Wisconsin natural resources. Vol. 29, No. 6 December 2005

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

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Center poster: Wisconsin's land legacy

WISCONSIN NATURAL RESOURCES

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Flocking to feathered guests

Gravity-defying forests

True love and a turkey leg

Special insert: Marketplace matters

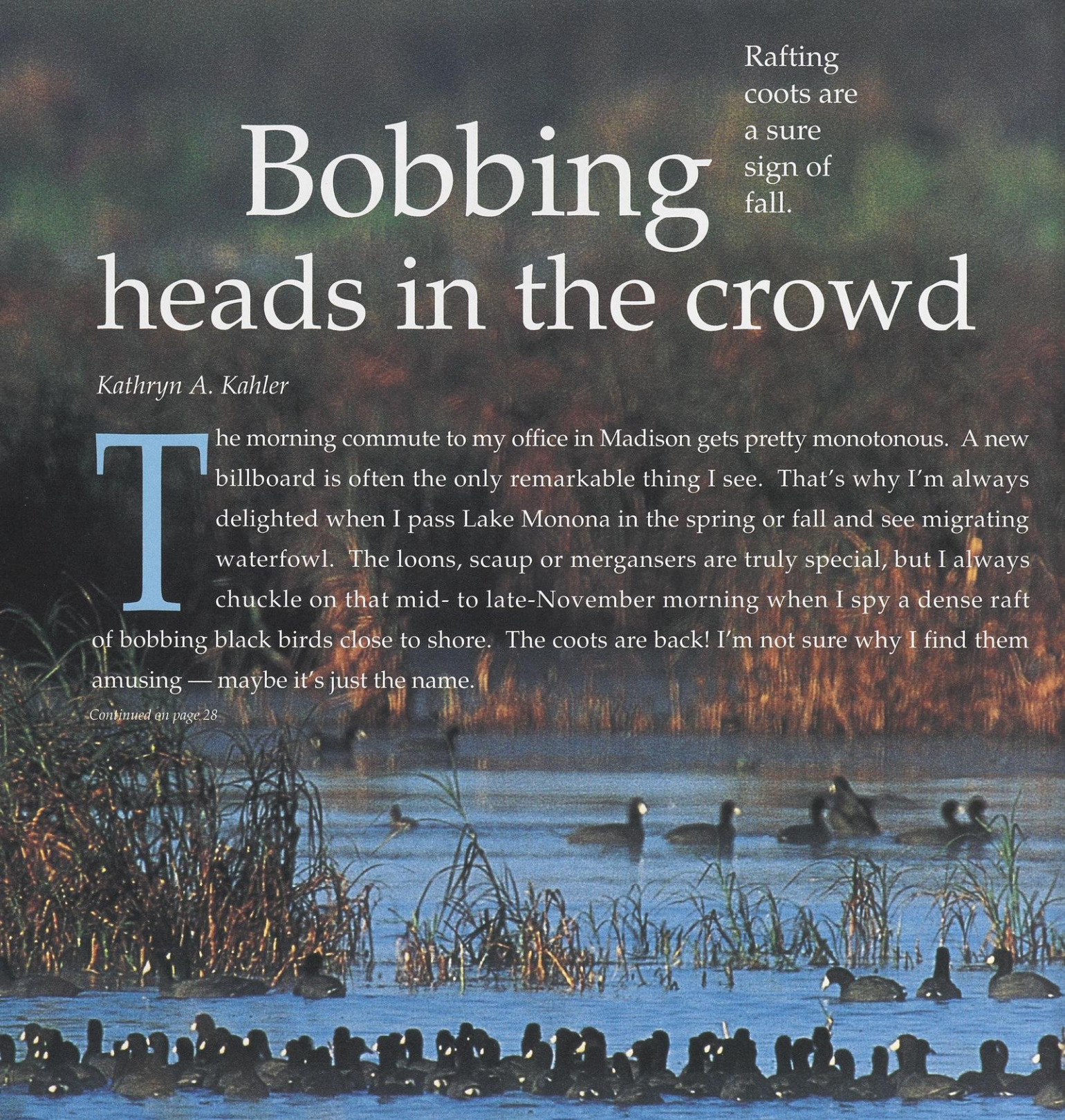
Rafting coots are a sure sign of fall.

Bobbing heads in the crowd

Kathryn A. Kahler

The morning commute to my office in Madison gets pretty monotonous. A new billboard is often the only remarkable thing I see. That's why I'm always delighted when I pass Lake Monona in the spring or fall and see migrating waterfowl. The loons, scaup or mergansers are truly special, but I always chuckle on that mid- to late-November morning when I spy a dense raft of bobbing black birds close to shore. The coots are back! I'm not sure why I find them amusing — maybe it's just the name.

Continued on page 28



It's fun to watch coots and listen to their soft *kuk, kuk, kuk* as they feed. The birds bob and do a head pump as they paddle, dabble, tip up in shallow water or graze near shore. They are social birds that raft up for protection.

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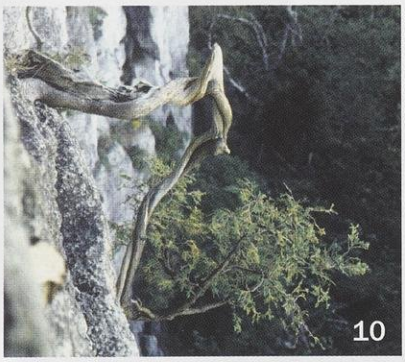

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DENNIS PRATT

© TOM LOWES

FRONT COVER: A rare treat! Many great gray owls and other northern boreal forest owls flew south last winter to the upper Midwest in search of food.

© RICHARD ARMSTRONG, DeForest, Wis.

BACK COVER: Baxter's Hollow State Natural Area in the Baraboo Hills, Sauk County. For more information, or to order a guidebook to State Natural Areas, 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.

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PUBLCE-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, PO. 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.**

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.

JACK R. BARTHOLMAI

Birders and photographers marveled as great gray owls successfully hunted rodents crawling almost a foot under the snow.

Invasion of the vole snatchers

Susan Foote-Martin

A rare winter treat of northern owls had birders flocking to northern Wisconsin.

We knew that they were coming. In fall 2004 the birding Internet chat lines in Canada were abuzz with sightings of great gray, northern hawk and boreal owls moving south in small groups. But how many would come into the United States and where they would show up was anybody's guess.

Why were owls on the move? Population estimates of small mammals conducted earlier in 2004 in Canadian boreal forests yielded the lowest numbers of voles in recent history. As the favorite prey for these owls, few voles meant certain death by starvation unless the owls moved farther south to find food as colder weather approached, so the irruption was on.

The owl irruption, dedication of the Crex Meadows Interpretive Center and opening of a regional Great Wisconsin Birding and Nature Trail provide year-round opportunities for tours, festivals, articles, ads and community business to encourage ecotourism.

SANDY ENG, BURNETT COUNTY SENTINEL

The great gray and other boreal owls have little exposure to people and little fear of human ways. This provided an unusual opportunity for a close look at "Wilson."

STEVE MARFILIUS

Bird watchers are a generous lot who like to share the experience with others. They stay in touch year-round on the Internet and through telephone hotlines describing when and where birds are moving through a region. By fall, the northern owls of Canada began arriving in Wisconsin and Minnesota in unparalleled numbers. Reports from Minnesota logged the first sighting of a great gray owl on August 17th, and by January their numbers had swelled to nearly 2,000 individuals. Hundreds of northern hawk owls and boreal owls were part of this same irruption, and sightings of all three species would nearly triple by late winter. Soon the Wisconsin bird-watching community began sharing details of their owl sightings. Enthusiasm for this once-in-a lifetime event was building across the state.

Over the winter months and continuing well into spring, people traveled north to see the owls and report their sightings on the Wisconsin Society for Ornithology's (WSO) birding chat line. Media accounts across the state and nation spun a story of a "great owl invasion." From the pages of the *New York Times* and *National Geographic* magazine to CNN and ABC, word of the northern owls traveled far and wide.

The wildlife-loving public was driving and flying to northwestern Wisconsin from across the U.S. and from as far away as England to partake of this great phenomenon. Fortunately, our *Great Wisconsin Birding and Nature Trail* for the Lake Superior Northwoods Region was there to guide them. This 72-page, full-color publication is the first of a series of five guides. The free publication contains descriptions and maps for 88 of the best wildlife viewing sites in the state's northernmost counties. Many of these sites were perfect places to see the owls. All of the sites listed in our viewing guides are nominated by the public as favorite places to find birds and wildlife in native habitat.

Some of the most popular places to see great gray owls in Wisconsin early in the season were at Wisconsin Point in Superior (site #30 in our guide) and on the south edge of Crex Meadows State

IN THE KNOW: A FEW BIRDING TERMS, A FEW FACTS

IRRUPTION: when a natural population undergoes a sudden upsurge in numbers, especially when natural ecological balances and checks are disturbed

DIURNAL: hunts during the day

NOCTURNAL: hunts during the night

VOLE: Eastern meadow (*Microtus pennsylvanicus*) and southern red-backed voles (*Clethrionomys gapperi*) are the favorite food item of northern owls. These small mammals have amazing reproductive capacity. They are like lemmings in that local populations can vary from one animal to thousands per hectare on a three- to four-year cycle. When vole populations peak, owls feed on nothing else. Great gray owls can eat six to eight voles per day.

© RICHARD ARMSTRONG

GREAT GRAY OWL (*Strix nebulosa*)

HABITAT: Forested habitats throughout its range. In far North America, it frequents stunted coniferous forests along the edge of the Arctic treeline and spruce and tamarack muskeg forests further south.

RANGE: Found from Alaska across Canada, down the northern Rocky Mountains to Northern Minnesota. It is also found in northern Europe and Asia.

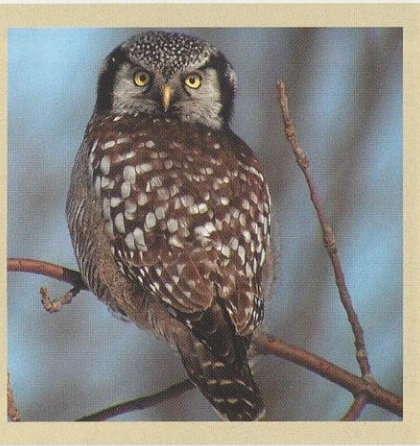
DESCRIPTION: One of the world's largest owls, it is dark gray overall interspersed with bars and flecks of light gray and white. The owl appears to be very bulky because of its dense, fluffy plumage, long wings and tail. A white "mustache" strip under its facial disk is broken by a black "bowtie." Its feet are heavily feathered and hidden from view.

SIZE: 24"-33" in length with wingspan up to 60" and weight up to 3.81 pounds.

DIET & FEEDING: Hunts mainly during early morning and late afternoon, especially during the winter, but will also hunt during other daylight hours and at night. Often seen perched on poles or fence posts along roadsides where it sits and waits. When the ground is covered with snow, it will hunt by hearing alone, often plunging into the snow to capture small rodents moving as much as a foot below the surface.

BREEDING & NESTING: Courtship involves feeding and mutual preening between mates and begins in midwinter. The male approaches the female, holding food in its beak, which is passed with both birds closing their eyes. The male selects possible nest sites and attracts its mate with calls. Several sites are inspected before she chooses the nest site. They primarily nest in abandoned stick nests of ravens, hawks or other owls. Great grays make modest nest repairs and line the nest with moss, deer hair or conifer needles. They also nest in tree snags or on the ground. Two to five eggs are laid and the young hatch in 28 days.

MORTALITY: In captivity a great gray can live to 40 years. Wild birds live shorter lives succumbing to starvation, predation by great horned owls, martens and wolverines, as well as people through shooting, road kill or power line electrocution.



© MICHAEL McDOWELL

NORTHERN HAWK OWL (*Surnia ulula*)

HABITAT: Boreal forests throughout its range.

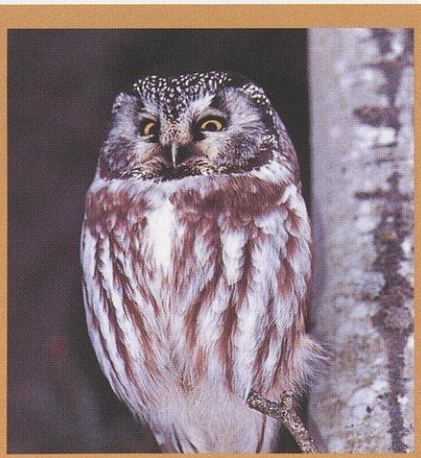
RANGE: Boreal zones of North America and Eurasia.

DESCRIPTION: A crow-sized owl and diurnal hunter that acts and looks much like a hawk.

SIZE: Average 17" in length, with wingspan of 32" and weight of 11 ounces.

DIET & FEEDING: Eats mostly small mammals like mice and voles, but will eat birds. It will cache food, storing it to eat later.

BREEDING & NESTING: Begins nesting in April or May inside woodpecker holes or rotting trees. It also uses abandoned crow, hawk or squirrel nests. The bird lays 3-10 eggs that are incubated for 27 days.



© RICHARD ARMSTRONG

BOREAL OWL (*Aegolius funereus*)

HABITAT: High elevations in spruce or fir forests, sometimes in lodgepole pine.

RANGE: Northern forests of North America.

DESCRIPTION: Round-headed with yellow eyes, white bill and white facial disks. It is often confused with the northern saw-whet owl as color and size are similar. Facial disk is reddish brown with a brown forehead streaked with white.

SIZE: 10".

DIET & FEEDING: Eats voles, lemmings and mice.

BREEDING & NESTING: Boreal nests in tree cavities or old woodpecker holes. It lays 3-7 eggs and incubates an average of 27 days.

The great gray is North America's largest native owl. It has keen vision and an extremely keen sense of hearing. This is Wilson, who delighted visitors to the Arlington area last winter.

© RICHARD ARMSTRONG

Wildlife Area (site #20) in Grantsburg. In a normal year, we might have had a single sighting of a great gray or a northern hawk owl at Wisconsin Point. Curt and Arlys Caslavka of Middleton saw 21 great gray owls at Wisconsin Point the day they visited.

"A viewing guide is perfect for this group of travelers," says Signe Holtz, bureau director for DNR's Endangered Resources program. "For the first time, we have compiled the best wildlife viewing venues in northern Wisconsin into one mapped auto trail. It contains detailed directions, site descriptions and tells the public what species they can expect to see. Now that we've tested it during this owl irruption, we know that it works."

Another full-color, high quality guide for the 13-county Mississippi/Chippewa Rivers region was just published in November. Similar Birding and Nature Trail guides for the Lake Michigan, Central Sand Prairies, and Southern Savanna areas of Wisconsin will be published through 2008. Within just a few years, Wisconsin will have a full set of guides to put anyone within arm's reach of nature-watching hot spots in the state.

Moreover, the local communities where these birds take up residence can also get a boost from ecotourism. The guides contain websites and contact information for local chambers of commerce and visitors bureaus so travelers can find a place to stay and discover more about nearby amenities. And with more than $400 million spent on wildlife viewing in Wisconsin each year, there is good reason for merchants to take notice.

"People came north from all over the country to see these beautiful creatures," says Lisa Hobbie, manager of the Best Western Northwoods Motel in Siren. "Employees enjoy meeting the birding public and share some of their owl sighting locations. Our customers love our Northwoods, and the owls teach us to appreciate what we have in our own back yards."

The Wisconsin Department of Tourism has taken on a full partnership with the Department of Natural Resources in publishing and distribut-

ing the guides. "The project is a winner for both agencies, and we're glad to be a part of it," says Tourism Secretary Jim Holperin. "Our customers want to know where to go to view wildlife, and we can put the viewing guides in their hands and send them to the best places in the state to enjoy our natural resources along with Wisconsin hospitality."

The owls of winter gave many people an unusual chance to connect to nature on their own terms, face-to-face and eye-to-eye. These owls have relatively little contact with people and are consequently unfazed by human contact. Thousands of people saw great gray and northern hawk owls for the first time in their lives at very close range. Schoolchildren to grandmothers called us, e-mailed and sent handwritten notes describing their experiences. It was clear that they had found something special and they wanted to share it.

One such encounter was with a great gray owl that came for an extended stay in the Columbia and Dane county communities of Arlington and DeForest. The kids in the area called him "Wilson."

Wilson arrived in mid-February and stayed until his untimely death on March 26 when he was struck and killed by a car. During that time hundreds of people came to get a close look. For me, his photographs have more personality than those of other great grays I saw last winter because I came to know him personally. He was part of my daily ritual as I drove to and from work, and I would look for him on the weekends too.

Wilson helped bird-watchers make new friends. He gave us opportunities to learn and teach more about nature. He gave us a glimpse into the lives of birds that normally live in the vast and sparsely populated boreal forests of the world that most people might never visit. He touched the lives of many. He taught us what happens when our habitat fails to provide for our needs and death becomes a possibility.

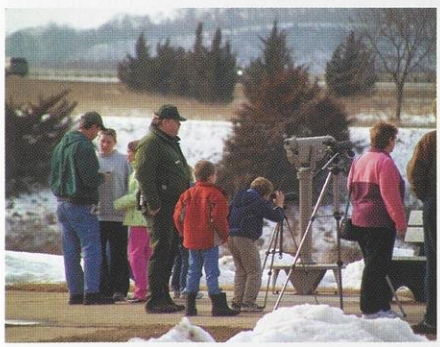
Like so many others of his kind that came south last winter, Wilson had no fear of cars, as they are rare occurrences in the boreal forest. Hundreds of great grays died during the irruption because they learned to hunt for food along roadside corridors that stayed warmer and attracted prey. The birds did not recognize car and truck traffic as a threat. Thankfully, many injured owls were successfully rehabilitated and released back into the wild.

We all hope for another winter to remember; a time of owls and of special opportunities to venture out, learn new things about the natural world that sustains us and value the natural resources that we all share. Just around the corner there's a new bird or wildflower waiting to be discovered, and a new community of people in a corner of the state that you haven't visited. We hope the Great Wisconsin Birding and Nature Trails will take you there.

Susan Foote-Martin is the Great Wisconsin Birding and Nature Trail *Coordinator for DNR's Bureau of Endangered Resources.*

KEN BLOCK

PRAIRIE DU CHIEN CHAMBER OF COMMERCE



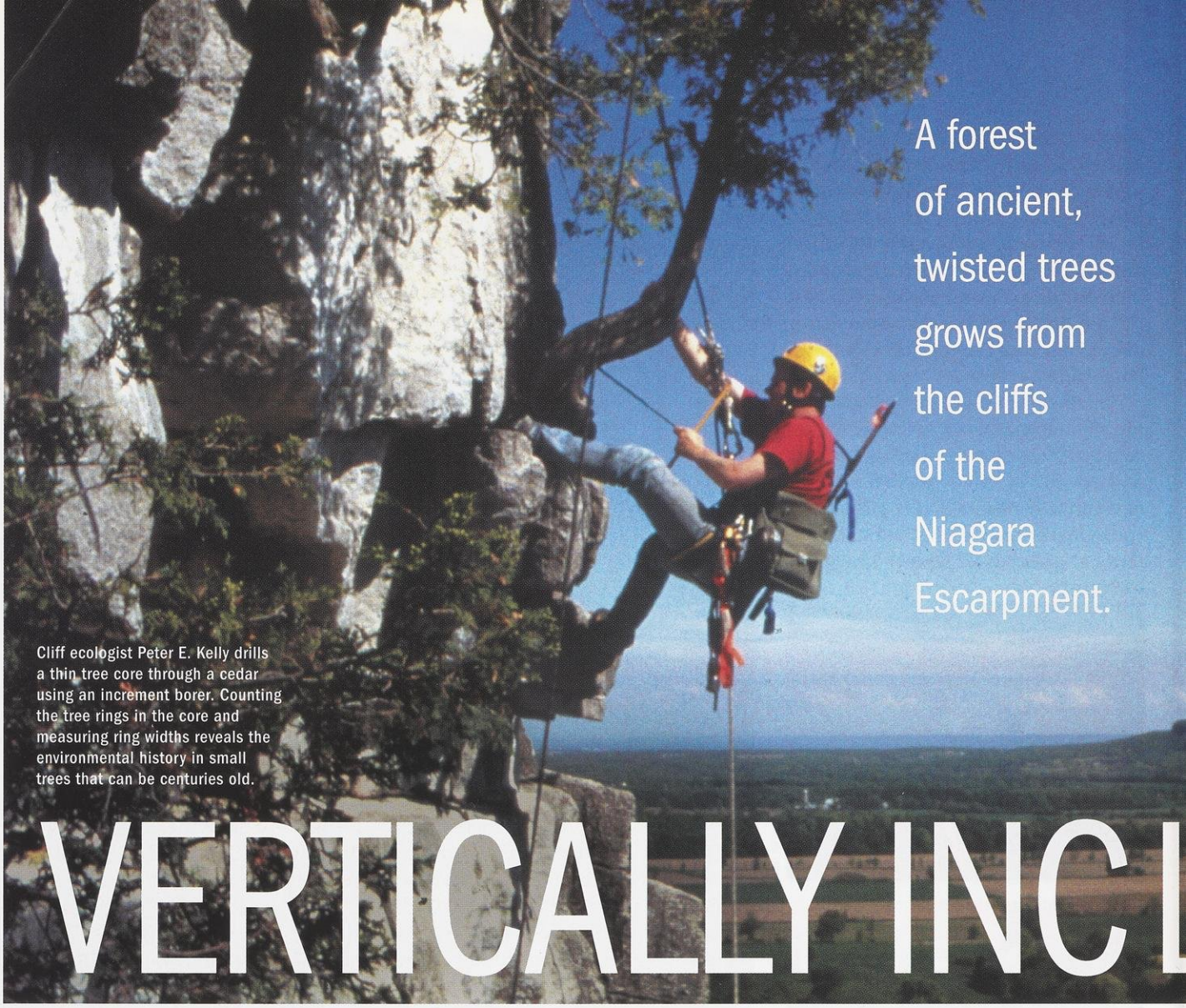
KEN BLOCK

ABOVE: Seasonal wildlife watching events, like Bald Eagle Days in Prairie du Chien, offer a chance to celebrate local quality of life, appreciate natural cycles, educate, share the outdoors and attract visitors to town.

TOM DAILY

Drive-up wildlife. The boreal owls were so fearless that curious human visitors could drive right up to a great gray that stood its post on an open car door on a Stoughton roadside last winter.

Order free Birding and Nature Trail guides to the Lake Superior Northwoods, and Mississippi and Chippewa Rivers regions by calling the Wisconsin Department of Tourism at 1-800-432-TRIP.



A forest of ancient, twisted trees grows from the cliffs of the Niagara Escarpment.

Cliff ecologist Peter E. Kelly drills a thin tree core through a cedar using an increment borer. Counting the tree rings in the core and measuring ring widths reveals the environmental history in small trees that can be centuries old.

VERTICALLY INC L

Kathryn A. Kahler

About the time Michelangelo was sculpting in Italy, a white cedar tree took root in a fissure of the Niagara Escarpment in Door County near what would be called Sven's Bluff centuries later. Today, though it lacks the stature of Michelangelo's "David," that cedar still clings — twisted and sculpted by nature — to the dolomite cliff where it rooted 500 years ago. It is one of thousands across the U.S. and Canada comprising a vertical forest, the most extensive old-growth forest east of the Rockies.

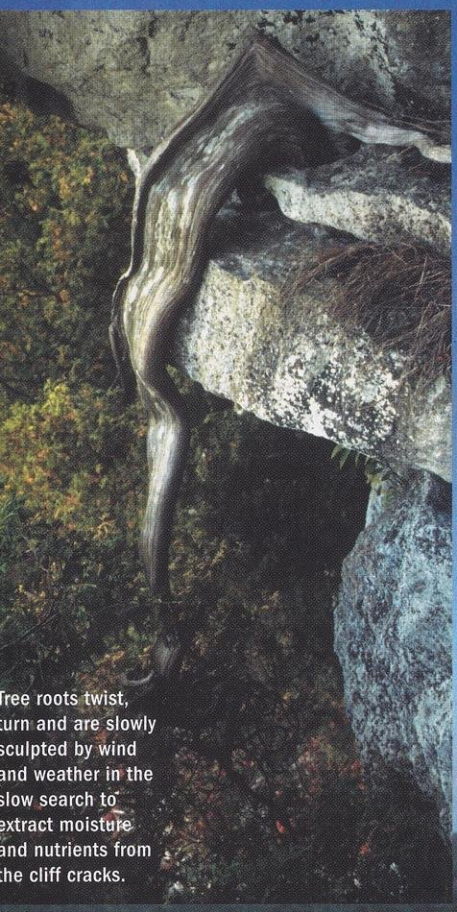
A curving rugged ridge of rock

The Niagara Escarpment is the rim of a saucer-shaped geological feature centered under Michigan. The saucer formed from the basin of an ancient inland sea during the Ordovician and Silurian eras some 445 to 420 million years ago. Over the life of the sea, layers of limestone, sandstone and shale were laid down. The Michigan basin sagged in the center under the accumulated weight of sediments. After the sea receded, the exposed layers of the saucer started to erode. The top layers of very hard dolomite limestone had weaker layers of sandstone and shale underneath. As the weaker layers eroded, the hard limestone on top was subject to another strong force — gravity — and crumbled and tumbled downward. This continual process of erosion and gravity over millions of years formed the cliff faces of the escarpment that we see today.

The western edge of the escarpment in Wisconsin curves in a semi-circular ridge northeast from Horicon Marsh, toward the eastern edge of Lake Winnebago and the western shore of Door County. It arcs around Lake Huron, then south through Ontario and ends at Niagara Falls, spanning a total of 650 miles. Some of its edge is underwater or covered by glacial deposits, but much is exposed as cliff outcroppings as high as 200 feet in places. Growing on these vertical cliffs, at the sluggish pace of about an inch every 15 years, are the gnarled and twisted specimens of this ancient forest.

A new small view of old-growth

Discovered some 17 years ago by a team of botanists from the University of Guelph in Ontario, the vertical forest of the escarpment is of major significance to the scientific community. Before the finding, our vision of old-growth forests focused in the Pacific Northwest



Tree roots twist, turn and are slowly sculpted by wind and weather in the slow search to extract moisture and nutrients from the cliff cracks.

© DOUGLAS W. LARSON, UNIVERSITY OF GUELPH

© DOUGLAS W. LARSON, UNIVERSITY OF GUELPH

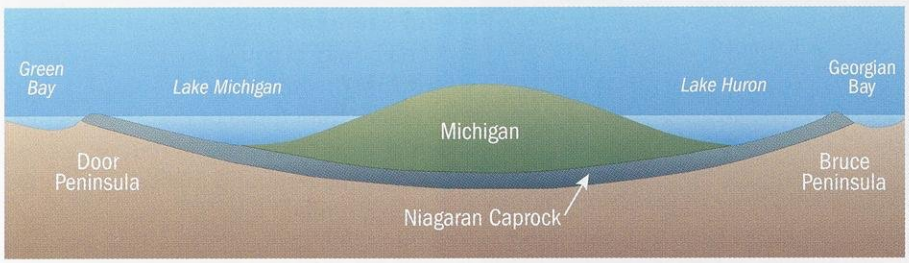
where massive 1,000-year-old trees grow 350 feet or taller. Escarpment trees, however, escaped human activities like logging, agriculture and, until recently, development because of the sheer inhospitable nature of their home. Finding these ancient stunted cedars clinging to cliff faces opened new doors for researchers in several disciplines. Locked in these tree rings are clues to climate changes long before the birth of our country.

Dr. Douglas Larson, a University of Guelph botanist, headed the discovery team in 1988 that found trees along the escarpment that are no more than 10 feet high, a foot in diameter and as old as 1,032 years on the Bruce Peninsula in Ontario. Aging trees that grow from vertical cliff faces is no easy task. Using rock climbing gear, they rappelled down the cliffs and sampled living eastern white cedar trees (*Thuja occidentalis*) by boring pencil-sized pieces of wood from the base of their trunks with a tool called an increment borer. Cross sections of fallen dead trees were collected from the base of the cliff as well.

In the laboratory, Larson's team dried the samples and sanded them smooth so they could count the rings, which in these trees can be the width of a hair. It took a microscope and instruments that could measure increments of one-hundredth of a millimeter. They also looked for the presence of charcoal in the rings, which would indicate whether the trees had been subject to fire. Their studies found uneven-aged populations, a large proportion of old trees (100 to 300 years), and very little sign of human disturbance or fire, leading them to conclude "that the entire forested cliff face of the Niagara Escarpment is an intact old-growth forest."

An even more astounding discovery came later in dendrochronological analysis of the samples. This kind of analysis relates both the number of rings and ring width to climatic conditions at the time the rings formed. Eastern white cedar growing from the cliffs formed narrow rings when the previous growing season was warm, and wider rings after cool growing seasons. By cross-dating tree ring samples from living trees, the Canadian researchers were able to create a timeline going back 1,400 years. Further radiocarbon dating of dead trees preserved at the cliff base revealed a chronology dating back to 1300 B.C. The tree ring growth patterns for the 1,400-year timeline showed a regular fluctuation of high and low growth throughout the period, suggesting a corresponding pattern of temperature change.

To see how trees on escarpment cliffs compared to forests on other cliffs, Larson's team conducted field surveys on 21 cliffs in eastern United States and Europe. After sampling hundreds of trees, they found that most U.S. samples were between 160 and 400 years old and were mainly eastern white cedar in the north and eastern red cedar (*Juniperus virginiana*) in other areas. All were stunted and growing less than one millimeter per year, the slowest growing trees on earth.



WALDBILLIG & BESTEMAN

The cross section of geological layers in the Niagara Escarpment under the Michigan Basin shows how the rock sagged under the heavy weight of sediments.

© DOUGLAS W. LARSON

Most of the rim along the 650-mile escarpment is buried but in places, like this segment in Ontario, hard dolomites remained when underlying weaker layers eroded. The heavy rock broke off in chunks forming cliffs arching from eastern Wisconsin through Michigan and Ontario, ending at Niagara Falls.

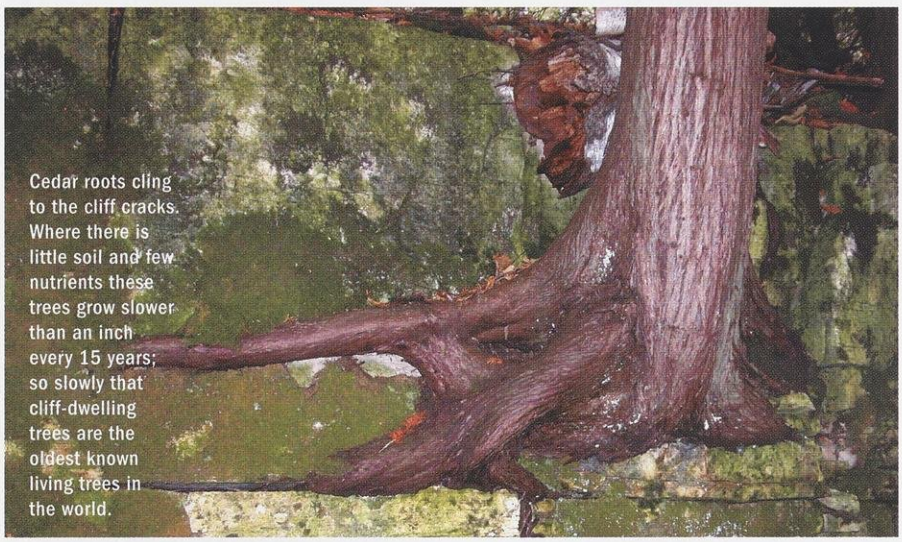
Hanging forests in Wisconsin

On a cold mid-March day in 1997, Larson visited Wisconsin. He was invited by Dr. Jeffrey Nekola, who at the time was a UW-Green Bay ecologist specializing in relict snail research. On cliffs, Nekola had found several species of tiny land snails previously thought to be extinct for more than 10,000 years. The cool crevices of the escarpment

mimic the Ice Age conditions where these snails once thrived.

The team of Canadian and Wisconsin scientists visited sites at Door County's Peninsula State Park, Ellison Bluff and a site on private property in Brown County near Greenleaf. Still snow covered, the bluffs didn't offer the best of conditions for rock climbing, but Larson tied onto a tree at the top of Ellison Bluff and rappelled down the 80-foot cliff face anyway.

"We found ancient *Thuja occidentalis* at Ellison Bluff County Park — 300-plus-year-old trees no larger than a 50-cent piece," says Nekola.



Cedar roots cling to the cliff cracks. Where there is little soil and few nutrients these trees grow slower than an inch every 15 years; so slowly that cliff-dwelling trees are the oldest known living trees in the world.

© GARY FEWLESS, UW-GREEN BAY

Cliff cedars, like these along Peninsula State Park's Eagle Trail, try to grow upward. As rocks give way underneath and roots get pinched, the trees grow and twist at odd angles.

© GARY FEWLESS, UW-GREEN BAY

PUBLIC PLACES TO SEE THE NIAGARA ESCARPMENT IN WISCONSIN

County	State Park	County Park	State Natural Area
Door County	Rock Island	Door Bluff	Peninsula Park Beech Forest, #12
	Peninsula	Ellison Bluff	Peninsula Park White Cedar Forest, #13
	Potawatomi	Meridian	Bayshore Blufflands, #377 Ellison Bluff, #378 Rock Island Woods, #382
Calumet County	High Cliff	Calumet County Park, Ledge View Nature Center	High Cliff Escarpment, #176
Fond du Lac County			Oakfield Ledge, #190
Dodge County		Ledge County Park	Mayville Ledge Beech-Maple Woods, #143

"We saw what looked like millennium-age trees at Eagle Bluff at Peninsula State Park, and I've since seen similar trees at Rock Island. But logistics were such that we couldn't safely age them.

"We also found the world's oldest red cedar at the bluff north of Greenleaf in Brown County, coming in at roughly 1,200 years old. It's the only known tree more than 1,000 years old in the state and is approximately twice as old as the next oldest known red cedar in the world, a tree in the Ozarks," Nekola says.

Since then, others have sampled trees and found a 507-year-old white cedar on Sven's Bluff at Peninsula State Park, and another venerable specimen at Fish Creek south of the park that is 616 years old. Compared to the trees Larson has found on the Bruce Peninsula, Door County trees are generally younger and fewer. However, Wisconsin trees have not been studied as extensively.

Mike Grimm of the Door County office of The Nature Conservancy accompanied Larson at the Ellison Bluff site. "He didn't find anything over 500 years old, but the jury is still out about whether there are trees here that are as old as the ones in Canada," Grimm speculates. "Nobody here has had the time or resources to do the sampling."

The Canadian and Wisconsin vertical forests differ in other ways. Wisconsin's dolomite cliffs are more brittle, which may account for fewer trees. In addition, our cliffs are cooler and moister than those of the Bruce Peninsula. Conditions are better suited for plants like ferns and mosses, which are more abundant here.

How cedars adapt to hang on

The trees have maintained their tenuous hold on life for hundreds of years through a delicate balance. Grimm says if they grew faster, they would succumb to the force of gravity. "And if they grew slower, well, they would be dead."

The cedars reproduce by dropping seeds, which find small pockets of soil and moisture in cracks and ledges of the cliff face. Once they germinate, the seedlings begin their slow growth, aided by a symbiotic relationship among their

roots, fungi and algae living in the rock. The fungi and algae collect phosphorus and nitrogen from the rocks and transfer them to the tree roots.

The cedar's root structure is unusual and may be a key to its success in this marginal environment. Unlike other trees that have nonspecific roots, each of the white cedar's roots is dedicated to a specific section of the trunk. So if one root is damaged when rock fractures and gives way, the tree can isolate the damage and survive. It also explains how the trees get their twisted appearance and sometimes end up growing sideways or downward instead of upward.

This unique root system depends on water seeping through the rock from the top. Grimm describes it as a pipework of vertical and horizontal holes and cracks which, if disturbed or plugged, threaten the delicate balance on which the trees depend.

What poses the greatest threat to that balance? Grimm believes it's condominium and private home development on top of the escarpment.

"Because most of the shoreline property in Door County is pretty much gone [developed], escarpment property that offers a view is the next best thing," says Grimm.

The filtration system that waters the trees isn't the only thing disrupted by construction, however. When homes are built on the cliffs, large trees along the edge of the bluff are often cleared to enhance the view of the water. The bluffs, once cooled and shaded by the trees, undergo an extreme temperature change.

"The mosses and rare ferns that grew in the cool, shady environment simply cook in temperatures that can reach 100 degrees," says Grimm.

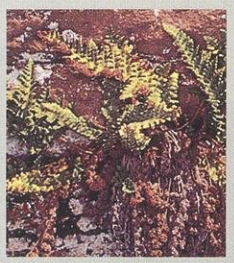
A report in 2001 by DNR's Bureau of Endangered Resources on the Niagara Escarpment lists several additional threats to the cliff environment, including land use conflicts, road construction, quarrying, tower construction, recreation, invasive species, groundwater contamination and jurisdictional conflicts. It also describes actions that would help preserve the biodiversity of the escarpment, such as monitoring, removing invasive species, better planning and protection, landowner outreach, and more surveys, including sampling vegetation like the cedar trees.

Grimm believes that while more can be done to protect the cliffs and the vertical forest that grows there, one place where protection is working is in the Bayshore Blufflands, a 500-acre land trust owned by the Door County Land Trust and The Nature Conservancy that was designated a State Natural Area in 2002. The property is located about eight miles southwest of Egg Harbor. Grimm also says some of the most striking parcels of the escarpment are already protected in public ownership providing vistas and paths to gaze up and down at the stubble of small ancient forests on Wisconsin's rocky face.

Kathryn A. Kahler writes from Madison. She is also production and circulation manager for Wisconsin Natural Resources *magazine.*

Common polypody

Bulblet fern



Fragrant wood fern

Rock whitlow-grass

EMMET JUDZIEWICZ

RARE FINDS IN ROUGH PLACES

The vertical forest of the Niagara Escarpment is home to a variety of plant and animal species, including some rare ones. Growing from the cliff face are such endangered species as lanceolate whitlow-cress (*Draba lanceolata*), and rock whitlow-grass (*D. arabisans*), a plant of special concern in Wisconsin. Some sites also support such rare species as climbing fumitory (*Adlumia fungosa*), and fragrant wood fern (*Dryopteris fragrans*) as well as the more common bulblet fern (*Cystopteris bulbifera*), common polypody (*Polypodium vulgare*), and fragile fern (*C. fragilis*).

In 1994, UW-Green Bay Ecologist Jeffrey Nekola discovered rare land snails on the escarpment that were previously identified in Wisconsin only in isolated, cool pockets of the Driftless Area of western Grant County. The year-round cool, moist microclimate on the escarpment mimics Ice Age conditions these snails need to survive.

Some of these tiny snails are no bigger than a sesame seed. Sixteen species live on the escarpment, in pockets of dirt on ledges and crevices. Fourteen of these species are classified of special concern by the Natural Heritage Inventory. One, the cherrystone drop (*Hendersonia occulta*), is threatened and another, the Midwest Pleistocene vertigo (*Vertigo hubrichti*), is endangered.

Nekola's research also led to the discovery that the land snails tucked in the crevices of the escarpment in Canada are vulnerable to the effects of rock climbing, a popular sport along the Bruce Peninsula. Nekola collaborated with Dr. Larson to find that snail density and diversity suffered on heavily-climbed cliffs, and Larson has concluded that climbing affects the ancient white cedars as well. Rock climbing is not yet considered a threat to escarpment communities in Wisconsin, possibly because the more brittle dolomite is less conducive to the sport.

For more information on the snails of the escarpment, visit the University of Wisconsin "Why Files" website: http://whyfiles.org/shorties/129snails/.

OTHER PHOTOS THIS PAGE BY THOMAS A. MEYER

FOR MORE INFORMATION:

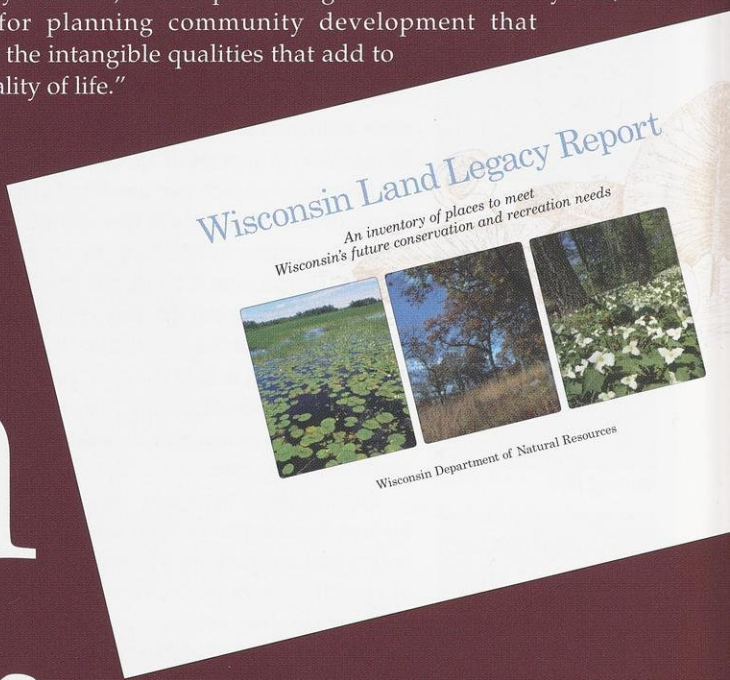
- **Niagara Escarpment formation – www4.vc-net.ne.jp/~klivo/gen/geology.htm**
- **Cliff Ecology Research Group, University of Guelph, Ontario – www.uoguelph.ca/botany/research/cerg**
- **DNR Niagara Escarpment Report – dnr.wi.gov/org/land/er/publications/niagara**
- **Cliff Ecology: Pattern and Process in Cliff Ecosystems, Douglas W. Larson, Uma Matthes and Peter E. Kelly Cambridge University Press, 2000.**

A path of our own making

The Land Legacy Report serves as a compass, blueprint and roadmap to guide land conservation and outdoor recreation for the next 50 years.

Keep your crystal ball under wraps and put the Ouija board back on the shelf. A more powerful tool to accurately plot a course for the future will soon be available to community planners and those who enjoy the outdoors. The *Wisconsin Land Legacy Report* shares a figurative and literal "big picture" of the places deemed critical to protect and meet conservation and outdoor recreation needs for the next 50 years.

The coffee table-sized book is a handsome volume flush with photos, illustrations, charts and maps that provide a picture of our changing society and a direction for saving natural features and spaces for outdoor experiences. The book is a combination of conservation history, an almanac of outdoor resources, an inventory of 229 locations ("Legacy Places") worth protecting over the next 50 years, and a tool for planning community development that protects the intangible qualities that add to our "quality of life."



David L. Sperling

Green space does not save itself. In order to have adequate public places for outdoor recreation, enjoyment and "breathing space" near where people live, we need to plan and set aside those properties. Where will we need to set aside such properties in the next 50 years?

DAVID GIROUX

In Wisconsin, a robust economy has always drawn its strength from abundant natural resources like wood and water, note DNR leaders in the book's introduction. Keeping natural resources viable for the long term is as much an economic benefit as an environmental one. Recognizing this, a governor's task force assessing the achievements in the first 10 years of the Stewardship Fund recommended that DNR staff develop a report describing the state's future land protection needs through the year 2050.

"We wanted a process that could help people envision their conservation future," notes DNR biologist and project manager John Pohlman. "We wanted to inventory the land and gather the expertise of a wide variety of people who know this state as farmers, biologists, community planners, outdoor enthusiasts, professional land managers and family caretakers.

"The public and DNR staff repeatedly noted land use trends that concerned them," Pohlman continues, "pressures brought on by growing numbers of people and changing development patterns. Land uses change when family farms and woodlots are developed for homes, industrial forests are sold and divided, and our developed infrastructure spreads farther and farther into our rural countryside."

As noted in the Foreword, "We need to build houses, roads, schools, industrial structures, commercial districts, and the many other facilities that support our growing population and expanding economy. But we must ensure that our developed infrastructure does not impair either our environment or our farm, forest, recreation, and tourism industries." Given the rapid changes confronting the state, it makes sense to consider what lands should be protected.

"We were directed to take a fresh look at land protection needs to revitalize a tool that helped guide public policy more than 50 years ago," Pohlman explains.

A somewhat similar planning process back in 1939, the *Park, Parkway and Recreational Area Plan for Wisconsin*, identified scenic areas that offered exceptional recreational opportunities. Many of those places are now protected as county, state and national forests, parks, wildlife areas and natural areas. Since that time land conservation groups and land trusts have developed strong skills in working with private landowners to similarly protect fragile parcels and recreation areas. The combination of a strong nonprofit community, public purchases funded through the Stewardship Program, private land management, conservation easements and tax incentives offer more tools to protect land than ever before.

DNR GIS SERVICES SECTION

One guide for investing in public spaces is selecting places convenient to where people live. Darker colors here show townships within 50 miles of where people lived in the year 2000.

Historically the goal of maintaining our natural heritage was a partnership anchored by individual people and families who loved the land and protected the homesteads that were the foundation of their family traditions and experience. These were bolstered by private groups, civic leaders, conservationists and public funding to preserve parcels as parks and public spaces.

"Communities throughout the state are struggling with how best to accommodate and encourage both environmental protection and economic growth," says Steve Miller who has served as the study's director. "We want to balance those decisions with the continued need to preserve our 'green infrastructure' — those important ecological landscapes and public green spaces that add so much to our quality of life. Our hope is that this report, by setting a 50-year vision, will help the Department of Natural Resources and so many other partners keep a long-term focus on sustaining quality land and water resources while we address shorter term opportunities."

The three-year planning process included public meetings across the state where the general public, outdoor enthusiasts, conservationists, professional land managers and researchers were asked to identify places and resource types that warrant some sort of long-term protection — sites that are particularly fine examples of native ecosystems or lands that link together recreational routes and opportunities.

In reviewing this report, the casual reader will want to jump to chapter four, which inventories and lists the 229 "Legacy Places." The Legacy Places are grouped by 16 ecological landscapes (see the poster in the center of this issue) that have similar topography, soils and types of vegetation. Not surprisingly, there is great variation in the Legacy Places — some are huge while others are small, some have been the focus of past protection efforts while others have not. Each Legacy Place contains a brief description, one- to five-star ratings of its conservation significance and recreation potential.

The maps of the different regions of the state also provide approximate locations of the Legacy Places, Pohlman says. "We wanted to focus our attention at the 'big picture' perspective to highlight the general areas harboring high-quality grasslands, forests, wetlands and waters, as well as places to hike, watch birds, canoe,

ride horses, fish and hunt," Pohlman explains.

"We feel that identifying the specific parcels and properties that warrant protection is best left to more locally-focused decisionmaking — a lot more dialogue around lots of kitchen tables."

Thanks to the efforts of many conservation groups and agencies, an impressive network of our natural heritage has been preserved, but as the report describes: "gaps remain in Wisconsin's 'portfolio' of protected lands and waters. The science of conservation has evolved over the past several decades and as a result we better understand how our forests, wetlands and grasslands function. It is now apparent that in many cases our protected places are likely too small, isolated and fragmented to maintain their species diversity and their ecological functions over time...We will need to continue finding ways to better integrate our conservation lands within larger working agriculture and forested landscapes."

Demand for outdoor recreation continues to exceed supply. As more people depend on public lands to provide a wide variety of outdoor activities, the increasing pressure has led to a growing number of conflicts, overcrowding and impacts on resources. The uneven distribution of public lands for outdoor recreation across the state is a long-standing concern, the narrative states.

"The report highlights what we did right in the past, what we've preserved and where there are gaps," Miller explains. "It's not a list of places DNR wants to buy. It doesn't identify how, when or who should protect these places. The report talks more about potential — which areas appear reasonably protected and which ones warrant further efforts to protect conservation and recreation values into the future."

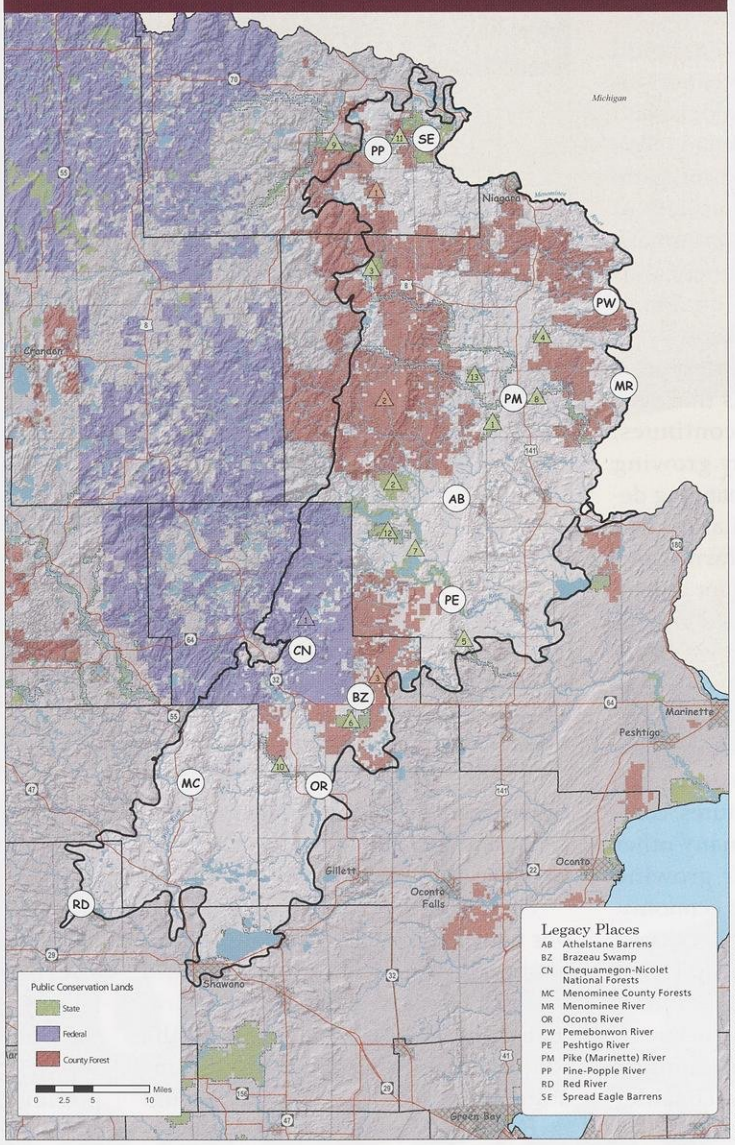
For conservationists and science teachers who want a better sense of the turf where they live, here's a tool to get a clearer picture of the breadth and diversity of nature nearby. The descriptions of Legacy Places will certainly suggest areas to consider for science class visits, conservation projects and personal exploration.

The report may also serve as a valuable primer for elected officials and community volunteers who are thrown into the fray of making land use decisions for their county, village or town. Here they can get background information on how land use decisions made in the past affected farmlands, forestlands, shorelands and wetlands.

Seasoned biologists and budding ecologists will find useful definitions of natural communities. Here they can learn the terms that ecologists use to separate the nuances of bogs, thickets, glades, fens, marshes and the like. Professional urban planners will find a mix of land use essays that share why those who regulate community development need to think big about protecting groundwater recharge areas, large working forests, recreation areas and trails. Academics and their students will delve more deeply into the histories of changing land uses, population trends, housing densities and development patterns.

This is a volume that should be used until it is dog-eared in regional planning offices, by local land trusts, at college and community libraries, by field ecologists, and by local governmental boards that set local land use policy. Community activists and conservation groups who want to do their town a favor should consider buying and donating copies for local use. Copies of the *Wisconsin Land Legacy Report* will be available after January 15, 2006 for $15 apiece plus $8 shipping and handling. It can be ordered at (800) 362-7253 or purchased at DNR Service Centers.

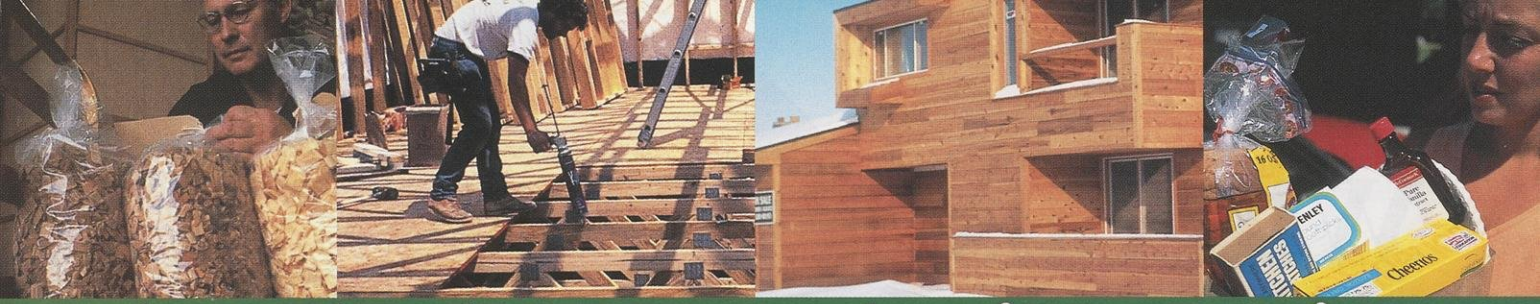
LEGACY PLACES AND PUBLIC CONSERVATION LANDS — NORTHEAST SANDS



DNR GIS SERVICES SECTION

Land cover and potential Legacy Places are mapped for each of the state's ecological regions.

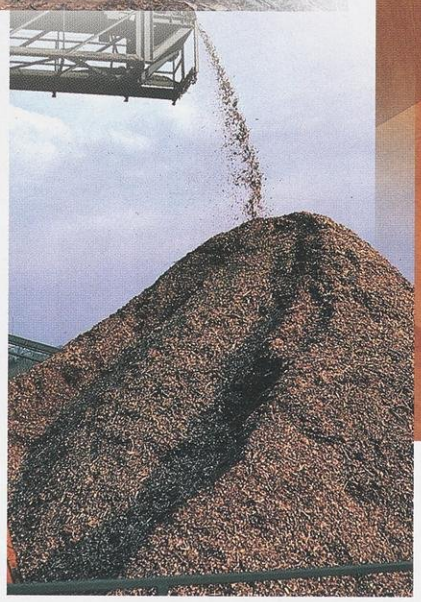
David L. Sperling edits Wisconsin Natural Resources *magazine.*

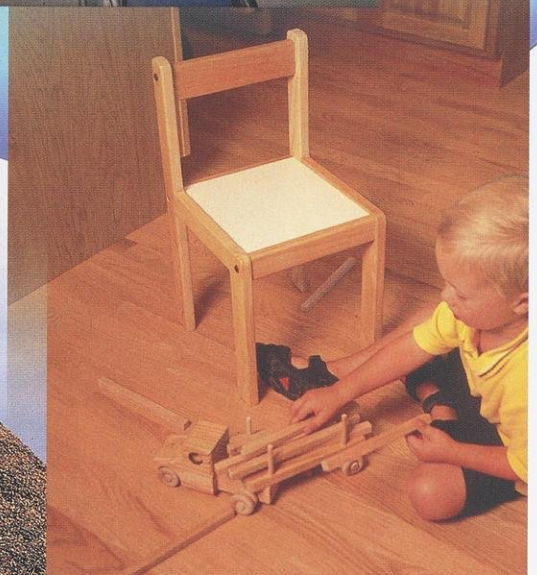


Understanding the economic value of Wisconsin forests.

Marketplace Matters

Wisconsin's forest products firms





CLOCKWISE FROM LEFT: DAVID L. CHESEMORE, KATHERINE ESPOSITO, ROBERT QUEEN, MIKE LIEDEKE

How they keep pace with the global marketplace.

Exhibit A: An oak dining room set, four chairs and a table, with dovetailed joints and an oiled finish, made by Richardson Brothers of Sheboygan Falls, Wisconsin. Price: $1,750.

Exhibit B: An identical set of chairs and table, similar construction, similar finish, made in China and imported to the United States. Price: $1,200.

Which one would you buy?

Most U.S. homeowners, faced with a mortgage, two kids and $1,000 in bills every month, would choose the cheaper. When that scenario actually unfolded a few years ago for Richardson Brothers, the family had to make a tough decision.

The company, founded by great-great-great-great grandfather Joseph Richardson, was losing money on every chair it sold.

"You can't lose seven figures every year and stay in business," says Jim Richardson, president of Richardson Brothers, a division of Richardson Industries. Nearly 200 jobs and the company's survival were at stake. The family decided to move all furniture manufacturing to China, and, initially, South America. Now they, too, sell dining room sets for $1,200 and their furniture sales have rebounded.

Unfortunately, Richardson Brothers is not an isolated case. Other forest industries in Wisconsin are feeling pressures brought on by forces beyond the U.S. borders.

China is not the only competitor. Canada, with its favorable exchange rate and lower fringe benefit costs, has

about a 30 percent competitive advantage compared to similar firms in the United States.

In the papermaking business, 5,000 jobs have been lost since 2000, as big foreign firms bought Wisconsin companies and closed less profitable mills. Forest products have always been closely linked to the global economy, even more so since passage of the North American Free Trade Agreement.

Lost jobs also mean less income tax that pays for public services like roads, police protection and libraries.

The United States, for 100 years a world manufacturing powerhouse, has paid a price for its success: Aging industrial machinery costs more to run and produces less per hour than newer, computer-operated equipment being installed in brand-new factories elsewhere. High salaries and good health insurance are unheard of in many developing countries. And, over the past two decades, stringent environmental laws have protected our water, air and soil. These factors add extra costs to any product on a store shelf.

China has less strict environmental laws and worker safety laws are weaker. But more critically, Chinese products of any kind cost less to make and sell largely due to the country's abundance of workers — 150 million rural Chinese have no jobs — and the jobs that are available pay far less than in the U.S. A worker in Shanghai, where much furniture is built, is paid about $2 per hour, which is considered a working wage.

Wisconsin, with its abundance of timber and historically strong manufacturing base, epitomizes the pattern of change in U.S. forest industries. Firms like Richardson Brothers and Kretz Lumber Company of Antigo were owned by local families, employed workers from nearby towns and got their trees from area forests.

How can Wisconsin companies keep up? The strategies differ by industry. Furniture maker Richardson Brothers figured that Chinese workers could make a chair according to their specifications at half their current cost.

In Antigo, wholesaler Kretz Lumber has maintained a focus on wood quality and timely delivery. Long ago, Kretz learned that some clients were willing to remodel their kitchens with cabinets made of beautiful, clear hardwood. Well-appointed kitchens are a big part of home values. So, Kretz foresters search northern Wisconsin and Michigan's Upper Peninsula for well-managed forests of hard maple to meet those desires, then mill the lumber and glue it up to form rough cabinet panels. The panels are then shipped to cabinet-making firms.

KATHERINE ESPOSITO

Kretz Lumber Company of Antigo competes in the world market by using quality wood from well-managed forests and assuring timely delivery.

Kretz cuts other grades of maple, basswood and birch for wood flooring and boards, as well as many other products. None of the tree is wasted: lower quality pieces go for pallets and mulch, residue is made into "liquid smoke" for cooking and wood scrap is burned to heat buildings.

Their strategies have worked. The firm's Wisconsin workforce has grown from 30 to 165 since 1987.

"Our quality is something we really hang our hat on," says Tim Kassis, Kretz sales and marketing manager.

The company also keeps its finger on the pulse of the world lumber market. On a recent trade mission to China, Kassis attended a wood products trade show and instructed Chinese lumber buyers on how to judge wood quality. At some point, the Chinese public may prefer Midwestern clear hard maple, too, he thinks.

When it comes to immediate market influence, however, some players wield enormous clout. One is Time Warner, Inc., publisher of mega-magazines *Time*, *People*, and *Sports Illustrated*, and purchaser of 650,000 tons of paper every year from 53 paper mills around the world, 26 in the United States.

About three years ago, Time Warner's publishing arm told its paper suppliers that it would no longer accept paper that was not acquired from "certified" woods. "Certification" is a seal of approval indicating that trees have been grown and logged according to modern, ecologically advanced principles. That decision reverberated through the industry, as periodical printers passed the request on to pulp suppliers. Those, in turn, started to look for wood from certified forests.

Initially, Wisconsin's publicly-owned forests did not carry that seal of approval, though public and much private land was managed according to the same principles as certification demands.

Last summer, however, private forest lands in the Managed Forest Law pro-

KATHERINE ESPOSITO

Kretz cuts maple, basswood and birch for wood flooring and boards, as well as other products. None of the tree is wasted.

gram — 1.9 million acres — received the certification label, acknowledging the good practices on which DNR had insisted. These certified private lands joined the certified state and county forest acreage, bringing the total certified forests in DNR-administered programs to about five million acres. The hope is that with Time Warner as a guaranteed customer, the wood from these lands will receive good management and provide an economic boost to Wisconsin as well.

Back in Sheboygan Falls, the Richardson family knows they won't be returning those furniture-making jobs from China any time soon, but the bell has not yet tolled for products made from American labor. Three years ago, the firm developed a specialty line of yacht furniture and started shipping it to boat makers in Florida. There, they compete mostly with Italian manufacturers, and the playing field is more even. Chinese companies, with mass markets in mind, have thus far shied from product lines with narrow appeal.

About 60 people have been hired to fill those jobs, Jim Richardson says, almost a third of those are former Richardson employees.

Making the choice to outsource American jobs was tough, especially in a city like Sheboygan Falls where everyone knows everyone else, Jim Richardson acknowledges. "It's a small town, and I still have to go down to the gas station and run into the people working at the mini-mart who used to work in the assembly department," he says.

But being a business owner in a tight global economy requires a broad vision and flexible approach. All forest products companies should take that to heart, he thinks. Change is the norm in the business world but what's unique about the forest products business is the degree of long-term planning that goes into every decision. Every tree that germinates today will take half a human lifetime or longer before it's ready for harvest.

Now that Richardson's company has success in China, furniture manufacturing is moving once more, this time to Vietnam. To keep competitive, Richardson Brothers will adapt and change. Again.

"It's not like we made the decision to go to China, and will sit on it and everything's going to be fine," Richardson says. "The pressure is continuous."

Wisconsin's forest industry pays

Wisconsin's forest products industry:

- **is a $28 billion industry and represents eight percent of the state's total industrial output (including printing and publishing).**
- **provides 96,000 manufacturing jobs.**
- **is the nation's second largest investor in forest industry capital equipment, $811 million annually, 20 percent of all investment in Wisconsin manufacturing.**
- **provides high paying, high skilled jobs, paying an average $38,000 annual salary, compared to the state average of $30,000. The average paper mill worker earns $49,000 annually.**
- **is the backbone of 1,800 companies. Wisconsin is the number one papermaking state in the nation and has been for 50 years.**
- **produces more than 5.3 million tons of paper and over 1.1 million tons of paperboard annually.**
- **sees that about 91.5 percent of the state's timber harvested stays in Wisconsin to be used by Wisconsin manufacturers.**
- **employs one in every eight workers in manufacturing jobs. For every 10 jobs in the forest products industry, an additional 16 jobs are produced in other sectors of the state's economy.**

The forest of tomorrow...

grows from today's choices.

What drives the forest products marketplace? You, the buyer, do.

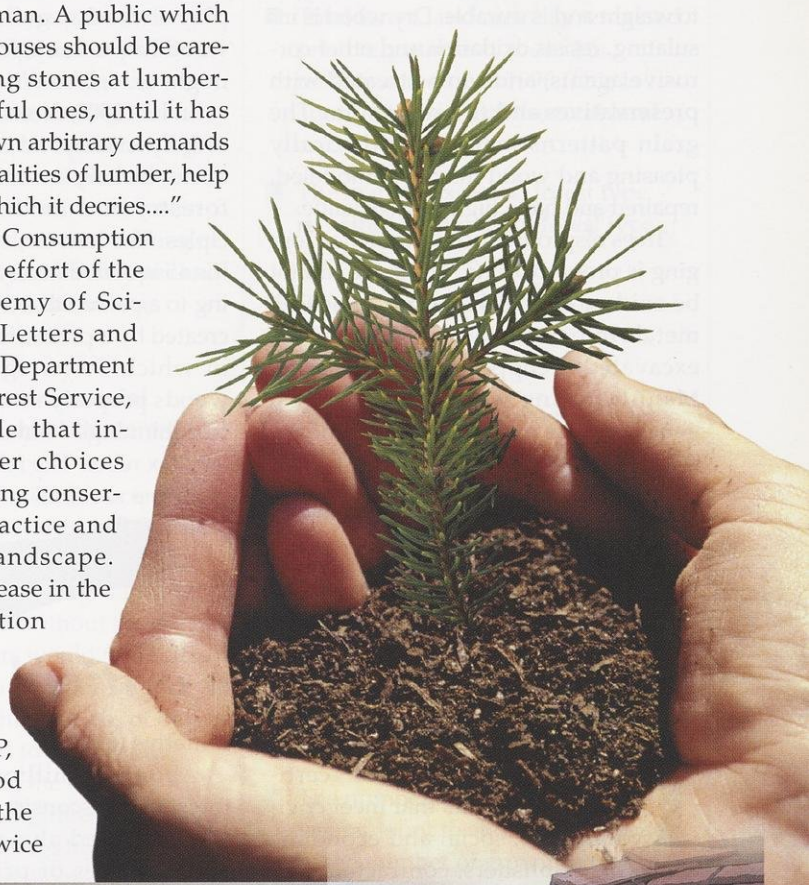
Installing a new wood floor? Kretz Lumber of Antigo sells hard maple flooring harvested from well-managed forests of Wisconsin and Michigan. From another supplier, however, you could buy flooring made of tropical Indonesian merbau trees, alleged to have been logged illegally.

Looking for a sleek hall table? A popular retail website offers one handcrafted from the endangered makore wood, also known as cherry mahogany, found in the wet evergreen rainforest of West Africa. But from the same store, you can find one made from maple, a common species in Wisconsin. Or you might be considering one made from metal or plastic.

The birth and death of industries and forests ride on thousands of individual decisions like these. Advocates of "intelligent consumption" believe that buyers should know the environmental impact (the "eco-print") of a particular product to help guide them to wiser choices.

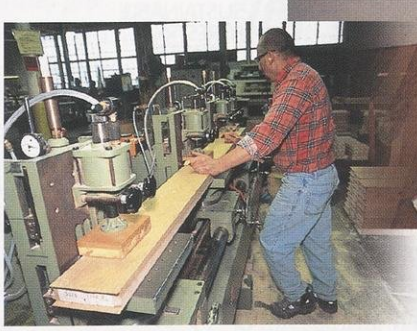
When Aldo Leopold was associate director at the Forest Service's Forest Products Lab at Madison in 1928, he wrote of the need for responsible consumption. "The American public for many years has been abusing the wasteful lumberman. A public which lives in wooden houses should be careful about throwing stones at lumbermen, even wasteful ones, until it has learned how its own arbitrary demands as to kinds and qualities of lumber, help cause the waste which it decries...."

The Intelligent Consumption Project (ICP), an effort of the Wisconsin Academy of Sciences, Arts and Letters and the United States Department of Agriculture Forest Service, explores the role that informed consumer choices can play in shaping conservation policy, practice and ultimately our landscape. The expected increase in the world's population will present unprecedented challenges. According to the ICP, per capita wood consumption in the United States is twice



ROBERT QUEEN

ROBERT QUEEN



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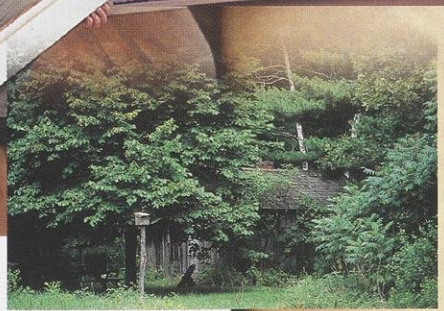


DAVID L. CHESEMORE

The global marketplace calls for more wood that is certified, meaning that from the tree planting to harvest and through production, the forest has been managed in accordance with sustainable forestry principles. (Bottom right) Aldo Leopold's shack still stands. During his stint at the Forest Products Lab, Leopold advocated for responsible consumption.

the average for other developed countries and roughly three times the worldwide average.

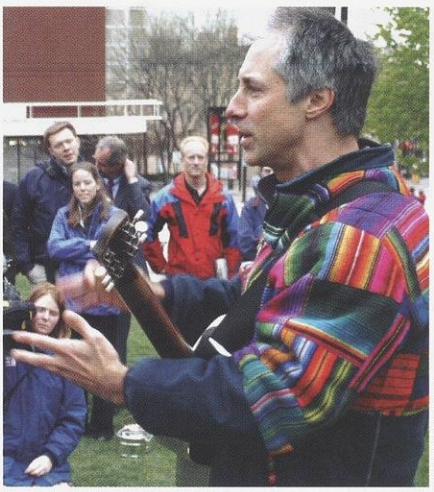
Given population trends, forest ecosystems will be pressured even in the absence of increased consumption. Sharp reductions in forestland per capita virtually ensure escalating conflict over forest uses. Yet, wood remains a good consumer choice because it is renewable, recyclable and available in many species and sizes. It has a high ratio of strength to weight and is durable. Dry wood is insulating, resists oxidation and other corrosive agents, and can be treated with preservatives and fire retardants. The grain patterns make it aesthetically pleasing and wood may be remodeled, repaired and has a high salvage value.

Trees resprout much faster when logging is properly done. The same cannot be said of coal, oil or nonrenewable metals mined from the ground. Once excavated, a copper mine sits empty. Manufacturing wood products also generates less air and water pollution. According to the Temperate Forest Foundation (www.forestinfo.org), as building materials, steel and concrete require 2.4 times and 1.7 times more energy than wood respectively. They also produce 1.42 times and 1.67 times more airborne emissions.

Stuart Stotts, a Madison resident and Vernon County landowner, says that he was once skittish about logging mainly because of the aesthetic damage that is so immediately visible. But no more, he says.

"We live in houses made of wood. I play a wooden guitar," he says. "The wood has to come from somewhere. It might as well be Wisconsin."

In late 2005, Stotts harvested 10 acres of fully mature red oak, aspen and bitternut hickory according to sustainable forestry and modern logging principles. The harvest, conducted on 10 of his 45 wooded acres, was done according to a personalized management plan created by a professional forester, a deal in which Stotts agreed to tend the woods properly — including periodic tree thinnings — in exchange for property tax relief. The felled trees are being sold to a sawmill and can be certified as sustainably grown.



ROBERT QUEEN

Stuart Stotts, a musician and songwriter, used to have reservations about logging, but now harvests part of his woods in Vernon County.

Good management is preferable to no management, Stotts says. "When I look at places that have been [managed sustainably], they're beautiful," he says. "So there's nothing wrong with the aesthetics, except in the short term. In the long run, you get bigger trees, and straighter trees."

Certification critical to industry survival

In the global timber market there is a growing demand for "certified" forest goods that meet environmental, social and economic concerns. Publishers, contractors and other manufacturers are expanding use of certified wood to assure customers that their products are not tainted by timber theft or destructive timber cutting.

To meet this demand and help the state remain competitive in global markets, Wisconsin state, county and many private forests are managed in accordance with acceptable sustainable forestry principles from independent certifying organizations.

In 2004, Wisconsin's entire 512,000-acre state forest program was certified by the two leading third-party auditing systems: the Forest Stewardship Council (FSC) and the Sustainable Forest Initiative (SFI).

About 2.4 million acres of county forests in Wisconsin counties also have been certified along with nearly two million acres of private land in the Managed Forest Law (MFL) program. The MFL is a voluntary program under which owners of 10 or more acres that have a written forest management plan approved by the Wisconsin Department of Natural Resources pay lower property taxes. The Managed Forest Law program participates in American Tree Farm System (ATFS) Group Certification, designed for smaller forests in private ownership.

The county forest system in Wisconsin also provides more than 6,000 miles of snowmobile, ATV, skiing/hiking trails and forest roads along with hunting and fishing opportunities. Forest products from these forests also generate more than $21 million annually in timber sale revenue for the counties and townships encompassing these lands plus an additional $17.2 million in economic impact.

"Sustainability has been the guiding light for managing our state forests since the hiring of the first state forester in 1904," says Wisconsin Chief Forester Paul DeLong. "Certification puts an independent stamp of authenticity on our commitment to manage all the products the forest provides including recreation, wood products, wildlife habitat, clean air and water to protect conservation values."

Fast forestry facts

How much forested land does Wisconsin have?

Wisconsin's total land area is 34.7 million acres. Trees cover 16 million acres or 46 percent. Most forested land is in northern Wisconsin.

How old are Wisconsin's forests?

Many southern Wisconsin forests were cleared for agriculture by the late 1800s. Forests in the north were heavily cut for timber by the early 1900s. Therefore, almost all the mature trees you see today are less than 125 years old.

Visit wisconsinforestry.org and click on "Kids Corner" to find the Wisconsin forestry song that Stuart Stotts wrote.

Who owns and cares for Wisconsin's forests?

Most forested land in Wisconsin — 57 percent — is owned by individual landowners. Another 32 percent is owned by federal, state, county or tribal governments and 11 percent is owned by forest industry or private corporations.

How much forested land does Wisconsin lose every year?

Wisconsin has been gaining, not losing, forest acreage. Since the 1930s, much marginal crop and pastureland has been planted with trees or reforested naturally, so the state now has more forestland than at any time since inventories began in 1936.

How much wood does the average person use in a year?

About 1,664 pounds, or one log 18 inches across and 25 feet long will meet the needs of an average person annually for building supplies, newsprint, paper, tissue paper, paper towels and more. Hundreds of products you might not think of contain wood fiber like toothpaste and football helmets.

Can't we get our wood products from somewhere else?

Yes, but the alternative would be to use nonrenewable material or wood imported from places that, unlike Wisconsin, may not manage forests in a sustainable manner. By choosing products made from trees grown in other places we're exporting the environmental impacts of our consumption. Harvesting trees in Wisconsin to meet our wood product needs also provides jobs and revenue for the state's economy. History has shown that the Wisconsin forests are resilient and we have gained the knowledge and experience needed to manage our forests sustainably here. A key to meeting the ecological, social and economic demands on our forests in Wisconsin is maintaining a diversity of forest types and conditions, including reserved areas.

Why is the state's environmental agenda concerned about the forest industry?

In addition to the tremendous contributions of the forest products industry to Wisconsin's economy, the industry is also important to the ecological well-being of our forests. Without these markets, landowners would find it less financially viable to maintain large blocks of forests. Thus the loss of the industry would lead to parcelization and fragmentation of the forest resource. Additionally, forest landowners would be less willing to tackle other issues affecting the ecological health of the forests if the timber income was not available to support the other projects.

How do we know the condition of our forests?

The Forest Inventory and Analysis (FIA) Program of the U.S. Department of Agriculture (USDA) Forest Service provides information needed to assess America's forests. As the nation's continuous forest census, the program projects how forests are likely to appear 10 to 50 years from now. The inventory information can be used in many ways, such as evaluating wildlife habitat conditions and identifying potential risks to forests. The Wisconsin Department of Natural Resources helps fund the inventory with the goal that it will meet the needs of Wisconsin forest planners and managers. The latest inventory of Wisconsin's forest resources began in 2000.

Highlights

- Total forest land area has remained relatively stable at about 16 million acres since 1996. This is about 46 percent of the total land area in Wisconsin.
- The maple-basswood forest type remains the dominant forest type group in the state.
- The volume of all live trees on forest land in Wisconsin has increased since 1996.
- Aspen was the hardwood species group with the greatest net growing stock volume while northern red oak had the largest net sawtimber volume.
- From 1996 to 2004, the average annual net growth of growing stock increased substantially while removals remained about the same. Growth continues to exceed removals by a wide margin.
- The number of trees dying each year amount to about one percent of the number of growing trees.

Inventory data will soon be posted on the Wisconsin Department of Natural Resources' Forestry webpages along with a history of the FIA program in Wisconsin, the scope of information gathered in the inventory process (landowner survey, timber product output, forest health monitoring and forest habitat classification) and information on the inventory process.

Where can I get more information about Wisconsin forests?

Wisconsinforestry.org — a portal to information, programs and organizations related to forests in Wisconsin.

Wisconsin forests

Dynamic and always changing.

ROBERT QUEEN

The year was 1848, and Wisconsin had just become a state. Cities in the east were growing fast, with nearly every home framed and shingled with wood. Railroads required ties and manufacturers needed wooden boxes to protect their goods. The Midwest timber economy was beginning to boom.

To meet that need, millions of acres of towering northern white pine were logged and shipped downriver. Later, hardwood stands such as maple, basswood and birch were clear-cut. In the south, some forested areas were logged and corn and tobacco plantations took their places.

By 1920, many trees were gone. In their stead loomed miles of raw stump land, which later became a perfect canvas for fire. Hopeful farmers staked their claims and grubbed out the stumps, but the days were short and the soil wrong. The crops didn't grow.

Fast forward to 2005.

You've returned from camping in the Northern Highland-American Legion State Forest, 220,000 acres, boasting over 900 lakes, abundant wildlife and healthy trees. Or, perhaps you listened to wolves howling in the Chequamegon-Nicolet National Forest.

Surely this can't be the same state. What happened to all the stumps?

The answer lies in a story of natural resilience and, after decades of denial, common sense.

The resilience came from the forest: The trees grew back. They weren't necessarily the same species, because growing conditions had changed so dramatically.

However, Wisconsin's forests have rebounded nicely. In 1996, the volume of wood in our forests was 18.5 billion cubic feet, up from 16.5 billion in 1983. That same year, we boasted more 10-foot-or-taller trees (9.8 billion) than we had 13 years earlier (8.4 billion).

That's where human common sense (and political willpower) came in.

One hundred years ago, E.M. Griffith, Wisconsin's first chief state forester, saw a landscape of charred stumps and failed family farms and recognized that something had to change. He offered recommendations, among them creating a forestry research program and forest preserves where the land would revert to trees. At first, Griffith's ideas were rebuffed. Some years later, though, politicians understood their wisdom and the state's forestry program was begun in earnest.

In Wisconsin, careful planning began decades ago and is now paying dividends. In fact, nearly half of our state — 16 million acres — is again forested. Total county forest holdings alone are 2.3 million acres. County forests offer more than 1,200 campsites and thousands of miles of hiking, skiing and snowmobile trails as well as public access to hundreds of lakes and streams.

The Marinette County Forest is one success story. It was among the earliest county forests and today covers 231,596 acres. It is home to deer, bear, grouse and many other species, and is a playground for humans who like to ski, ride horses, pick berries and camp.

Marinette County Forest also provides huge quantities of raw forest products for wood-using industries. From 1936 to 1945, all county forests produced about 125,000 cord-equivalents of wood, with revenue of $135,000.

Between 1994 and 1998, the amount of wood that came from county forests had jumped to nearly three million cord-equivalents with corresponding revenue of $46 million.

So what's next?

Modern challenges to our forests come from issues like invasives and forest fragmentation.

The tree known as buckthorn grows quickly and crowds out more desirable species. The emerald ash borer insect kills green and white ash within three years. Nine million ash trees have already been killed by emerald ash borer, mostly in Michigan, and forest specialists fear that the insect will be in Wisconsin soon.

Less obvious is the damage done by thousands of homeowners who build weekend homes as a refuge against urban stress. Trying to reconcile fragmentation and "back to nature" values with those of the working, growing forest can be tricky.

But Wisconsin public and private forest owners are working together to set standards for tackling these and other challenges. In 2004, the Statewide Forest Plan was created and may be found at dnr.wi.gov and search "Statewide Forest Plan."

"Our state's forestry interests are dedicated, progressive and committed to sustainable forestry," says Wisconsin Chief Forester Paul DeLong, who serves as chair of the steering team for the Statewide Forest Plan. "The people of Wisconsin care deeply about their forests."

Cover photos from top left: DNR File Photo, DNR File Photo, DNR File Photo, Robert Queen, Kirsten Held

PUB-FR-337-2005

December 2005

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Design by: Waldbillig & Besteman

Produced under a 2004-2005 grant from the Wisconsin Environmental Education Board with support from Wisconsin DNR-Division of Forestry

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Big steelhead returning from the big lake can get their start in little tributary streams that DNR teams and sports clubs are working to recover.

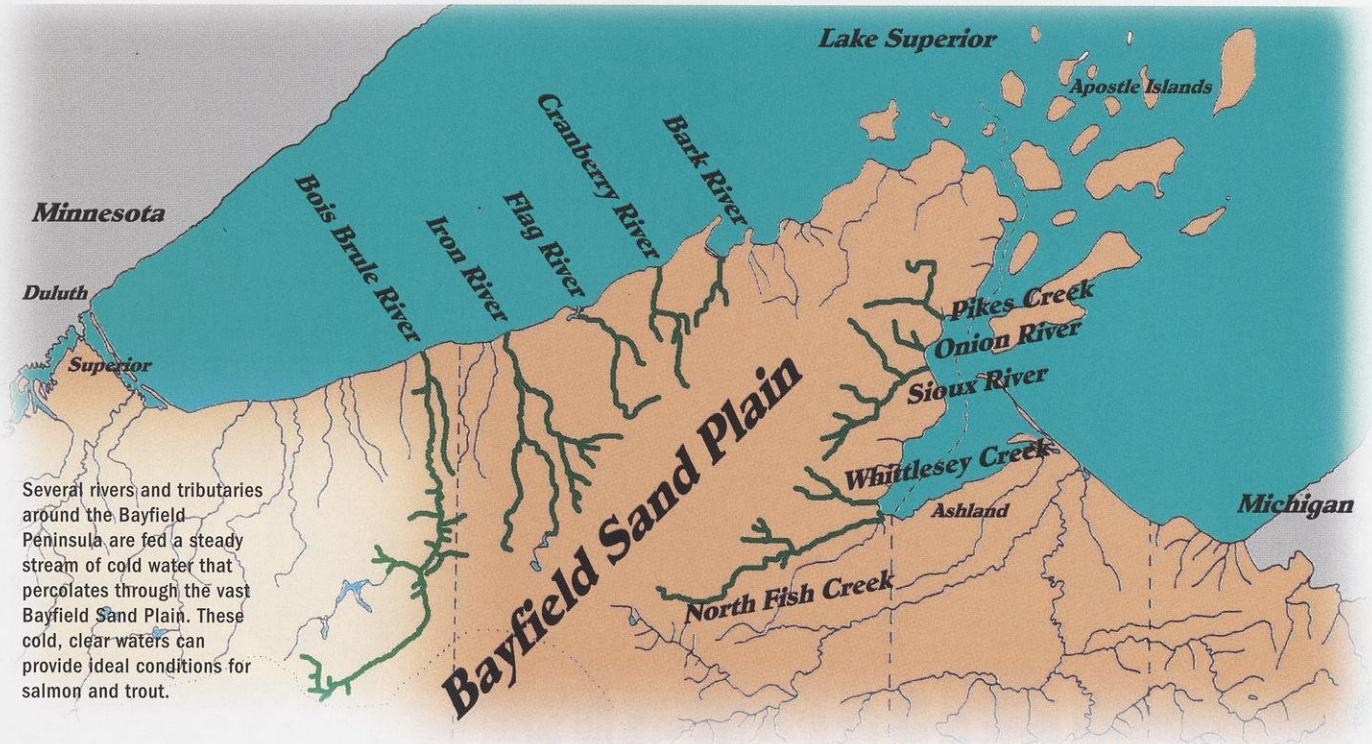
Little streams feed a big fishery

Better trout and salmon fishing along the Lake Superior shore starts in the small streams and rivers flowing into the big lake.

Dennis Pratt and Bill Blust

The Northwoods is a land of pine and water. For the occasional traveler, a road trip heading east from Superior to Iron County cuts through forests where swift, cold rivers are pummeled into foam as the water tumbles over the black rocks and waterfalls. Memorable tourist stops include Big Manitou Falls, Amnicon Falls, Copper Falls and the Potato River Falls.

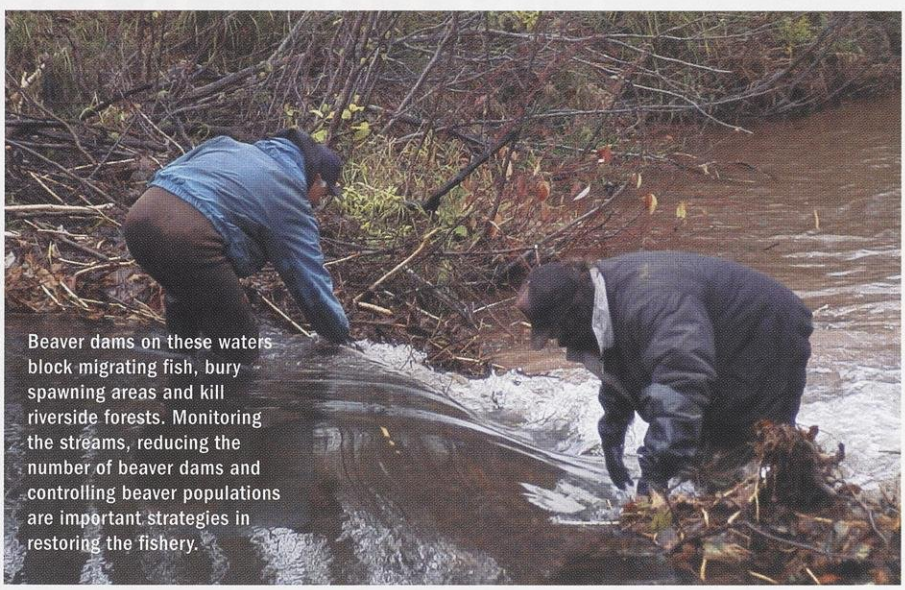
However, if you take a slower trip at bird's-eye view along the Lake Superior coast, you'll see a very different landscape, one predominated by red clay bluffs and sand. It's a land where streams and small rivers ribbon through soft soils as they flow into the south shore of the lake. From west to east, you'll cross the Bois Brule, Iron, Flag, Cranberry and Bark rivers on the west side of the Bayfield Peninsula; and Pikes Creek, the Onion and Sioux rivers, Whittlesey Creek, and North Fish and South Fish creeks as you head around Chequamegon Bay toward Ashland. These waters produce the lion's share of trout and salmon that feed into the big lake.



Several rivers and tributaries around the Bayfield Peninsula are fed a steady stream of cold water that percolates through the vast Bayfield Sand Plain. These cold, clear waters can provide ideal conditions for salmon and trout.

Most of the streams in this region drain shallow aquifers near the surface, but these rivers are fed by cold groundwater that collects under the Bayfield Sand Plain, a layer of almost pure sand several hundred feet deep extending from the headwaters of the Bois Brule in a northeasterly direction through the center of the Bayfield Peninsula. Rain and snow falling in this region are quickly absorbed into the soils and may be stored in the aquifer for up to a century before seeping into the headwaters of these streams and rivers. The cold, clean waters provide ideal growing conditions for aquatic insects and fish. Steelhead, brown trout, coho salmon and smaller numbers of brook trout, chinook and pink salmon migrate up these tributaries to spawn. The trout and salmon lay their eggs in gravelly reaches. The eggs incubate over winter and the fry emerge in early spring; spring-spawners (steelhead) deposit eggs that won't emerge until early June. The newborn fry are less than an inch long. They spend from one to two summers growing in the stream environment before they migrate down to Lake Superior to find larger prey and continue to grow to adulthood.

Fisheries managers estimate the populations of both juvenile and adult fish migrating from these rivers into Lake Superior each spring and fall.



Beaver dams on these waters block migrating fish, bury spawning areas and kill riverside forests. Monitoring the streams, reducing the number of beaver dams and controlling beaver populations are important strategies in restoring the fishery.

DNR PHOTO

Records showed the number of fish surviving to reach the big lake started dropping quickly in the mid-1980s; the decline prompted fisheries agencies around the lake to find the cause and search for ways to reverse the precipitous trends.

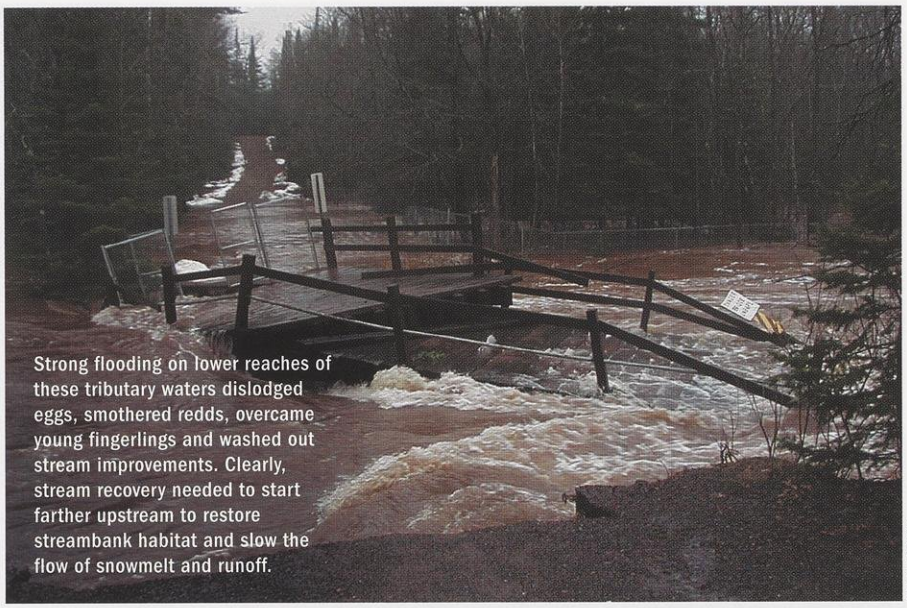
One culprit appeared to be beaver. Biologists have long known beaver dams on these sand and clay-based streams easily form barriers that prevent migrating fish from reaching their upstream spawning grounds, so beaver control became an important strategy for the fisheries teams. Starting in the mid-'80s, beaver populations began rising as fur prices dropped and fewer trappers found it worth their while to harvest beavers. Wisconsin DNR wildlife staff did aerial surveys to pinpoint beaver dams, produced maps showing dam locations and offered bounties to entice more trapping, but these incentives failed because fur prices remained low. Agencies resorted to using trout stamp funds to hire federal trappers to remove problem beavers and dams. The combination of trapping and dam removal brought desired results. Fish populations started to rise, and today trapping on 117 miles of tributary streams remains an important

strategy. Air and ground surveys check the major rivers and streams in the area before the fall spawning season. Problem dams are noted, mapped, trapped out and removed. Streamside landowners are important partners in reporting problems and providing access to trappers.

Biologists also noted that as lake trout populations rebound in Lake Superior, the young trout and salmon migrating from streams into the big lake face two additional challenges: the stream trout must compete with lakers for dwindling amounts of food, and the smaller stream fish themselves become food for the larger, swifter and more experienced lake trout. Tightening bag limits for anglers and raising the minimum size limits for harvesting trout and salmon helps to compensate for these losses.

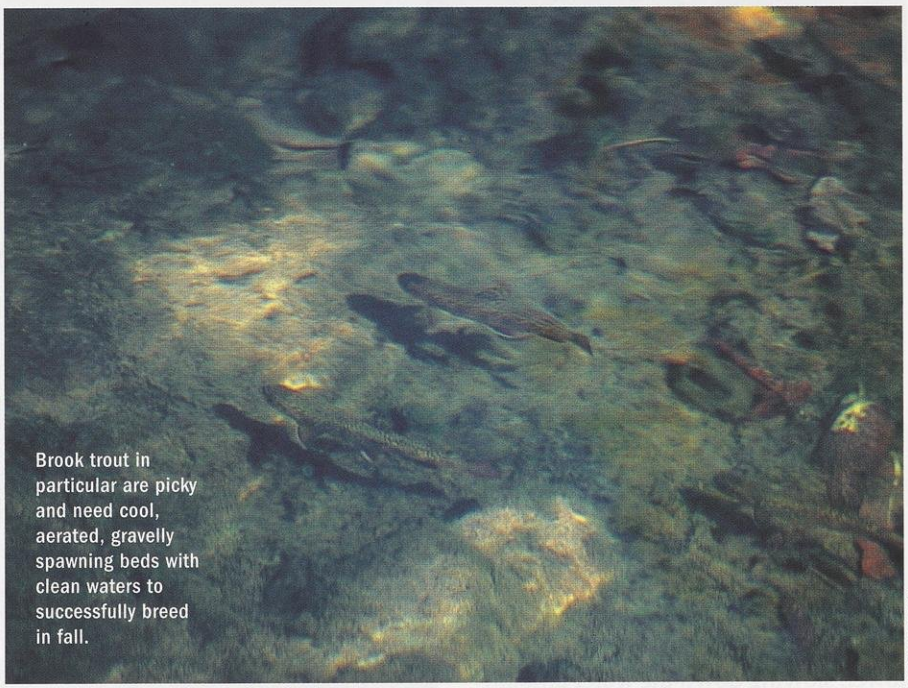
Fisheries managers also began more intensive research on the tributary streams to tease out other factors that were reducing the survival rates of juvenile trout and salmon. Stream surveys on the Brule River over four years (1987-91) showed how high, fast water takes its toll on young fish. Trout and salmon are strong swimmers able to battle strong currents as adults, fighting their way upstream and passing barriers to reach spawning grounds in riffles of cool, oxygen-rich waters. However, these same fish turn out to be very vulnerable to the whims of fast-moving, quick-rising waters in the eight months it takes for fertilized eggs to grow into two-inch fingerlings. Untimely floods can dislodge eggs or quickly cover them with a smothering layer of silty red clay soil or sand. Flood waters may kill newly emergent fry and small fingerlings that are still weak swimmers.

Searches of historical records and recent studies by the U.S. Geologic Survey on North Fish Creek, the Bark River, Sioux River, Whittlesey Creek and the Cranberry River verified that floods in recent years are more than twice as powerful as floods during presettlement times. Extensive logging and subsequent development removed a lot of the natural cover that slowed down runoff, rain and snowmelt. Floods changed the character of some stream segments and even destroyed spawning reaches on the middle and lower portions of some Bayfield Peninsula streams. The studies suggest it is especially important to slow the flow of snowmelt and rainwater draining off the land just upstream of river reaches that provide spawning habitat and rearing areas for fish.



Strong flooding on lower reaches of these tributary waters dislodged eggs, smothered redds, overcame young fingerlings and washed out stream improvements. Clearly, stream recovery needed to start farther upstream to restore streambank habitat and slow the flow of snowmelt and runoff.

DNR PHOTO



Brook trout in particular are picky and need cool, aerated, gravelly spawning beds with clean waters to successfully breed in fall.

DON BLEGEN

Rebuilding spawning grounds

What corrective measures might help fish? One river where it's easier to gauge success is the Bois Brule. The river has a lamprey barrier and a fishway with a large glass window where returning trout and salmon can be counted and observed. Moreover, the Brule is a favorite with anglers, and stream improvements here provide a lot of recreation. A first step in helping more fish survive here was setting more restrictive fishing regulations to protect juvenile fish, the trout residing year-round in the river and returning spawners.

Next, fish managers worked to restore spawning grounds, particularly

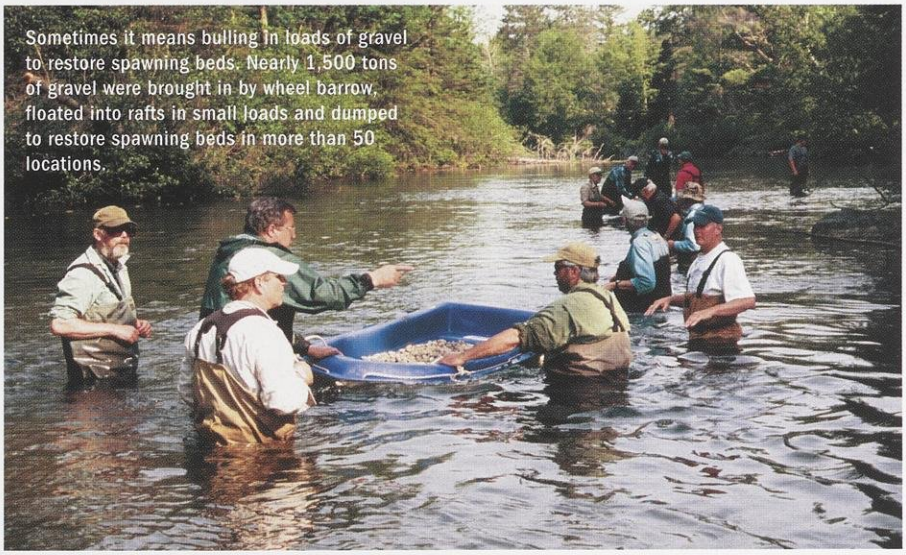
Streams and rivers recover foot by back-breaking foot. Sometimes that means adding structures like logs to create deeper channels, increase water flow and scour the stream bed to help restore gravelly bottoms.

DNR PHOTO

above County Highway B. Research has shown that juvenile fish depend on the cover near their spawning beds to survive their early days; survival drops off quickly in open downstream areas. State crews funded with trout stream money along with volunteer help from the Brule River Sportsman's Club hauled in nearly 1,500 tons of washed, uncrushed gravel to artificially rebuild spawning beds at 50 locations on the upper Brule.

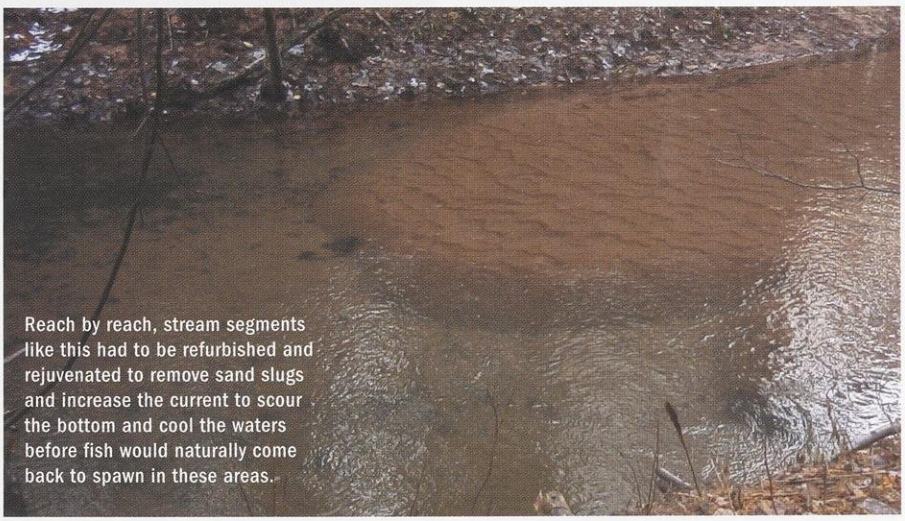
Over the last century, small woody debris, much of it tag alder, had fallen into many upriver feeder streams, collecting sand and burying the stream channel to depths of one or two feet. That made the streams wider and shallower, slowing down the water and limiting the flowing water's ability to flush out sandy sediment.

DNR trout habitat crews removed debris and cut and pulled out alder. Water started flowing faster and the stream naturally cut deeper channels, exposing gravel and uncovering large logs that could provide cover. Portions of nine high-quality feeder streams on 8.3 stream miles were restored. Finally, managers experimented with installing large logs in different patterns to provide overhead cover and channel water so it would scour sand and soft bottom mud, exposing streambed gravel. These



Sometimes it means bulling in loads of gravel to restore spawning beds. Nearly 1,500 tons of gravel were brought in by wheel barrow, floated into rafts in small loads and dumped to restore spawning beds in more than 50 locations.

FRANK KOSHERE



Reach by reach, stream segments like this had to be refurbished and rejuvenated to remove sand slugs and increase the current to scour the bottom and cool the waters before fish would naturally come back to spawn in these areas.

DNR PHOTO

restored waters are monitored annually for spawning activity and hatching success.

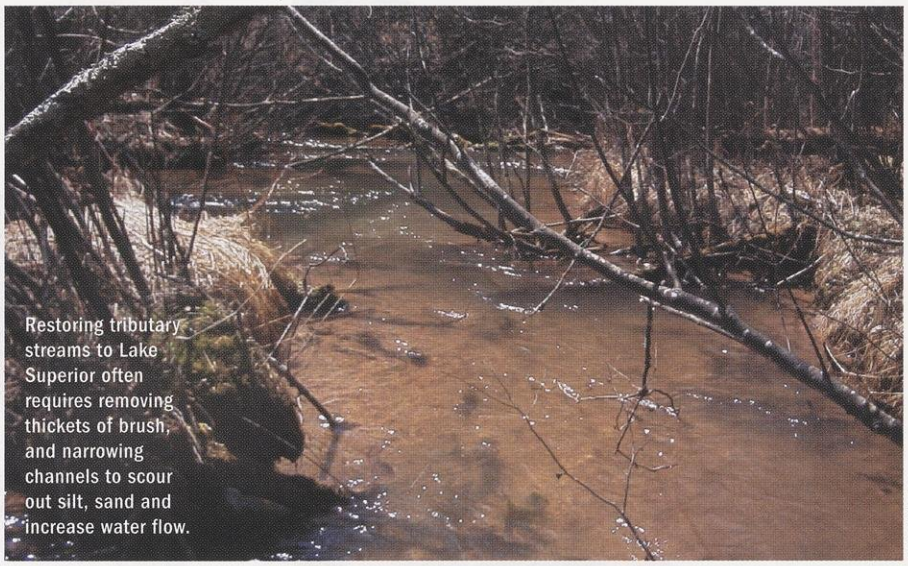
Efforts to restore trout and salmon on other tributary streams along the Bayfield Peninsula historically met with limited success. The in-stream tactics we tried on the lower stream portions and rip-rapping to control streambank erosion were too easily washed away by flood waters. These lower areas drain red clay soils and are subject to the same flood conditions that muddy waters on the lower Brule. Sands continue to fill in and bury the native gravel fish depend upon for spawning. Just as on the Brule, restoring these rivers will have to start upstream on the headwaters by clearing debris, removing beaver dams, increasing the water flow rate and uncovering buried spawning habitat. To date, DNR crews have restored about 5.7 miles of several streams – two tributaries of the Bark River, Four Mile Creek on the Sioux River, two tributaries of the Flag River and a tributary of the East Fork of the Cranberry River. We estimate at least another 10 miles of similar degraded stream habitat need refurbishment.

We hope continued restoration will be great for the fishery. In areas with completed projects the streams are narrower and deeper, the water flows faster, and the stream bottoms are now 90 percent gravel rather than 90 percent sand. When we combine this work with upland efforts to reduce flood flows, we expect both trout and salmon populations to improve as migrating fish have more places to spawn and a greater percentage of hatching fish have a better chance of growing bigger and stronger before they migrate downstream into Lake Superior. We think the results will justify the ongoing restoration of the small rivers that feed the big lake and provide a foundation for its trout and salmon fishery.

State, federal and tribal fisheries managers have launched experiments to see if we can rehabilitate the populations of brook trout migrating into Lake Superior — the "coastal" brook trout or "coasters" that grow to 11 inches or more, larger than fish that reside in streams. Historically these "rock trout," as they were called, stayed near the stream mouths and along the 40 miles of rocky sandstone shoreline adjoining the Bayfield Peninsula. The remaining 85 percent of Lake Superior's south shore is a sandy and clay bottom that held fewer coasters. A rehabilitation plan approved by our Natural Resources Board last August — the Wisconsin Lake Superior Basin Brook Trout Plan — was jointly prepared by staff from the Wisconsin Department of Natural Resources and the U.S. Fish and Wildlife Service. It calls for:

- researching traditional brook trout ranges and migratory routes in the nearshore
- restoring habitat along the lower reaches of streams and Apostle Island shoals where coaster brook trout live
- controlling the harvest to prevent overexploitation
- stocking genetically-appropriate strains of fish that stand a better chance of reproducing naturally
- monitoring results

These projects complement efforts to restore the cold streams feeding into Lake Superior's southern coast. We have high hopes that restoring these waters will improve habitat for trout and salmon and sustain a lot of fun and recreation along this part of the Great Lakes coast.



Restoring tributary streams to Lake Superior often requires removing thickets of brush, and narrowing channels to scour out silt, sand and increase water flow.

DNR PHOTO

After restoration note deeper channels, riffles, pools and in-stream structures that provide spawning habitat.

DNR PHOTO

Dennis Pratt is a DNR fisheries biologist in Superior, and Bill Blust is a DNR fisheries technician in Superior. Readers can learn more about Lake Superior Fishery work on the web at dnr.wi.gov/org/gmu/superior/Fish/Fish.html.

Savoring some memorable Thanksgiving feasts – and a first date.

Sweet and sour pie

The first Thanksgiving I can remember was in 1949, a year before Mom, Dad and I moved to Wisconsin. It was the Thanksgiving we had rabbit and French fries.

The entire Lorain, Ohio branch of the Crehore family was there. Grandpa and Grandma, Mom and Dad, three aunts, three uncles, three cousins and myself gathered at Uncle Charlie and Aunt Betty's apartment that day, a grand total of 12 adults and four small boys. Aunt Betty, a home economics teacher, had volunteered to prepare the entire dinner; its centerpiece was to be a 20-pound turkey. At least, that was the plan.

The day started early with a family Thanksgiving tradition — a mass rabbit hunt on the original Crehore homestead farm, led by Grandpa, with Dad and my four uncles serving as guns and dog handlers. The hunters were supposed to hit the briar patches at 6:00 a.m. and be home by 11:00. Then they would clean up, change, and arrive at Charlie and Betty's around noon, with wives and kids in tow.

The rabbit hunt was a success. The farm was only a couple of miles away on the outskirts of town, and it was hunted only by relatives. That day, the six men collected a total of 20 cottontails, and they even got home on time.

But then the best-laid plans began to fall apart. First of all, it was harder than Betty had figured to fit 12 adults and four small boys into the apartment. Uncle George lived just around the corner, so he went home to fetch some extra

Story by Dave Crehore • Illustrations by Tom Lowes

chairs. But once that problem was solved, a bigger one surfaced. The bouquet of roasting fowl, which should have filled the apartment by then, was conspicuously absent. We sat shoulder to shoulder in the living room, and sniffed, and wondered.

Before long the truth came out. Betty, who had been slaving away for hours, opened the kitchen door about an inch and summoned her husband. "Charlie," she called, in a high-pitched and slightly quavering voice, "Charlie, would you come here, please?"

Charlie forced a nervous laugh and went into the kitchen, closing the door behind him. We could hear whispers. After about a minute Charlie reappeared, his face as red as his hair. He smiled sheepishly.

"There will be a slight delay," he said. "The little woman forgot to light the oven."

It was at this point that I learned something about forbearance, and leadership, too. Grandpa and Grandma were the senior people present, so everyone turned to them for guidance. Grandma put a hand over her mouth, but her thin little shoulders were shaking and it was clear she was laughing. Grandpa was fighting laughter too. Finally he assumed a straight face and turned to Grandma.

"Such is life," he said. "A 20-pound turkey will take about five hours, won't it, Anna?"

"At least," Grandma said. She pointed at me and my cousins. "The little fellas can't wait that long to eat," she said. "Why don't we fry up the rabbits — you said you had 20 of them, didn't you — and we could make fried potatoes, and there's a big colander of string beans at home, we could cook them up with some bacon. Run home and get the beans, and the big cast-iron skillets, and my boning knife, and a pound of bacon, and the oil."

"No sooner said than done," Grandpa said. "Boys, go get your rabbits."

We all lived within a mile or two of each other, so within a half-hour the kitchen table was covered with cottontails, beans, bacon and potatoes. Grandma put her arm around Aunt Betty to comfort her.

"Don't worry, Betty," Grandma said. "Everyone makes mistakes. Remember that root beer I made for the holidays last year, and every single bottle of it exploded on Christmas Eve? Well, that just goes to show you."

"Now," she said, "let's make dinner. Dave and Charlie, fry up the bacon and boil the beans. Betty, slice the potatoes. George and Jack, take the rabbits outside and dress them. I'll fry them. Charlotte, could you make some biscuits?" And within about an hour we were sitting down to rabbit fried crisp in coconut oil, *patates frites* made Quebec style, crunchy green beans with bacon and biscuits full of melted butter.

Before I could stick a fork into my first piece of rabbit, Grandpa cleared his throat and stood up.

"It's customary to say a word of thanks before Thanksgiving dinner," he said. "I am particularly thankful for two people — my wife and Franklin Delano Roosevelt, may God rest his soul. Amen."

"Amen!" we all said, and started to eat. The turkey, meanwhile, sat lonely and unloved in the Frigidaire. Betty roasted it the next day, and the legend is that Charlie ate turkey sandwiches for 17 consecutive days.

After we moved to Manitowoc in 1950, our Ohio relatives were 500 miles away. That was a two-day drive in those days, so for our first six Manitowoc years, Thanksgiving dinner was shared only by our nuclear family and its two orbiting beagles. The beagles panted impatiently under the table while we ate, but after we finished our pie, we filled their bowls with dark meat and turkey skin. They ate ravenously and competitively, and it was a joy to watch them. Then they would lie distended on the back porch and be sick. But they didn't mind, because that gave them a chance to pick through everything, find the best stuff and eat it again.

When I got into my teens, the new tradition was interrupted. In 1955, Mom and Dad joined a group of four couples, including a doctor and a dentist and their wives, who dined together about once a month. In the fall of 1956, when I turned 15, it was decided that the group would have Thanksgiving dinner at the home of the dentist. His wife would bake the pies and act as hostess, with the other couples bringing the turkey, potatoes, cranberries and side dishes.

This division of labor was good in theory. The doctor's wife was a marvelous cook and Mom was no slouch either. But it failed in practice, because the dentist's wife had baked green apple pies without sugar. They were inedible; even the women who daintily asked for "just a sliver" could not finish their slivers, and the dentist's wife was miffed.

But not as miffed as the doctor, who was nothing like the gaunt and trendy doctors so common today, doctors who run a marathon before breakfast. No, this doctor was an old-fashioned family MD who made house calls, and would give you a shot of penicillin right through the seat of your pajamas if you were shy about disrobing. This doctor lived for pie and had been saving room for it. He was known for his perfect frankness and inability to whisper, and when the dentist's wife overheard him using a medical term to describe the pie — "quinine," I believe it was — the atmosphere at the dentist's got distinctly chilly.

Besides the sour pie, there was another drawback to Thanksgiving at the dentist's: the nearness of Mary, who

lived just around the corner and down the block.

Mary was the person for whom the term "nice girl" had been coined, and Mom was interested in getting us together. For weeks she prodded me into asking Mary out on a date Thanksgiving night. "It will be so convenient for both of you," Mom said, as though that mattered. Finally, one day after school I cornered Mary and summoned the nerve to ask her, and she accepted. It was to be my first unsupervised, un-chaperoned actual date with a girl, and in the days leading up to Thanksgiving, I should have felt a pleasant anticipation.

What I actually felt was dread and discomfort. For a first date, I would have preferred an ordinary, undemanding girl who wouldn't expect much. Instead, I had Mary, who was superior to me in every respect. At fifteen, she was beautiful, talented, a straight-A student and a gifted athlete with an IQ of about 200. In addition to "nice girl," other terms that might have been invented to describe Mary were Phi Beta Kappa and summa cum laude.

But a deal was a deal, and when Thanksgiving dinner was finally over, I walked leaden-footed to Mary's. She was ready and waiting, all smiles and wearing a fetching white duffle coat with a fur-trimmed hood — a snow princess. Standing on the porch with her before we started our long march downtown, I felt relieved about one thing: if nothing else, I stood about a half-inch taller than she, even with the fur trim.

The plan was to walk the three miles to the Mikado Theater, take in a movie, go somewhere for a Coke afterwards, and walk the three miles home. It was just a few degrees above freezing, but as we walked along I found myself yawning and stumbling over my own feet as we shuffled through the fallen leaves. I suppressed the yawns so that Mary wouldn't think I was bored, but post-turkey lassitude had me in its thrall. And once I had flopped into a comfortable seat in the dark, overheated Mikado, I was down for the count. Soon I was snoring, belching turkey and onion fumes, and, I strongly suspect, breaking wind as well — I can't say for sure, because I was asleep.

During the first reel, Mary poked me from time to time in an attempt to quiet me down, but after a while I guess she

just gave up and waited for it to be over. We never saw much of each other after that, mostly because I was too embarrassed to face her. I distinctly remember a Friday night later that winter when I saw Mary coming my way down the sidewalk on Eighth Street. I crossed over in mid-block and pretended to look at a Rolex watch in Rummele's window until she was out of sight.

From time to time I have wondered what might have happened if I had kept on seeing Mary — assuming, of course, that Mary would have kept on seeing me. Probably nothing; once you have exposed a nice girl to the full aftereffects of a heavy Thanksgiving dinner, a line has been crossed and things are never the same.

After 1960, I was in college, the Navy, and then college again. I made it home for Thanksgiving all but two of those years. My first Thanksgiving dinner away from home was at a fraternity house in Indiana. By vote of the brothers, we had shrimp for dinner — shrimp so foul that, to this day, I have never been able to eat another. I quit the fraternity, too.

My second Thanksgiving away from home was spent aboard a ship rolling her guts out in the Pacific. The motion of the ship slopped the yams into the cranberry sauce and sent the peas rolling into the ice cream, creating a sweet-sour stew that we ate only because we were homesick. Except for those who were seasick — they ate nothing at all.

Thanksgiving started being fun again after I got married. My family was strictly Yankee, so we ate sage and onion dressing, rutabagas, mince and pecan pie. My wife's relatives, on the other hand, were Germans and Norwegians who preferred bland and mild-mannered foods. My first Thanksgiving dinner at the in-laws was a shock; I found I had married into a family that stuffed the turkey with apples and raisins, ate potato dumplings, and regarded mince pie with grave suspicion. And as for pecan pie — well, Lutherans did not eat pecan pie. There were compensations, though: Aunt Ruth's dumplings turned out to be chubby little poems, and my mother-in-law's apple pies weren't better than Mom's, but in the ballpark.

The best part was that my wife's relatives ate Thanksgiving dinner at suppertime, while my parents — who had given up the society of the dentist — always served holiday meals at 1:00. So not only had I gained a wife, I had also gained a second Thanksgiving dinner, which, with due restraint ... but I was never good at restraint.

Well, that was then. Today, the greatest generation of the Crehores and Heckers and Sorensons is no longer with us, and those of us who were young in the 1950s have combined the family traditions. We have sage dressing and potato dumplings, mince and apple and pecan pies, and pretty much eat all day and well into the evening.

Because, let's be honest. The best part of the whole Thanksgiving ritual is the chance to slip into the kitchen about 10:30 or so, slice off some cold turkey, make a sandwich — heavy on the salt and mayonnaise — warm up a dumpling and some dressing and gravy in the microwave, take a dollop of cranberry sauce out of the fridge, pour a glass of cold milk, and consume. Doesn't the contrast between the cranberry and the milk just get you where you live? If you still have room, a piece of pecan pie and a little maple syrup will go down nicely.

And because everyone else in the house is asleep, you can break wind with abandon. Only you and the dog will know, and the dog will probably like it.

Dave Crehore hosts Thanksgiving dinner at the family home in Green Bay.

2005 index

WISCONSIN NATURAL RESOURCES

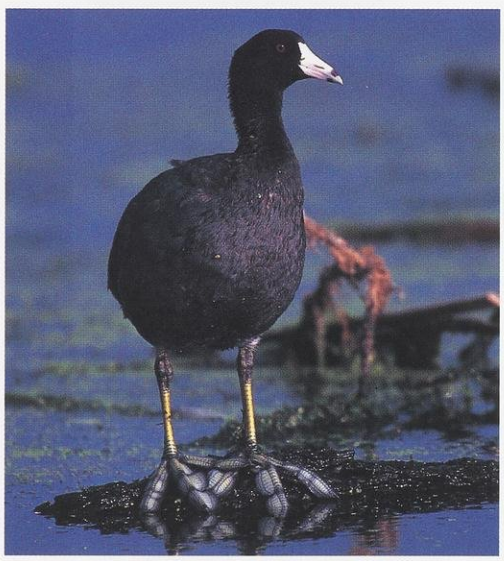
Each December we publish an annual index of our stories. A cumulative index of our stories 1977-2004 is also available as a file you can download from our website: www.wnrmag.com. Please note this is a large file (more than 350,000 bytes and in excess of 100 pages), so browse before you print.

Bobbing heads in the crowd

Continued from page 2

The American coot (*Fulica americana*) is a common migratory bird that breeds throughout much of the U.S., including Wisconsin. Some coots are found year-round in the southeast corner of the state. The birds passing through Wisconsin in the fall likely take a route from their breeding marshes in the prairies of western Canada or northern plains states to their wintering grounds in freshwater marshes along the Gulf of Mexico or Atlantic coastal areas.

Coots appear duck-like in the water but are actually more chicken-like in their onshore appearance. They have dark, slate-gray, rounded bodies with small black heads, brilliant red eyes and greenish-yellow legs. A small reddish-brown shield tops the white, banded bill. Members of the family that include gallinules and rails, coots don't have webbed feet, but instead have widely lobed toes that help them get around as easily on water as walking through the mud. Hence, they are often called "mud hens." Males and females look alike,



JACK R. BARTHOLMAI

Lobed toes give mud hens stable footing on soft shores and easy paddling in the water.

and immature birds look similar but are lighter in color.

Coots also cluck and cackle like chickens and are seemingly awkward fliers. To become airborne, they must get a running start (or "patter") across the water, usually fly a short distance and come to a clumsy, splashing landing. Once airborne in their nighttime migratory flights, however, they are capable fliers.

The coot's eating habits are described as opportunistic. Opportunity sometimes presents itself in the form of leftovers from other dabbling ducks, or pirated plants brought to the surface by diving ducks. They are also perfectly capable of finding their own food, including snails, insects, worms and a variety of aquatic and terrestrial plants. Coots are stridently territorial and are known to grab opponents with one clawed foot while trying to slap them with the other, at the same time pecking the hapless birds with their bills.

Coots do a lot of splashing around to attract attention during the mating season and to discourage predators. They will "raft-up" in tightly packed masses to avoid predation by bald eagles and osprey. The "safety in numbers" theory is at play in this behavior, I suspect.

Mating occurs in May and June. Almost all aspects of raising the family are shared by the monogamous pair. The birds select a nest site over water in tall, concealing vegetation. The nest is a cup-shaped mass of dead vegetation, lined with fine grasses, and anchored to live plants. About eight to 12 pinkish, spotted eggs are laid and incubated by both the female and male for about 23 days. Coots have been found to have extremely high levels of brood parasitism, where birds lay eggs in another's nest to avoid having to raise the young themselves. In the case of coots, this parasitism is intraspecific, or within their own species. To combat this rampant behavior, recent research has found that female coots are adept at recognizing and even counting their own eggs. They reject the parasitic eggs by burying them deep in the nest or pushing them to the outside so they hatch later, decreasing the chance of survival of the parasitic chicks.

So while the coots may not have the best reputation in the marsh, they are indeed very interesting birds, and I look forward to each fall when they reappear and brighten my morning commute.

Writer Kathryn A. Kahler is also production and circulation manager for Wisconsin Natural Resources *magazine.*

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

NO FERAL COWS IN WISCONSIN

I was working at the public contact desk at Willow River State Park on a fairly busy weekend. A visitor came in and asked about hunting wild pigs. I repeated some things I had read in the magazine's August article on feral pigs ("Wild hogs in the woods") and the visitor had further questions. I had others to serve so I provided the magazine for the visitor. After looking over the article, the visitor's next question was, "If I can hunt feral pigs, can I hunt feral cows?"

I explained that to my knowledge, feral cows are not an issue in Wisconsin since most herds are dairy cows and some farmers raise beef cattle, which also tend to be confined. Feral cows may exist in the western states where open range land is used by ranchers that do not need to confine the animals. That situation does not occur in Wisconsin.

Jeffrey Bolte
Willow River State Park

Cows and other livestock are considered domestic animals in Wisconsin and are thus protected from hunting. Beyond that, the dairy cow is by statute Wisconsin's official domestic animal.

TWO VIEWS ON PINE ISLAND LITTERING

I read the article about Pine Island that Michael Wessinger wrote in the August 2005 ("Readers Write, Disrespect for Pine Island") issue. I too am disturbed by the amount of garbage, tires, refrigerators and everything else that is thrown into the rural ditches of Wisconsin. I live in a rural area near Berlin. There is a town dump six miles from Berlin where you can take appliances, and all other waste for proper disposal. It costs a lousy $3 to dispose of an auto tire. Waste oil and appliances are FREE. Yet people dump them in the ditch.

I have worked for the Department of Corrections for 20 years. I see a lot of inmates with nothing to do, or not enough to do. Many of them want to keep busy. With proper screening and supervision, we can get these inmates out on the very roads Mr. Wessinger referred to in his article and get our beautiful state cleaned up. There

are already inmate crews working in various areas of the community, and they are doing GOOD things. We need to expand on that. More importantly, let's get back on the publicity bandwagon and start preaching about keeping America's roadsides clean!

Eric Hamersma
Redgranite

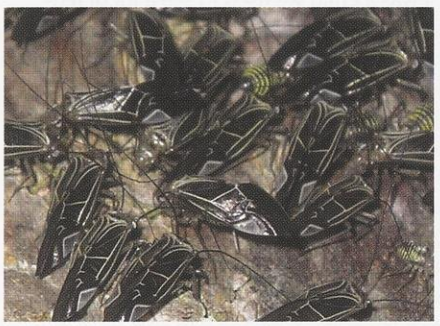
I am responding to the August 2005 letter submitted by Mr. Wessinger regarding illegal trash dumping on the public land of Pine Island Wildlife area. This is a sad commentary on many levels. I too have had enjoyable and rewarding experiences there over the last quarter century and have commented to friends that we are lucky to have such a large contiguous area so close to urban areas to escape to, if only for a few hours or a day. The recounting of the trash heaps saddened me, but not as much as the response given to Mr. Wessinger. It may be true that the DNR has not received as much funding as it had asked for over recent years, but it cannot be scraping by as implied. As we see every day on our roads, in our cities and fields, enforcement seems to be regarded as a concept and not something we have any realistic control over. Sit at a controlled intersection and observe drivers ignore traffic controls and safety. The scofflaw attitude exhibits "taking the easy path/me first" and if we accept the policy, "We don't have the resources to. . .," can we really blame those who trash our landscape and endanger others in traffic? Our attitudes need to change, and the public should expect more out of the overseers of daily public living. I think the situation described at Pine Island degrades the environment as much or more than deer poaching or manure spilling into a beloved trout stream, although bringing a litterer to justice will never make the front page or the evening news. As with most enforcement I observe, we as a society go for the big splash and not the mundane. That is as sad as the trashing of Pine Island and the...request for the public to [help] clean up for someone who probably would enjoy observing that effort.

John Lazaris
Madison

INSECT ID

These insects were on a pine tree in groups of several hundred. They appeared as fuzzy three- to eight-inch diameter patches because of their antennae. I am just curious about what type of insect they are.

Burt Zielke
Bruce



BURT ZIELKE

Linda Williams, DNR Forest Health Specialist, Green Bay, replied: They're bark lice. They aren't a true louse, that's just their name. I believe they are the Psocid Lachesilla nubilus. *Every year I get reports of bark lice congregating on trees. I don't know why they do this but they often congregate for a week or so and then mysteriously disappear. The congregations will have both adults and immature bark lice so this is not a mating congregation. They eat the dead portions of the bark and also feed on decaying plant material, including bark mulch and leaf mulch. They do no harm to the tree!*

COOLING NETTLES' STING

I enjoyed the article regarding stinging nettle in the June issue. One thing that was not mentioned might interest anyone who has ever brushed up against this plant. There is often another plant growing nearby that will quickly ease the burning itch. This is jewelweed or touch-me-not. The juice inside the succulent stalks works much like Aloe vera works on a burn. Look for this plant growing in moist areas. You can identify it by its orange flowers and thick stalks. Crush the stalks and squeeze the juices on the affected area for almost instant relief.

Bill Fowler
Kenosha

HOGS AND DOGS

I read "Wild hogs in the woods" (August 2005) by Kyle LaFond with great interest. I no longer hunt but had my first run-in with wild hogs in 1963 when I was a high school senior in Charleston, South Carolina. A big sow with piglets had charged the children of a family friend who lived in the mostly rural area of Johns Island. I was one of three people hunting, making my way through thick underbrush. I stepped out onto a well-worn path that was completely invisible until I was on it. I had only moved a few yards when the sow appeared and charged like a runaway locomotive. I had a double-barreled shotgun loaded with deer slugs. I fired both barrels at almost point-blank range. If one of the shots had not broken its front leg, I would probably not be here to write this letter. It was finished with a .45 coup de grace. She weighed about 300 pounds.

I then began hog hunting using Airedales and had a few more close calls since wild hogs will not always turn tail and run, especially if they have a litter. I had one chase me up a tree until my dogs arrived and ran him off.

The wild hogs in Hawaii are doing a great deal of damage as well as here in the South. Some of the wild hogs in the South can be traced to the Great Depression when small farmers went under and were evicted or abandoned their farms. The livestock was left behind. The large paper companies then bought up these lands from the banks for ten cents on the dollar, and the hogs left in place are the ancestors of many of today's wild hogs. I think one solution is to go back to the old fashioned bounty coupled with an open, year-round season. It could go a long way to bring down the population, maybe even eliminate it in places.

Lawrence Wertan
Toccoa, Georgia

Regarding the article "Wild hogs in the woods" in the August 2005 issue, I am curious how the feral hogs manage winters in Wisconsin. Could you pass my question along to author Kyle LaFond? It would be helpful if you had contact information for the author at the bottom of each article (e.g., e-mail, phone number, address) as you do for the editor on the letters page. I enjoy your magazine and it helps me in my environmental responsibilities.

Peter C. McCarthy
Green Bay

Hogs forage in winter for leftover grain, acorns, old fruit, roots, carrion and whatever they can rut up. As you might guess, the pickings are slim, the temperatures are cold and this may limit their success in Wisconsin. Author Kyle LaFond has left our agency, but you might send a note to wildlife manager Dave Matheys who has been dealing with feral hogs in Vernon County. His e-mail is david.matheys@dnr.state.wi.us.

Your point about designating a contact person in our stories is well taken. We try to do that when we can. Some authors are

DNR staff people but others are freelancers. Feel free to write to us, by letter or e-mail and we'll be happy to connect you to the right person.

NEW NEIGHBORS

Upon moving into our new home and starting to get the landscaping in place, some of our first visitors came up our driveway one early evening in June. They approached from the middle of the driveway and were the subject of numerous shots with the camera. Needless to say they ended up on my front step perched on the carved owl and took a snooze. Thought you might like to share this with subscribers!

SHIRLEY WILLIAMS

Shirley Williams
New Richmond

NEW GENERATION SEES CHANGED OUTLOOK

I recently read the article "A generation of shared rights and shared responsibilities" by Lisa Gaumnitz and David L. Sperling in the August issue. This article brought back many memories of discussions my father-in-law and I had over this topic in the early 80s. My father-in-law, Mr. Clyde S. Poulter of Birchwood, was an avid fisherman and a lifelong resident of northern Wisconsin. He would tell me about how angry he and his fellow fishermen would get over seeing local tribesmen taking large female walleyes by spearfishing and other means. This was truly a serious topic during this time and it was often the cause for many a heated discussion at the boat launches on the lakes at which my father-in-law fished. I am glad to hear that the May 9, 1990 ruling that Judge Crabb made has helped both sides realize the importance of the walleye harvest, both culturally as well as recreationally. If my father-in-law were alive today, I know that he would truly be appreciative of all the work that has been done to help manage the walleye harvest as well as the tempers of those intimately involved.

Thank you for a very informative article on a topic that has touched the hearts and souls of many who were a part of this issue while living in the woods of northern Wisconsin.

Ronald E. Weberg
Chandler, Arizona

COVER PHOTO REQUEST

In your August 2005 issue, you have a beautiful picture of one of the most beloved birds that we don't see any more. When I was a child we used to see a lot of red-headed woodpeckers on the farm lands. I'm wondering if I could get a reprint of the photo for framing. Please let me know if I can get a reprint and the price of such print.

Clement J. Schahezenski
Menominee, Mich.

Most of the photos used in our magazine are taken by freelance photographers who grant us one-time rights to their work. Some photographers are happy to sell prints for framing, but readers need to contact them directly. Write us at the Readers Write address and we'll put you in touch with them.

NOT-SO-RUSTIC ROADS

I empathized with the article by Lynn Kuhns on the mowing of roadsides ("Let the cup be unbroken," August 2005). We live on a side road in Grant County. The township crews mow first, then spray a toxic chemical that kills all vegetation except the grass, causing even low-hanging branches to turn black and die. Then they mow again, as far back as possible. One cutting went back about 30 feet to decimate a small grove of sumac that apparently was deemed hazardous. The irony? Our side road was designated a "Rustic Road" several years ago. All we lack is pavement and chain link and we would have a mini-Interstate!

Sandra Waldman
Stitzer

Besides Ms. Kuhns' aesthetic and naturalist's arguments in opposition to cutting the plants along Wisconsin's highways, it seems to me that there are at least two more significant reasons to leave ditches in their natural states. It doesn't take much imagination to believe that a vehicle, skidding off highway pavement would come to a much slower, gentler, safer stop when cushioned by tall grasses, small shrubs and other similar plants than when careening over more closely-cropped lawn-type vegetation. (The same function is provided by snow, once a vehicle has penetrated a plowed-up snow bank; evidence of this is readily seen from time to time in winter.) Secondly, given the crises in annual governmental budgets, think of the savings in operator-hours and equipment purchases and upkeep if cutting were to be reduced or eliminated.

Richard C. Schneider
Stevens Point

UPDATE

DNR MAY LIMIT VEHICLE ACCESS TO LOWER WISCONSIN RIVERWAY

Department of Natural Resources officials are considering limiting vehicle access to some Lower Wisconsin State Riverway properties because of continued littering, vandalism and damage to plant and wildlife habitat.

Steve Colden, property supervisor for the 92-mile riverway, stressed that DNR is not thinking about closing the properties to public access. The vehicle restriction would address persistent problems property staff has encountered, especially with ATVs operating in unauthorized areas.

Last spring, property managers filled two, 20-yard dumpsters with trash dumped on riverway properties, including items such as couches, tires, refrigerators, televisions and drywall. A vehicle restriction would stem such illegal dumping, as well as alleviate safety concerns during the fall hunting seasons.

"I hope that riverway area residents will take pride and ownership in the Lower Wisconsin State Riverway, a precious resource that is just out their back door," said Colden. "Local residents need to influence other riverway users to stop illegal activities on all public property and provide information to law enforcement officials when appropriate."

EMERALD ASH BORER MOVES WESTWARD

An infestation of emerald ash borer (EAB), an exotic, aggressive beetle native to Asia, was recently confirmed in Michigan's Upper Peninsula, in Brimley State Park along Lake Superior. Since its discovery in southeast Michigan in 2002, the pest is responsible for the death or damage of 15 million ash trees in Michigan.

The infestation is the first report of EAB in the Upper Peninsula and the Michigan departments of Agriculture and Natural Resources are working quickly to eradicate EAB in this isolated infestation. Eradication measures include removal of all ash trees larger than one inch within a half mile of the site.

The discovery is alarming because the infestation was established prior to last May when the Michigan Department of Agriculture instituted a hardwood checkpoint at the Mackinac Bridge to prevent the spread into the Upper Peninsula. Since the checkpoint was established, officials have inspected 63,000 cords of logs and pulpwood, and confiscated 245 cubic yards of firewood.

Watch for our story next April about steps people can take to slow the spread of this invader and other forest pests by being careful with their firewood.

Home for the holidays

Cue Der Bingle: *"I'll be home for Christmas, you can count on me..."* Just exactly whose home Mr. Crosby never did specify. Home, as in No Place Like? Home, the one On The Range? Home, Where The Heart Is? Or Home, the place where Country Roads Take you?

Wherever you hang your hat, TRAVELER suggests a home visit this holiday season — to someone else's home, that is. Many Wisconsin communities had the foresight to preserve old mansions and homesteads, the presence of which now lend an air of timeless grace to modern city and village streets. The structures festooned with traditional decorations take on a special glow this time of year, opening a door to the holiday celebrations and customs of generations past.

The halls will be decked with flowers, fruit and greenery at Green Bay's ten-room **Hazelwood Historic House Museum**, a classic example of Greek Revival architecture built in 1837. "A Victorian Christmas" displays children's toys from the 19th century guaranteed to confound today's pint-sized Game Boy aficionados. The home is open from 12-4 p.m. on December 17-18 and 26-30. Take a moment to savor history in the dining room: Hazelwood's owner Morgan L. Martin led conversations around the dining table that brought about the birth of Wisconsin's Constitution. Visit www.browncohistoricalsoc.org/hazelwood/ or call (920) 437-1840.

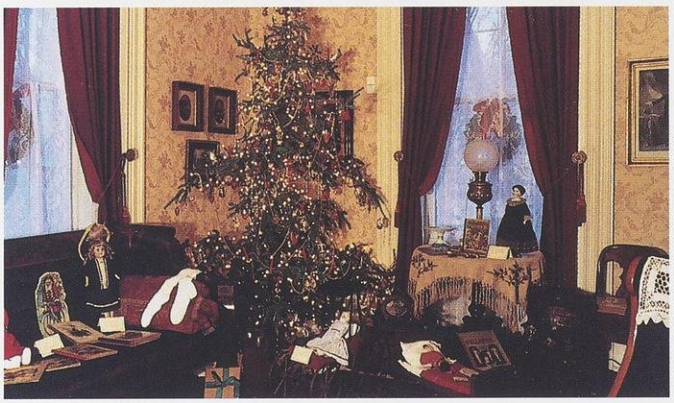
Sing carols with the Wakely homesteaders and watch artisans craft ornaments suitable for a frontier log cabin from 10 a.m. to 5 p.m. on December 17 at **Historic Point Basse** in Nekoosa. Located at the beginning of the navigable waters of the Wisconsin River, Point Basse features a working blacksmith shop, a trading post, and the Wakely Road Bridge, built in 1893 by Newbold Wakely, son of original settlers Robert and Mary; it's one of the few stone-arch bridges remaining in the state. See www.historicpointbasse.com or call (715) 886-4202.

Fond du Lac's **Ebert Estate** is home to the famous "Painted Lady" — an exquisitely restored Queen Anne mansion. On Sunday December 4, 11 and 18 from 2-5 p.m. you'll be dazzled by trees decorated with hand-blown glass ornaments from Germany, Italy and elsewhere. (920) 923-3010. Fondy's elegant **Galloway House** — 30 rooms graced with Victorian holiday finery — glimmers by lamplight during the "Twelve Days of Christmas" tour from 5-8 p.m. on December 1-4, 8-11 and 15-18 and 1-4 p.m. on Sundays. (920) 923-3010. Visit www.fdl.com for more details on both homes.

Celebrate the holiday in style with teas, community concerts and workshops at **Fairlawn Mansion**, Superior's true *grande dame* with a four-story turret. Fairlawn became a landmark upon its completion in 1891, and remains so today. Open Mon.-Sat. 9 a.m.-5 p.m., Sun. 11 a.m. - 5 p.m. through December 31. See www.fairlawnmansion.org or call (715) 394-5712.

Completed in 1857 with all the modern conveniences — large walk-in closets, a complete water system, central heating and indoor privy — it's no wonder the Tallman House in Janesville was deemed the "finest and most costly residence in Wisconsin" in 1871. So fine was the home that Abraham Lincoln himself slept there for two nights in 1859; today the property is known as the **Lincoln-Tallman House** in his honor, and the bed upon which Old Abe dreamed of a more perfect union can be seen in one of the cream-brick Italianate villa's 26 rooms. Open for holiday tours daily from 9 a.m.-4 p.m. through December 30. Visit www.rchs.us/tallman/page3.htm or call (800) 577-1859.

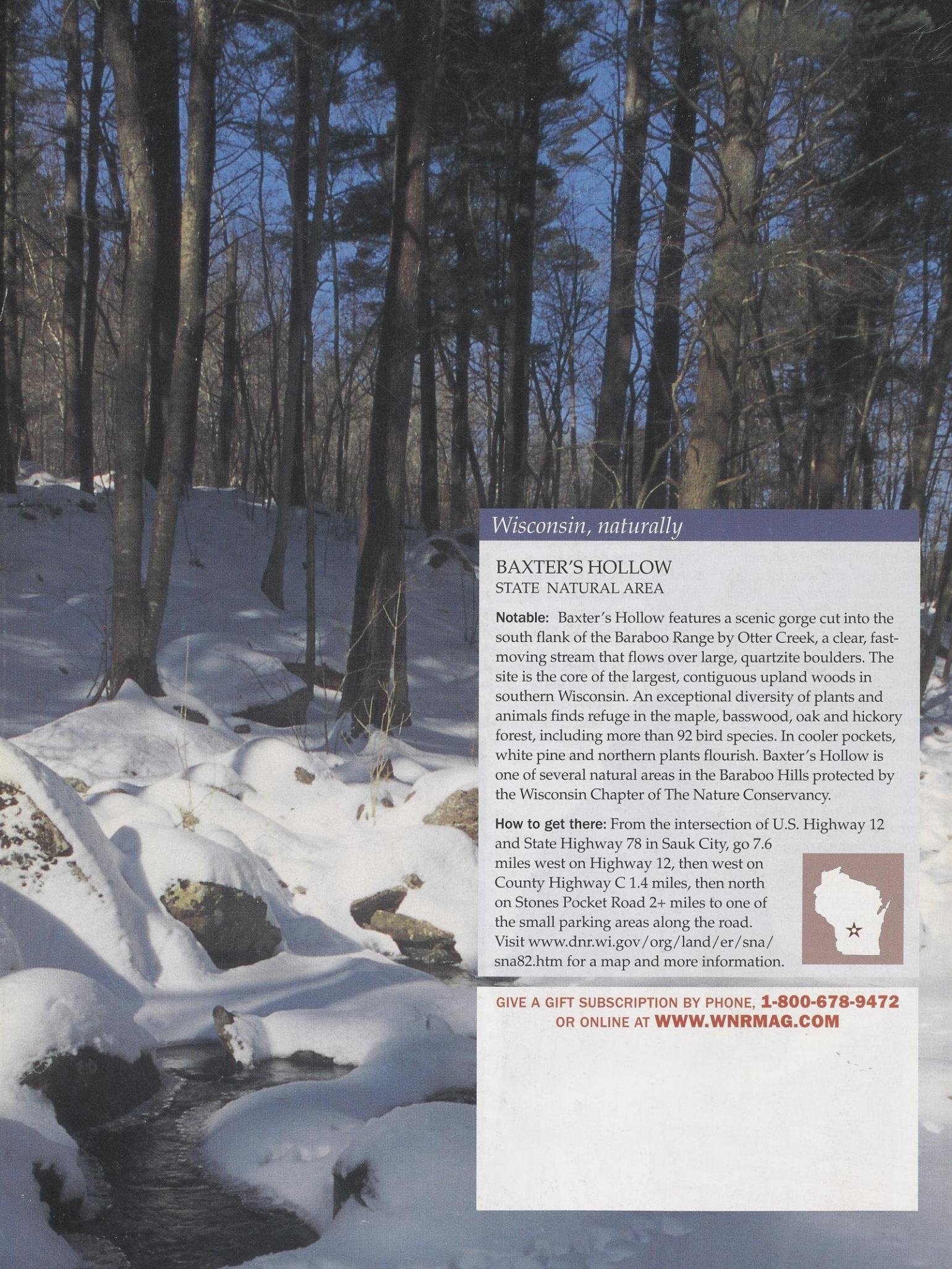
SUPERIOR PUBLIC MUSEUMS, INC.



BROWN COUNTY HISTORICAL SOCIETY

BROWN COUNTY HISTORICAL SOCIETY

Enjoy the sights and feel of holidays past. FAR LEFT: Tasty plum puddings at Point Basse. TOP: The stately seasonal appointments at Fairlawn Mansion. ABOVE AND LEFT: The formal parlor and outdoor trimmings decked out for visitors to Hazelwood Historic House.



Wisconsin, naturally

BAXTER'S HOLLOW
STATE NATURAL AREA

Notable: Baxter's Hollow features a scenic gorge cut into the south flank of the Baraboo Range by Otter Creek, a clear, fast-moving stream that flows over large, quartzite boulders. The site is the core of the largest, contiguous upland woods in southern Wisconsin. An exceptional diversity of plants and animals finds refuge in the maple, basswood, oak and hickory forest, including more than 92 bird species. In cooler pockets, white pine and northern plants flourish. Baxter's Hollow is one of several natural areas in the Baraboo Hills protected by the Wisconsin Chapter of The Nature Conservancy.

How to get there: From the intersection of U.S. Highway 12 and State Highway 78 in Sauk City, go 7.6 miles west on Highway 12, then west on County Highway C 1.4 miles, then north on Stones Pocket Road 2+ miles to one of the small parking areas along the road. Visit www.dnr.wi.gov/org/land/er/sna/sna82.htm for a map and more information.