sign, ask the landowner for permission. If you see DNR improvements, thank the landowner for allowing the fisheries' crews and volunteers to help the stream. Courtesy will go a long way in promoting farmer and fisherman cooperation as we strive to improve our waterways.

The best part of trout fishing in southwestern Wisconsin is exploring one of the most picturesque areas of the state. Trout water can be found in nearly every valley, so there is very little pressure to find good water. You could fish every day in the summer and never need to fish the same place twice. And the joys go beyond fishing. Traverse this area of the state as Chief Black Hawk did almost 200 years ago. Taste handmade Amish chocolates and warm Norwegian fruit pies. Bid at a quilt auction or take home a country antique. That large brook trout at the end of your line is just an added benefit. So grab your rod and your camera, and explore coulee country.

Avid trout Judy Nugent writes from Waukegan, Ill.



Geese wait out the last ice as they ready for the spring work of raising a brood.

A lesson in patience

Ready for the seasons to change? Take everything in its time.

Dan Rudebeck

I have lived one place or another on the Winnebago System for almost all of my 57 years, and if I live here for 57 more, I doubt that I will ever cease to wonder at the coming of spring in these parts. On this last day of February it is still winter for all practical purposes, but for the past several days the weather has warmed beyond the norm, and spring has shouldered its way in as if impatient to begin.

The geese came back the other day, as did the first redwings. And this morning we heard the ancient, haunting music of sandhill cranes as the first pairs arrived to reclaim their nesting territories. Others report seeing robins and the first wood ducks. I wonder where these early arrivals will find sustenance when winter returns as it surely will to tighten an icy grip on the land

one final time.

Still, this happens every year, and I always worry, wonder and marvel every year that most of these early birds survive. They are hardier than I and have followed the 32-degree isotherm north since before the first human footprint was laid down upon this land, so who am I to question the rightness of it all?

Perhaps this is my way of coping with a great longing to find a true end of winter, cold, snow and ice when I first hear their calls. Next to spring, change is my favorite season, and when I see the beginnings of change arriving, I grow impatient. The short days of December give way so slowly to earlier sunrises and longer twilights in January and February. Something within me reaches out searching for the next

season. I am done with winter, so let it be done with me.

Fortunately, nature sees things differently. There are preparations to be made, and each species must have its rightful turn. For several nights now, pairs of owls have been asking their one great question from the trees that border my property. They will nest shortly, and their young will be well fed on the abundance from the coming spring and early summer. Populations of mice, voles and other prey species will be controlled within sustainable limits, and the owls too will continue as they have for millennia.

The edges of Lake Poygan where I currently make my home are beginning to thaw, as are the adjoining marshes. Before the ice leaves the rest of the lake, these shallow areas, warmed and

recharged by runoff from the thawing countryside, will open and northern pike will arrive to lay their eggs along the marsh edges. By the time the water has warmed sufficiently to accommodate other species, the northern fry will have hatched and another generation of these toothy predators will be safely away.

In the marshes and ditches the first mallards will soon reconnoiter for nesting sites and brood water. Wood ducks too will return to the places where they were reared, searching for suitable places to continue the species.

As the lake begins to open, diving ducks, loons, swans and a host of other migrants will pause briefly to recharge their batteries before continuing to more northerly breeding grounds. They will continue to push the edge of winter all the way up to their summer homes, but they take a calculated risk in pushing too hard, too fast. They have to find enough buglife and other food to survive.

Other preparations are progressing beneath the ice even during the dead of winter. The first spawning sturgeon, I'm told, begin moving toward their spring spawning grounds as early as December. Theirs can be a leisurely journey that allows eggs to fully develop as the sturgeon eat their way upstream. Not all of their kind choose this slow migratory path. Lake sturgeon are residents of the entire Winnebago System, and they pretty much live and travel great distances. Walleyes too, from Winnebago and the upriver lakes, begin making their way toward the lower Wolf and upper Fox rivers long before these waters are ice-free. This happens every year, even though spawning will not take place until April when the marsh waters reach a balmy 46 degrees. Since they have adequate feed throughout their range, the reason for this early movement is not readily apparent. Perhaps, like me, they are simply impatient. The urge to reproduce is powerful indeed, and if you don't believe this old man, go ask a 20-year-old!

As February ends, the pace will pick up. Spawning grounds will teem with fish. The skies will flow with skeins of



DAVID L. MISTEREK



JACK R. BARTHOLMAI

migrating geese, and once again we will be treated to the sight of great white tundra swans spread out against a cobalt sky as they ride the wings of a lusty March storm. The days will lengthen, and we will bask in longer silvery twilights.

Soon the dead brown marsh grass of winter will give way to a low, slow world of green, as nature, the ultimate biochemist, rebuilds life one cell at a time until the earth itself seems pregnant. Spring peepers will sing their love songs, the trees will be heavy with blossoms, and the first spring ephemerals will add their subtle hues to the developing palette. Ducks and dickeybirds alike will dress in their finest colors for the great spring dance. Drakes will strut and spar, hens will do the choosing, families will start, and all at once it will be summer. We will sit in the warm sun on sleepy afternoons to doze or watch

as life unfolds and ripens.

For now, I'm prepared to rein in my enthusiasm and look forward to the

process more than completing these annual changes. There's beauty in both the intricate melody of spring and the tempo that is best enjoyed by taking the time to listen to each note, to allow each crescendo to arise naturally, to hear each gurgle, each green shoot in the wind, each flapping wing and the collective voices of mammals, birds, fish, frogs and even insects at a natural pace. Have the patience to savor the season's gradual arrival.

Dan Rudebeck writes from Larsen near the northeast shore where Lake Poygan flows into Lake Winneconne.

TOP: Sturgeon take their sweet time migrating to spawn when melt waters just start to warm up in the shallows.

ABOVE: Chipmunks emerge from winter dens when late snows still fall.



Time

Christine Tanzer

Get out your calendars and join us for some field trips. The Natural Resources Foundation is sponsoring 75 day hikes — mainly guided walks, tours and leisurely paddles — in the company of DNR staff who are happy to point out plants, animals, progress and challenges in managing natural resources.

Come along on guided field trips from April through October.

to travel!

These 75 trips are arranged chronologically from April through October. Assume these day trips fall on Saturdays unless otherwise noted. The physical demands of each trip are noted by the tint color behind each trip number.

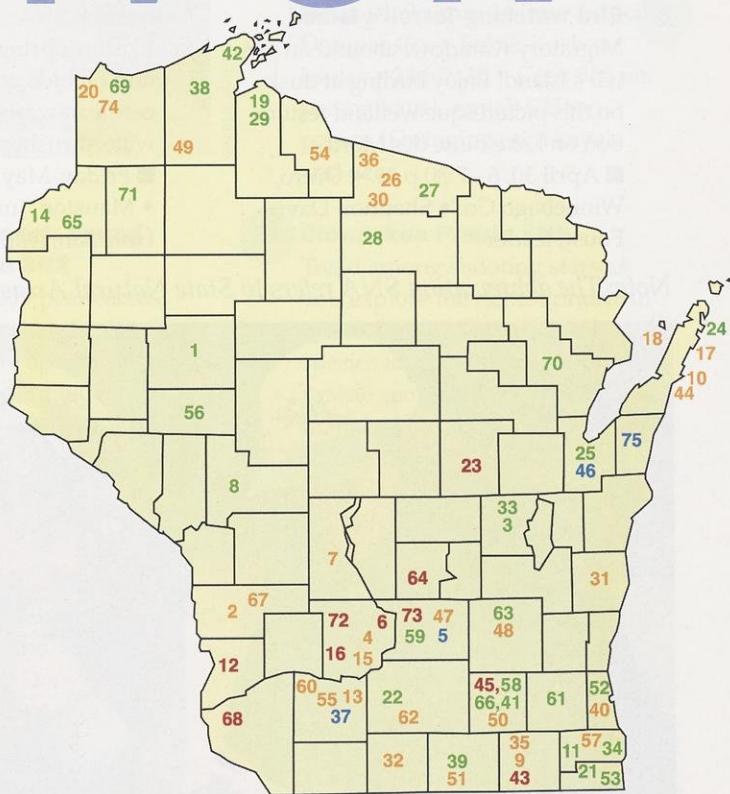
Space is limited and trips fill quickly on a first-come, first-served basis. Trips that can accommodate fewer than 20 people show these limits in the listing. If you'd like to join us on a canoeing or kayaking trip, please only request one such trip per family or group. These trips are especially popular.

Photocopy the registration form and fill it out in pen, listing the trip number and number of people in your party. Tally any per person fees for those few

trips that charge for providing lunch, boat or canoe rentals. Calculate total costs, include an annual \$30 trip registration, and please mail one check payable to the Natural Resources Foundation of Wisconsin to the address indicated on page 19.

Details and directions will be sent to registrants two weeks before each trip. Fees are nonrefundable if you cancel, but parties on waiting lists that can't be accommodated will receive refunds.

You can check if trips still have space available on our website www.nrfwis.org, or call toll-free (866) 264-4096 after 5 p.m. to hear a recording that provides trip updates. Further questions? Call me on Wednesdays at (608) 264-8548 or send an e-mail to: christine.tanzer@dnr.state.wi.us.



● Accessible to people with walking disabilities
● Easy, short travel on level terrain
● An average hike with a few hills
● Steeper terrain, a longer hike or canoe trip with a few small rapids

TRIP LOCATOR MAP

1. Frogs and toads of northern Chippewa

Identify frogs and toads by their chirps and chortles while exploring several sites in northern Chippewa County.

- Friday, April 29, 8 - 11:30 p.m.
 - Eagleton, Chippewa Co.
 - Bruce Neeb & Rob Strand, leaders • Limit: 12 • Cost: \$25 per party includes field guide and tape.

2. Sugarbush and oak: private woodland management

Enjoy the woodland wildflowers in bloom as we visit an oak regeneration project and a sugarbush that uses gravity flow tubes to collect sap.

- April 30, 9 a.m. - 1 p.m.
 - La Farge, Vernon Co.
 - Chris Widstrand, leader

3. Bird watching Terrell's Island

Migratory waterfowl abound on Terrell's Island! Enjoy birding at dusk on this picturesque wetland restoration on Lake Butte des Morts.

- April 30, 6 - 7:30 p.m. • Omro, Winnebago Co. • Shannon Davis-Foust, leader

Note: The abbreviation SNA refers to State Natural Areas.



Enjoy trip #6 for a close look at plants and a long look from the river bluff.

4. Parfrey's Glen SNA

Explore the natural and human history of this spectacular 100-foot gorge cut into the Baraboo Hills.

- May 7, 9 - 11:30 a.m. • Baraboo, Sauk Co. • David Bouche, leader

5. Making maple syrup

Learn how maple syrup is made and taste the homemade goods at MacKenzie Environmental Center.

- May 7, 9 a.m. - noon • Poynette, Columbia Co. • Derek Duane, leader

6. Ferry Bluff vistas

Enjoy an exceptional show of spring woodland flora with a breathtaking view of the Lower Wisconsin River atop the bluff.

- May 7, 9 a.m. - noon • Sauk City, Sauk Co. • Janeen Laatsch, leader

7. Birds and plants of Bass Hollow SNA

Explore spring wildflowers and orchids on the trail of cerulean warblers and Louisiana waterthrushes.

- Friday, May 13, 7 - 10 a.m.
 - Mauston, Juneau Co. • Randy Hoffman, leader

8. Owls of the Black River

Discover the darker side of the Black River State Forest on a night filled with aerial displays of American woodcock and the sounds of owls, whip-poor-wills, snipe, frogs and maybe even a wolf!

- May 14, 7 - 11 p.m. • Black River Falls, Jackson Co. • Andy Paulios, leader • Limit: 12

9. Turtle Valley prairie and wetland restoration

Explore this restored area where endangered Forster's terns and Massasauga rattlesnakes make their home.

- May 14, 7 - 10:30 a.m. • Elkhorn, Walworth Co. • James Jackley, leader

10. Logan Creek ramble — Door shore

Bask in wildflowers as we ramble upland hardwood forests and lowland cedar/hemlocks of this satellite of Ridges Sanctuary.

- May 14, 1 - 3 p.m. • Jacksonport, Door Co. • Karen Newbern, leader • Limit: 15

11. Spring flora of an old-growth maple woods

Sugar maple, basswood and beech tower above the spectacular display of trillium, spring beauty, trout lily and woodland phlox in Renak-Polak Maple-Beech Woods SNA.

- May 14, 9 - 11 a.m. • Racine, Racine Co. • Owen Boyle, leader • Limit: 18

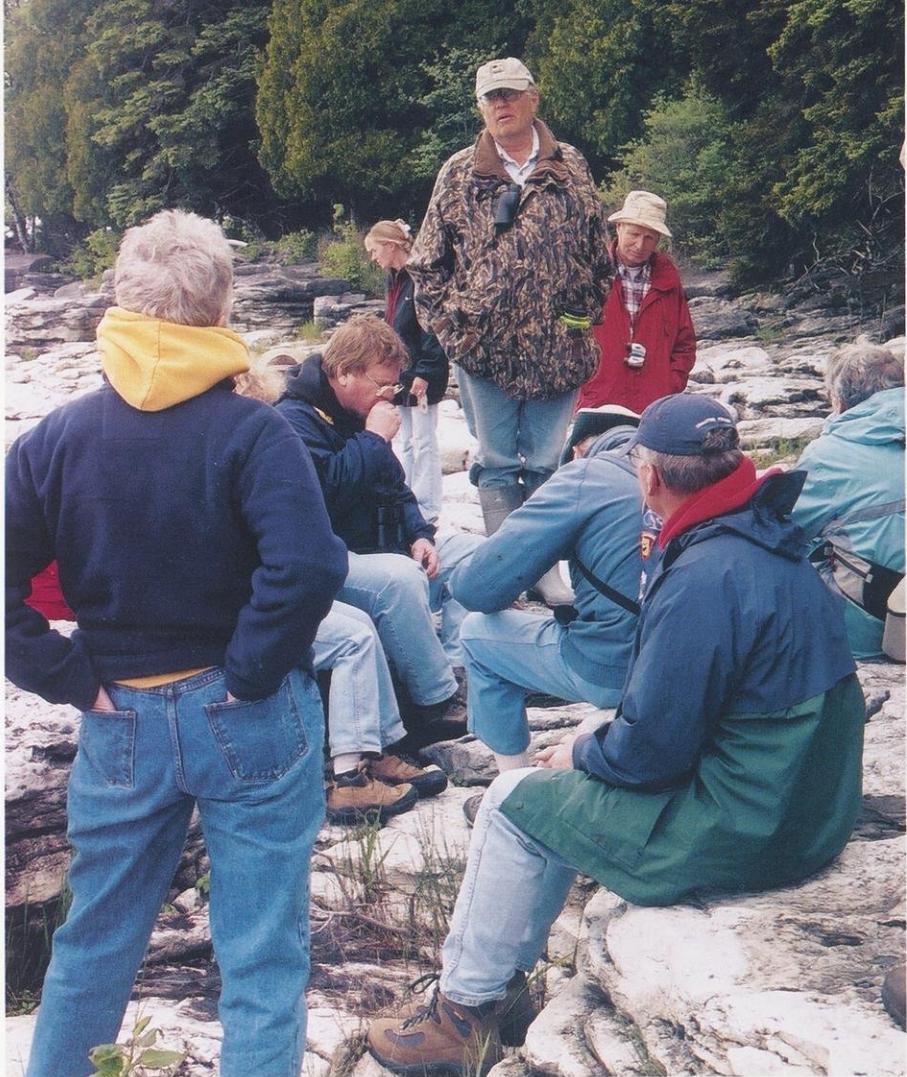
12. Blufftops of Rush Creek SNA

Savor breathtaking vistas of the Mississippi River and oak woods, hillside prairies, spring wildflowers and peak bird migration along one of the nation's best flyways.

- Friday, May 20, 9 a.m. - 1 p.m.
 - Ferryville, Crawford Co.
 - Craig Thompson & Armund Bartz, leaders • Limit: 15

13. Spring wildflowers of Blue Mounds

Enjoy "Pleasure Valley" where



CHARLIE LUTHIN

Trek the forest and rest up on the rocky beach on trip # 17 to Moonlight Bay.

the sugar maples hail above ephemeral wildflowers in a canyon-like setting.

- May 21, 10 a.m. - noon • Blue Mounds State Park, Iowa Co.
- Al Swain, leader

14. Prairie birds and flowers of Crex Meadows

Explore the prairies and enjoy blooming lupine, phlox and spiderwort while sparrows, warblers and upland sandpipers fly about.

- May 21, 10 a.m. - 1 p.m.
- Grantsburg, Burnett Co.
- Jim Hoefler, leader

15. Baxter's Hollow Gorge blooms and warblers

Woodland flowers are tucked into the cool scenic hollows and rocky gorge of Baxter's Hollow SNA.

- May 21, 8 - 11 a.m. • Sauk City, Sauk Co. • Mike Mossman, leader

	Accessible to people with walking disabilities
	Easy, short travel on level terrain
	An average hike with a few hills
	Steeper terrain, a longer hike or canoe trip with a few small rapids

Kind & Kathleen Harris, leaders

19. Lake sturgeon — lifting nets of Lake Superior

Board boats in Ashland and see DNR biologists capture, measure and tag lake sturgeon. Then drive to Bayfield, board a research vessel and steam out into the bay to lift gill nets and help process the catch!

- Friday, June 3, 8:30 a.m. - 2:30 p.m.
- Ashland, Ashland Co. • Stephen Schram, leader • Limit: 10

20. Sea kayak through a Lake Superior estuary

Enjoy a six-mile paddle past steep wooded shores, unique wetlands and meandering bays in the remote wilderness of the St. Louis River Streambank Protection Area. Sea kayaks and instruction will be provided by outfitter. Beginners welcome.

- June 4, 9 a.m. - 4 p.m. • Superior, Douglas Co. • Frank Koshere, leader • Limit: 18 • Cost: \$55 per person kayak rental; \$25 per person if bringing own kayak and gear

21. Chiwaukee Prairie SNA

Tread among shooting stars as you explore the richest prairie in Wisconsin, with over 400 plant species identified! Learn about prairie ecology, invasives and management techniques.

- June 4, 9 - 11 a.m. • Kenosha, Kenosha Co. • Marty Johnson, Dan Werner, Doug Robinson & Kevin Burdick, leaders

22. Diamond in the rough: Mazomanie Barrens SNA

Explore this fascinating oak barrens. Find out why this place is special and invasive plants are intruding.

- June 4, 8 - 10 a.m. • Mazomanie, Dane Co. • Matt Zine, leader • Limit: 15

23. Canoe Myklebust Lake SNA — beetle control of purple loosestrife

Paddle this pristine marl-bottomed lake, walk on a bog mat and see

16. Wisconsin's desert: Spring Green Preserve SNA

Hike to see prickly pear cactus, reptiles, grassland birds, dazzling flowers and wide open spaces of dry prairie and sand blows.

- Tuesday, May 24, 9 a.m. - 1 p.m.
- Spring Green, Sauk Co. • Rich Henderson, leader

17. Moonlight Bay Bedrock Beach SNA

Blaze a trail through a boreal forest and emerge into the solitude of a bedrock beach in Door County. Fringed orchids and rare plants await.

- May 28, 1:30 - 4:30 p.m.
- Bailey's Harbor, Door Co.
- Mark Martin, leader

18. Peninsula Park Beech Forest SNA

Discover the unique treasures of this northern mesic forest.

- Friday, June 3, 9 a.m. - 1 p.m.
- Fish Creek, Door Co. • Darcy

lobelias and lady's tresses. Learn about loosestrife biological controls. Bring your own canoe. (1/4-mile portage)

■ June 4, 1 - 4 p.m. • Iola, Waupaca Co. • Brock Woods & Ryan Magana, leaders • Limit: 10 boats

24. Orchids, flora and birds of The Ridges Sanctuary SNA

Hike wooded ridges and sedge-filled wetland swales while listening to bird songs and searching for orchids.

■ June 4, 1 - 3 p.m. • Bailey's Harbor, Door Co. • Paul Regnier, leader • Limit: 15

25. Biodiversity along the Niagara Escarpment

Explore this hard rock ridge that extends from eastern Lake Winnebago to Niagara Falls! Visit Red Banks Alvar SNA.

■ June 4, 10 a.m. - 3 p.m. • Green Bay, Brown Co. • Shelly Schaetz, Eric Fowle, Gary Fewless & Ron Stieglitz, leaders

26. Bog walk at Crystal Lake

Venture onto a quaking, floating mat of vegetation to discover unusual adaptations bog plants make — like eating insects!

■ June 4, 10 - 11 a.m. • Boulder Junction, Vilas Co. • Susan Knight, leader • Limit: 15

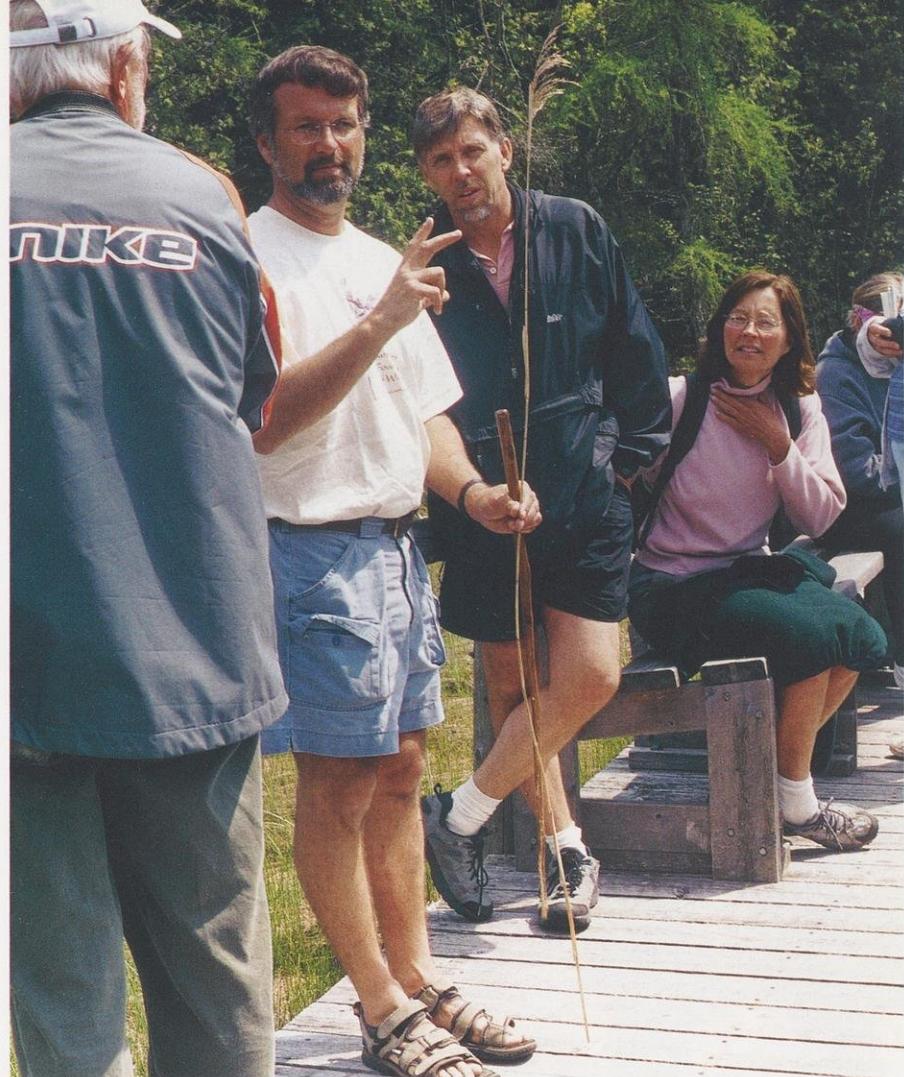
27. Vilas Lakes — aquatic invasives

Visit three beautiful lakeshore sites on Shannon, Found and Little St. Germain lakes. Learn about aquatic invasive species and the "Clean Boats, Clean Waters" volunteers who defend waterways from these invaders.

■ Tuesday, June 7, 11:15 a.m. - 3:30 p.m. • St. Germain, Vilas Co. • Laura Herman, Laura Felda, Carolyn Scholl, Pat Goggin, Chuck Their & Sandy Gillum, leaders • Limit: 15

28. Goods from the Northwoods

Make your own bark basket and balsam wreath! Venture into the forest to sustainably harvest the



Tread the boards winding through the wooded ridges and sedge-filled swales on trip #24.

balsam bows, birch bark and princess pine (club moss) you will use in your projects.

■ Thursday, June 9, 9 a.m. - 4 p.m. • Woodruff, Oneida Co. • Colleen Matula, leader

29. Invaders to Chequamegon Bay

Visit Fish Creek Estuary to discuss purple loosestrife and aquatic invaders, then onto Moquah Barrens SNA to learn about leafy spurge.

■ Friday, June 10, 9 a.m. - noon • Ashland, Ashland Co. • Rebecca Sapper, leader

30. Old-growth forests of the Nicolet

Hike the magical beauty of Franklin-Butternut Lake, identifying plants and birds. Pull some garlic mustard along the way.

■ Friday, June 10, 10 a.m. - 2 p.m. • Eagle River, Vilas Co. • Linda Parker, leader

31. Kettle Moraine Red Oaks SNA

One of the richest oak forests in the region, this SNA contains over 100 plant species including red oak, mayapple and trillium. It is home to red-shouldered hawks, cerulean warblers and barred owls, too.

■ Friday, June 10, 8 a.m. - noon • Greenbush, Sheboygan Co. • Randy Hoffman, Tim Beyer & Dale Katsma, leaders

32. Beauty of Green County SNAs

Enjoy colorful prairie flowers and listen for grassland birds at Muralt Bluff Prairie SNA. Then cool off in the shade of Abraham's Woods SNA — a rich sugar maple and basswood forest.

■ Friday, June 10, 9 a.m. - noon • Albany, Green Co. • Dawn Hinebaugh, leader

33. Lower Fox River remedial action site

A rare behind-the-scenes visit



See the Niagara Escarpment that arches from Wisconsin northeast to Niagara Falls, trip #25.

to see clean-up in action. See hydraulic dredges vacuum contaminated sediment on Little Lake Butte Des Morts, then board a pontoon boat for a closer look.

■ Friday, June 10, 10 a.m. - 1 p.m.
• Neenah, Winnebago Co. • Ben Hung & Bill Hartman, leaders

34. Understanding a river

Explore the Root River and learn hands-on why the river looks the way it does, what lives in it and what can be done to protect it.

■ June 11, 9:30 a.m. - noon • Racine, Racine Co. • Craig Helker, leader

35. Lulu Lake and Pickerel Lake Fen SNAs

Lulu Lake has it all — fens, bogs, savannas and prairies. Pickerel Lake has unusual plants like pitcher plant, marsh blue violet and more. Help pull garlic mustard after the tour.

■ June 11, 9 a.m. - noon • East Troy, Walworth Co. • Hannah Spaul, leader • Limit: 15

36. Hike and canoe the Northern Highlands

See blooming moccasin flowers. Visit Cathedral Point, an old-growth pine forest. Jump into canoes to paddle Allequash Lake and glimpse a colony of black terns. Canoes provided, but bring your own life jackets.

■ June 11, 10:30 a.m. - 4:30 p.m.
• Boulder Junction, Vilas Co.
• Heidi Conde & Dan Jacoby, leaders • Limit: 16

37. Aliens at Governor Dodge!

Visit two lakes in this state park to learn how exotic invaders can affect water quality and fishing.

■ June 11, 9 a.m. - noon • Dodgeville, Iowa Co. • Donna Sefton, leader

	Accessible to people with walking disabilities
	Easy, short travel on level terrain
	An average hike with a few hills
	Steeper terrain, a longer hike or canoe trip with a few small rapids



STEVEN SERVANTEZ



NATURAL RESOURCES FOUNDATION OF WISCONSIN

TOP: Learn about barn owls and other raptors at Hoo's Woods Raptor Center, trip #39.

ABOVE: Try one of our canoe trips.

38. Edible and medicinal plants of Moquah Barrens SNA

Explore plants, animals, history and management of this beautiful pine barren community in the Chequamegon National Forest.

■ June 18, 9 - 11 a.m. • Iron River, Bayfield Co. • Darcy Kind, leader

39. Raptor rehabilitation and education

Tour Hoo's Woods Raptor Center to see live hawks, eagles, owls and falcons. Learn about rehabilitation and enjoy a demo of a trained hawk in flight. (over 10 yrs. of age only)

■ June 18, noon - 2 p.m. • Milton, Rock Co. • Diane Moller & Mary Ann Buenzow, leaders

40. Menominee Valley — 400 million years of history

View remnants of an ancient beach and reef as we hike along the



Explore floating bogs on trip #43.

CHARLIE LUTHIN

Menominee River on the Hank Aaron State Trail. Enjoy the beauty of the National Soldiers Home.
■ June 18, 9 - 11 a.m. • Milwaukee, Milwaukee Co. • Melissa Cook, leader

41. Orchids along the Glacial Drumlin Trail

Keep your eyes peeled for showy lady's-slippers and other orchids on this springtime hike.

■ June 18, 8 a.m. - noon • Lake Mills, Jefferson Co. • Scott Weber, leader

42. Apostle Islands boat tour and water issues

Board the *LL Smith* research ship to tour this beautiful area and hear about the environmental and cultural history of the Apostle Islands. Learn about fishing, shipping, water quality, then trawl to sample fish.

■ Sunday, June 19, 1 - 5 p.m.
• Washburn, Bayfield Co.
• Frank Koshere & Dan Rau, leaders • Cost: \$15 per person

43. Walk on water at Beulah Bog SNA

Traverse a floating, quaking mat of

vegetation to the wonders of bog flora including carnivorous plants, mosses and tamaracks.

■ Tuesday, June 21, 9:30 - 11:30 a.m. • East Troy, Walworth Co.
• Thomas Meyer, leader
• Limit: 12

44. Wigwams of Whitefish Dunes

Take a trip back in time and learn hands-on about techniques and tools used to build wigwams and long houses. Experience what life was like 2,000 years ago.

■ Wednesday, June 22, 9 a.m. - 3 p.m. • Whitefish Dunes State Park, Door Co. • Carolyn Rock & Mike Madden, leaders
• Limit: 15

45. Bicycle tour of Jefferson County SNAs

Bike 12 miles through the gently rolling countryside of northwest Jefferson County to visit the Waterloo, Snapper and Faville Prairie SNAs. Stop and hike through these preserves to see "prairie dock forests," bobolinks and unique native plants.

■ June 25, 9 a.m. - noon • Lake Mills, Jefferson Co. • Amy & Rich Staffen, leaders • Limit: 12

46. "Green" building with ecology in mind

Learn how proper building orientation and window exposure can provide 90 percent of building lighting. See how high-efficiency systems filter the air and rain gardens handle roof runoff. Tour with the architect of Wisconsin's first "green" DNR state office building, silver level LEED (Leadership in Energy and Environmental Design) certified.

■ June 25, 1 - 4 p.m. • Green Bay, Brown Co. • Ian Griffiths & Annette Weissbach, leaders

47. Canyons and savannas of Rocky Run

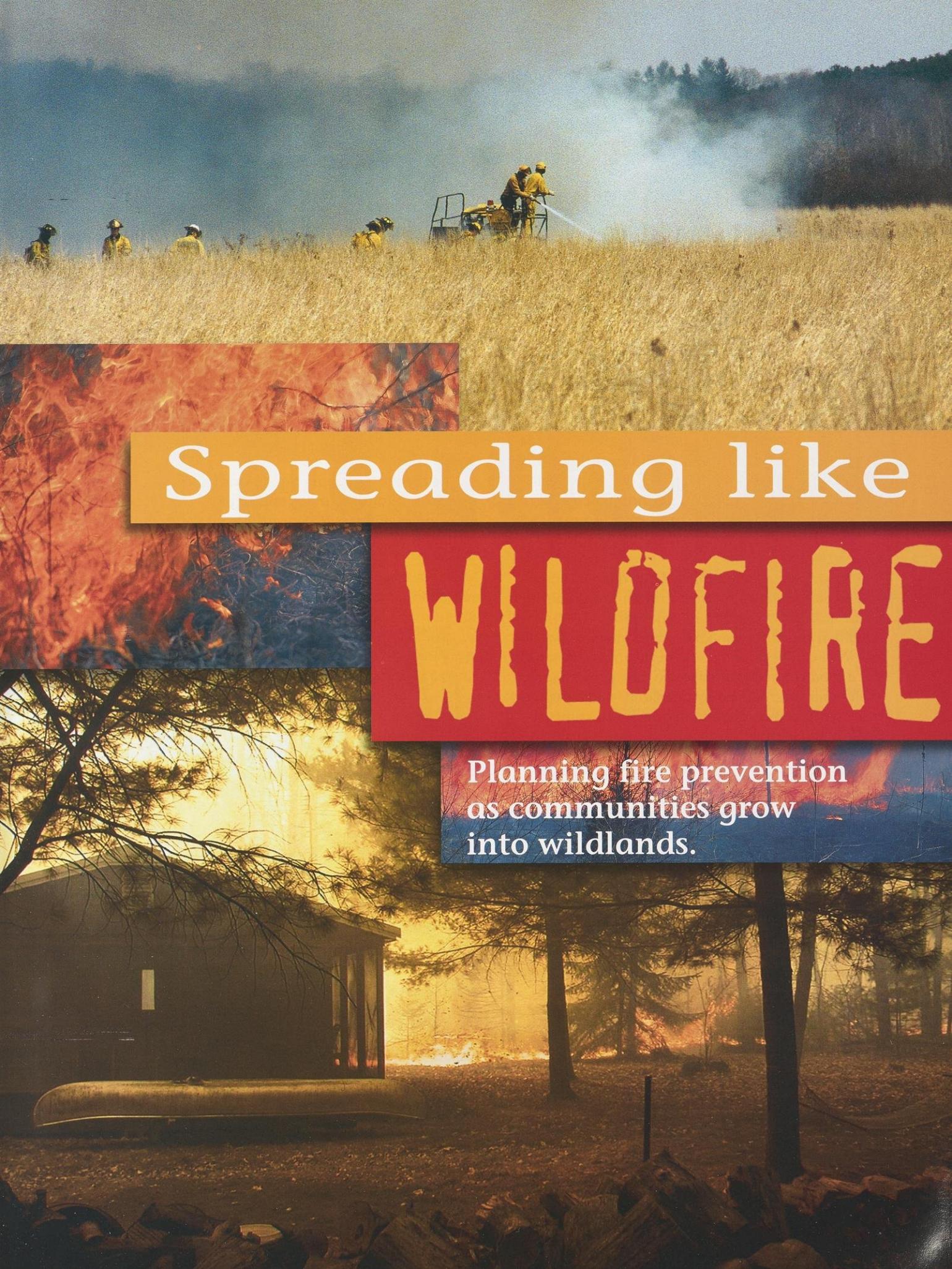
Explore gently rolling slopes next to sheer-walled box canyons.

■ June 25, 9 a.m. - noon • Wyocena, Columbia Co. • Craig Anderson, leader • Limit: 15

48. Canoe Horicon Marsh

Learn about marsh ecology and watch an array of wildlife as you paddle through this scenic wetland of international importance. Canoe and kayak rental available on-site.

continued on page 17



Spreading like

WILDFIRE

Planning fire prevention
as communities grow
into wildlands.

Fighting FIRES

Special challenges heat up where wildfires and urban life meet.

Jolene Ackerman

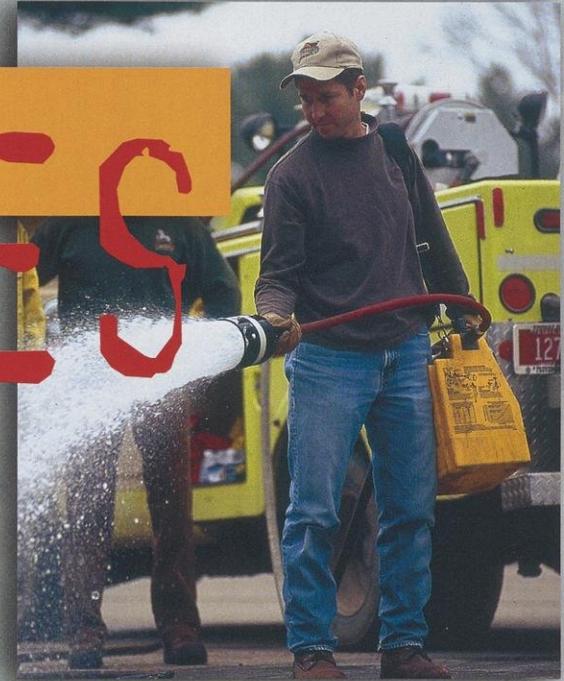
Fire, whether started by humans or by lightning, is necessary and inevitable. It helps maintain the beauty and health of our forests even though it seems destructive. Each year in Wisconsin, thousands of acres burn, destroying dozens of structures and threatening hundreds more. Excluding fire from wildlands is not possible.

Today, however, a unique wildfire danger is growing where homes and other structures are built in areas of highly flammable vegetation, creating a condition called the wildland-urban interface (WUI). The WUI can be a lone house in the middle of a forest, a subdivision on the edge of a pine plantation, or even homes surrounded by grassland. Adding buildings to areas that historically burn interrupts the natural cycle of wildfires and creates a situation where homes and businesses potentially become just another piece of burnable fuel during a wildfire. Increasingly, people are moving into wildland areas without adapting to the dangers around them.

Fire officials are greatly concerned when the structures themselves are made of flammable materials and built in remote areas where roads and driveways are narrow or sandy, making it impossible for emergency vehicles to reach them.

Unfortunately, even though housing in the wildland-urban interface is increasing, the number of available firefighters and equipment is not increasing at the same rate.

We can start preparing for wildfire by working together. As homeowners, we can partner with others in our community as well as local fire departments to develop a safety plan in the wildland-urban interface. By planning how home sites are designed, built and maintained in wildland areas, we can work together toward becoming "firewise." Becoming firewise is a process, not an endpoint. That process includes paying attention to the features on your property and in your community that may start or spread a wildfire.



ROBERT QUEEN

The goal is to prepare homes and businesses to survive wildfire without the intervention of the fire department, allowing firefighters to concentrate on controlling the fire without having to make stands to save individual homes.

Jolene Ackerman is Wisconsin DNR's wildland-urban interface coordinator.

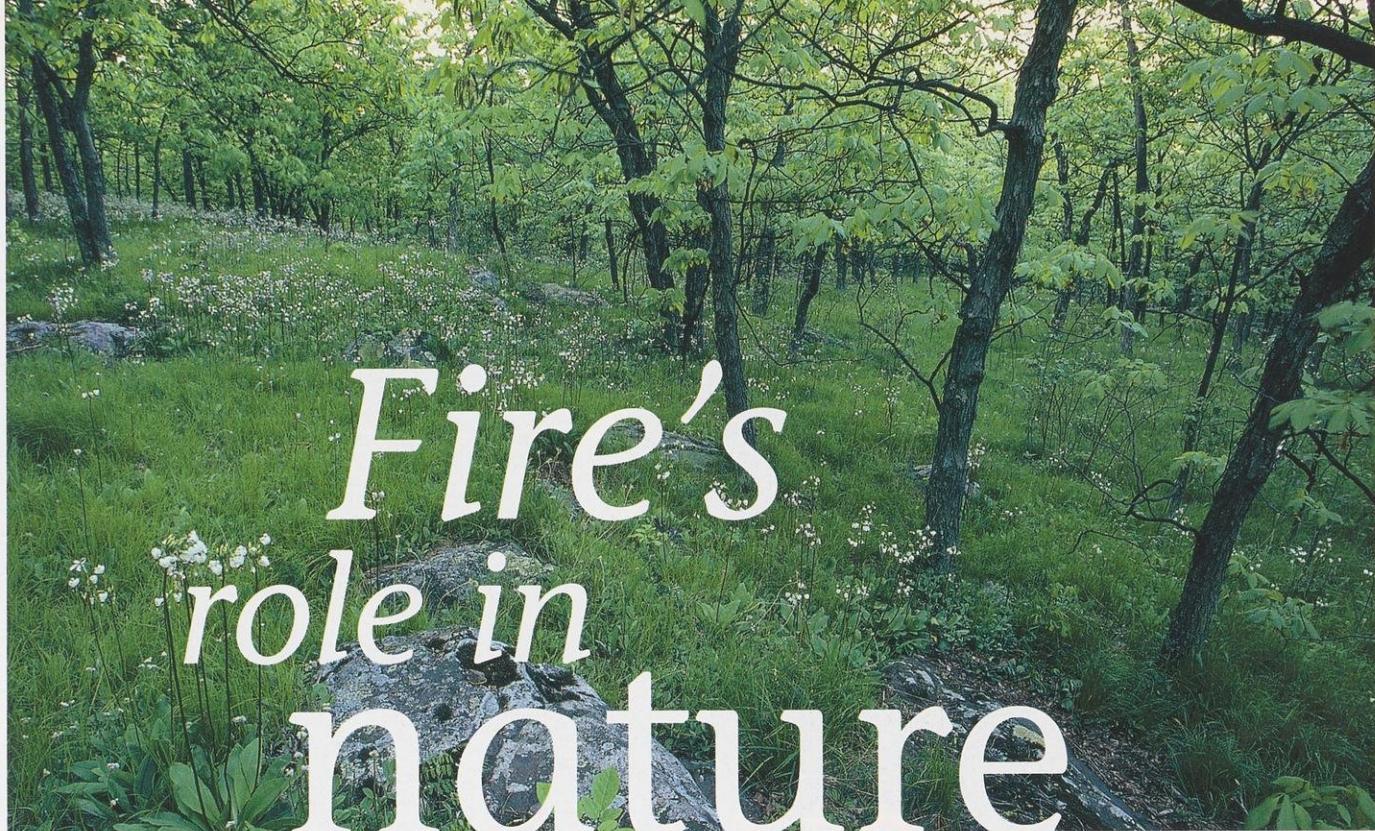


JOLENE ACKERMAN



CHRIS KLAHN

TOP: Fire training is an important tool in suppressing fires in the wildland-urban area. During an actual fire these firefighters will be outfitted in full gear.
MIDDLE: The Crystal Lake Fire in 2003 melts the vinyl siding on this house.
BOTTOM: A fire crowns in trees and throws embers across the highway.



Fire's role in nature

GERALD H. EMMERICH, JR.

Shaping Wisconsin's landscape.

Nancy Braker

Much of life on Earth has evolved with fire. Like storms and floods, fire is a powerful force that can give life or smother it. Fire has shaped many of the ecosystems we know today, in Wisconsin and worldwide.

Wisconsin's natural plant communities at the time of settlement were a mix of grasslands, oak savannas and oak forests in the south and southwest, and conifer-hardwood forests and pine savannas (or barrens) in the north. These ecosystems evolved over thousands of years under many influences. One of the most important was fire. Fire returns nutrients to the soil, exposes soil so that seeds may germinate, releases seeds from cones or hard seed covers, removes the thatch layer that shades small-statured species and plays many other ecological roles.

While lightning strikes started many fires, many more acres in North America were burned intentionally by Native Americans. Fire was used to clear the land for agriculture, improve forage for game species, direct game migration and clear brush to ease travel or prevent hostile forces from approaching.

In *The Vegetation of Wisconsin*, John Curtis writes: "In the early years of

settlement, the most important vegetational effects were caused by the elimination of fire." European settlers limited the extent of wildfires with their plowed fields, dirt roads and forest clearings, causing major changes in the frequency and extent of free running fire that changed the natural community.

In prairie and savanna regions of the state, land described as treeless by early settlers quickly became covered with brush and forests as major settlements were established. Changes in fire-dependent plant communities were rapid after about 1850. Prairies, pine barrens and oak savannas disappeared as the forest canopy closed. Many formerly common plants and animals are now uncommon, and quite a few are listed as threatened or endangered.

Even with conservation efforts, only a small percentage of vegetation representing the original natural state remains and is largely maintained by fire such as prescribed burns.

Natural resources managers work to mimic the fire that plant communities experienced naturally. Since most significant natural fires burned when the vegetation was dry in the spring and fall, this is when managed fires usually

are set. Using natural fire breaks such as rivers or lakes, or manmade breaks such as roads, mowed paths or plowed fire lines, land managers generally only burn a small portion of a protected area at one time in order to avoid damage to animal populations.

While state and federal agencies conduct most management fires, private organizations such as The Nature Conservancy, The Prairie Enthusiasts and many nature centers have prescribed burn programs as well.

For more information:

- The Nature Conservancy's Fire Initiative: <http://nature.org/initiatives/fire/>
- National Park Service Fire Management Program Center: www.nps.gov/fire/
- "Bibliography of Fire Effects and Related Literature Applicable to the Ecosystems and Species of Wisconsin," Technical Bulletin No. 187, Wisconsin DNR
- "Fire In America: A Cultural History of Wildland and Rural Fire" by Stephen Pyne

Nancy Braker works for The Nature Conservancy out of its Baraboo office and is fire manager for the Conservancy's Wisconsin chapter.



Partnerships

A powerful fire fighting tool.

Natasha Kassulke

Chris Klahn, DNR cooperative fire specialist, was a forest ranger for 15 years and now works with 870 fire departments in Wisconsin planning for fighting fires. He also serves as the assistant fire chief in Montello.

"A vast majority of Wisconsin fire departments are volunteer," Klahn says. "Members often have other jobs, and make time to fight fires in their communities, train and help with rescues after car accidents."

Rural fire departments are our first line of protection, Klahn says. Yet, staffing and equipment aren't growing



TOP: Many fire department members, wildlife managers, students and citizens are trained in fire suppression methods each year.

BOTTOM: Emergency fire wardens have been volunteering since 1895.

DEAN TVEIT

at the pace that can keep up with the needs of communities spreading into the wildland-urban interface.

To meet these challenges, communities can apply for grants. The Volun-

teer Fire Assistance (VFA) grant program is open to county fire associations and consists of a 50 percent cost share grant using federal funding.

The Forest Fire Protection (FFP) grant program is open to Wisconsin fire departments with wildfire suppression agreements with DNR. The program also provides a 50 percent cost share using state and federal funds.

"Fire suppression efforts statewide include training, community planning and zoning," Klahn says. "This includes writing mandatory driveway widths into zoning laws and

including fire protection in subdivision planning."

The Spooner fire district, along with DNR, is asking homeowners to play a larger role in fire protection. The district consists of the City of Spooner and 11 townships. The 322-square-mile fire protection area is covered by a 35-person volunteer fire department.

"It's a large area and keeps us active," says Spooner Fire Chief Darren Vik.

Highly flammable pine is common in the area. Many homes are being built in clusters surrounded by pine plantations and at the woods' edge. Vik's concern is that his department won't have the vehicles or manpower necessary to make a stand against fires that threaten multiple homes. Some areas also have limited access and steep terrain.

Vik credits Ed Forrester, DNR area forestry supervisor in Barron County, and Bob Focht, Spooner fire ranger, with suggesting a door-to-door inspection program to get homeowners proactively working to minimize fire risks around their homes.

During his door-to-door visits, Vik explains that the property is located in an area that historically was subjected to periodic forest fires. The last catastrophic forest fire in the area occurred in 1980 and destroyed over 150 buildings. Since then, the number of structures built in the St. Croix River drainage basin has doubled. In that same period, the number of fire departments has remained the same and the number of DNR fire units available in the area has decreased.

Whether Vik finds people at home or not, he leaves them information on proper leaf burning, burn barrel requirements, emergency vehicle access and more.

Among the most common changes homeowners make after his inspections are widening driveways and creating turnaround spaces for fire fighting vehicle access. Other changes include pruning trees to a height of six to 10 feet above the ground, adding stone landscaping to create a defensible space, moving firewood piles away from homes and removing conifer bushes from around the home. Ever-

green trees are generally much more flammable than deciduous trees and are not recommended within 30 feet of structures.

During the inspections, Vik also uses GPS (Global Positioning System) to locate the main building on the property as well as map driveway dimensions in the event of a fire. Under smoky conditions, these maps can be used to locate structures and driveways.

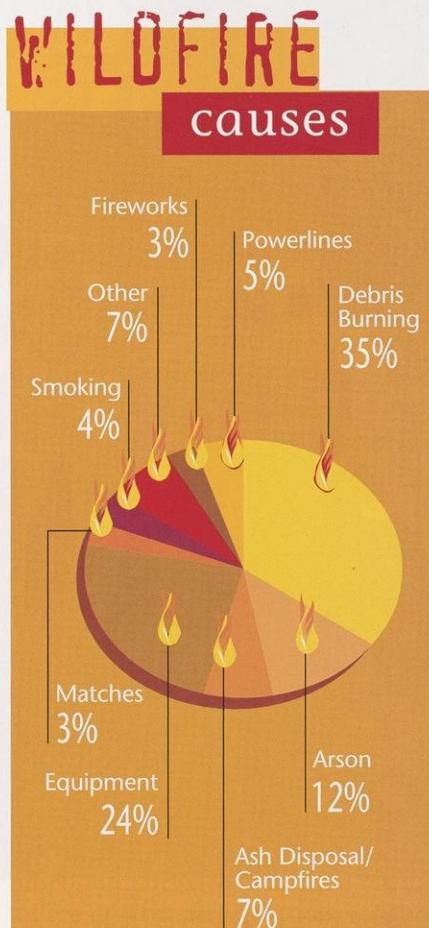
"This is a wonderful program," Vik says. "It's been very well accepted by homeowners who are not only protecting their homes but beautifying them in the process."

Marquette County has included fire prevention information in its comprehensive land use plan, and Crystal Lake recently became Wisconsin's first recognized "Firewise Community" for its efforts to plan for the fire season. In April 2003, the northern Marquette County community was threatened by a fire started near the Lake of the Woods Campground. Because of the fire's intensity, 17 fire departments and DNR worked together to save many threatened structures. The fire was finally contained after 572 acres burned. The cause was a large brush fire that had not been fully extinguished.

After the fire, the community worked with the Neshkoro Fire Department and local DNR to widen access roads and thin vegetation. A chipping day was held to dispose of removed trees. The community's efforts paid off. They received lower insurance rates on their collectively owned wildland.

Decisions on where to invest time, energy and funding are increasingly based on data and partnerships.

A research team from the College of Agricultural and Life Sciences at the University of Wisconsin — Madison has partnered with the U.S. Department of Agriculture Forest Service to analyze and combine census and vegetation data to create a map that defines at-risk communities in the wildland-urban interface. Wildland-urban interface maps are available online at: www.silvis.forest.wisc.edu.



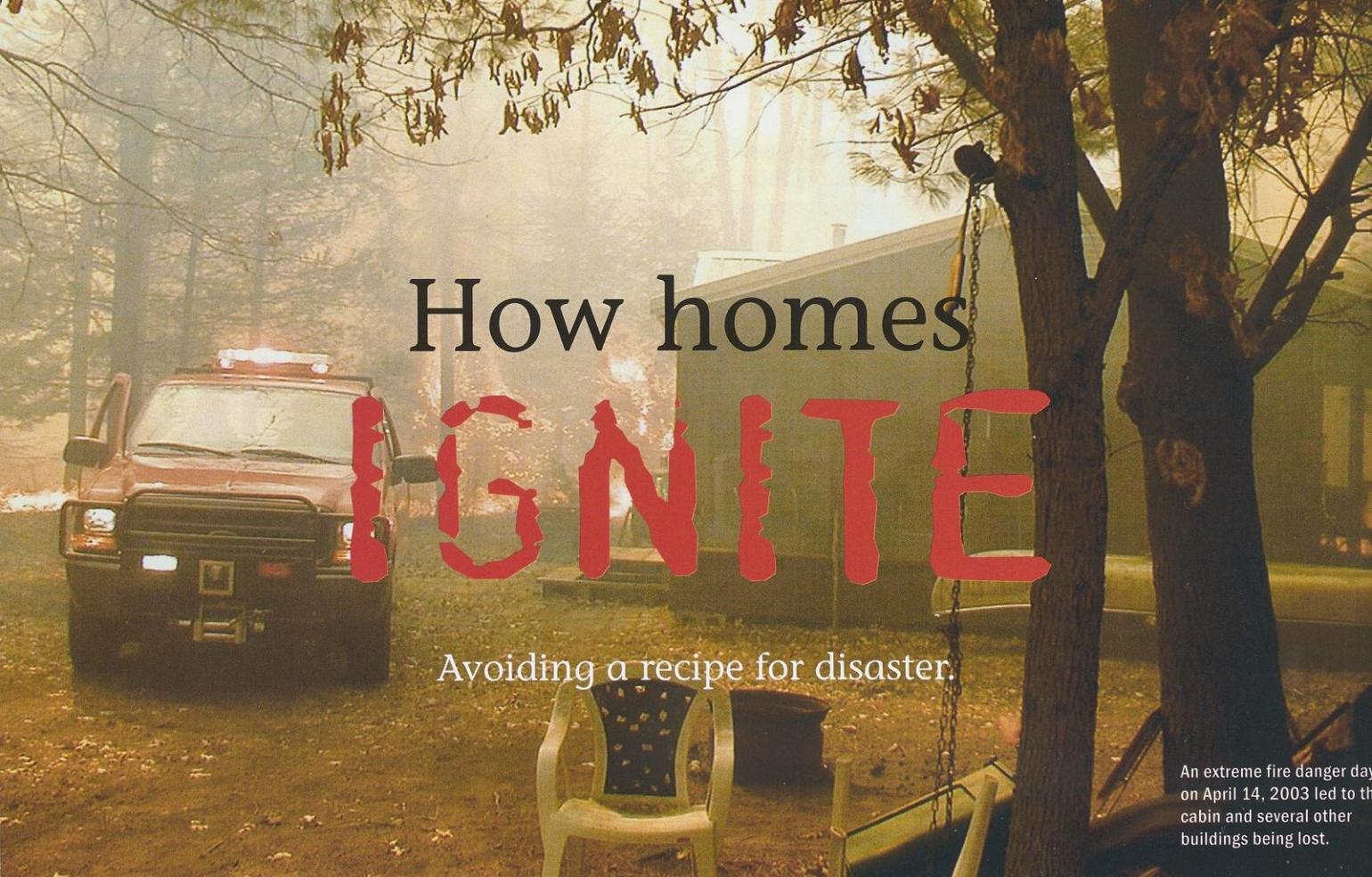
About 1,500 fires annually burn over 5,000 acres on lands protected by the Wisconsin Department of Natural Resources.

Over 90 percent of these fires are human-caused.

In the spring, a lack of rain

In the Spring, a lack of rain and high winds can add up to especially bad fire weather. Burning debris piles may be left unattended and embers can reignite a large fire. ATV riders and other off-road motorists also should be aware that grass and leaves can collect around the muffler and fall off causing a fire. If you build a campfire, clear all grass and leaves from around the area. When you put the fire out, pour water on the ashes and make a slurry to ensure that the fire is out.

Natasha Kassulke is associate editor of Wisconsin Natural Resources magazine.



How homes IGNITE

Avoiding a recipe for disaster.

An extreme fire danger day on April 14, 2003 led to the cabin and several other buildings being lost.

Jolene Ackerman and John Hintz

Fire needs heat, fuel and oxygen to burn. If even one of these factors is removed from the equation, the fire is snuffed out. Fuels, weather, topography and human behavior influence the likelihood of a fire starting, as well as its speed, direction, intensity, and the ability to control and extinguish the wildfire. Weather cannot be changed. Topography generally

remains the same. But fuels and human behavior can be altered. Thus, the greatest opportunity to reduce a wildfire threat to your home lies in actively managing wildland vegetation and changing your habits.

Fuels

Fire quickly moves through light fuels

like grass, fallen leaves, pine needles and mulch. Fire lingers and burns more intensely in heavier fuels like wood decks and fences, firewood stacks and lawn furniture. Very heavy fuels like trees and buildings can burn for long periods and spread fire by producing radiant heat and flying embers.

Fuels are arranged horizontally and vertically. Ground fuels consist of

TIMELINE

Wisconsin's heated history.

1634

Jean Nicolet explores Wisconsin. Fur traders and missionaries follow.



1820

The first European settlements are built in southwest Wisconsin, following the discovery of lead. Much of the timber is cut and burned to make room for agriculture.

1850

Railroad construction begins. The first railroad into northern Wisconsin, the Wisconsin Central, is built in 1870.

1854

A single wildfire runs from Amery to Iron River, a distance of 140 miles.

1871

Peshtigo fire: The deadliest fire in the nation's history. Between 1,200 and 1,500 lives are lost and more than 1.5 million acres burn.

1887

Marshfield burns to the ground.

1891

Comstock fire in Barron County destroys 64,000 acres, the entire village of Barronett and also burns structures in Shell Lake.

1894

On July 27, the Phillips fire burns over 100,000 acres in Price County, destroying 400 homes and much of the downtown area. Thirteen people die trying to escape by swimming across the lake.

1900

The "Golden Age" of lumbering reaches its peak in Wisconsin. Fueled by slash left from the intensive logging of the era, large catastrophic fires are common.

combustible materials lying beneath the surface including deep duff, roots, rotten buried logs and other organic matter. Fires in ground fuels are usually called "peat fires."

Surface fuels consist of materials lying on or immediately above the ground including pine needles, leaves, grass, downed logs, stumps, tree limbs and low shrubs.

Aerial fuels include green and dead materials in the upper forest canopy: tree branches, crowns, snags, moss and taller shrubs. "Crown fires" burn these aerial fuels. Fires in conifer stands and pine plantations tend to be very intense and difficult to control.

How these fuels are connected around a home can determine the chances of a structure surviving. Unmowed grass, unraked leaves and dead branches are a continuous fuel supply right up to a home's siding. Breaking the chain of continuous fuels up to and around a home can serve as a fuel break, slowing a fire and bringing it to the ground where firefighters have a better chance to stop it.

Weather

Temperature, relative humidity and wind speed are three significant weather factors affecting wildfire behavior. Higher temperatures preheat fuels by driving off moisture, which allows fuels to burn faster. Lower relative humidity and a lack of precipitation lowers fuel moisture; dry fuels

burn more easily than fuels with higher moisture content.

Wind is the most important weather factor since it dries fuel and increases the supply of oxygen. Wind has the greatest influence on the rate and direction of fire spread. In Wisconsin, wind direction almost always changes in a clockwise rotation, and winds tend to be the strongest in mid-afternoon.

Wisconsin's wildfire weather is most severe during spring, between the time after the last snowmelt and before the vegetation "greens up." Spring rains and new green growth lessen the likelihood that wildfires will start and spread. The chances increase again during late summer and fall when the vegetation begins to dry out. The combination of hot weather, high wind speed and dry vegetation creates

prime conditions for wildfires.

Topography

Topography plays a big role in how a fire will behave. Steep slopes spread fire rapidly. Minimizing fuels downhill from a home can make a difference when a wildfire threatens. Fire travels faster uphill, and afternoon winds travel upslope as hot air rises, pushing fire even faster. Homes built on a hilltop need larger areas of defensible space, particularly on the downhill side. Aspect, or the direction a slope faces, also is a factor. North facing slopes tend to be more shaded and moister with heavier fuels such as trees. South facing slopes tend to be sunnier and drier, with more light fuels such as grasses.

Human behavior

When people live in fire-prone environments, their behavior becomes an important factor in predicting the loss of life and property. Narrow or sandy roads and driveways, limited access, lack of firewise landscaping, inadequate water supplies and poorly planned subdivisions increase risk to people living with the threat of wildfire. Wildfire risk also increases when people burn trash or light warming campfires.



Juniper is highly flammable and should not be planted near homes located in areas at risk of fire.
ROBERT QUEEN

Jolene Ackerman is the DNR's wildland-urban interface coordinator. John Hintz is the forestry staff specialist in the Wisconsin Rapids area.

1905

Forest fire control begins, marked by appointing 249 town fire wardens around the state. While they have authority to hire firefighters, they have no equipment.

1911

First forest rangers hired. The forest protection headquarters is established at Trout Lake. From this point through the late 1920s, organized protection spreads across the state as ranger stations and lookout towers are constructed.

1914

National Fire Prevention Day inaugurated. 1915 Jack Vilas pilots as the first forest fire patrol. The flight is made from Trout Lake. For the first time in Wisconsin's history, it is possible to detect fires from the air.

1925

Spring fires burn out of control until late May when rains extinguish them. Rangers, equipped only with hand tools, are virtually helpless. Later that year, a new burning permit law is enacted, which requires citizens to obtain a written permit before setting any fires in a protection district when the ground is not snow-covered.

1930-34

In the dust bowl era, severe droughts ravage the state. During this time about 2,950 fires burn 336,000 acres annually in Wisconsin.

1930

One fire burns 120,000 acres of marshland. Demand for more adequate forest protection builds.

Continued on page 8

Is your home firewise?

Protect your property from wildfires.

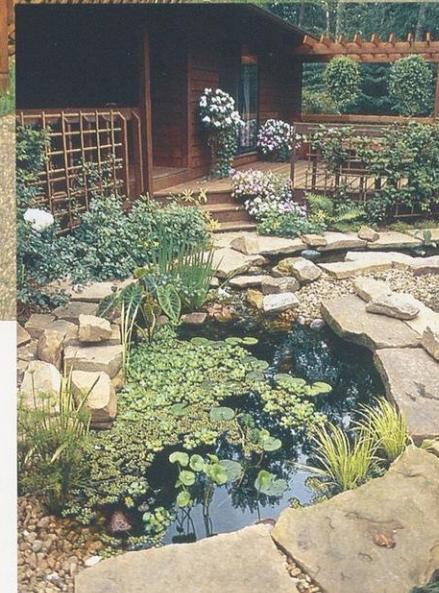
Matt Duvall and Jolene Ackerman

Your home was your castle in medieval times. High stone walls, massive drawbridges and deep moats protected you against competing monarchies and roving bandits.

Today, homes built in the wildland could take a tip or two from their medieval predecessors. Using nonflammable building materials and

landscaping plants, and providing ample access for emergency vehicles will improve the chances that your modern palace will survive a wildfire.

Many parts of a home are vulnerable to wildfire. The roof is the most exposed portion of a home exterior and is the most at risk from flying embers. Roofs near any wildland area should be constructed of noncombustible materials,



PHOTOS BY ROBERT QUEEN

Making your home "firewise" includes having an adequate driveway for fire trucks to be able to turn around and (inset) stone and water are excellent fire breaks.

TIMELINE

Continued

1933

The Civilian Conservation Corps (CCC) provides increased firefighting and completes essential improvements in fire protection efforts by building standard lookout towers, fire lanes and bridges.

1935

The tractor plow is established as standard fire suppression equipment. Dramatically fewer large wildfires occur.

1936

Chartered aircraft is used for detecting and reconnaissance on fires.

1939

Use of radios expands to aircraft, firefighters on the ground and lookout towers.

1948

Aldo Leopold, author of *A Sand County Almanac* dies while fighting a grass fire between Portage and Baraboo on April 28.



1951

Smokey Bear makes first public appearance in Wisconsin (Hurley).



1959

On May 1, a running crown fire in Burnett County burns 17,560 acres, causing \$201,889 damage.

1960s

Throughout the 1960s, an average of 1,880 fires burn 8,700 acres each year. Railroads are the leading cause of fire.

and all roofs and gutters should be kept clean of pine needles, leaves or other burnable material.

Unfortunately, homes are often made of materials that melt or ignite when exposed to heat or flames. Consider using fire-resistant siding and logs, masonry or stucco. Vinyl siding and soffits, when exposed to heat from a wildfire, will melt and fall away from structures, leaving a passageway for embers to ignite insulation or enter the attic. Airborne embers also can enter attics through open eaves or vents. For these reasons, it is especially important to keep flammable objects like shrubs and firewood stacks away from buildings and keep eaves and vents covered with a tight mesh screen.

Anything attached to your home, such as a deck, fence or garage can also carry fire into your home. Decks should be enclosed to keep debris from collecting underneath. Keep flammable vegetation and debris away from the base of your deck, fence and garage. These are the same places where flying embers will collect should a fire occur in your neighborhood.

Windows can transmit radiant heat



ROBERT QUEEN

Keeping firewood close to your home is an unsafe practice. It increases the risk of fire spreading into the home.

and break under heat stress. Tempered or double-paned glass windows will protect a home better than single-paned windows during a wildfire. Most importantly, keep flammable objects away from windows.

Clean and inspect your chimney at least once a year and use a chimney cap with a spark arrestor. Keep a garden hose that is long enough to reach any area of

your home and any other structures on your property. Develop a water supply. Water can be supplied from nearby creeks, rivers, lakes, ponds and even swimming pools.

Nearly every home has some tools that can be used in the event of a wildfire. People living in fire-prone areas should have some fire protection tools on hand. Shovels and rakes can be used to create a firebreak around your home. And, of course, fire extinguishers should always be on hand.

In the fire protection world, 30 feet around the home is known as "defensible space." In this space, all trees should be pruned and kept widely spaced. Evergreen trees and shrubs should be kept to a minimum. Remove

dead, dying and diseased plants or plant parts. Maintain a vegetation-free zone three feet wide around all structures. Create "island" gardens that are separated by nonflammable features such as lawns or stones. Choose plants with fire-resistant qualities. Succulent plants, deciduous trees and shrubs, and plants with thick leaves are better suited to a fire-prone environment.

Wood chips and straw are ideal places for embers to land, smolder and ignite. Use these mulches sparingly and never alongside the house.

In order for firefighters to protect your home, they must be able to reach and exit your property safely. Post the house address along the road at the driveway entrance as well as on the home.

Build and maintain your driveway so it is wide enough and straight enough for a fire engine to navigate. A good rule of thumb is a 12-foot wide driveway with 14 feet of overhead clearance. Longer driveways and those with curves should be closer to 20 feet wide.

Your castle is only as strong as its weakest point. Invest in a home sprinkler system. Take the time to assess your property and make the necessary changes. With a comfortable fleece vest as your armor and chainsaw as your sword, go forth and defend your castle.

Matt Duvall is UW-Extension's Central Wisconsin basin educator for wildland resources. Jolene Ackerman is DNR's wildland-urban interface coordinator.

1977

The entire state suffers a second year of severe drought. Nearly 49,000 acres burn in 1977. Over 170 structures are destroyed or damaged. Areas worst hit are Jackson, Washburn, Douglas and Wood counties. Notable fires include:

- Saratoga fire in Wisconsin Rapids, 6,159 acres and 90 buildings
- Brockway fire, Black River Falls, 17,590 acres
- Five-mile fire, Washburn and Douglas counties, 13,375 acres and 83 buildings

1980

Over two days in April, the Ek-dall Church fire in Burnett County and the Oak Lake fire in Washburn County burn over 16,000 acres and destroy more than 200 buildings.

1988

The entire state suffers a second year of drought. Notable fires include:

- Deer Print fire, Douglas County, burns 817 acres.
- Lyndon Station fire, Juneau County, burns 911 acres and three buildings.

1990s

Throughout the 1990s, an average of 1,600 fires burn 3,400 acres each year. Debris burning is the leading cause of forest fires.

1995

State begins a trial program with a local agriculture pilot, Jim Stutesman, to use single engine air tankers for in-state fires.

2003

The Crystal Lake fire in Marquette and Waushara counties burns 572 acres. Several buildings are destroyed and nearly 200 are threatened.

Tools of the trade

From planes to Pulaskis.

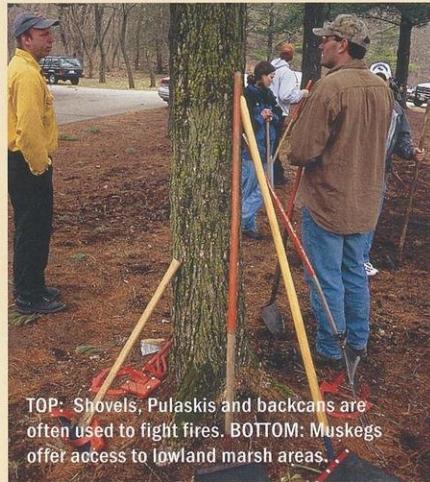
Ron Zalewski

Just as the forest fire hazard varies across the state, so does the equipment used to suppress those fires. Some of the equipment has not dramatically changed over the past century. The reliable backcan pump is still commonly used to suppress many smaller fires.

These backcans can be either galvanized metal or newer soft models that are more comfortable to wear. Both types hold about five gallons of water and, when used in a team approach with three or more individuals attacking a fire, can successfully extinguish smaller, lower intensity fires burning less than a couple of acres. These backcans also are used extensively during mop-up procedures, where hotspots are completely extinguished after initially containing and controlling a fire. Often used in conjunction with hand tools such as a shovel or Pulaski (combination of axhead for cutting

and mattock for digging) these backcans can help ensure that the fire is completely out.

Additional equipment, however, may be needed to fight more intense wildfires. Initial attack DNR Type 7X trucks or fire department brush trucks often provide first response to forest fire



TOP: Shovels, Pulaskis and backcans are often used to fight fires. BOTTOM: Muskets offer access to lowland marsh areas.

reports and can be used effectively where access is available. These four-wheel-drive trucks carry 150 to 200 gallons of water and are equipped with mobile radios, emergency lights and sirens, hand tools (shovels, Pulaskis, chainsaws) and other safety equipment. These engines provide quick response to many fires, helping to keep them small and minimizing destruction. DNR Type 7X engines typically are equipped with foam units for applying a foam-water mixture that provides greater protection than water alone.

The Department of Natural Resources uses larger Type 4 engines on more challenging fires. These trucks are outfitted with emergency lights and sirens, carry about 850 gallons of water, and house small and large diameter hoses, hand tools, backcans and safety equipment. They often have foam capability. Not only can these trucks deliver water to a fire, they are



able to pump water from lakes, streams and even swimming pools. These engines are often used to suppress wildfires and protect structures. Larger fire department engines vary considerably, but also are commonly used on wildfires along with tanker-type engines to suppress fires and protect structures.

These engines also pull tractor plows to control more challenging fires. When combined with a tractor plow unit and trailer, they are referred to as "heavy units." Tractor plow units carry 150 gallons of water primarily used for operator protection. The six-way blade on the front can be used to construct drivable roads around larger fires, separate burning materials from unburned material, push over burning trees and create firelines or fire breaks. The plow in back of the tractor may cut a six-foot-wide mineral soil fireline or fire break.

Fire breaks are effective ways to control small intensely burning fires or larger fires. Inside the fire break, a small fire (drip torch) is used to burn out fuels between the fireline constructed by the tractor plow furrows in an attempt to stop the spread of an advancing fire. Tractor plow units are especially effec-



DNR FILE PHOTO

Planes play an important role in detecting and suppressing fires.

tive in upland areas but can also operate in some wetter areas that pose equipment access problems. These tractor plow units are the backbone of fire suppression activities in Wisconsin.

The Wisconsin Department of Natural Resources also has equipment specifically designed to operate in lowland marsh conditions. ATVs, Muskeg Units and Bombardier units oftentimes can provide the necessary access. These tracked units typically are equipped with water tanks and can suppress fires either by running over the edge of a less intense fire with their tracks and smashing vegetation into wetter fuels or water, or by spraying water on the fire edge. Some of these wet ground units are equipped with a front blade to assist fire suppression. Once the fire is contained and controlled these units help with mop-up actions and provide transportation and water into areas that are not accessible by typical equipment.

Plane patrols

Planes are important tools in detecting and suppressing fires. Oftentimes, smoke spotted by these planes, or air patrols, are outdoor burning operations. Since burning is normally only allowed toward evening hours, these aircraft patrols are an extremely effective fire prevention tool, alerting forestry personnel on the ground about illegal burning.

Fire towers also are used to detect fires and reports from fire towers are checked by air patrols. Once a wildfire is spotted, aircraft pinpoint the wildfire

location and assist by directing ground forces into the wildfire and providing valuable information on fire size, intensity and spread.

During periods of high fire danger, the Department of Natural Resources contracts aerial suppression planes or helicopters to help control fire.

These planes, called SEATs (single engine air tankers), are usually based in the most hazardous areas of central, northwestern or northeastern Wisconsin. These aircraft can deliver up to 600 gallons of foam or retardant to a fire scene in a short time, hopefully arriving while fires are small. They work with resources on the ground to prevent fires from becoming larger and more destructive. Helicopters have the same mission. They typically drop water with a collapsible bucket that hangs from the bottom of the ship and holds just over 100 gallons of water or a water/foam mixture. Larger air tankers that carry up to 2,000 gallons also are available from neighboring states to aggressively attack more intense fires.

Fire prevention

Even before a fire starts, computer programs can predict fire danger and fire behavior. Small hand-held instruments gather weather information at the scene, helping fire managers make better decisions on how to safely suppress these fires. Other computer programs help firefighters make attack plans and rally resources to suppress larger fires.

Ron Zalewski has been a DNR forester and ranger for 20 years.



JOLENE ACKERMAN

A photograph of a person in a green jacket and dark pants, wearing a red headband, bending over a large pile of burning debris. The debris includes a white chair, a wooden board, and various branches. The ground is covered in snow. The background shows a dense forest of evergreen trees.

Hazards,
alternatives
and safe
practices.

Open burn

Catherine Regan and Lindsay Haas

The safest time to burn is when the ground is completely snow covered.

Burning debris is the number one cause of fires in Wisconsin and poses health concerns for you and your neighbors.

Outdoor burning in Wisconsin is regulated and you will need a permit in most areas of the state. In most fires caused by debris burning, the responsible party was not following restrictions listed on the burning permit.

Permits typically restrict burning to evening hours when there is less likelihood that a debris fire will escape control.

Usually illegal

Smoke from burning garbage stinks, can trigger asthma attacks and contains toxic compounds.

Open burning of household solid wastes also is illegal with limited

ing

exceptions. For example, it is illegal to burn all plastic materials, kitchen wastes, dirty or wet paper wastes, treated or painted wood, furniture and demolition material — or any other material that creates a nuisance. The exceptions include (if not prohibited by local ordinance) lawn and garden debris, small quantities of clean, untreated, unpainted wood and clean paper waste that is not recyclable.

Outdoor fires for cooking or warming up are usually okay and do not require special approvals.

Alternatives

There are many alternatives to open burning for waste disposal.

- **Reduce:** Buy in bulk to reduce overall packaging.
- **Reuse:** Reuse household items and give toys, clothes and furniture that you no longer want or need to

someone who can use them.

- **Recycle:** It's the law in Wisconsin to recycle plastic, glass, metal, newspaper and cardboard. Take your recyclables to the recycling center closest to your house if there is no roadside recycling pick-up.
- **Compost:** Composting is a great way to dispose of yard waste and kitchen scraps while getting something in return — nutrient-rich soil for your garden, trees and bushes. Brush piles left in a wooded area also can provide wildlife habitat.

When a burn pile escapes

If, after considering environmentally sound alternatives to burning, you still decide to burn, check to see if a burning permit is required.

The safest time to burn is when the ground is snow-covered and late in the day when the wind has died down.

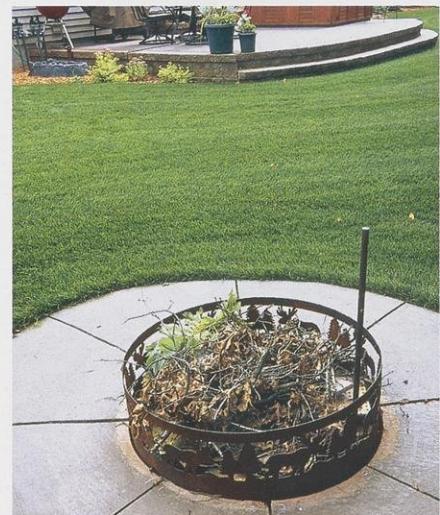
Before igniting the fire, clear away overhanging branches and remove surrounding vegetation or flammable material at least 10 feet around your fire. Make sure to have firefighting tools, such as a watering hose and a shovel handy, and never leave your fire unattended.

Be certain your fire is out by dousing it with water and stirring the ashes. The two most common reasons burn barrels cause wildfires are the lack of a lid and a barrel that is in such poor condition that burning materials fall out.

Burning permit required?

Use the Wisconsin map to determine where and when you may burn.

- **In an intensive area:** Permits are required when burning any time the ground is not snow-covered. Contact your local DNR Office or Emergency Fire Warden.
- **In an extensive area:** Permits are required any time the ground is not snow-covered during January through May. Contact your local DNR Office or Emergency Fire Warden.
- **In a cooperative area or inside the**



ROBERT QUEEN

Piling leaves and branches in a fire pit does not make it a campfire. A burning permit may still be required.

limits of incorporated villages or cities: These areas are primarily protected by local and county officials. Communities can create ordinances and additional permit requirements. Contact your local fire department or local officials to obtain burning regulation information.

Obtain a permit, if required. Check the permit for date and time restrictions. Avoid burning on windy days.

Never leave your fire unattended. You are responsible for all costs to suppress a wildfire caused by your negligence.

Catherine Regan is a DNR wildfire prevention specialist and Lindsay Haas is a DNR natural resources educator.

Forest fire protection



WISCONSIN DNR



Sparks in the

Fighting nighttime fires poses unique challenges.

Ron Zalewski

April 12, 1998 began early in central Wisconsin for DNR forestry personnel and local volunteer fire departments. Strong southerly winds, low humidity and warm temperatures combined with dead vegetation on the ground — typical spring conditions — resulting in extreme forest fire danger across the area.

DNR forestry personnel and volunteer fire departments were paged early that morning to the first forest fire call at the start of what turned out to be a very busy day in the Grand Rapids DNR dispatch area. That first fire was started by careless outdoor burning, but was quickly extinguished, burning less than one acre.

That wasn't the case with other forest fires that started later that day. Careless

outdoor burning, unextinguished debris piles or campfires, railroad activities and downed power lines ignited another 24 forest fires that burned 94 acres that day.

While night fires happen, they usually are less challenging to control than daytime fires because relative humidity tends to be higher and temperatures lower, resulting in less volatile fire behavior.

On this day, the daytime humidity remained low and winds gusted to nearly 30 miles per hour creating challenging nighttime fire conditions.

A Town of Rome police officer on patrol reported a forest fire at 1:33 a.m. The Town of Rome Fire Department responded. Minutes from the fire station, they discovered a fire burning several acres, with many of the trees torching

(completely consuming all needles on the tree).

The fire department called the Department of Natural Resources for help. Several heavy ground units responded and a single engine air tanker dropped a water and retardant mix. DNR sent heavy units including 800-gallon fire engines towing John Deere 450 tractor plows. These plows control fires by creating fire breaks (plow furrows) along the edge of a fire with hopes the fire will stop spreading when it reaches the break.

Firefighters worked to flank the fire, keeping it as narrow as possible, until fuel type or weather changed in their favor and they created a fire break that surrounded the fire or used existing barriers to contain it.



dark

No cause was found for this Wood County night fire on April 12, 1998.

The fire's glow was visible as soon as DNR units pulled out of the station in Grand Rapids. Even before arriving at the scene, assistance was requested from the DNR station in Babcock and from Whiting where firefighters were returning from fighting another fire.

DNR initial attack units and heavy units responded from Friendship, Necedah and Wisconsin Dells along with fire department trucks and personnel from Grand Rapids, Nekoosa and Big Flats. Rome Police Department staff and the Adams and Wood county sheriffs' departments and Wood County Emergency Management provided traffic control and evacuated more than 75 residences.

As the fire roared, fuel types changed from young 10- to 15-foot red

pine that completely torched to 45-foot red pine that burned mainly as a hot surface fire, consuming brush, grass and needle litter on the forest floor. The relative humidity continued to rise and winds decreased allowing firefighters to surround the fire with fire breaks to keep it from spreading. The fire breaks were then leveled into a drivable trail, allowing four-wheel-drive engines to patrol and extinguish hot spots with water.

Fire seriously threatened six buildings but there were no structural losses or significant human injuries. In the end, 30 DNR personnel, 14 DNR engines, eight DNR tractor plow units, 60 fire department members, 16 fire department engines, a 20-person University of Wisconsin-Stevens Point

hand crew, numerous law enforcement personnel, county emergency management personnel and one DNR aircraft battled the fire.

The fire was controlled at 5:28 a.m. on April 13, after jumping two town roads and burning 158 acres of planted pine on industrial owned property. Light rain later that morning helped firefighters "mop-up" (extinguish all hotspots on the fire). Timber value damaged by the fire exceeded \$65,000 while the cost of suppressing the fire totaled over \$10,300.

No definite cause was found, though an intensive investigation was completed.

Ron Zalewski is a DNR forester and ranger in Antigo.

WILDFIRE

From clues to court cases

Fire investigations dissect fire behavior and burn patterns.

Jolene Ackerman and Rick Bucklew

All forest fires are investigated, regardless of the fire size or the amount of property damage. At the scene, a wildfire investigator looks for clues that indicate where the fire started: "point of origin." To find that point and cause of a fire, the investigator must know wildfire burn patterns, fire indicators and fire behavior.

Seasoned investigators use science and art to determine what started the blaze. Sometimes the cause is easily pegged — a prescribed burn that got out of control or a burn barrel. But often the evidence at the point of origin is not found intact, making the investigator's job more difficult. First responders to the scene must protect the area believed to be near the point of origin. Both the public and firefighters are kept out of this area to minimize the chance that evidence will be destroyed or washed away.

Every fire is investigated and documented as if it were going to be a court case. The fire investigators keep detailed records of observations such as license numbers of vehicles leaving the scene, tire tracks, fire behavior, and persons or aircraft in the area. An investigator's

records can include written descriptions, pictures and even sketches.

Wildland fires often have common features. They usually start in light fuel such as dry grass or leaves and typically the ignition is small. Physical indicators point to the direction the fire has burned. For example, the way soot marks rocks, tree trunks and other dense or non-flammable items will show an experienced fire investigator the fire's path. Other indicators can be the way light fuels are left unburned or the way burn patterns are left on small shrubs and twigs. Combining all of the indicators points out key information to a trained investigator.

Wildfire investigators and fire control personnel are always on the lookout for potential serial arsonists. If not caught, these fire setters can get bolder with time and move from wildland fires to empty buildings and even to occupied structures. Consequently, a thorough investigation needs to be conducted on even the smallest grass fire as it may have been set by a budding arsonist.



JOLENE ACKERMAN

Fire scars indicate which direction the fire came from.

Jolene Ackerman is DNR's wildland-urban interface coordinator. Rick Bucklew is DNR's forestry law enforcement specialist.



FOR MORE INFORMATION:

WDNR Forest Fire Program

www.dnr.state.wi.us/org/land/forestry/fire

Firewise

www.firewise.org

USDA Forest Service

www.fs.fed.us

National Association of State Foresters

www.stateforesters.org

National Fire Plan

www.fireplan.gov

Joint Fire Science Program

<http://jfsp.nifc.gov/>

National Interagency Fire Center

www.nifc.gov/

National Fire Protection Association

www.nfpa.org

Federal Emergency Management Agency

www.fema.gov

Produced by: Wisconsin Department of Natural Resources, Division of Forestry, Fire Management Section.

Copyright 2005, *Wisconsin Natural Resources* magazine, Wisconsin Department of Natural Resources

PUB-FR-309-2005

April 2005

Design by:
Waldbillig & Besteman, Inc.

Funding: The work upon which this publication is based was funded in whole or in part through a grant awarded by the Northeastern Area State and Private Forestry, USDA Forest Service.

This publication is available in an alternative format.

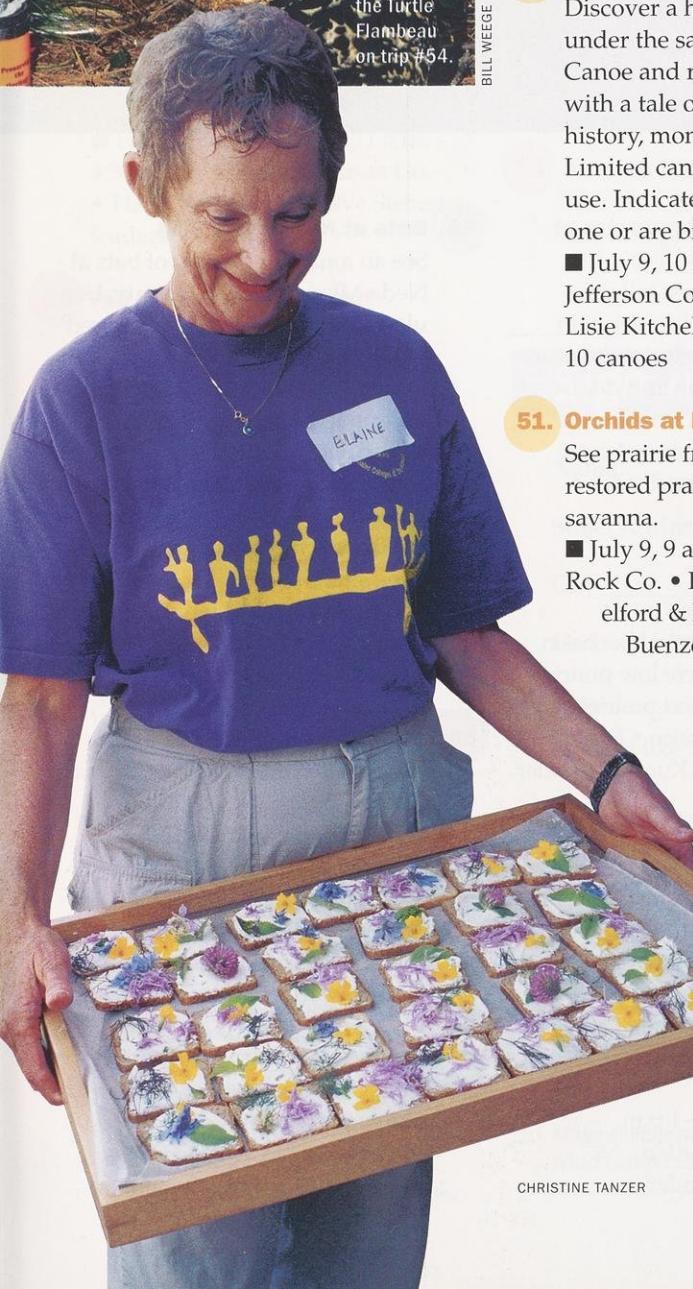
Subscribe to *Wisconsin Natural Resources* magazine at www.wnrmag.com

Cover photos clockwise from top:
JOLENE ACKERMAN, J-MAR PHOTO WORKS, CHRIS KLAHN, J-MAR PHOTO WORKS



Band osprey and tour the Turtle Flambeau on trip #54.

BILL WEGE



CHRISTINE TANZER

continued from page 16

- June 25, 8:30 a.m. - 2:30 p.m. • Horicon, Dodge Co. • Brenda Hill & Laura Hartner, leaders

49. Wolf howl

Enjoy a bus and hiking tour of the Chequamegon National Forest near Clam Lake. A nighttime drive through wolf territory includes howling stops on back roads to listen for wolves. Cost includes dinner at Lakewoods Resort.

- July 9, 3 p.m. - midnight • Cable, Bayfield Co. • Adrian Wydeven, Sarah Boles & Tom Matthiae, leaders • Cost: \$30 per person

50. Canoe to hidden treasures

Discover a hidden treasure buried under the sands of the Bark River! Canoe and relax in cool waters with a tale of biology mixed with history, money and science.

Limited canoes available for free use. Indicate on form if you need one or are bringing your own.

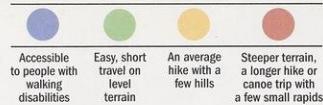
- July 9, 10 a.m. - 4 p.m. • Rome, Jefferson Co. • Kurt Welke & Lisie Kitchel, leaders • Limit: 10 canoes

51. Orchids at Fair Meadows SNA

See prairie fringed orchids at a restored prairie, wetland and savanna.

- July 9, 9 a.m. - noon • Milton, Rock Co. • Penny & Gary Shackelford & Mary Ann Kroehn Buenzow, leaders

See if flowers taste as good as they look on trip #55.



52. Milwaukee's urban forests

Enjoy a luxury bus tour of Milwaukee and discover the urban forest that surrounds you. Also visit a nursery that produces the trees, shrubs, annuals and perennials that beautify public roads.

- Friday, July 15, 12:30 - 4:30 p.m. • Milwaukee, Milwaukee Co. • Joe Wilson, Jeff Boeder & Kathy Esposito, leaders • Cost: \$15 per person

53. Prairies and grasslands of Bong

Identify the plants, insects and birds that depend on a prairie and make it unique.

- July 16, 9 - 11:30 a.m. • Bong Recreation Area, Kenosha Co. • Beth Goeppinger & Donna Mosca, leaders

54. Osprey banding and Turtle Flambeau Flowage tour

Visit osprey nests and help band nestlings. Take a scenic boat ride through the flowage to see wildlife and a patterned bog. Gourmet lunch included. This trip is a fundraiser for the osprey monitoring program.

- July 16, 8:30 a.m. - 4 p.m. • Mercer, Iron Co. • Bruce Bacon & Roger Jasinski, leaders • Cost: \$65 per person

55. Wild edible & medicinal plants and flower farming

Learn about harvesting edible and medicinal woodland plants, then go into the kitchen to prepare your foraged lunch. Tour a cut-flower farm and learn about organic and sustainable farming.

- July 16, 9:30 a.m. - 2 p.m. • Barneveld, Iowa Co. • Kelly Kearns & Kate Cooper, leaders • Limit: 15 • Cost: \$6 per person

56. The "power" in landfills

Superior Seven Mile Creek Landfill is now powering 2,600 local homes! Come see this clean state-of-the-art power plant



Sampling aquatic life on Lake Namekagon.

fueled by refuse.

- July 23, 10 a.m. - noon
- Eau Claire, Eau Claire Co.
- Dave Lundberg & Mark Vinall, leaders

57. Pike River restoration

Enjoy a summer walk and learn about prairie, wetland and stream restoration.

- July 23, 9:30 - 11:30 a.m.
- Racine, Racine Co. • Mike Luba & Craig Helker, leaders

58. Prairie insects and blooms

Take a close look at insects that thrive in the Faville SNA and Tillitson prairies. Put the hand lens to butterflies, leaf-hoppers, moths and blooming flowers.

- July 30, 9:30 a.m. - noon
- Lake Mills, Jefferson Co.
- Joe Henry, leader

59. Prairies peak in summer bloom

Enjoy Goose Pond Sanctuary, a 25-year-old prairie restoration.

- July 30, 9:30 a.m. - noon
- Arlington, Columbia Co.
- Mark Martin, leader

60. Exploring the back country of Avoca Prairie

Experience the largest tallgrass prairie east of the Mississippi in full blooming splendor! Adventure on a true exploration and discover parts of Avoca SNA rarely seen.

- August 6, 7 - 11 a.m. • Avoca, Iowa Co. • Matt Zine, leader • Limit: 15

61. Wildflowers of Scuppernong Marsh

Explore a former glacial lake basin that's now a 3,500-acre low prairie. See compass plant and prairie dock.

- August 6, 9 a.m. - noon • Eagle, Waukesha Co. • Ron Kurowski, leader

62. One landowner's approach to forestry, wildlife and watershed

Enjoy a practical workshop about reforestation, timber sales, under-planting trees, prairie and oak savanna management, soil erosion control and water retention basins.

- August 6, 8 a.m. - 1 p.m.
- Cross Plains, Dane Co.
- Steve Holaday, leader

63. Bats at Neda Mine SNA

See an amazing display of bats at Neda Mine in Dodge County. Use ultrasound bat detectors, infrared video cameras and your own eyes to watch as bats swarm outside the mine exits. A rare opportunity to learn about bat biology and natural history in Wisconsin's largest bat hibernaculum where more than 50,000 bats hibernate in abandoned mine shafts.

- August 13, 6 - 10 p.m. • Horicon, Dodge Co. • David Redell, leader • Cost: \$10 per person

64. John Muir's boyhood haunts

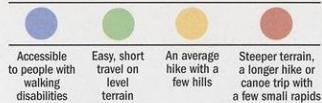
Traverse the lake, wetlands, prairie and savanna where John Muir grew up. Lunch at Observatory Hill atop a cedar glade with a spectacular view.

- August 13, 9:30 a.m. - 1 p.m. • Montello, Marquette Co. • Mark Martin, leader

65. Trumpeter swan families

Watch Trumpeter swan parents and cygnets swim, feed and rest on the lakes of Crex Meadows.

- August 13, 9 a.m. - 3 p.m.



- Grantsburg, Burnett Co.
- Pat Manthey, leader

66. Rock River restoration

Long ago there was a shallow lake between Lake Mills and Fort Atkinson. Discover how two large wetlands in this area are being restored to past glory.

- Sunday, August 14, 1:30 - 5 p.m.
- Lake Mills, Jefferson Co.
- Donna Sefton & Suzanne Wade, leaders

67. Canoe the Kickapoo

Water-carved sandstone cliffs line the banks as we paddle this winding waterway. Enjoy a hike through the hemlock forest of Mt. Pisgah SNA. (Limited canoes available for free use. Indicate on form if you need one or are bringing your own.)

- Friday, September 16, 11 a.m. - 4:30 p.m. • Ontario, Vernon Co.
- Hank Kuehling & Dave Siebert, leaders • Limit: 18

68. Fall raptor migration and Mississippi prairies

Observe raptors migrating overhead as we hike a bluff prairie full of rare plants. Breathtaking views of the Mississippi River await.

Steep terrain.

- September 17, 9 a.m. - noon
- Cassville, Grant Co. • Richard & Amy Staffen, leaders • Limit: 15

69. Water quality and history boat tour of Superior Harbor

Come aboard the *LL Smith* research vessel to tour and learn about the environmental history and cultural development of the Duluth/Superior Harbor.

- September 17, 9 a.m. - 3:30 p.m.
- Superior, Douglas Co. • Frank Koshere, Nancy Larson, Dan Rau & Sue O'Halloran, leaders

70. Rainbow and brook trout rearing station

Enjoy a rare behind the scenes glimpse of the Lakewood State Trout Rearing Station's inner workings. See over 200,000 brook,

brown and rainbow trout that are destined for public waters.

- September 17, 10 - 11:30 a.m.
- Lakewood, Oconto Co. • Jesse Landwehr, leader

71. Beauty of Namekagon Barrens

See migrating birds and beautiful prairie flowers on a bus and hike tour of this out-of-the-way gem.

- September 17, 9 a.m. - 2 p.m.
- Spooner, Washburn Co. • Nancy Christel & Gary Dunsmoor, leaders

72. Baraboo Hills geologic history

Hike the picturesque bluffs at Devil's Lake to examine quartzite, then enjoy the beauty of Parfrey's Glen and a rock hunting expedition into the Pink Lady Quarry.

- September 24, 9 a.m. - 4 p.m.
- Devil's Lake, Sauk Co.
- Phil Fauble, leader

73. Autumn Dells hike

Spectacular gorges, mossy glens and rare plants await in the Dells of the Wisconsin River SNA.

Strenuous 3.5 mile fast-paced hike

on steep, off-trail terrain.

- Friday, September 30, 9 a.m. - 1 p.m. • Wisconsin Dells, Columbia, Co. • Thomas Meyer, leader

74. Bayfield Road trail history and hike

Hike and explore the old wagon trail that connected Superior and Bayfield in the 1800s. Learn about cultural history, natural history, geology, plants and animals.

- October 1, 9 a.m. - noon
- Brule, Douglas Co. • Jay Gallagher, leader

75. Chinook salmon

Watch the chinook salmon on their last journey in life. Learn about Great Lakes history, salmon life-cycles and egg collection at the Besadny Fisheries Facility.

- October 8, 10 - 11:30 a.m.
- Kewaunee, Kewaunee Co.
- Kathy Dax, leader

Christine Tanzer is field trip coordinator for the Natural Resources Foundation of Wisconsin.

Sign up for a 2005 field trip!

Name _____

Street Address _____

City _____ State _____ Zip Code _____

Phone (daytime) _____ (evening) _____

E-mail _____

I would like to attend the following trip(s):

Trip# _____ # of People _____ x Trip Fee _____ = \$ _____

Trip# _____ # of People _____ x Trip Fee _____ = \$ _____

Trip# _____ # of People _____ x Trip Fee _____ = \$ _____

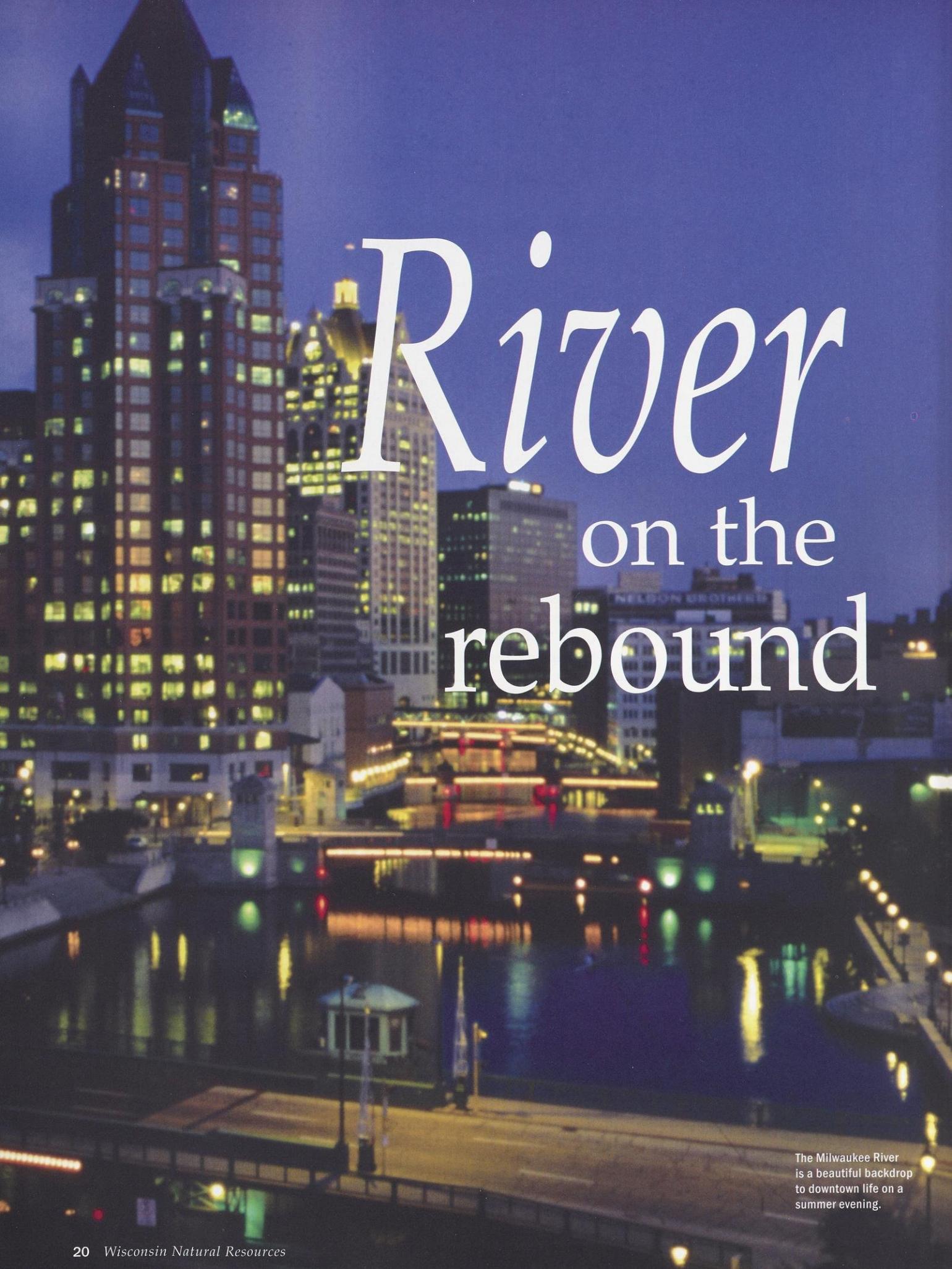
Trip Registration Fee: \$ 30.00

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

Total Enclosed \$ _____

Make checks payable to Natural Resources Foundation of Wisconsin

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



River on the rebound

The Milwaukee River
is a beautiful backdrop
to downtown life on a
summer evening.

Restoring the lifeblood that flows through the heart of Milwaukee.

Kathleen Wolski and William Wawrzyn

For more than 150 years it took a lot of kicks, but recent restoration and protection has helped revitalize the Milwaukee River, and it is definitely a river on the rebound. One of the most dramatic and controversial changes to the river focused on removing the North Avenue Dam in downtown Milwaukee, but the river's story stretches much farther upstream and much further back in time.

Almost 100 miles in length, the Milwaukee River flows from headwaters in Fond du Lac and Sheboygan counties through seven counties draining an area of nearly 725 square miles that is home to one-fifth of Wisconsin's residents. The river's north, east and west branches and Cedar Creek merge with the Kinnickinnic and Menomonee rivers in this "gathering place by the waters" (the Native American meaning of "Milwaukee") to flow through the city into the Milwaukee River Estuary and Lake Michigan.

In its upper reaches, the Milwaukee River drains undeveloped portions of the Northern Unit of the Kettle Moraine State Forest and developed rural lands. Runoff from barnyards, feedlots and ever increasing paved suburban developments flow downstream. The river's lower reaches tax the waters even more substantially. The Milwaukee River system drains the most densely populated region in the state. Moreover, more than 950 industries and 14 municipal treatment plants discharge wastewater into the water basin, and runoff from streets, rail yards and rooftops strain its natural abilities to cleanse and recover. Still, there are encouraging signs that the river's vital role in Milwaukee's economic past will be reflected in renewed prosperity as the river recovers into the future.

When "Milwaukee" meant the river

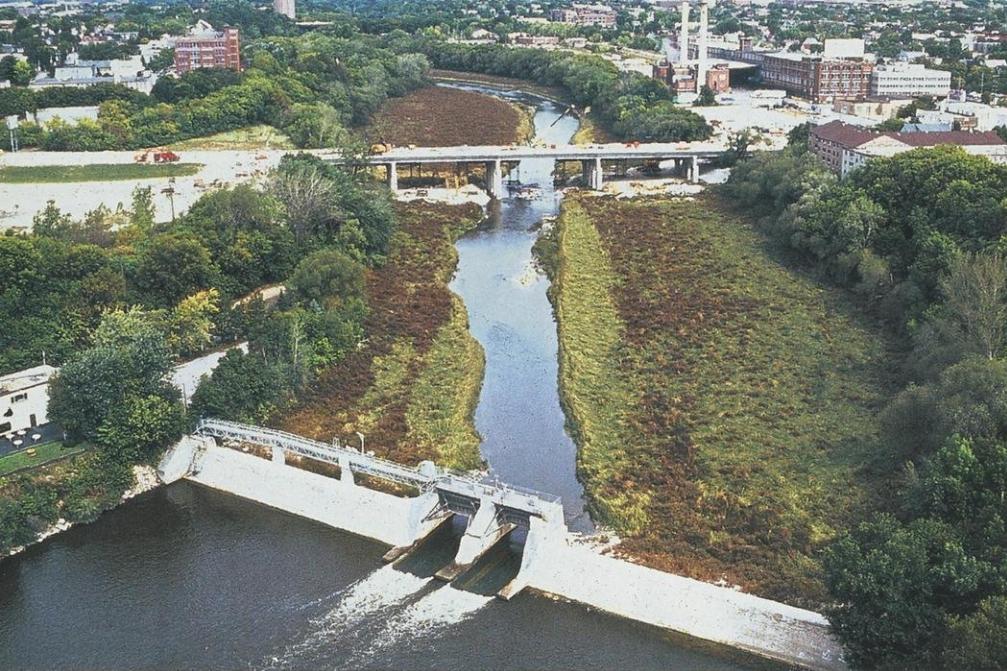
During the city's formative years, the river helped transform the region into a major transportation, economic and industrial center. With the opening of the Erie Canal, the first trading vessels arrived in Milwaukee in 1832, creating demand to develop transportation routes that could move imported goods west and ship Wisconsin's ample natural resources to eastern and European markets. A Milwaukee canal was envisioned as a conduit and a catapult for economic growth.

The Milwaukee and Rock River Canal was an ambitious plan designed to link the Milwaukee and Menomonee rivers with a manmade waterway that would follow the Menomonee west, cut through to the Rock River and the four lakes in Madison, link to the Wisconsin River, and eventually to the Mississippi.

In 1835, a timber dam across the Milwaukee River, just south of North Avenue, was built to control water flow in the Milwaukee and Rock River Canal. Only about one mile of the project along the west banks of the Milwaukee River was completed before the project was abandoned. The Milwaukee and Rock River Canal Company went bankrupt and ceased operation in 1866, the same year spring floods washed out the original dam; its timbers damaged or destroyed five bridges on the Milwaukee River on their way downstream to Lake Michigan. In 1884, the City of Milwaukee filled in the canal and built Commerce Street on the site.



Map produced by the UW-Extension Environmental Resources Center



WILLIAM WAWRZYN



WILLIAM WAWRZYN

TOP: A drawdown in late 1990 to accommodate bridge and water main work gave a technical team opportunity to study dam alternatives. As the river channel narrowed, exposed muds dried and the banks were seeded.

BOTTOM: The drawdown also exposed 150 years of accumulated garbage. Volunteers removed more than 2,000 tires and 600 yards of other debris in the summers of 1991 and 1992.

for many Milwaukeeans. Swimming schools, beaches, passenger ferries, boat liveries, rowing schools and

A new dam was built in 1891 to control flooding and regulate water between the upper and lower portions of the river. The 2.5-mile-long 82-acre impoundment created behind the dam was a prime place of leisure and recreation

commercial icehouses thrived above the dam. Ships and barges continued to use the lower river to meet the transportation needs of the machine shops, breweries, tanneries, paper mills, factories and other industries located along the river.

Unfortunately, in addition to recreation and commerce, the river was a convenient dumping ground. Industries and residents used the river as a sewer, and stormwater runoff from developing urban areas and agricultural lands upstream further eroded water quality. Water pollution closed the beaches in the 1930s and city residents complained of a foul odor from the river. Sediments built up behind dams

and other obstructions trapped pollutants like heavy metals, organic chemicals and nutrients in the silty layers.

For the most part, Milwaukeeans turned their back on the river during the post-WWII years. New families moved out of the older neighborhoods along the river seeking new housing on the city fringe and in the suburbs. Public parks and private developments bordering the river fell into disuse and disrepair.

Railroads and trucks replaced freighters, and in 1959 the last commercial vessel navigated the Milwaukee River upstream of Buffalo Street. Many factories and warehouses along the lower river closed, leaving behind abandoned and blighted buildings. Downtown Milwaukee, once the heart of evening entertainment, had become a ghost town after offices closed for the day. Ornate movie theaters were torn down and replaced with parking lots.

River interests regrouped

Cleaning up the river has provided outstanding examples of regional cooperation, citizen and community involvement. As in so many Wisconsin rivers and streams, wastewater and piped wastes from industries were once considered the major impediment to water quality. Beginning in the 1970s, major investments upgraded private and public wastewater treatment plants. Soon after, hundreds of millions of dollars were spent containing and treating combined sewer overflows in the Milwaukee area. Those efforts continue.

Nevertheless, environmental quality and river uses along the Milwaukee River were still limited. Recognizing these conditions, the Department of Natural Resources completed a comprehensive plan that recommended improvements throughout the Milwaukee River Basin. Thanks in part to this planning effort, a Milwaukee River Revitalization Council and a watershed plan was developed to focus on the river's cultural, environmental, recreational and economic benefits. The River Revitalization Foundation raised community support to acquire land to form a recreational trail and corridor



WILLIAM WAWRZYN

along the lower riverbanks. Now, cement that might formerly have been used to channel and straighten the river is being poured for riverwalks, new homes and businesses proud to carry a riverside address.

Thousands of students from area high schools participate in the Testing the Waters program to monitor and learn about water quality in the river. Landowners in rural areas are working with the state on cost-sharing programs to help reduce runoff pollution from their farms. Each year, business groups and nonprofit organizations join together for river cleanups. Cities, villages and towns are developing riverwalks and parks, and are sponsoring festivals and activities celebrating the vitality of the Milwaukee River.

Much of the river's physical recovery can be linked to projects that removed seven obsolete dams on the main stem and tributary waters starting in 1990. These removals included the Young America in Washington County, the Woolen Mills dam in the city of West Bend, Chair Factory dam in the Village of Grafton, the DNR's New Fane dam in the Kettle Moraine State Forest, the Waubeka dam outside of

Freudonia, the Schweitzer dam outside of Jackson, as well as the largest dam on the river, North Avenue Dam in Milwaukee.

As noted in the River Alliance's account of river recovery, "At the former Chair Factory Dam site in Grafton, removal uncovered beautiful dells as this portion of the Milwaukee River cuts through the Niagara Escarpment. At both New Fane and Young America dam sites, removal restored habitat for the threatened longear sunfish. In West Bend, removal of the Woolen Mills dam...[subsequently] created a 60-acre park that has become the crown jewel of that city."

Removing the North Avenue Dam and impoundment was viewed as a linchpin for riverside recovery. In late 1990, the dam gates were opened, lowering water levels to accommodate replacing of a water main and repairing a bridge. Then-Mayor John Norquist agreed to leave the dam gates open while DNR staff led a technical advisory group consisting of city, county, village of Shorewood, Southeastern Wisconsin Regional Planning Commission and the Milwaukee Metropolitan Sewerage District. The technical team

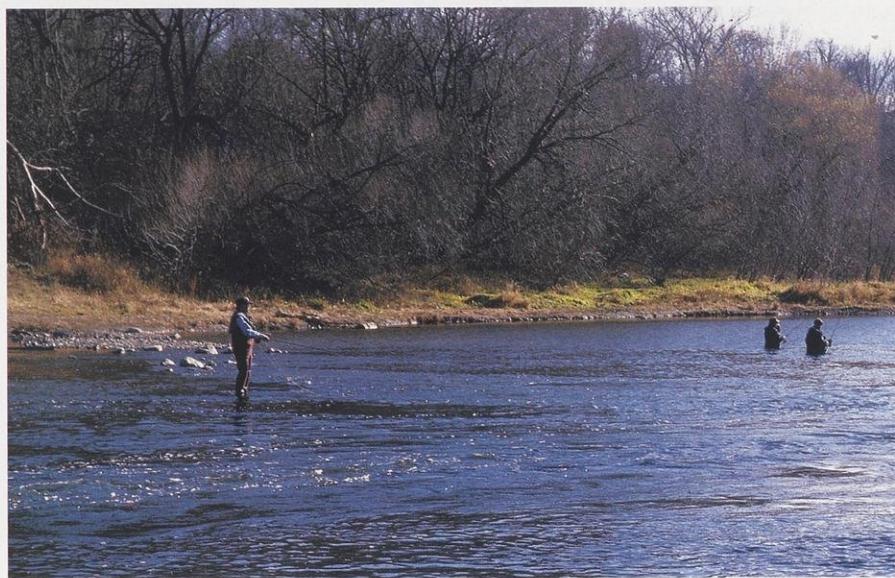
studied alternatives and recommended partial removal of the dam to lower and narrow the river flow to natural conditions. Once exposed muds dried out and consolidated, the riverbanks were seeded with natural vegetation to keep sediments in place as the river returned to a natural state.

The 2.5 miles of river from the Estabrook Dam to the North Avenue Dam narrowed considerably as the free-flowing river resumed a more natural course. The drawdown also exposed more than 150 years of accumulated garbage. During the summers of 1991 and 1992, Youth Conservation Corps members and numerous volunteers removed and recycled more than 2,000 tires and about 600 yards of other debris including auto parts, shopping carts and appliances. Water quality and habitat was improving. Fish subsequently moved in from populations upstream and downstream of the former dam.

Downstream, the city began building the first segment of a downtown river-



MARSHA BURZYNSKI



WILLIAM WAWRZYN

TOP: It takes concerted community work to envision what might be. This downtown river stretch was decaying. As the river is recovering, so are nearby neighborhoods. This area has been redeveloped as prime real estate for shops, restaurants, housing, outdoor entertainment and a pretty area for a stroll.

BOTTOM: Milwaukee River segments just upstream from the downtown now provide excellent canoeing and even steelhead fishing.

walk system and started holding annual festivals like River Splash to celebrate the river. The enthusiasm spawned equal interest in revitalizing neighborhoods and housing downtown. Further study recommended removing the dam in its entirety. Permits were secured and the dam was taken out in 1997.

The fishery responded very quickly, noted Will Wawrzyn, one of the DNR biologists who spent more than seven years working on the project. Fish species using the river increased five-fold in just a few years. The waters that used to hold common carp and white sucker now have healthy populations of smallmouth bass. Walleye

and lake sturgeon restoration projects are underway and a state-threatened species, the greater redhorse, is common here. Where the river flow remains strong and steady, trout and salmon have migrated approximately 30 river miles upstream as far as the Village of Grafton on the Milwaukee River and to the City of Cedarburg on Cedar Creek. Today, you can walk along the former impoundment and see herons and osprey, red fox and river otters on restored wetlands along the floodplain.

City parks along the river are benefiting from a renewed interest from neighborhood coalitions through groups like the Urban Ecology Center in Riverside Park. The center holds canoe trips, river exploration and remains a community center for scientific explorations in the heart of the city. The city, county and state are working on a streambank restoration project to stop erosion, establish hiking trails, and create canoe and kayak access. A canoe trip along the Milwaukee River from North Avenue to downtown presents a beautiful urban perspective. Luxury apartments and condominiums have replaced old warehouses. During the warmer months, outdoor tables in restaurants and pubs that located on the river are at a premium, and pontoon and paddle boat rentals are available.

The city has nearly completed the downtown phase of the riverwalk, and future development will focus on the north and south ends, possibly extending from the North Avenue bridge to the Third Ward and Lake Michigan harbor. A pedestrian bridge now spans the former dam site connecting new developments along Commerce St. and existing Riverwest neighborhood with that of the historic Brady St. neighborhood.

Rich in history, the Milwaukee River is finally receiving respect and recognition as a treasured natural resource flowing through the heart of an invigorated downtown.

Kathleen Wolski is DNR's public affairs manager for southeastern Wisconsin and William Wawrzyn is a DNR fisheries biologist for the Southeast Region.

At a state park on the very tip of Door County, volunteers shed light on the lives and times of Great Lakes sentinels who kept the night watch.

Keepers of the flame

Story and photos by Tim Sweet

A lighthouse has dutifully stood watch atop the rugged dolomite limestone bluffs of Rock Island's Pottawatomie Point since 1836. In December of 1837, the federal government hired David Corbin to serve as the light station's first keeper on this farthest point of Door County jutting out into Lake Michigan. Corbin, a veteran of the War of 1812, was a bachelor who spent 15 years at his post.

Many other keepers and their assistants followed. Those familiar with Door County history may recognize the names of Jesse Miner, Jens Jacobsen,



Colleen Andrews is one of the volunteers who spruce up, clean and staff the lighthouse from Memorial Day through mid-October.

The restored Pottawatomie lighthouse stands watch on Rock Island off the tip of Door County.

Edward Cornell, Raymond Buttars and his assistant Ernie Lockart who manned the Pottawatomie Light until 1946 when the station was automated.

For the last 58 years, the keeper's house has been vacant except for a colony of bats in the attic and an assortment of snakes slithering about the cisterns beneath the summer kitchen. Several years ago the Wisconsin Department of Natural Resources and the Friends of Rock Island formed a partnership with the purpose of restoring the historic lighthouse and its surrounding outbuildings to their former glory. This past May, restoration con-



TOP: The ferry docks at the Thordarson Boathouse to shuttle passengers who visit for the day or camp on Rock Island.

BOTTOM: The sparse head keeper's bedroom shares the feel and look of simpler times.

tractors finished the job of restoring the station to what it looked like in the early 1900s.

Volunteer families have taken up the call to once again inhabit the lighthouse from June through mid-October, interpreting the history of the buildings and its keepers. This year the lighthouse will be open to the public from Monday through Saturday between the hours of 10 a.m. and 4 p.m. starting Memorial Day.

In addition to welcoming visitors and leading tours, volunteers get a firsthand opportunity to experience what it was like to live at a relatively isolated island outpost. The Potawatomi Lighthouse has never had electricity, running water or indoor plumbing.

Keepers used to rely on rainwater collected in the two cisterns or they hiked down the bluff to Lake Michigan,

bucket in hand. Back in 1909 a well was dug near the keeper's house, and a hand pump there is still in use. During the recent renovations a parlor stove with propane insert was installed, but those are the only amenities. For visitors, Rock Island offers primitive tent camping in a small campground on the southwest corner of the island and five backpacking sites on the southeastern corner. Amenities include fire rings, picnic tables, composting toilets and water.

The first week of June proved to be a bit of an adjustment for me during my stint as the volunteer keeper. I was usually out of bed by daybreak watching the sunrise over nearby Poverty Island. Mornings were spent cleaning up and shaving with a bucket of water and some soap. The lighthouse was swept and the nearby composting toilet was cleaned. Then I did what many of my predecessors had done — I painted,

and painted, and painted!

Visitors were welcomed whenever they arrived; being there alone, I was nearly starved for human contact. I struggled a little with the quiet and lack of companionship. I'm used to having others around with whom I can converse. And living in the 21st century has made me accustomed to modern houses with refrigerators running, televisions talking and CD players singing. I'm thankful that so many visitors now make the lighthouse a destination on their Door County trips and that historical interest is leading many to take the ferry out to Rock Island during the months that docent keepers are here to greet them and share a bit of history.

We record daily observations of wind direction, temperature and precipitation in the station's logbook, just as keepers of yesteryear were expected to do. The wind seems to blow almost all the time. It would roar up the side of the bluff, rustle the leaves, rattle the windows and moan and groan through the vents of the lantern room (at least I think it was the wind).

The lighthouse provides its own measure of unusual sights. I particularly recall a week at the lighthouse in August when a thunderstorm struck late one afternoon. A cold front swept through from the northwest with strong winds, intense lightning and torrential rains. Pea-sized hail banged against the tin roof and the old wavy glass of the windowpanes in the parlor. Fortunately, the hail was short-lived, and neither the roof nor the glass was damaged.

On several days, spectacular cloud formations took shape over the lake unlike the ones I'm used to seeing further inland. Dramatic gray and white storm clouds drifted by the lighthouse in the unstable and cool air. Some were even reported to have produced waterspouts over the northern portion of Lake Michigan. Other clouds of unearthly beauty adorned the sky above the boathouse as if placed there in a painting by a heavenly artist with a masterful hand.

From the lantern room one afternoon, I noticed an unusual ship approaching from the west, just off

Life on a small island — entries from the *light keepers' logbook*

Boyer's Bluff. A short time later, I heard an engine in the passage in front of the lighthouse. A dash to the opening in the trees revealed a *Staten Island Ferry* passing Rock Island on its way from Marinette to New York Harbor!

Even the pitch-blackness of a starry night is a gift to be cherished on a clear evening at the lighthouse. From one bedroom window, I watched the Big Dipper hang just above the horizon line over Escanaba, while Orion's belt lit up the eastern sky out the other bedroom window. Never have I noticed Venus as bright as in the spellbinding darkness that surrounds Rock Island in the pre-dawn sky.

Other "visitors" warranted mention in the log. I even recorded my encounter with a three-foot fox snake I found in the front hallway!

Several times a day I would go up into the lantern room to check out the view of the lake and bay. After the last visitors left later in the afternoon, I'd take a hike down to the boathouse to watch the last ferry go. Then a hike around the rest of the 900-acre island would help to ensure I had worked up a good appetite for supper. I have the feeling that many keepers were so involved in purposeful exercise, such as climbing the lighthouse tower or hiking down to the lake for water, that they never would have understood the need for Nordic Tracks, stair steppers and treadmills.

Unlike keepers of the past who had to keep the light burning, I retired for the day shortly after watching the sun slip beneath the horizon.

If you have the time this summer, perhaps you'll want to lace up your hiking boots and pay a visit to the Pottawatomie Lighthouse in Rock Island State Park. I know the volunteers would enjoy showing you the station, and they'd appreciate the company. If you see someone looking especially lonely, offer to sit down and play a game of cribbage with him/her before you head for home. **W**

Tim Sweet writes from Clintonville. For more information on the Pottawatomie Lighthouse, please contact: Friends of Rock Island, 126 Country Club Drive, Clintonville, WI 54929. E-mail: tjsweet@charter.net. Website: <http://fori.us>.

Memorial Day, May 31 6:15 a.m. — 48 degrees

The view from the northeast bedroom looks cool, windy and foggy — can't see St. Martin Island six miles across the passage. Unfortunately, the view from the kitchen window doesn't look much different. The rain and east wind make it the kind of nasty day that leaves me longing for indoor plumbing and central heating (actually any kind of heat). But at least we're not in a tent!

Ranger Randy picked us up at 9:30 a.m. Torrential rains soaked everyone and all their gear as we lined up on the dock waiting for *The Karfi* to ferry us back to Washington Island. So many people were in front of us that we missed the first run. Lots of cold, dreary faces peered out from drenched hats and hoods on the boat. The car's heater never felt better!

June 6

I counted 27 visitors who signed the guest book. It's very quiet this evening as I sit here at Inspiration Point near the edge of the lighthouse cliff on the northeast shore. Waters below are calm and placid — an ideal evening for sea kayaking or daydreaming.

June 7

6:19 a.m. — Partly cloudy, 58 degrees

The lilacs still haven't opened up this spring. Next to them, the century-old apple trees are just beginning to blossom.

Lots of birds frequent this blufftop opening in the woods. A flock of cedar waxwings is eating the petals of the apple blossoms. A ruby-throated hummingbird just buzzed past them. Robins and flycatchers are singing along with an assortment of other feathered friends. Earlier I spotted several bluebirds, an indigo bunting and a scarlet tanager!

June 8

It's already 76 degrees at 9:00 a.m. Mostly sunny, a breezy south wind is blowing, and it is very muggy. Scattered thundershowers are predicted for later in the day. Flies are after my ankles.

I painted the west side of the summer kitchen yesterday. This morning, I finished the south side and two vertical boards on the east side before running out of paint.

As I was walking through the house to head upstairs, I encountered a three-foot fox snake sprawled out at the base of the stairway. Needless to say, the unexpected sighting shocked me.

After composing myself, I backtracked to the summer kitchen to get my camera to document the incident. I then herded the snake out the door.

June 11

12:55 p.m. — Fresh east wind, 57 degrees

I took a hike after staining the new porch on the summer kitchen. It was very chilly in the wind. I decided to take a hike in order to warm up. My attire featured a turtle-neck, wool sweater, down vest and rain jacket.

Heat and company were found in the ranger's residence near the boathouse. Kirby gave me a cup of hot coffee. The warmth did wonders for me. I even took off a layer while visiting.

We watched *The Sea Diver* from the bay window in the office. The crew was pulling up nets just a little off shore. Kirby explained that this is one of only two commercial fishing vessels remaining on Washington Island.

continued on page 28

June 14

About 9:15 a huge liner went past. It was all lit up against the pink, purple and blue night sky. Such a beautiful sight!

June 18

Sunny and warm

Expecting lots of company today. We have the house spick-and-span. Not only did we do the daily sweeping and spot cleaning, but we swept every corner, washed the floors, dusted, cleaned, put in screens — we are ready!

I have so many mosquito bites everyone thinks I either have the chickenpox or mumps!

June 24

The day started blustery and unsettled, but ended calm and almost cloudless. After tours ended, the whole family did the Thordarson Trail to the east side of the island. From the backpacking sites, we scampered along the shore to the south beach. The beach was ours alone. Then it was time to head back home, some fresh baked bread and finally up to the lantern room for the sunset — the best of the week: yellow into red to purple and finally, yellow-orange. Wow!

The lighthouse is a treasure and the opportunity to live in and keep it alive was a treasure too.

July 4

The fog cleared about 5:30 p.m., and we were fortunate to be able to see a big barge go by. It was mostly bright blue. A second barge was passing in the opposite direction at the same time — it was red and white. How fitting to have red, white, and blue ships going through the Rock Island Passage simultaneously on the Fourth of July! Who needs fireworks?

July 8

The night is clear with so many stars! The lights at Boyer's Bluff, Minneapolis Shoal, and Poverty Island, along with ours look like lightning bugs in the night. We cannot tell where the sky ends and the lake begins with no moon on the water.

July 13

The first storm front moved in around 2 p.m. The tour guests holed up until the rain diminished at 3 p.m. Twenty minutes later, Ranger Randy came flying into the yard in the park ATV checking to be sure everyone was all right. A family back in the campground area on the other side of the island was struck by lightning. The father was hit hard while everyone else in the family was knocked to the ground. They were all evacuated from the island. Our prayers are with those involved.

August 3

Yesterday a thunderstorm rolled through in the late afternoon. It was the delicious kind that allowed you to feel cozy and safe, but yet appreciate all of the power and majesty such a storm holds. Counting between lightning flash and thunder clap made the heart of the storm about two miles away at its closest.

August 21

A beautiful clear night last night — stars formed a blanket out here over Lake Michigan, different from the scattering of stars we see near home.

We woke this morning to clear skies, happy birds and a new crop of flies.

September 16

Woke up at 3:30 a.m. High winds were banging things upstairs. Actually thought the furniture was being moved around. In the daylight, went up to see the rocking chair under the steps banging the wall from the wind (where the plasterer had put it yesterday). 50 mph winds were reported with three trees down on the lighthouse path.

September 28

Sunny — mid-60s

Late in the afternoon, we walked down to the stone beach below the lighthouse. We saw a peregrine falcon chasing after some smaller birds.

Four deer and a gray fox came to eat apples at sunset.

The moonrise later was like a giant Japanese lantern, surreal.

October 6

When we arrived, a crew was installing the parlor stove. It works wonderfully! Now we can just about live here year-round. In the evening, we lit the stove and closed both doors to the parlor. The room heated up nicely, and we stayed cozy all night.

October 8

We had only one visitor today. By 2:30, the fog started to lift and the rain let up. We walked down to the dock for a couple of hours then came back to the lighthouse. We saw several deer and a fox out by the apple trees after dinner. Tonight we're going to sit by the stove in the parlor and read.

October 18–22

I closed the lighthouse for the winter. The weather was perfect even though rain had been forecast for the entire week — clear nights and many shooting stars!

Stealth on silent wings

continued from page 2

For centuries barn owls were victims of naive superstition and they were driven from their nests in the mistaken belief that they brought bad luck. In fact, these sleek, silent fliers are wonderful mousers. These crow-sized birds measure about 13 to 15 inches in length and weigh from 17 to 20 ounces. These flying mousetraps can eat 1.5 times their weight each day in mice and meadow voles!

The barn owl is handsome, dressed in a sandy brown, golden and cinnamon suit of feathers streaked with white and blue with a white belly speckled black or brown. The barn owl is distinguished by a large, round tuftless head and a white heart-shaped face edged brown. At night it appears completely white. Its look and moth-like flight earned the nickname ghost owl.

Barn owl flight is silent as a stalking cat. Special feathers on the front of its 42- to 45-inch wings dampen noise. It attacks with frightening efficiency — gripping and snatching prey with razor-sharp talons. A barn owl seldom misses its mark while cruising the edge of open country along meadows, grasslands, fencerows and wetlands near granaries and barns. Small quarry is swallowed whole. Larger victims are torn into pieces with a sharp, hooked beak.

Though these owls can breed year-round in Wisconsin, mating typically takes place from April through July. If food is plentiful, a second brood may be reared in early fall. Courtship consists of the male chasing the female, bringing her mice and uttering a series of rapid squeaking noises. It's believed that barn owls mate for life. As cavity nesters, the pair chooses natural sites or abandoned buildings, church steeples, silos, belfries, water towers and manmade nesting boxes as well as barns. A pair may use the same nesting site each year.

The female lays one white egg every two days until there are five to seven in her clutch. Both parents bring prey to the young, called owlets. The food, usually mice, is swallowed whole. A nesting pair of barn owls with six young may consume over 1,000 mice during their three-month nesting period.

Barn owls are not equipped to survive severe winter weather and, truth is, they have never been plentiful in Wisconsin. Their bodies store little fat. If they don't find a constant food supply, especially during cold spells, they may die. On average a barn owl lives only three to four years.

The common barn owl, *Tyto alba*, (*Tyto* is Greek for owl and *alba* is Latin meaning white) is also known as monkey-faced owl, ghost owl, rat owl, night owl and death owl. It is listed as a state endangered species in Wisconsin due to habitat loss from more row cropping, fewer fields of oats, fewer fencerows and fewer wetlands. Metal pole barns with fewer uncovered entryways also reduced rural nesting areas.

Owls are protected by the Migratory Bird Treaty Act, meaning it is illegal to harm or possess these raptors. If you find an owl that appears wounded or poisoned, call your local conservation warden who often works with networks of licensed rehabilitators who can help injured birds recover. Support for the Endangered Resources Fund could help train volunteers to build and install barn owl boxes and resume programs to track barn owl movements and captive breeding.

Ann Bailey Dunn writes from Campton, Kentucky.

READERS write

COMMENT ON A STORY?

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

LAKE SUPERIOR SALMON STOCKING

Can you tell me what happened to the salmon fishing in the rivers and creeks in northern Wisconsin in 2004? The fall of 2003 was very good. Many salmon were taken and many more released. [Last year] there were a few in the creeks mid-October, then that was it. Did the DNR stop stocking salmon up north?

James Mattson
Ashland

Stephen Schram, DNR's Lake Superior Fisheries Supervisor in Bayfield, responds: The Wisconsin DNR continues to stock Chinook salmon in Lake Superior. Sporadic returns over the last 15 years are the result of poor survival of stocked fish and an increase in natural predators. The success of stocked Chinook depends on the availability of forage fish. The forage base in Lake Superior has changed dramatically as native species' rehabilitation has been successful. The exotic rainbow smelt once dominated the forage base in nearshore areas. Recently native lake herring, which are found throughout the lake, have increased in abundance. Chinook salmon, which are nearshore predators early in life, must constantly hunt for food to grow to such a large size in a short time period. When smelt populations decreased, Chinook survival also decreased.

The increase in the lake trout population also increased competition for the available forage. In fact, increased competition from native predators has made it very difficult for any stocked fish to survive in Lake Superior. Stocked fish are either eaten or they can't compete for food with native fish. The combination of increased predators and a change in the forage fishery has been a positive change benefiting native species such as lake trout. However, exotics such as Chinook salmon will continue having a difficult time surviving in Lake Superior.

STILL MORE ON SQUIRRELS

I am hoping the squirrel issue is not over!

They are our natural neighbors — let's enjoy their antics. Squirrel-proof your bird feeder and try this. (They need food too.)

I laid a cob of corn on my low-level patio floor. Very soon a squirrel had eaten half of it. Then I decided to make him work for his meal. I had a three-inch screw-eye bolt in my array of small hardware. I screwed it into the core of the cob and secured a small rope to the eyelet. Then I attached the other end of the rope to a roof brace under the patio. The corn was touching the patio floor, but *vertical* now.

He came back the next day and virtually cleaned the cob. I knew he was hooked. I attached a fresh cob to the

continued on page 30

screw-eye, but shortened the rope. The next time (and I was watching) he stood on his tiptoes to get the bottom one-third of the kernels. Then I raised it some more, two feet high.

I was lucky to be watching on his next trip. He ran right to the spot, looked all over, then looked up! His eyes got big, his expression was like, "What now?" To my surprise, he squatted and jumped straight up. He clutched the cob and swung back and forth enjoying the corn.

See how high your squirrels can jump! They are super athletes, with an uncanny knack for solving a problem. We invaded their territory. Find a pleasant way to enjoy them!

Jim Cox
Lodi

We live in the country on a five-acre tract that has a natural two-acre woods adjacent to a neighbor's three- or four-acre woodlot which, of course, brings in a host of wildlife, including many squirrels. We are avid bird feeders with hundreds of birds of all kinds and we had problems with the squirrels robbing the feeders also. We had a store-purchased, plastic, barn-type feeder. We taped two bare wires to the plastic perches, one on each side of the perch that surrounded the feeder, and then attached a double stranded light gauge wire to the bare wires. We ran the light wire into the house under a window and attached it to an electric field fencer used by farmers to fence livestock. We put an off/on electric switch on the wire and were set to have action. When a squirrel got on the feeder we engaged the switch and laughed to see the animal jump five feet into the air and take off running. It only took a couple of times and the animals were trained. We also found that insistent mean blue jays that hogged the feeder and kept the other birds away were easily trained to stay away from the perch and feed

on the ground where they belonged. This did not hurt the culprits, but it trained them very well and we enjoyed the fact that we could control the pests humanely.

J. Everett O'Brien
Boscobel

While we don't encourage the average reader to try this technique, it is certainly creative. For someone experienced in electrical wiring, using necessary precautions, it's worth a shot.

BURN BARREL DEBATE

"Open and Outdoor Burning" in the December, 2004 issue leaves me questioning the author's intent. This is the second article to appear in your magazine regarding dioxin production in burning barrels. I think that your readers should know that you couldn't produce dioxins from your burning barrel without adding a chlorine donor to the mix. Dioxins are chlorocarbons. The only donors that would be available to most barrel burners are the plastic polyvinyl chloride, PVC. This plastic is used mainly for plumbing piping and wire insulation; very rarely in packaging anymore, and is not recyclable in Beloit anyway. It is land-filled, where I assume it will form dioxins.

Also burning trash does not produce arsenic, mercury or other heavy metals as the author contends. These are elements, and man cannot create or destroy them except in a nuclear reaction. If you burn arsenic-treated green wood you'll release the arsenic into the environment sooner than by natural decay. The green wood produced nowadays does not contain arsenic. Extremely small amounts of mercury and other heavy metals are absorbed by plants from their environment, the soil and air, and remain in the ashes or are sent airborne in the smoke. Rock County Electric Coop reports that man's activity releases only five percent of mercury into the environment. Nature releases the other 95 percent.

Rather than forcing your agenda on us, please inform us of the facts. The folks of Wisconsin are pretty smart and responsible and will do the right thing without deceptive scare tactics. The burning of organic materials can only produce water, carbon dioxide, and heat — the exact same result of composting.

Carl Denninger
Beloit

Kevin Kessler, DNR's Open Burning Team Leader, replies: It is true that dioxins cannot be produced without chlorine being present, and PVC is one potential source of chlorine. However, there are many more sources of chlorine in typical waste that can contribute to dioxin formation. The Chlorine Chemistry Council states on its website that "dioxins are commonly produced in virtually any combustion environment, and great quantities of chloride are not needed to produce them. In fact, a teaspoon of table salt contains 1,000 times as much chloride as is incorporated in the daily dioxin emissions of a typical municipal waste combustor. Even backyard burning of leaves or paper produces pollutants, including dioxins."

You are correct that burning household waste doesn't produce heavy metals that aren't already in the waste. However, burning can be a health hazard by releasing those materials into the atmosphere and concentrating them in the ash residue. According to the EPA brochure entitled The Hidden Hazards of Backyard Burning, "Smoke from burn barrels contains hazardous pollutants such as particulate matter, sulfur dioxide, lead, mercury, and hexachlorobenzene. The ash residue from backyard burning can contain toxic pollutants, such as mercury, lead, chromium and arsenic, which can contaminate vegetables if scattered in gardens."

UPDATE BREATHING EASIER?

Since our December 2004 insert

on air quality, concerns were raised about federal enforcement of legal deadlines to cut air emissions at oil refineries nationwide. As reported by the Duluth News Tribune, an investigation by the Fort Worth Star-Telegram found that consent decrees, which should have reduced emissions of nitrogen oxides, sulfur dioxides and particulate matter by almost 200,000 tons a year, have largely gone unenforced by EPA. Consent decrees were used over a four-year period beginning in 2000 to reduce emissions of air pollutants at 48 refineries in 24 states. But investigators found that court-mandated deadlines have been missed and extensions granted by EPA, usually without notice to the public or the courts that set the deadlines.

Refineries give varying reasons for missing deadlines. Sometimes there were mechanical problems installing new equipment, but most of the delays are attributed to chemical additives, recommended by EPA to achieve quick emission reductions until permanent measures could be installed. The additives had been successful in other industries but never fully tested at oil refineries where they have since failed to reduce pollution. The newspaper reports that despite those failures, EPA continues to require companies entering legal settlements to use the additives.

The only such facility in Wisconsin, Murphy Oil in Superior, is currently subject to a federal consent decree that continues to resolve Clean Air Act issues. DNR Air Management Engineer Steve Dunn notes that no deadlines for emission reductions required in the decree have been missed, nor have any deadlines been extended. Murphy Oil has installed required upgrades and has paid all penalties assessed by the court. Air management staff report that communications among all parties to the settlement have been excellent.

Hawks and herps

Attention all birders with bulky binoculars and books bursting at the bindings with blow-ups of bitterns, bald eagles and bluebirds! Yes, spring migration is upon us, and yes, your TRAVELER has listed a couple of ways you can participate in this extraordinary annual aerial event.

But, if you could ever so gently set down the scopes and life lists just for a day — Saturday, April 23, to be specific — and make your way to the Monona Community Center, you can enhance your knowledge of birds without flapping a wing. Spend a few hours at the **Wisconsin Reptile Breeders Association's Spring Show**, and we guarantee you will never think of birds in the same way again.

Remember, the traits modern birds possess were acquired gradually over many millions of years of evolution. Those first birds...

well, they had more in common with Godzilla than Tweety Pie. Serious birders wanting to know more about avian lineages should spend a day getting acquainted with reptilian relatives.

At the WRBA show, 20 breeders and herpetologists will be on hand to answer your questions about the hundreds of live reptiles and amphibians, a.k.a. herptiles or "herps" on display. The organization is dedicated to conserving herps

and protecting habitat around the state.

10 a.m. - 4 p.m.,
1011 Nichols
Road, Monona,
Dane County.
\$4 adults;
\$2 children.

On the web: www.madison.com/communities/whs/

With the deep background you've amassed about the connection between birds and reptiles, you'll not want to embark on a spring birding outing without proper fortification. **Enjoy Birds & Breakfast** from 7:30-11:30 a.m. on Saturday, May 7 at the Hawthorn Hollow Nature Sanctuary & Arboretum in Kenosha — it's a hike to view the spring migration followed by a pancake-and-sausage feast. \$5. Reservations: (262) 552-8196. Also on May 7th, you can set out at 6 a.m. for an **Early Morning Bird Walk** with experienced ornithologists at Old World Wisconsin in Eagle. Look for the 60 species that frequent the area; afterward enjoy a delicious continental breakfast. \$10. Reservations: (262) 594-2922.

Lose your binocs in a battle over a canoe paddle with a frisky beaver last spring? No problem. Borrow some binoculars from the folks at Havenwoods State Forest in Milwaukee on **Discovery Saturdays** in May and see the spring bird migration up close. They'll even show you how to make your own "outdoor lookers." All ages welcome, 9 a.m. - noon.

(414) 527-0232.

Other birding events you won't want to miss:

- **International Migratory Bird Day, May 8, Horicon Marsh**

The height of Horicon's spring bird migration is a grand spectacle of flight. Watch from trails, boardwalks, and back roads. (920) 387-2658.

The Wisconsin Reptile Breeders share enthusiasm and respect for herptiles at an annual show and at outdoor programs.



HAWTHORN HOLLOW NATURE SANCTUARY
AND ARBORETUM



R. & LINDA MILLER

TOP: Enjoy a morning of birding and a pancake breakfast on May 7 at Hawthorn Hollow in Kenosha.

BOTTOM: Spend your spring weekends watching the May migrants with other birders on walks and festivals throughout Wisconsin.

- **Mississippi River Flyway Birding Festival, May 13-15, OmniCenter, Onalaska**

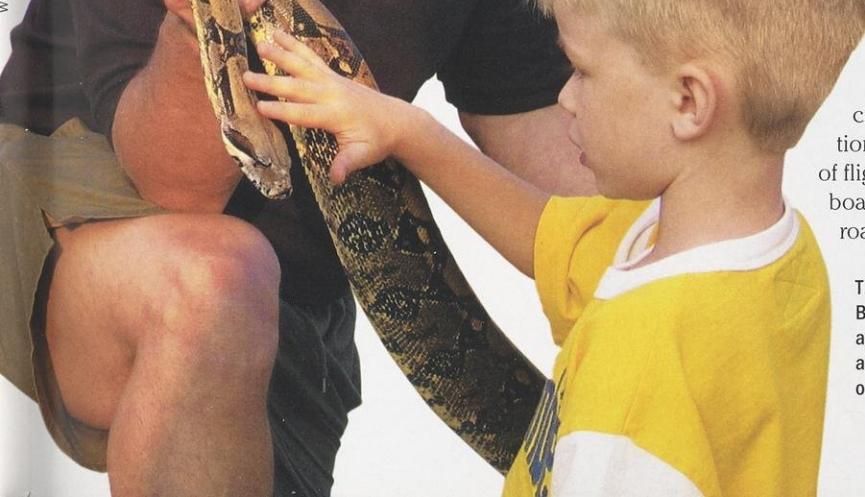
Take guided birding tours, canoe and kayak trips in the tri-state area, attend seminars and enjoy entertainment. Learn about bird habitat and public and private bird conservation efforts in the Coulee Region. (608) 784-2992.

- **Great Wisconsin Birding & Nature Trail**

Five regional trails will use existing roads and custom maps to guide the nature traveler to the best of Wisconsin's bird and wildlife watching areas. Learn more at: www.dnr.state.wi.us/org/land/er/birds/trail.htm. The first guide to the Lake Superior Northwoods Region is available now.

- **Checklist of Wisconsin birds**

The scorecard for every bird lover! Get your copy at www.dnr.state.wi.us/org/land/er/birds/pdfs/checklist.pdf



Wisconsin, naturally

QUINCY BLUFF AND WETLANDS STATE NATURAL AREA

Notable: This vast (4,500 acre) wetland mosaic of sedge meadow, wet forest and seepage ponds is situated in the flat lowlands between 200-foot high sandstone buttes and mesas, once islands in the extinct Glacial Lake Wisconsin. Uplands contain oak forest, pine and oak barrens, and massive cliff faces. The site is cooperatively protected by the DNR and The Nature Conservancy.

How to get there: From the intersection of Highways 13 and H just east of White Creek in Adams County, go west on H 2.6 miles, then north on 16th Ave. 0.4 mile, then west on Evergreen Ave. 0.5 mile, then north on 16th Dr. 2.4 miles to a parking area west of the road. *Wisconsin Atlas*: page 43, grid B4.



TO SUBSCRIBE CALL 1-800-678-9472
OR VISIT OUR WEBSITE www.wnrmag.com