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WISCONSIN

NATURAL RESOURCES

August 2000 \$3.00

Watch wildlife at
Navarino

Grappling the green giant

The viggie years

Special section
**State of our
natural resources**

<http://www.wnrmag.com>



The contrast between the mourning cloak's bright dorsal colors and its drab underwing is dramatic. Dull colors help it hide in bark over winter as an adult.

A CHANCE ENCOUNTER

CLOAKED IN
CHOCOLATE
BROWN, THIS
BUTTERFLY
PITCHES WOO ON
A WOODLAND
PATH.

Anita Carpenter

Have you ever walked along a sun-dappled woodland trail and had a mourning cloak butterfly (*Nymphalis antiopa*) flit about your face? Did you brush it aside as a nuisance insect and continue on your way? You should have stopped and enjoyed the moment, for the lovesick male was courting you as a potential mate. He approached because you entered his territory. When you didn't respond to his advances, he dismissed you as unacceptable and returned to his favorite perch. Undaunted, he'll wait for the next passerby, perhaps a wandering female mourning cloak, and approach again.

The mourning cloak is found in woods and open areas throughout Wisconsin, and it is unmistakable. The butterfly's four-inch wingspan is robed in rich chocolate brown, edged by a creamy yellow margin. A row of iridescent violet to blue dots highlights a black band lying within the creamy border. The underside of the wing is dark gray to black bordered by a dirty looking cream-colored band. This cryptic coloration truly cloaks the butterfly when it rests with its wings closed on a tree trunk. Both sexes are similarly colored.

In the warmth of summer, love is in the air for the mourning cloak. Males establish territories. Within their turf, a favored branch or leaf serves as a perch

to wait for females that wander through. During days of waiting, mourning cloaks often bask with their wings open in a sunny spot on the path or on a sunbeam striking a leaf. If you flush a basking mourning cloak, it will float along the trail drifting lazily back and forth, up and down before returning to its chosen sunny spot.



After a receptive female enters his territory and mates, the female searches for willows on which to lay her eggs. American elm, white birch, aspen or hackberry trees are sometimes suitable substitutes.

Most butterflies lay single eggs on separate plants, but mourning cloaks lay up to 250 round yellow eggs in a tight, one-layered cluster around a twig. Once eggs are laid, the adults die. Within a few days, the eggs hatch and tiny caterpillars begin to eat, grow and molt. Boy do they eat! With so many ravenous larvae in one area, they often defoliate the shrub or tree branch. Don't be alarmed. The tree survives and responds by sending out new growth after the caterpillars leave.

The black larvae are decorated with branched black spines. They have four pairs of bright red prolegs. If disturbed, the caterpillars twitch and wave their bodies sinuously to ward off would-be predators.

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WISCONSIN NATURAL RESOURCES

August 2000

Volume 24, Number 4



SCOTT NIELSEN

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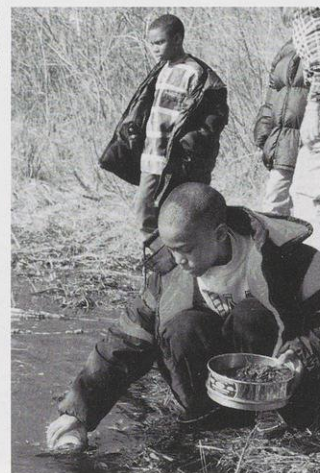
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smacks an articulated "viggler." See
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WWW.STAMMPHOTO.COM

BACK COVER: Bass Lake Fen State
Natural Area, Waushara County.
(inset) Fringed gentian (*Gentiana
crinita*). THOMAS A. MEYER, Mount Horeb, Wis.



Four seasons at

Just a short trip from Appleton and Green Bay, the Navarino Wildlife Area offers an ever-changing pageant of wildlife, plants and landscapes.

Robert J. Zimmer

We stood in the coppery glow of an early spring twilight, watching the dancing cranes with wonder. There were 16 in all — striking, graceful birds painted by the light in a soft fawn hue, leaping and prancing along the water's edge. Their strong cries resounded across the countryside. As light faded into darkness, the sandhills took flight, wings gently tapping a flight rhythm to carry them swiftly over the ridges. Spring had come to Navarino.

Navarino Wildlife Area ranks as one of Wisconsin's top-rated wildlife viewing areas and public hunting grounds. The 14,500-acre property in southern Shawano County (near the Shawano, Waupaca and Outagamie county lines) receives a great deal of hunting pressure during the fall as it is located near the heavily populated Fox Valley. Yet, with

easy access, abundant parking, spectacular scenic beauty and well-managed habitat, opportunities for watching wildlife year-round have never been better.

Once part of a glacial lakebed formed about 12,000 years ago, the waters here receded to form swampy lowlands and rich forested uplands. As the glaciers melted, massive sand ridges sculpted by wind and water formed the rolling landscape.

The returning sandhill cranes signal the start of nature's year at Navarino. They arrive with the first billowy warmth of March, about the same time as the season's first wildflower — skunk cabbage — blooms in the wetlands. Sandhills have benefited greatly from habitat development that has created a meandering mix of grasses and marshes at Navarino. Resident sandhills are here from March through Octo-

Navarino

ber. When cranes “dance,” a single bird or an entire flock will leap, twirl, scamper and bow in one of the most elaborate courtship displays and bonding rituals in the natural world.

With April and May comes a breathtaking display of wildflowers in the woodlands. Low wet areas and roadside ditches sparkle with flashy marsh marigolds; their lush green leaves and brilliant yellow blooms provide the season’s first splash of color. Colonies of bloodroot and May apples open big white waxen blooms and spread their huge umbrella leaves. Delicate wood anemones, violets, wild geranium and hepatica bloom en masse in shades of purple, yellow and white.

Then, the grand finale — trilliums, blooming by the thousands, blanketing the hills and forests like snow that never melted away.



SCOTT NIELSEN

The sounds of love

Spring evenings in the marshy lowlands are filled with the bizarre courtship displays of American woodcock and snipe. Just after sunset, the male woodcock struts about his private dancing ground, “peenting” loudly. Suddenly he explodes into flight, circles higher and higher, and bursts into bubbly song before zigzagging back to his dance floor. Common snipe perform an equally stunning courtship dance. The bird spirals upward in widening circles to a height sometimes reaching 300 feet, then sets his wings, spreads his tail and swoops to the ground, producing a

There’s always something to see or do at the Navarino Wildlife Area. Watch yellow warblers feed their young in spring. Look for starflowers in early summer. See migrating geese in fall. Take an ice fishing class in winter.

strange pulsating “woo-woo, woo-woo” growing louder and louder until he pulls from his death-drop just a few feet from the ground.

While the common snipe sings his courtship song with his tail, the ruffed grouse announces his intentions with his wings. Throughout the spring woodlands, drumming grouse thunder from their forest log perches.

Warbler time

Early mornings, a thin mist drapes the temple-like aisles of giant pines. Three whitetails wander through the arching fern oasis like ghosts in the shadows. A gentle rain — barely more than drizzle — moistens the woodlands and the

loud, clear song of the northern waterthrush rings through the heavy morning air. Warbler watching is a highlight of a Navarino spring. Along with northern waterthrushes, expect to see or hear as many as 30 species, including colorful yellow warblers, common yellowthroats, magnolia warblers, black-throated greens, American red-

starts, chestnut-sided, black-and-white, and more!

One of the best places on the property to observe warblers and other wildlife is the Navarino Nature Center, on Lindsten Road within the southern refuge portion of the wildlife area. The center offers a large butterfly garden, a forest boardwalk, and a trail system that winds through the high sand ridges, large prairie, sedge meadow, willow, aspen thickets and marsh.

Summer's chorus

Thunder grumbles on the western horizon. The shadow of the coming storm's massive anvil darkens the sky. Sturdy bracken fern and royal fern line the rolling trails and swaths of sensitive fern carpet the wet lowlands between the ridges.

Graceful wild columbine and Canada mayflower still bloom on the hilltops. The storm looms closer, rumbling louder in the distance, the sun hidden now behind a veil of hazy clouds.

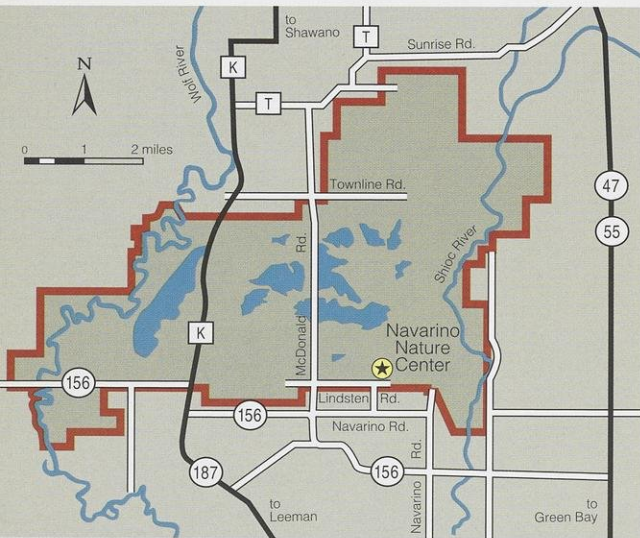


SCOTT NIELSEN

A crystal-clear pond reflects the fortress of birch and oak. Dragonflies dance across the surface. A green frog strums to break the silence, and from the shadows of the fringing cedars, the clear, liquid song of the veery rings out. The chorus of the woodland thrushes has begun.

The song of the veery floats effortlessly across the calm water, joined by another farther down the shore. Another

Navarino's wetlands and flowages attract lots of birds and wildlife. It's not far from Green Bay, Neenah, Menasha, Stevens Point and Wausau. Enjoy a day trip to the new Nature Center. Hike the trails and bring your binoculars.



MOONLIT INK FROM A MAP BY KANDIS ELLIOT



Prairies at their peak

The colors of autumn set the woodlands ablaze and the hills are painted in fiery shades of yellow, gold, orange and red. These cool fall days welcome the noisy return of Canada geese. Resident birds are joined by migrating flocks from the north, and goose numbers annually peak at several thousand birds during fall migration. Large numbers of ducks — mallards, teal, wood ducks, ring-necked ducks and more — add to the cacophony.

Navarino's wetlands are managed to



SCOTT NIELSEN



DNR NAVARINO PROPERTY MANAGERS



DNR NAVARINO PROPERTY MANAGERS

Enjoy the sights in every season: (top) wild sarsaparilla in late summer, (middle) a quiet rest stop at the well pump in fall, (bottom) a walk near frosted cattails in early winter. (right) Rounding up bugs as late as October makes a fun field day.

er woodland thrush, the American robin, chimes in with its cheerful and familiar song.

The cedar swamp is a haunting place to spend a quiet summer evening. Ferns and skunk cabbage whorls decorate the flooded forest floor. Exquisite starflowers grace the moss-coated stumps and crags, and jack-in-the-pulpits, Virginia waterleaf, and wild sarsaparilla bloom in abundance. Eight-spotted forester moths, black and white, dance among the ferns, and the dusk rings with the rich "TEA-cher, TEA-cher" song of the ovenbird. The darkness deepens and the plaintive sweet voice of the white-

throated sparrow drifts slowly through the forest shadows.

Lightning flashes more vividly on the night horizon. In the marsh, green herons and great blue herons stalk the fertile shallows. A family of American coot scuttles through the flooded wetland and a lone northern harrier makes a final sweeping pass over the rippling marsh grasses.

The willow thickets and ditches are ablaze with sparkling fireflies. Lightning flashes wildly as the storm rages just to the north and west. Hot, hazy days and firefly nights: this is summer at Navarino.



STEPHEN J. LANG



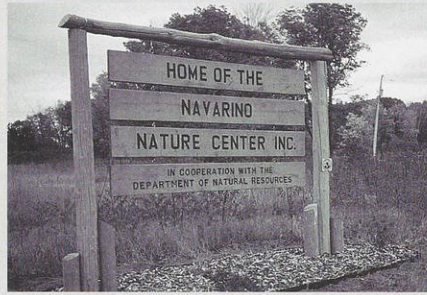
DNR NAVARINO PROPERTY MANAGERS

Nurturing their nature

Back in 1985, a group of Shawano County residents recognized their communities were growing but the nearest places for school groups to learn about the environment were at the six nature centers in Outagamie County, a long drive away. The group formed Our Nature Center, Inc. in 1986 and began a search for a home site in Shawano County near the population centers of Shawano and Shawano Lake.

As luck would have it, then-DNR Wildlife Technician Glenn Kloes was struggling to meet the requests for conservation talks and environmental education from local schools. When Kloes heard of the search, he invited the group to consider a partnership with the Department of Natural Resources.

He envisioned locating a nature center at Navarino Wildlife Area. This type of partnership was uncharted territory at that time. The tireless efforts of Kloes,



Signs, trails and boardwalks were erected 10–15 years ago to make the wildlife area accessible to group visits throughout the year.

Wildlife Supervisor Jim Raber and the fledgling group produced an innovative lease, and 10-year goals were created for the new Navarino Nature Center, Inc.

The lease allowed the group to plan and construct facilities to provide environmental education on 20 acres at Navarino. During the first ten years, group members built an interpretive trail, formed cross-country ski trails, put

up a modest starter nature center, installed an outdoor amphitheater, created a picnic shelter, built bathrooms, marked a wetland for pond study, restored prairies and dug and paved a parking area. The longer-term 15-year plan envisioned building a permanent nature cen-

ter. Thanks to willing volunteers and a community that cared about environmental education, every one of these goals was achieved on schedule. Most of the money came from members, fundraising banquets and local donations. Local businesses also donated supplies and labor to construct the center. Shawano County contributed \$50,000 towards the new building, and \$40,000 came from the DNR's Stewardship Fund. Conservation groups such as Shadows on the Wolf and Wisconsin

This small building and utility shed served as a modest center for educational programs until the new nature center opened on Earth Day this year.



(ALL PHOTOS THIS PAGE) DNR NAVARINO PROPERTY MANAGERS





Deerhunters also contributed. Navarino's support group has grown to 267 members. They are working to raise sufficient funds to hire a full-time naturalist.

The Navarino Nature Center was dedicated on Earth Day, 2000. Rick Herzfeldt, conservation warden and nature center volunteer, concluded the dedication ceremony by saying, "Our strength is our people. This nature center is not one town's place, but everybody's."

provide a wide range of habitat, from sedge meadow to cattail marsh to open water. Fifteen dikes flood over 1,400 acres, and the area features seven main flowages, several ponds, and two rivers — the Wolf and the West Branch of the Shioc.

The area is well known to deer hunters for archery and gun seasons. Nearly 4,500 acres are primarily aspen — prime habitat for upland gamebirds such as woodcock and grouse.

Squirrel hunters also love Navarino's large oak stands, which produce big bushy-tails.

Fall is also the best time of year to experience the prairies in full bloom. Colorful butterflies dance and flutter among towering cup plants, coneflowers and prairie dock. Flaming goldenrod and splashy asters in pinks, purples and white decorate the meadows and forest edges. Goldfinches swarm among the prairie giants and gray catbirds scold from the fiery dogwoods. The afternoon chorus of crickets and grasshoppers swells in the last of autumn's warmth.

The season marches on, busier and busier, louder and louder, until suddenly, one day, silence falls across Navarino. The geese have moved on. The crickets and grasshoppers sing no more. There are no leaves left in the trees to rustle in the late autumn breeze. Even the goldfinches have lost their bubbly effervescence. This is December.

Challenging trails and high ridges provide prime cross-country skiing and snowshoeing opportunities for winter visitors. The snow-covered hills offer wonderful wildlife viewing as well. White-tailed deer and wild turkey travel along the ridges. River otter, mink, rabbits and weasels bound and slide along the hillsides. Flashy woodpeckers brighten the bare hardwoods and large roaming flocks of juncos, chickadees, nuthatches and blue jays sweep through the winter forest.



Large roosts of crows gather in the evergreen boughs late each afternoon, their loud raucous cries echoing through the hills. Before long, February will turn to March. The slow trickle of water in the wetlands will again flow. A south breeze will bring the gentle warmth of another spring and with it, the sandhills will sing, dance and welcome another year at Navarino. □

Robert J. Zimmer is a freelance writer from Neenah.

Even in the dead of winter you can see woodpeckers, nuthatches or you might come upon a raucous gathering of crows.



GREGORY K. SCOTT





Don't breathe a word!

Roger Drayna

I will tell you only this much. My secret fishing place is a brook trout creek 130 miles northeast of Wausau. It's not all that secret, of course, very few places are these days. But, I fish it at a hard to reach place and only midweek when the fish have had a few days to quiet down.

The limit is five, not much of a reward for a 260-mile round trip. That's why I almost always make the jaunt alone. My fishing pals don't care to travel that far for five small brook trout, not even when I promise to spring for breakfast. My wife will go along if it's late enough in the season for her to pick a couple of quarts of blueberries.

For the most part, this is a solitary venture. Since I'm out to capture a sense of wilderness as much as to catch pan-

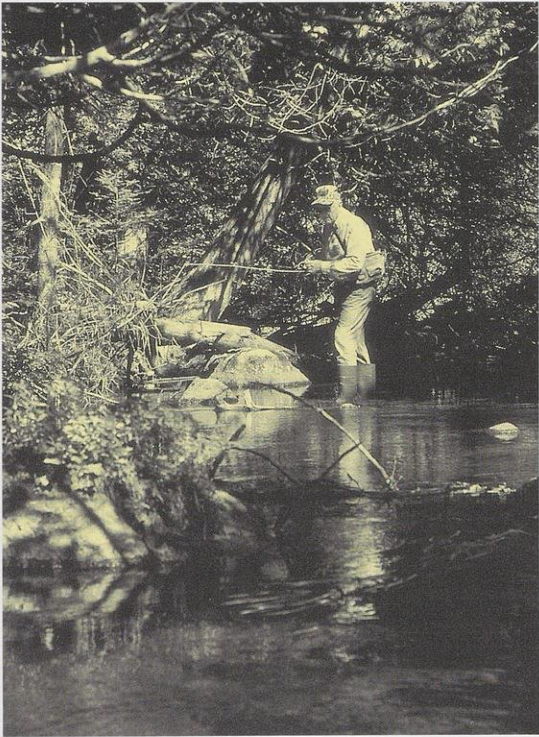
sized brookies, I rather like it that way.

Seven-inch fish are keepers. Eight inches is about average. Nine-inches are whoppers. I did catch a 10-incher once, and, in these tight quarters, it seemed like a whale. They are always thick and firm fish, and red-meated — genuine, native, wild trout.

My trips begin in the gray of first light. By mid-morning my Little Red Truck has labored the last few miles across what locals refer to as the "Plains" and is tucked into the shade of a picture book stand of Norway pine.

I don't exactly look like a page out of the L. L. Bean catalog. I'm wearing barn boots, Levis, and a long-sleeved shirt. I reek of insect repellent. The pack of cheap cigars in my shirt pocket is a defense against deer flies. When I light up one of these stogies, I can hardly stand it myself.

I follow a game trail to the creek which is gin-clear, icy cold, crisscrossed with logs, and shaded by a tangle of tag



BOB PILLS

Cramped, buggy, snaggy and pure heaven when the brookies are biting.

On a small stream, in a
tangle of branches and
skeeters, a trout
finds his oasis.

alders. It burbles along, almost inaudibly.

This is trout fishing as I learned it growing up along Lake Superior. It has the look of places I haven't visited in decades — State Line Creek, the Little Black, the Little Amnicon, the Silver. It's a quiet business of dapping worms into dark pockets or working patiently to get them under mossy logs. Get it right, and the leader starts twitching almost immediately. Tread carelessly or jostle an overhanging branch, and swift forms dart for cover; I might as well move on.

On a bite, I lift the tip of the six-foot rod just enough to feel resistance. A quick flip and the trout is out of the water. Sometimes, it will get hung up on some brush, flip furiously, come off the hook, drop back into the creek, and vanish in the blink of an eye.

It rarely takes much more than an hour to fill my limit. By then I'll have lost a half dozen hooks under logs or solidly embedded a few in stumps. I'll

be running low on worms — these wild brookies are clever thieves. I'll have done some swearing, not always under my breath. Understand that this is not clean, genteel fly casting. This is a sweaty, brush in the face, mosquitoes in the ears kind of fishing.

And these solitary pilgrimages are about much more than limit catches. First of all, there is the country itself, still wearing the look of wilderness. There are the lichen-splotched rock ledges, ragged pine tops against the horizon, and, always, there is solitude.

Warblers make buzzing little sounds and flit around me. There is otter scat on logs. Sometimes there will be a rustling in the underbrush, and I'll be rewarded with a close-up look at a mink. I see deer and there is the special joy of watching a doe slip away with her spotted fawn. Grouse always manage to sit tight and explode into thunderous, heart-stopping flight at the very last instant. Once, I got to watch a bear

foraging in a rotted stump.

I take time to admire the cedars, the black spruce, and the tamarack — gnarled and twisted and lovely to my eye. There is a dampness and spiciness in the air. The world, viewed from deep in these woods, seems completely all right.

When I have creeled the five fish, it's back to the Little Red Truck. I'll pop a can of something cold and inhale a thick meat sandwich. I've always got time to wander through the stand of Norways I call Neil's Grove and remember the good man who once owned them. In the remembering, I'll think of the trout we caught, the rivers we paddled, and the grouse we sometimes tumbled out of swift flight.

Then, I'll aim the truck toward home, comfortable in knowing Wisconsin still has places like this. □

Roger Drayna writes from Wausau.

Grappling with

The spiked head of reed canary grass towers in a southern Wisconsin wetland.
(right) Reed canary grass invading a sedge meadow at an Ozaukee Co. field station.



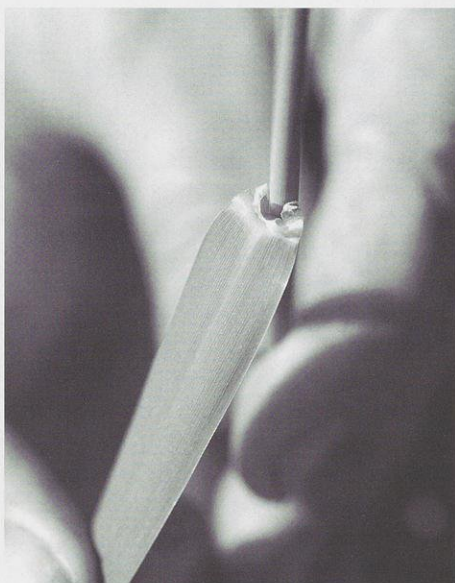
the green giant

Reed canary grass grows in tall, dense stands of bright green, but it's hardly a sign of a healthy wetland.

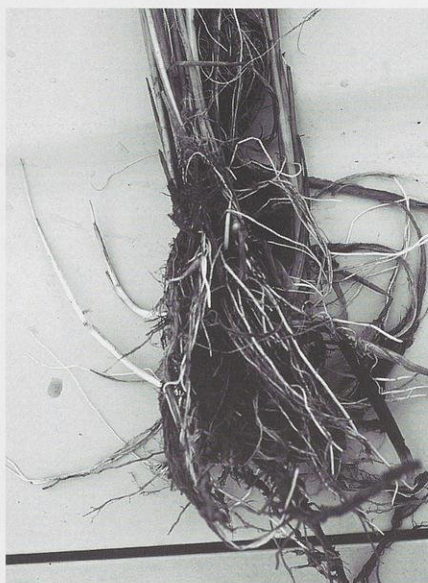
Amy Groshek

"LOOK AT ALL THAT PURPLE," SAID MY FRIEND, HIS FOREHEAD WRINKLED IN FRUSTRATION. The highway skirted a large marsh, and I followed his gaze out the window. Surrounding the occasional purple streak of loosestrife flower were huge swaths of a bright green, thick-growing grass. Unnoticed, reed canary grass (*Phalaris arundinacea*) had invaded and subdued this wetland long before the purple loosestrife arrived.

"Reed canary grass has more influence over more acres than purple loosestrife, but because it's green and not showy, we don't notice it," says Dan Spuehler, management specialist for Wehr Nature Center in Milwaukee and former member of the State Natural Areas Management Crew for the DNR Bureau of Endangered Resources. Reed canary grass is native to North America, but a European subspecies has become an invasive pest in American wetlands, Spuehler says.



(left) Look closely to distinguish reed canary grass from other marsh vegetation. Where the stem meets the broad leaves, this grass has a white sheath or membrane called a ligule.
(right) The roots are pinkish and curve back toward the surface interweaving in a dense mat.



ALICE THOMPSON (FAR LEFT) ROBERT QUEEN

English farmers began cultivating the grass around 1824 and brought the cultivar to the eastern U.S. in the 1850s.

Reed canary grass. (inset) Orchard grass (*Dactylis glomerata*) a long, leggy native grass that is often mistaken for the invasive species. Identify grasses properly before beginning any treatment.

The plant was hardy, grew in waterlogged marginal soils, spread easily and provided forage early in the growing season. The grass was promoted nationwide and farm workers were photographed planting and harvesting reed canary grass in Coos County, Oregon in 1885.

A United States Department of Agriculture pamphlet from 1929 describes the grass as "an excellent hay and pasture plant, both succulent and palatable that deserves a wider use...particularly on wet lands." Botanists, however, were already noting the invasive character of the plant. In 1940 C.C. Deam, in *Flora of Indiana*, wrote "...my observation with reed canary grass is that it is wise not to plant it if one wishes ever to get rid of it."

Wetland managers and scientists alike repeat Deam's sentiments today. DNR's Horicon Marsh Naturalist Bill Volkert notes that the stems of canary grass tend to lie down late in the summer season. The plant fails to shelter nesting wetland birds and pheasants. Young birds and



ROBERT QUEEN (INSET) ROBERT FRECKMANN

Tricks to identify wild grasses

Grasses are often difficult to identify. By paying attention to a few details, you can find the reed canary grass in your area. Refer to a credible guidebook to grasses or consult an expert for confirmation, especially before beginning control measures.

Reed canary grass has a two- to six-foot stalk with wide, flat blades. The flowering body is branched and dense, and blooms from May to August. Examine the stem at the base of each blade. Look for a long white membrane called a ligule between the stem and leaf blade and continuing up the stem to the point where the blade folds away. The ligule of reed canary grass is notably long and transparent. Rhizomes (roots) of the plant are pink, and hook towards the surface within four to six inches of the parent, forming a thick interwoven mat. Also look for distinguishing features of the plant with a hand lens. Individual spikelet (seed) scales are hairless, and inside the scales, each spikelet bears two distinct tufts of hair.

Native bluejoint (*Calamagrostis canadensis*) lacks a long transparent ligule and has a continuous circle of hairs around each spikelet instead of two tufts. Non-native orchard grass (*Dactylis glomerata*) lacks a long transparent ligule and has hairs on its spikelet scales.

mammals have difficulty navigating the dense stands reed canary grass forms. The stems are also too weak to serve as singing perches and nesting sites for songbirds. Further, the seeds do not provide much nutrition for small mammals.

Joel Trick of the U.S. Fish and Wildlife Service in Green Bay, conducting a 1997 study for the U.S. Environmental Protection Agency, found that small Wisconsin wetlands dominated by reed

Controlling the spread

HERBACEOUS WETLAND COMMUNITY	HERBICIDE	CONTROLLED BURN	CUT OR MOW	PLANTING NATIVE SPECIES
Reed canary grass (RCG) in small patches; diverse, high-quality vegetation.	Glyphosphate (6 percent) treatment early spring, fall. Remove seed and spot treat in summer. Dalapon and Amitrol effective only on seedlings to three weeks.	Not recommended for RCG management alone.	Manually cut RCG three times a season (occasional clipping stimulates growth).	Not needed for small patches of RCG (less than a meter in size).
RCG patches common but still mostly native vegetation.				Consider seeded cover crop or native pioneer species where patches are extensive. Bare spots from treatment at risk to RCG.
RCG dominant with few native species, no rare species.	Glyphosphate (1.5 percent) direct spray without dripping.	Late spring or early to mid-fall. Repeat yearly. Low cost alternative to herbicide. Requires more time.	Requires repeated treatments. May release seeds. Remove mulch cut material.	Needed where native seed bank is sparse. Recommended: cordgrass (<i>Spartina pectinata</i>), sawtooth sunflower (<i>Helianthus grosseserratus</i>), and cup plant (<i>Silphium perfoliatum</i>).
RCG monoculture with or without native seed bank.	Wick or spray 6 percent glyphosphate. Burn three weeks later to kill resprouts and seedlings. Possible reapplications.	Fall burning effective, may require herbicide prior to burning.	Without seed bank use in combination with herbicide.	Match seed mix to plant community suggested by native seed bank.

Condensed from guidelines compiled by the Reed Canary Grass Task Force. For more information contact the Wisconsin Reed Canary Grass Task Force c/o Joanne Kline, WDNR, P.O. Box 12436 Milwaukee, WI 53212, or call her at (414) 263-8756.



Phalaris arundinacea

1. Leaf and stem, x 1
2. Florets, x 10
3. Glumes, x 10
4. Panicle, x 1



ALICE THOMPSON

Controlled burns are only recommended where reed canary grass is widespread. Burning is often used in combination with herbicides or other treatments to retard future growth.

canary grass were rarely used by migratory birds.

And botanists statewide lament the loss of plant diversity in areas where reed canary grass has successfully invaded.

Wetlands ecologist Alice Thompson studied reed canary grass for her master's project. "I had this grand idea I was going to figure out what would control it," she said. The grass invades wetlands easily because it grows early in spring and shades out native plants that don't grow until later in the season. Its seeds shatter and spread through the air or by floating on water, so that any disturbed area downstream of a reed canary grass stand is at risk. The plant also loves nitrogen, and flourishes where urban runoff or siltation raises nutrient levels.

But high urban runoff and siltation are not factors in stable wetlands. Reed canary grass needs help to invade an area. "Disturbance is the real factor," says Thompson. Again and again, the cause of invasions is disturbance of some sort, whether it's fluctuating water, a change in nutrient levels, siltation or devegetation.

As botanist C.C. Deam suggested, removing established reed canary grass is very difficult. Each invaded area differs in size and ecology, and each requires careful planning and follow-through. Thompson is writing a landowners'

guide to wetland restoration, which will set out basic techniques that can be adapted to a site's individual needs.

To help those working privately and through government organizations to control the plant, Joanne Kline of DNR's Southeast Region formed a Reed Canary Grass Task Force. "The task force pulls together people from all areas — research, education, landscape design, landowners, and managers," says Kline. "Effective control takes both getting the information out to people who will use it and getting feedback to come up with even better ideas."

The task force published guidelines, "Reed Canary Grass Control Methods in Herbaceous Wetlands," that outline and discuss various management strategies. Members also serve as contacts for those seeking advice or information.

One member, Joy Zedler, the Aldo Leopold Professor of Restoration Ecology at UW-Madison, tried control techniques on an invaded portion of the UW-Madison Arboretum's Greene Prairie. On seven wetland acres, Zedler is investigating which native species can compete with reed canary grass when combined with prescribed burning.

A main component of the study, says Zedler, will be the human community's response. Some properties might have to be flooded or drained to restore original hydrology. A genuine attack on the invasion also requires changing the

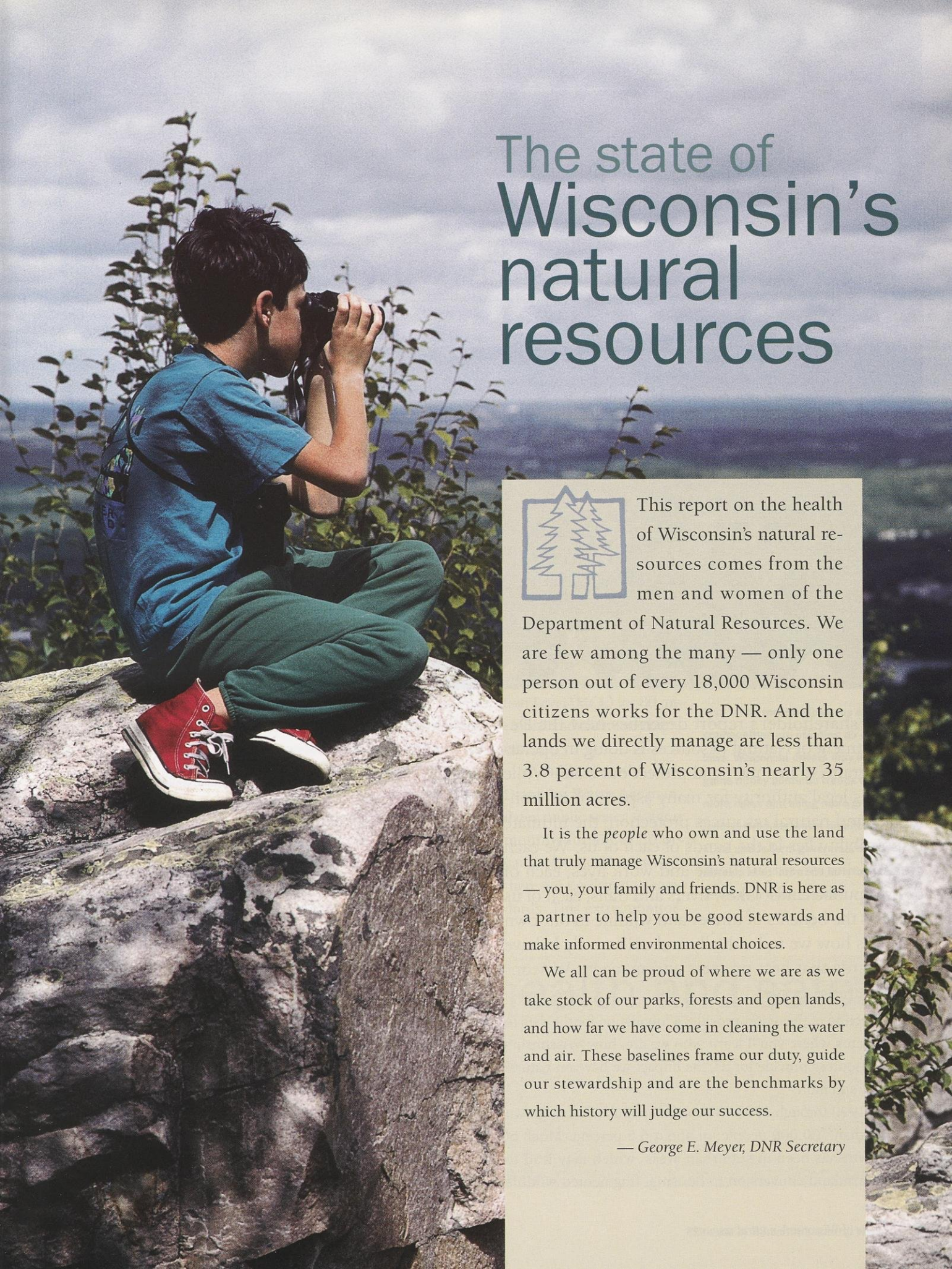
flow of storm runoff from homes and public properties within the watershed. Zedler is curious about how much people are willing to pay to preserve the wetland. As invasive control efforts increase, public sentiment becomes crucial.

Even with so much attention on the harmful aspects of reed canary grass, some soil stabilization and stream bank restoration experts say the plant does have a few redeeming qualities. In disturbed areas vulnerable to erosion, few other plants grow as quickly and hold soil as well as reed canary grass. Trout stream restoration would become difficult without reed canary grass's thick, matted root structure to stabilize banks and provide habitat, Zedler says.

But there are alternatives to reed canary grass. "Anywhere it effectively controls erosion there are native plants that can take its place," says Dan Spuehler, listing several native grasses and sedges in potential mixtures. "It's an easy option." Spuehler supports using affordable native plant species and keeping reed canary grass out of as many wetland areas as possible.

Controlling exotic species is challenging and time-consuming, but restoring native plant diversity is a rewarding experience. Learning to identify native and exotic species greatly enriches one's understanding of natural systems. Reed canary grass is not the first invasive plant to grow its way into our native habitats, and it will not be the last, but information and options are available to check its progress. □

Amy Groshek studies botany and writing at the University of Wisconsin-Stevens Point.



The state of Wisconsin's natural resources

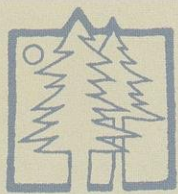


This report on the health of Wisconsin's natural resources comes from the men and women of the Department of Natural Resources. We are few among the many — only one person out of every 18,000 Wisconsin citizens works for the DNR. And the lands we directly manage are less than 3.8 percent of Wisconsin's nearly 35 million acres.

It is the *people* who own and use the land that truly manage Wisconsin's natural resources — you, your family and friends. DNR is here as a partner to help you be good stewards and make informed environmental choices.

We all can be proud of where we are as we take stock of our parks, forests and open lands, and how far we have come in cleaning the water and air. These baselines frame our duty, guide our stewardship and are the benchmarks by which history will judge our success.

— George E. Meyer, DNR Secretary



Wisconsin's natural resources



JEAN B. MEYER



DNR PHOTO

This shareholder's report describes how the Department of Natural Resources is doing in operating programs to maintain and protect our state. While DNR has legal authority for many aspects of environmental and natural resources protection, the ultimate responsibility lies in the hands of each of us. We each create pollution in our home and work lives; each of us uses public lands, lakes, rivers and trails; each of us harvests the benefits of timber and wildlife in our own way. It is how we individually and collectively behave as stewards that best protects and manages Wisconsin's natural resources.

This section of the report provides a foundation for the data to follow. Here's where you'll learn who we are, how Wisconsin's natural resources provide for us, the impact we have on natural resources, and more.

From 1990 through 1998, Wisconsin's population has grown by more than 300,000 people, or about 6.5 percent. Much of that growth has been in suburban areas, which may lead to sprawl, farmland conversion to housing, fragmented wildlife

habitat and increased demand for public environmental services such as water and wastewater treatment.

Wisconsin's economy, along with the national economy, has been growing over the past several years. From 1990 through 1997, Wisconsin's gross state product grew by 24 percent (adjusted for inflation).

Energy usage in Wisconsin is an indicator of our efficiency. From 1990 through 1997, our total energy consumption grew by slightly more than 20 percent — less than the growth in gross state product, but more than Wisconsin's population growth.

(above left) The 1990s saw a 6.5 percent growth in Wisconsin's population, while energy consumption (above) grew by slightly more than 20 percent. Each of us acting as stewards of Wisconsin's natural resources can make a difference.

Natural resource laws protect the land, surface waters, groundwater and air for humans and other living things. Here's how our livelihoods and recreation benefit from vigilance and awareness.

Air quality

Air quality in Wisconsin has steadily improved over the last three decades. Emissions of sulfur dioxide, carbon monoxide, particulate matter, and ozone precursors (volatile organic compounds and nitrogen oxides) are lower than in the mid-1980s.

Most Wisconsin businesses and municipalities are doing a good job of complying with state laws to protect air quality. In 1999, the DNR performed more than 1,500 on-site inspections, reviews, and investigations, 96 percent of which found that businesses meet state air quality laws.

Changes in our driving habits will become more important as Wisconsin and other states try to meet stricter federal ozone standards. Although automakers have significantly reduced emissions from cars, as a society, we may offset those gains by driving more vehicles more miles, and by driving larger vehicles that require more gas.

DNR has worked with private and public sector partners to help reduce ozone concentrations when conditions are ripe for unhealthy ozone levels. More than 240 southeastern Wisconsin businesses, community organizations and municipalities have joined Wisconsin Partners for Clean Air. The partners voluntarily take steps to reduce ozone-forming emissions on hot, humid days. The number of days ozone reached unhealthy levels dropped from an average of 14 days each year in the 1980s to 3.8 days per year most recently in 1999.

Safe drinking water

The United States Environmental Protection Agency (EPA) requires operators of public water supply systems to monitor their water to make sure it does not exceed the Maximum Contamina-



DNR PHOTO



ROBERT QUEEN

tion Level (MCL) for 80 microbial and chemical contaminants.

In addition, the Safe Drinking Water Act mandates public water systems monitor for about 50 organic chemicals for which there are no drinking standards. This extra monitor-

(top) While most businesses and communities are meeting air quality laws, Wisconsin drivers may offset those gains if they continue trends of driving more miles and using more gas.

(above) Drinking water monitoring allows state and federal governments to develop standards and strategies to protect our water supplies.

Protecting public health and safety





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ing allows the state and federal governments to identify new contaminants for possible regulation and to develop treatment and prevention strategies to protect drinking water supplies.

Most Wisconsin citizens receive water from systems that comply with state and federal health standards. Just six percent of the water utilities had violations in 1998, and many of these were for paperwork problems, rather than for contaminants in the water.

The percentage of Wisconsin's population served by public water systems with no violations for biological and chemical contaminants has remained steady, in the mid-to-high 90 percent range. But violations of standards for radiation in water — such as uranium, radium and radon, which occur naturally when soils and rocks dissolve into groundwater — are increasing. This is largely because EPA and Wisconsin are not requiring systems to take corrective action until there are federal standards for radionuclides in drinking water.

Wisconsin's private well owners are not required to annually test their water to assure that contaminants do not exceed allowable health standards. But about 10 percent of the private well samples analyzed most recently for nitrate in rural areas show groundwater contamination above the state groundwater standard.

Groundwater is plentiful in Wisconsin, but concern is growing about its limits and its susceptibility to contamination. Natural shortages of groundwater have occurred due to weather condi-

Polluted runoff threatens the quality of our lakes, streams and groundwater. Legislative authority granted in 1997 allows state agencies to control runoff from farms, municipalities and construction sites.

tions and geologic setting. Pollution has also limited groundwater use in several areas.

Surface waters: Our lakes and rivers

The sheer number of lakes and rivers in Wisconsin outstrips the state's ability to test the quality of every water body. We focus our monitoring efforts on lakes and rivers with historic water quality problems, or where the waters are most vulnerable to pollution due to natural conditions or overuse by people. Data indicate that Wisconsin has generally healthy water, but that some specific lakes and rivers fail to meet standards.

The Wisconsin Fish Distribution Study is one tool to assess the health of many of the state's waters. Scientists collect fish from 7,500 stations looking for signs of species that we know need clean water to survive (smallmouth bass, rock bass, brook trout) and the variety of fish species (richness). Environmentally sensitive species, for example, were found at 83 percent of sampled stations in rivers, 63 percent in streams, and 56 percent in lakes. These species would rarely occur in degraded waters.

Runoff from farms, cities, construction sites and other areas is now one of the greatest threats to Wisconsin's water quality, degrading or threatening about 40 percent of our streams (as measured in miles) and about 75 percent of our inland lakes (as measured by surface area). It also threatens many of the Great Lakes harbors and coastal waters. DNR and the state Department of Agriculture, Trade and Consumer Protection (DATCP) have had voluntary programs in place since the late 1970s to address the problem. In 1999, with legislative authorization, the two agencies wrote rules that will require farmers and small cities to control runoff. The proposed changes also would set standards for municipalities, real estate developers and others to control runoff from construction sites and developing areas.

Environmental contaminants

The majority of waters tested in Wisconsin do not contain contaminants such as mercury or PCBs at levels that pose a health risk to humans who regularly eat fish caught from those waters. But Wisconsin's state fish consumption advisory currently lists 370 lakes and river sections where fish contain contaminants; we add about 10 to 12 new sites each year. The additions are the result of the state's continued monitoring of new sites; they do not necessarily reflect an increase in pollution.

Levels of PCBs and mercury, the two most common contaminants found in Wisconsin fish, have remained fairly steady over the past decade. PCBs were banned in 1976, but they are still found in large concentrations in sediments in the Great Lakes, their tributaries and the Mississippi River. Mercury occurs natu-

rally, but the primary source of additional mercury in Wisconsin waters is air pollution from coal combustion at power plants.

Human population pressure can degrade near-shore and shoreline wildlife habitat. Since the 1960s, two-thirds of the larger, previously undeveloped lakes in Wisconsin's Northwoods have been developed, and the average number of homes on privately owned shorelands has more than doubled. The number of permits for seawalls has tripled, and the number of permits for piers, near-shore ponds, and other structures has swelled to 10,000 a year.

(below) Air monitoring stations such as this measure mercury stored in lichens. The primary source of mercury in Wisconsin waters is air pollution from coal-fired power plants.

(bottom) Booming shoreland development has led to more protective local and county zoning and new DNR efforts to work with partners to protect shorelands.

Many counties are enacting more protective standards for lot sizes, setbacks from the water's edge, and buffer zones next to the water. Through its Northern Initiative effort with local governments, citizens and organizations in the Northwoods, DNR is using education, incentive, and acquisition programs to protect shorelands.



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Wastewater discharge

Wisconsin businesses and municipalities are doing a very good job of meeting current state laws governing the wastewater they discharge to rivers and lakes. In 1999, 97 percent of the regulated dischargers to lakes and rivers complied with state laws regarding those discharges. Wisconsin received more awards than any other state for outstanding wastewater operations and maintenance.

Waste management

The total amount of solid waste sent to Wisconsin landfills in 1999 continued to grow, in part because of a booming economy in which commercial and industrial operations are producing more goods and services, and generating more waste. The rise also reflects the amount of solid waste coming into Wisconsin from other states, which now constitutes about 20 percent of the total. Wisconsin's solid waste disposal industry has about five years' worth of disposal capacity available, a level it has maintained over the last decade.

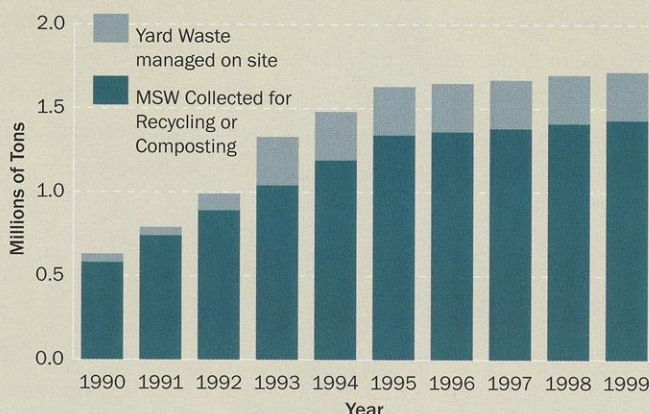
Approximately 36 percent of the waste generated by Wisconsin households and commercial facilities is recycled or composted, compared to a national average of 28 percent in 1997. A 1998 survey showed that 97 percent of Wisconsin households recycle, diverting from landfills about 40 percent of the wastes our residents and commercial establishments generate. From 1990 to 1998, recycling saved the equivalent space of five average-sized landfills or expansions.

In the late 1990s, the department successfully completed a 10-year effort to clean up 15 million waste tires that had accumulated at 640 sites around Wisconsin. Today, processed waste tires are reused as fuel.

Property can be contaminated by industrial or commercial activities. Wisconsin law requires owners to report contamination to DNR and to restore the site. The most serious long-term clean-up projects occur when pollutants have moved through the soil and contaminated groundwater. Nearly 70 percent of the remaining cleanup sites in Wisconsin were created when old underground petroleum storage tanks leaked. All of those older tanks were to have been removed or upgraded by Dec. 31, 1998.

About 1,200 spills of hazardous substances are reported annually statewide, with one-third occurring in the more heavily populated southeastern part of Wisconsin. Petroleum products are the most commonly spilled substances. Nearly 45 percent of all spills in Wisconsin occur on ground. Excavating the contaminated soil and refilling with clean soil usually cleans up these spills. When a spill occurs on or near surface water or seeps into groundwater, it presents a greater risk and requires a more inten-

Municipal Solid Waste Diverted



TRACEY TEDECKI



DNR PHOTO

sive response.

There has been a major state effort in recent years to clean up contaminated urban land called brownfields, where real or perceived contamination has caused property to become abandoned or under-used. Putting brownfields back into productive use returns them to the tax base, brings jobs to populated areas, takes advantage of existing roads and utilities, and helps conserve other land for farming, recreational areas and green space. A good example is Kenosha's Harborpark Development Project, a 60-acre property on Lake Michigan that has undergone extensive cleanup and restoration after 100 years of industrial use.

DNR advises property buyers and sellers, local governments, lenders and developers about legal and technical options to manage cleanups and ensure that development does not hopscotch around a brownfield project. Property owners may obtain a "certificate of completion" when a DNR-monitored cleanup is completed. The certificate removes the owner's environmental liability for the contamination that was cleaned up.

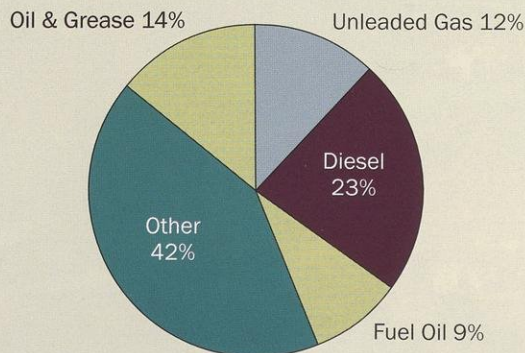
Fewer businesses are generating hazardous waste and those that do are generating less of it. DNR inspections and investigations found compliance with state hazardous waste laws in 94 percent of the cases reviewed.

Through the Toxic Release Inventory, DNR collects information on the release of toxic materials to land, air and water. Wisconsin's businesses and institutions have done a marvelous job over the last decade in reducing toxic releases — to about half of the previous levels!

(top) More than a third of all waste generated by households and businesses is recycled or composted. Yard waste composting projects (middle) and municipal curbside recycling (below left) saved the equivalent space of five landfills from 1990 to 1998.

(below) Petroleum products are the most commonly spilled substances.

Spills in Wisconsin, by Substance





Sustaining ecosystems

By using resources in a manner that provides for today's human and environmental needs while respecting the needs of tomorrow's inhabitants, we can support the diverse forms of life that make up our world now and in the centuries to come.

Wildlife

This is a period of remarkable abundance for some of Wisconsin's wildlife species, and a period requiring our utmost attention for others. A sampling of their status follows.

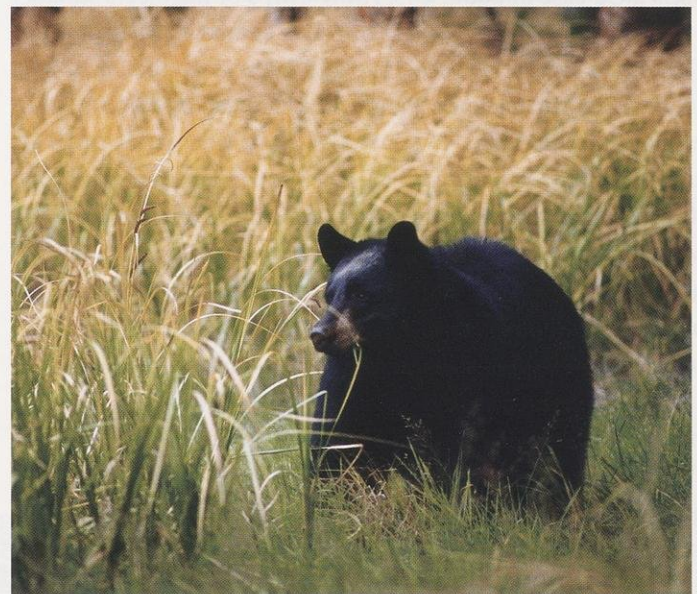
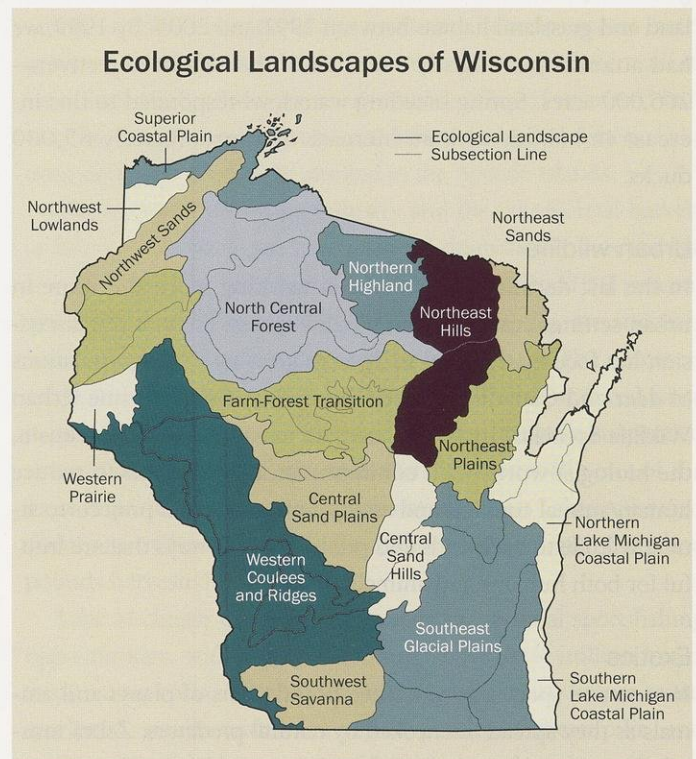
Our white-tailed deer herd is projected to reach 1.7 million animals in the fall of 2000, an all-time high. In 1999, more than 692,000 hunters harvested nearly 500,000 deer. However, there is ample evidence to indicate that the deer population this high should not be sustained and is likely harmful to our land. The deer seasons for 2000 and beyond will be designed to reduce the herd to a more healthy level of 1.1 million.

Nearly 13,750 black bears roam Wisconsin woodlands. More of us have to learn to live with the bears; in 1999 nearly 500 bears were live-trapped and relocated in response to damage or nuisance complaints. The popularity of black bear hunting has never been higher. This year, 51,000 Wisconsinites submitted an application in hopes of getting one of just 6,500 hunting permits.

The remarkable restoration of wild turkeys began in 1983 when 334 birds were transplanted from Missouri to the coulee country of southwestern Wisconsin. The current statewide population is projected at more than 200,000. This spring more than 109,000 hunters enjoyed pursuing the wily birds.

Following extensive study and public discussion, 25 elk from Michigan were reintroduced in 1995 on 315 square miles of the Chequamegon National Forest. For the last five

(above right) **An understanding of Wisconsin's diverse ecological landscapes guides DNR's management efforts for today's residents and future generations.**
(right) **A healthy black bear population is just one example of Wisconsin's abundant wildlife.**



years researchers have tracked elk movement, recorded herd reproduction and assessed compatibility with surrounding resources and human populations. The herd currently stands at about 62 animals.

In 1991 the DNR coordinated an effort to involve other Midwestern states to form the Upper Mississippi River and Great Lakes Region Joint Venture of the North American Waterfowl Management Plan. This partnership with other agencies, private organizations, and corporations pooled resources to protect and restore wetland and grassland habitat in each state. Wisconsin's goal is to protect and restore an additional 400,000 acres of wetland and grassland habitat between 1991 and 2005. By 1999, we had attained just slightly over half of the habitat objective — 206,000 acres. Spring breeding waterfowl responded to this increase in habitat with an increase of approximately 85,000 ducks.

Urban wildlife

In the last decade, DNR has been working more and more in urban settings and on urban wildlife issues. Most of the discussion has focused on what to do with growing urban populations of deer and Canada geese. DNR hired its first full-time Urban Wildlife Specialist in 1999. Stationed in southeastern Wisconsin, the biologist works with communities and residents to reduce human/animal conflicts and assists communities in projects to attract wildlife to backyards and public lands in ways that are fruitful for both humans and animals.

Exotics

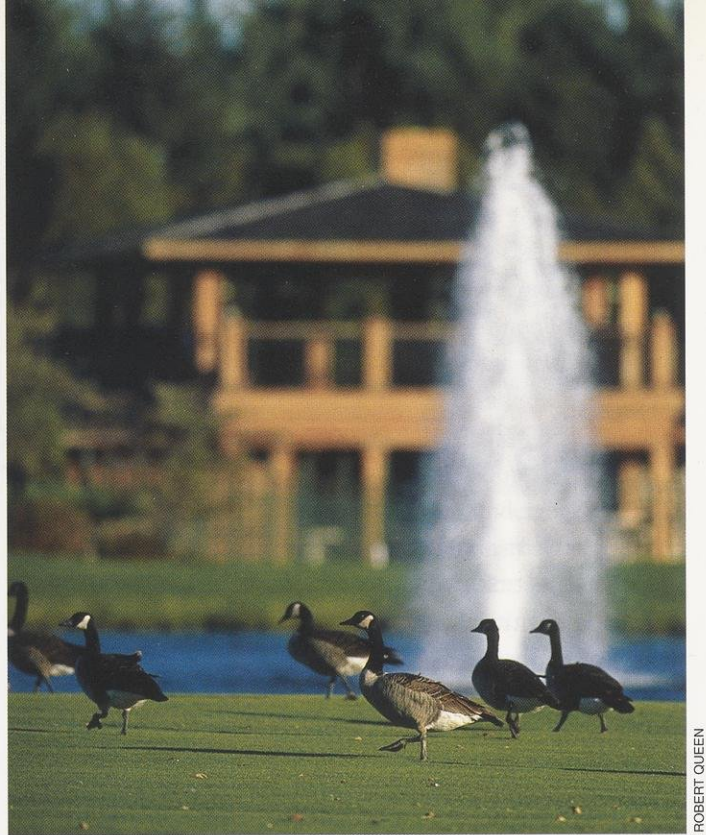
Non-native species harm native populations of plants and animals as they spread unchecked by natural predators. Zebra mussels are a case in point: U.S. Army Corps of Engineers summer surveys showed the number of native mussel species dropped from 27 to seven between 1996 and 1999 along the Mississippi River's East Channel near Prairie du Chien, with "zebras" a major factor in the decline.

DNR and partners work with boaters and anglers to prevent zebra mussels and Eurasian water milfoil from hitching rides on boat hulls, propellers, and in live well water.

A technical advisory committee is working with landowners, nurseries and others to revise Wisconsin's weed laws to prevent further spread of purple loosestrife and common buckthorn.

Endangered resources

In 1985, the Wisconsin Legislature established the Natural Heritage Inventory (NHI) to document and monitor the status of the rare plants, animals and natural communities of Wisconsin.



ROBERT QUEEN

Since then, state biologists have documented the status of plants, natural communities and larger animals such as birds, fish, and mussels through field collection, identification and mapping. Recently DNR staff have started

collecting comprehensive information on insects and lower plants such as lichens and fungi. Inventory work completed thus far indicates that hundreds of species are endangered or threatened with extirpation in our state because of past unregulated use or because their habitat has been destroyed or degraded. Future work will identify important habitat and help businesses, developers and road builders use the NHI information to prevent species from becoming endangered.

Endangered plants and animals are managed, in part, by protecting their habitats as natural areas. From a single natural area in 1950 to 326 areas today, the state and its partners such as The Nature Conservancy and other groups are maintaining critical habitats so that these endangered plants and animals will be here tomorrow to provide genetic material, strength and resiliency to our ecosystems.

Karner blue butterfly

A habitat conservation plan and agreement protecting the Karner blue butterfly was signed in September 1999 at Sandhill Wildlife Area by federal and state conservation officials. The agreement is the first of its kind in the country and a new national model. The agreement will provide a shifting mosaic of habitat sufficient to

DNR is focusing efforts on how to deal with problems from growing urban populations of deer and Canada geese, shown here on a Madison golf course.

support the butterfly's continued existence on more than 265,000 acres of Wisconsin habitat without harming local economies, costing jobs or provoking court battles. The DNR and 25 partners representing county forests, forest products companies, utilities and other state agencies crafted the plan.

Fisheries

Good habitat is the key to healthy, sustainable fish populations. In 1999, fisheries staff improved habitat on 25 miles of trout streams, 23 lakes, several pools on the Mississippi River, and this year removed a dam and restored habitat on the Baraboo River.

(below) **DNR maintains critical habitats for endangered plants and animals through its 326 state natural areas.**

(bottom) **The Karner blue butterfly is protected by a habitat conservation plan crafted by DNR and 25 partners.**

Information collected from surveys conducted during the 1990s on northern Wisconsin lakes indicates walleye populations maintained by natural reproduction averaged three to five adult fish per acre. That number drops considerably in lakes where stocking is used to maintain the population.

Results from 10 years of angler

surveys on northern lakes show anglers have better luck on lakes with naturally reproducing fish populations than on those where stocking maintains a fishery. A comparison of catch rates — the number of fish caught per hour — indicates that anglers catch, on the average, about three times more fish if they're fishing a lake with a walleye population maintained by natural reproduction.

Lake Michigan fisheries

An agreement among state, tribal, provincial, and federal agencies guides management of the Great Lakes fisheries. The "Joint Strategic Plan for Management of Great Lakes Fisheries," which was renewed in 1997, is a model for managing fisheries across state, provincial and tribal jurisdictions. Work to restore lake trout in Lake Superior has been a success and has allowed increased harvests by state-licensed commercial fishers and tribal fishers. Lake trout no longer need to be stocked in the Apostle Islands.

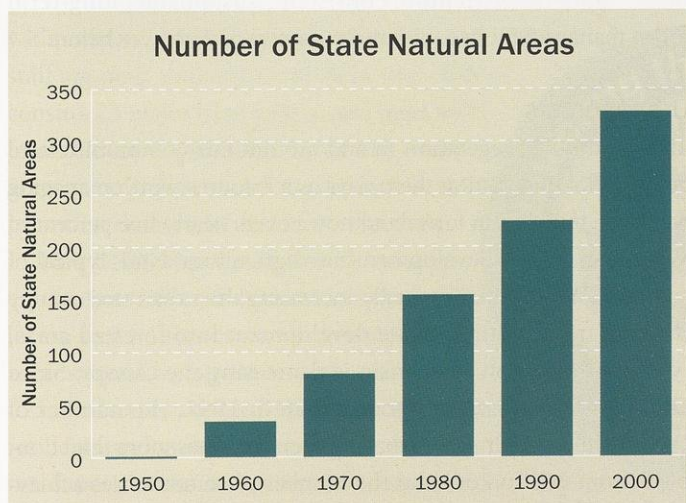
The commercial fishing industry and the commercial harvest of fish on Lake Michigan have changed dramatically over the last few decades. The number of licenses has declined 59 percent since 1980, reflecting a policy designed to stabilize the industry and support serious full-time commercial fishers. The commercial harvest of yellow perch has been significantly reduced since its peak in 1987. Commercial perch harvest has been suspended since 1996. Harvest of lake whitefish, economically one of the most important commercial species in the Great Lakes, averaged about one million pounds in the 1980s with a record 1.7 million pounds harvested in 1997.

Lake Michigan continues to provide exceptional sport fishing opportunities, with anglers devoting nearly three million hours to pursuing coho and chinook salmon, lake trout, brown trout, steelhead, smallmouth bass, yellow perch, northern pike, and walleye. The fishery is sustained by the annual stocking of more than 4.5 million salmon and trout in Wisconsin waters.

Trout management

Wisconsin has more than 9,000 miles of coldwater trout streams and leads the nation in miles of Class I high quality trout streams with naturally self-sustaining trout populations (3,500 miles). That reflects our approach to building and protecting healthy, self-sustaining trout communities by protecting and improving habitat. The use of wild trout as brood stock in the last three years has increased survival, and the trout population is increasing naturally in many streams due to use of this wild stock.

Wisconsin earmarks trout stamp funds for habitat protection and improvement instead of hatchery work. From 1977 to 1997, Wisconsin's inland trout stamp program paid for improving more than 530 miles of coldwater streams on almost 400 different waters.



DNR PHOTO

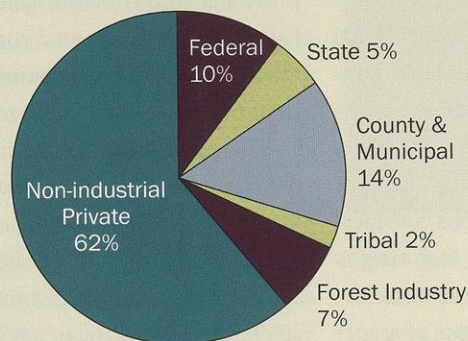


WISCONSIN DEPARTMENT OF TOURISM

(above) Lake Michigan sport anglers devote nearly 3 million hours in pursuit of trout, salmon and other Great Lakes species.

(right) The health of Wisconsin's forestland depends heavily on private landowners who own 71 percent of our forests.

Wisconsin Forestland Ownership, 1996



Dam removals

More than 3,700 dams of varying sizes have been built on Wisconsin's rivers and streams in the last 150 years for various reasons, including boating recreation, mill operation and power generation.

Today about 300 to 400 small dams no longer serve the purpose for which they were built. Many of these dams have deteriorated and pose hazards to human safety as well as river health. Research shows that the presence of some of these dams degrades water quality, blocks migration of fish and other species, fragments the river ecosystem, causes dramatic changes in stream flow, disrupts spawning of native fish, reduces aquatic insect habitat and increases erosion.

The Baraboo River Restoration Project is a fine example of river revitalization through dam removal. Scores of partners have joined DNR to remove four dams and restore the fishery and ecosystem along what will be approximately 120 miles of free-flowing river when the last dam is eliminated by 2003. The fishery improved after the Baraboo Waterworks Dam was removed in 1998: Researchers found 24 fish species in a stretch of river that two years earlier had yielded only 11 species.

Thousands of acres of wetlands and associated uplands have been protected under programs in which private landowners can voluntarily enroll, such as the Wetland Reserve Program, a new partnership between the USDA Natural Resources Conservation Service and DNR.

Forestry

Forests cover about 46 percent of Wisconsin's 34.8 million acres, a total that has remained relatively constant since the first forest inventory in 1936. Despite development pressure, forest acreage increased by 640,000 acres between 1983 and 1996, primarily because marginal cropland reverted to forests.

The volume of wood in Wisconsin's forests provides another measure of forest health. Over the past 40 years, it has more than doubled. Landowners are cutting more timber, but are growing more wood than they're cutting.

Never has private stewardship of a resource been so important: Private landowners, including Indian tribes, own 71 percent of Wisconsin's forests, while state, federal and county governments together own and manage about 29 percent. Non-industrial private forestland changes ownership about every 30 years in Wisconsin. Most native trees in our state do not reach maturity until they are 80 to 100 years old or more. With increasing harvest pressure on private lands and the relatively short land ownership tenure, consistent, sustainable, long-term

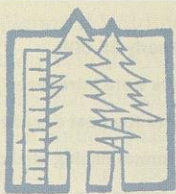
forest management becomes more necessary than ever before.

Urban forests

Trees and other vegetation in and around our communities are getting a lot of attention these days as a resource worth managing well. The total urban forestland now covers nearly five percent of Wisconsin. Home development into agricultural land, typical of southern Wisconsin, is actually increasing the urban tree canopy through tree planting, while development into forested areas, typical of northern Wisconsin is decreasing the canopy. Since DNR's urban forestry program began in 1991, the number of Wisconsin communities managing their trees has more than doubled (from 106 to 266) and the number of communities achieving Tree City USA, a national recognition of urban forest management, has grown to 125. Wisconsin now ranks fifth in the nation for total number of Tree City USA communities.

Forest fire protection

DNR forestry staff and trained firefighters from local fire departments work together to control forest fires that threaten lives and property. Our 1999 data show that DNR helped suppress more than 1,600 forest fires statewide. Volunteer fire departments assisted DNR in about 1,200 of those fires. More than half of the 1999 fires were suppressed before burning over one quarter acre, and less than one percent burned more than 100 acres.



Making people our strength

Wisconsin has done a good job in the past 30 years of cleaning up and controlling pollution from smokestacks and effluent pipes. But the regulatory approach that led to these successes is no longer enough to get the job done.

People are the thorniest natural resource challenge Wisconsin faces today. Air pollution comes from driving our cars; runoff from cities, construction sites and farms degrades or threatens our rivers and lakes; rapid development of farms, woodlands and shorelines fragments wildlife habitat. People are the source, and people are also the solution.

The DNR reorganized in 1995 to foster partnerships with citizens and other governmental bodies. Field staff are now assigned to work in one of Wisconsin's 23 major river basins, and meet with local citizens in each basin to identify natural resource problems and opportunities, set priorities, draft plans, and carry them out.

New DNR programs work with businesses, communities and citizens to prevent pollution and to improve environmental and recreational features through grants and technical expertise. At DNR's service centers, residents and visitors can purchase licenses, find out about permits and get other information in a convenient, friendly setting. The centers have been located so most Wisconsin residents are no more than 30 minutes away from DNR staff who can answer their questions.

Here are samples of these cooperative works in progress:

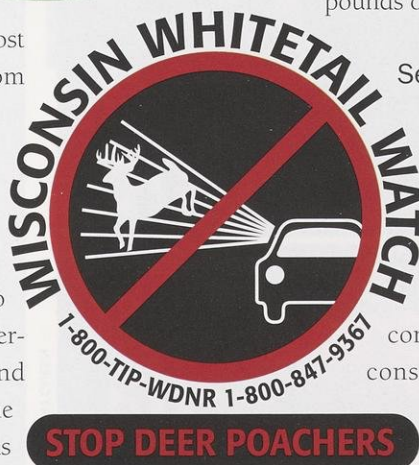
Mercury "roundup" events

Communities, businesses, utilities and dairy farmers have formed partnerships with state government in recent years to reduce mercury in homes, businesses and the environment. Mercury has been commonly used in thermometers, medical and other equipment, and the silvery toxic metal can damage the nervous systems of animals and people. Power plant emissions

from burning coal, which naturally contain small amounts of mercury, are a leading cause of mercury contamination in the environment.

Here's a sampling of some of the partnerships and their achievements:

- Mercury Waste Solutions, Inc., the DNR and the cities of Appleton, Green Bay, Madison, Marinette, Milwaukee, Kenosha and Racine held "mercury roundup" events and collected 3,579 pounds of liquid mercury, 5,539 pounds of mercury-containing devices, and over 100,000 fluorescent lamps that contain mercury — more than the typical amount of mercury released to the environment in one year from all sources in Wisconsin.
- Nine electric utilities and heating, ventilation and air conditioning (HVAC) contractors and six wholesalers in southeastern Wisconsin are encouraging property owners to trade in thermostats which contain a mercury switch for one with a digital or electronic switch. Through June 1999, the partners collected 3,272 thermostats and 29 pounds of mercury for recycling.



Serving as wardens' eyes and ears

A small but active black market for large, white-tailed deer racks is spurring poaching activity in western Wisconsin counties. Area DNR conservation wardens, hunters, conservation clubs, citizens and businesses responded by creating a "Wisconsin Whitetail

Watch” program to help catch poachers and improve relations between hunters and landowners.

Northern Highland-American Legion State Forest

DNR staff and interested citizens have been working for two years to develop goals and visions to manage the 221,000-acre Northern Highland-American Legion State Forest, the nearby 18-mile Bearskin State Trail, and the 4,096-acre Powell Marsh Wildlife Area. The plan takes into account economics, ecological conditions, and the forest’s two million annual visitors. Forest managers have been meeting with local, regional and statewide organizations; forest users; Native American tribes; fish and game groups; neighbors and other interested groups. Updates are available through newsletters, open houses and an Internet website that tracks master plan progress.

Milwaukee’s Menomonee Valley

For years, the Menomonee River Valley was the backbone of Milwaukee’s industrial might, employing more than 50,000 people in foundries, power plants, tanneries, cement plants and chemical companies. Its decline as an industrial center has created numerous economic and environmental challenges. The DNR, EPA, City of Milwaukee and more than 50 partners have combined efforts to address problems and revitalize the area.

The DNR continues to work with the city and partners in developing the Hank Aaron State Trail, which will link the west side of Milwaukee with Lake Michigan

and the downtown. Links from the trail to adjacent neighborhoods will encourage trail use as an alternative transportation corridor.

Horicon Marsh

In January 2000, the DNR and U.S. Fish and Wildlife Service began treating 20,976 acres of the Hori-

(below) Nearly 55,000 youngsters were introduced to fishing over the past decade through formal fishing clinics. Informal events like this one involving DNR staff and their children provide many more kids with the basics of fishing.

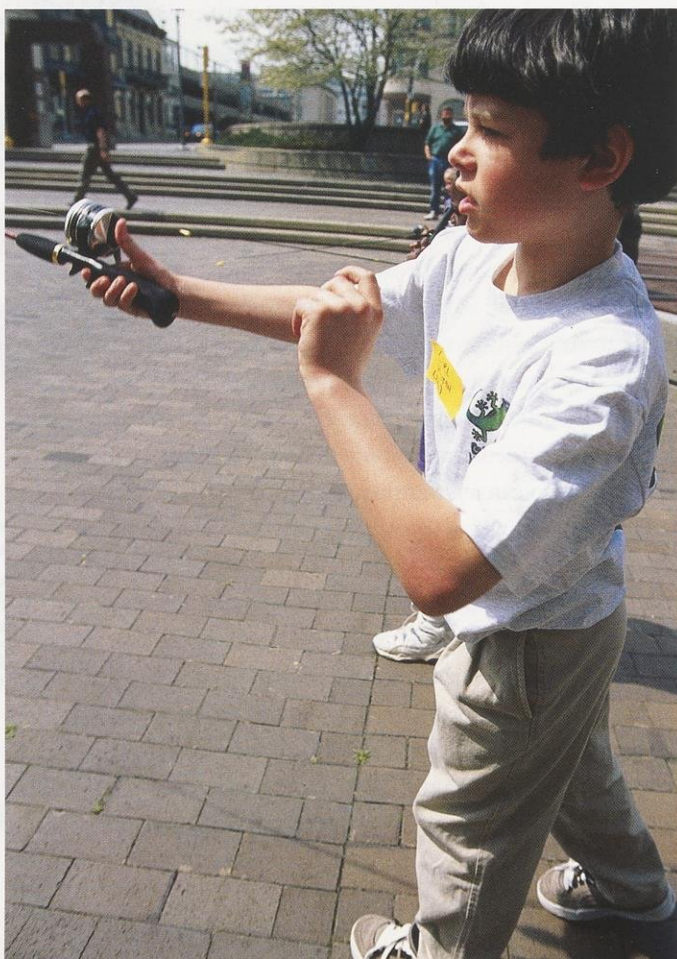


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(below) Management of the Northern Highland-American Legion State Forest will depend on efforts of interested citizens as well as DNR staff who continue to collaborate on the master plan for the 221,000-acre forest.



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con National Wildlife Refuge, followed by the 10,967-acre state Horicon Wildlife Area, with a natural fish toxicant to eradicate the carp that uproot aquatic plants and stir up bottom sediments. Because aquatic plants anchor the base of the food chain, the lack of plants harms the entire marsh ecosystem. Removing carp is part of a long-range management plan aimed at improving water quality, fish and wildlife habitat on the 50-square mile marsh. Other efforts include the construction of a 200-acre flowage and a \$400,000 water quality monitoring project, a cooperative effort by the department, the Horicon Marsh Area Coalition, Town of Hubbard, Dodge County, Lake Sinissippi Association and the U.S. Geological Survey.

Introducing kids to the fun of fishing

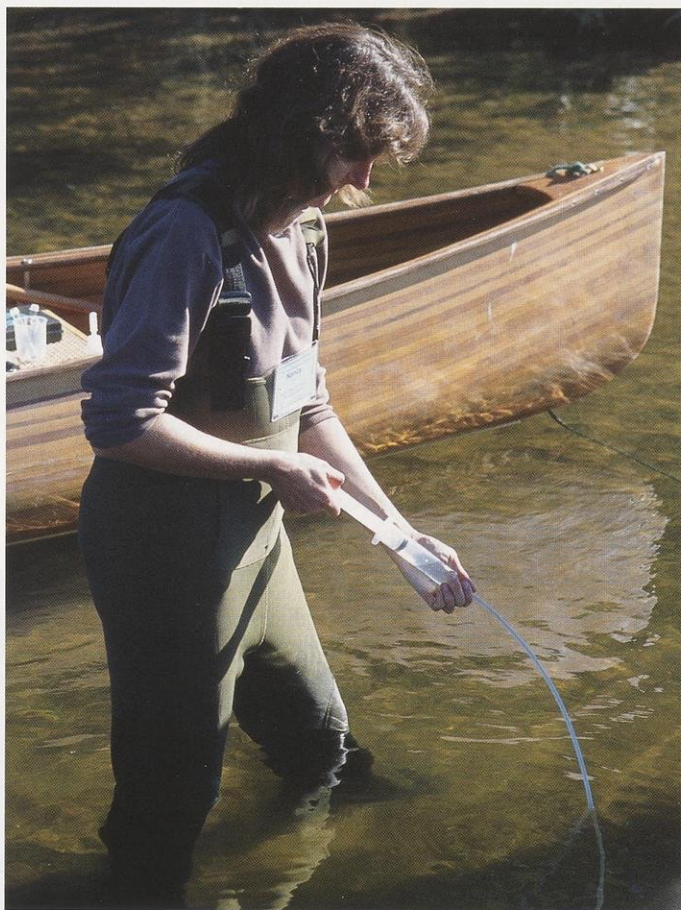
DNR fisheries staff team with schools, youth agencies, angling groups and other sport organizations to introduce young anglers to fishing and the aquatic environment. Over the past decade, nearly 55,000 youngsters have participated in the formal program, while many more have taken advantage of informal clinics and learn-to-fish events supported by the angler education program. Now that DNR staff have finished developing new materials, they can devote more time to conducting workshops, and the numbers of youngsters served by the program is expected to climb again.

Keeping a watchful eye on Wisconsin's lakes

Since 1986, the DNR and thousands of volunteers have worked together to monitor the water quality of Wisconsin's inland lakes. DNR staff train volunteers and give them the tools to monitor water clarity and collect samples to be analyzed for water chemistry properties. Self-Help Lake Monitoring Program volunteers learn more about their lakes and track water quality changes over time providing information that lakeshore owners and local, state, and federal governments can use to make decisions about how to manage lakes. The volunteers keep records on many more lakes than DNR staff could monitor alone.

Cleaning up and connecting to Wisconsin rivers

The shorelines of Wisconsin's rivers are considerably cleaner this year thanks in large part to participants in Water Action Volunteers, a cooperative program that involves local citizens activities to clean up and protect nearby waters. In 1999, 1,762 volunteers collected 40,550 pounds of garbage — enough trash to fill more than four garbage trucks, and cleaned enough shoreline to stretch from Madison to Milwaukee. Also, 719 volunteers in 21 counties stenciled 1,517 storm water drains to warn people that the drains lead directly to the nearest lake, river or stream.



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DNR staff train volunteers critical to programs monitoring the water quality of Wisconsin's inland lakes. (top) A volunteer learns how to measure flow from groundwater feeding into lakes, and another (above) learns water sampling techniques.



Providing outdoor recreation

Outdoor recreation is a passion in Wisconsin and a cornerstone of the state's economy. Tourism, much of it tied to outdoor exercise and scenic beauty, generates \$6.5 billion a year and bankrolls more than 180,000 permanent jobs.

Wisconsin residents and visitors alike can find places of scenic beauty to hunt, fish, camp, swim and pursue a variety of recreational activities. The DNR manages, and holds easements and agreements, on:

- more than 15,000 lakes and 44,000 miles of rivers and streams;
- nearly 87,000 acres of state parks and trails;
- 215 wildlife areas comprising over 490,000 acres;
- some 285 public fisheries projects containing 113,650 acres;
- 326 state natural areas encompassing about 120,000 acres; and,
- over 502,500 acres of state forests.

State expenditures provide only 12 percent of the \$356 million a year spent by county and local governments to provide parks and recreation opportunities.

Local and county governments use federal and state grants as well as local taxes to buy, develop and maintain land for team sports facilities like swimming pools, tennis courts, and soccer and softball fields.

Investing in public lands

Providing and sustaining a commitment to outdoor recreation takes money and maintenance. Wisconsin has made significant headway in purchasing large blocks of property that are equally valuable for public recreation and resource protection. Since 1988 the state has acquired approximately 247,733 acres of recreational lands, 179,500 acres of which were acquired through the Stewardship program. These major public acquisitions include, in parts of or additions to:

- Chippewa Flowage in Sawyer County

- Lower Wisconsin State Riverway
- Turtle-Flambeau Flowage in Iron County
- Wisconsin Dells State Natural Area
- abandoned railroad grade in Brown, Oconto, Marathon and Shawano counties to establish the Mountain Bay Recreation Trail
- abandoned railroad grade in Douglas and Washburn counties for the Wild River State Trail
- Spread Eagle Barrens State Natural Area in Florence County
- frontage along the Menominee River in Marinette County
- Willow Flowage in west central Oneida County
- Bill Cross Rapids Wildlife Area in Lincoln County
- LaSage Unit of Wolf River Bottoms Wildlife Area in Outagamie County
- Black River State Forest additions in Jackson and Clark counties and Lake Arbutus and the Black River
- St. Louis River Streambank Protection Area in Douglas County along Red River
- Bibon Swamp Natural Area in Bayfield County
- Buckhorn State Park and Buckhorn Wildlife Area additions in central Juneau County
- Lapham Peak Unit — Kettle Moraine State Forest in Waukesha County
- Loew's Lake Unit — Kettle Moraine State Forest in Washington County
- Ridgeway Pine Relic State Natural Area in Iowa County
- Koshkonong Wildlife Area in Jefferson County
- Glacial Habitat Restoration in Columbia and Dodge counties
- Hook Lake/Grass Lake Wildlife Area and Natural Area in Dane County
- 32,000 acres (about 50 square miles) in "The Great Addition" — the largest state conservation land acquisition in history in the northern Wisconsin counties of Iron, Oneida, Vilas, and Lincoln.

And, this year, a new Centennial State Park will be designated to commemorate 100 years of Wisconsin's park system.

State trails take many different paths

State trails are designed and developed in many ways for many uses — smooth, flat, paved trails for in-line skaters and people who use wheelchairs; crushed limestone trails for touring bikes; undulating wooded trails for cross-country skiers; wider trails for horses; hilly trails for mountain bikers and hikers.

Sorting out trail uses and accommodating different activities takes people management and cooperation. Clearly skiers, snowmobilers, snowshoers and dog-sledders cannot all use the same turf at the same time. Trails that are used extensively for mountain biking need more maintenance than trails that only receive foot traffic. Similarly, nature trails can be designed so that people using

(below) State trails are designed with the diversity of users in mind. This trail at Devil's Lake State Park was paved to accommodate people using wheelchairs as well as hikers.

Mileage of state managed trails

hiking trails	1,610.8 miles
nature trails	238.3 miles
touring bike trails	587.6 miles
mountain bike trails	385.8 miles
horse trails	541.8 miles
ski trails	698.6 miles
snowmobile trails	974.6 miles
all-terrain vehicle trails	394.5 miles
Total state trail miles	1,787.2 miles
(includes multiple uses on some trails)	

wheelchairs, people with visual impairments and those walking can equally enjoy the narration.

All newly constructed contact stations and toilets/showers on state properties are fully accessible. Some paved trails, parking stalls, picnic areas and disabled campsites have been revamped to accommodate all visitors. At Paradise Springs Nature Area in the Southern Unit of the Kettle Moraine State Forest, cables and posts along a 16-stop nature trail provide the means for visually impaired visitors to take their own self-guided tour.

For those unable to enjoy outdoor campsites, volunteers have helped fund and construct wheelchair accessible cabins at Mirror Lake and Potawatomi state parks, and at Ottawa Lake in the Southern Unit of the Kettle Moraine State Forest. A fourth cabin is being built at Buckhorn State Park. A more rustic cabin for people with disabilities will open this year at Copper Falls State Park.

Leaders in rails to trails

Nearly 20 years ago, Wisconsin pioneered the concept of converting abandoned railroad rights-of-way into recreational trails. Of the state's 701 miles of converted trails, 316.4 miles are developed, managed and maintained cooperatively by counties and villages.

Bike trails provide for short day trips, weekend get-aways, or longer, more leisurely tours as people visit parks and communities along the way. Linked trails create a network of off-road adventure allowing bikers to crisscross the state on their own quiet corridors without the danger of cars, trucks or other motorized vehicles.

Making campsite reservations easier

Since April 15, 1999, campers have been making camping reservations at any Wisconsin state park and several state forests by calling 1-888-WI-PARKS. When a requested state park is full, alternate state park campsites are recommended. When state parks are full, callers are referred to private campgrounds in the area. Campers can also reserve spots 24 hours a day through a World Wide Web site, www.wiparks.net.

With help from our friends

In the last decade, the number of visitors enjoying state parks has increased by two million annually. DNR staff receive enthusiastic support from volunteer park "friends groups" to help maintain properties and host that many guests. Two grants programs authorized by the Legislature match money raised by friends groups for improvements in state parks.

More than 65 friends groups now support individual state parks. Nine concession corporations operate state trails and a



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golf course, seven friends groups bolster state wildlife areas, and at least another 15 groups are forming.

Wildlife watching

The number of wildlife watchers in Wisconsin has increased to 2,074,000 annually according to the 1996 National Survey of Fishing, Hunting and Wildlife-Associated Recreation. Wisconsin residents spend almost \$592 million annually observing and photographing wildlife species.

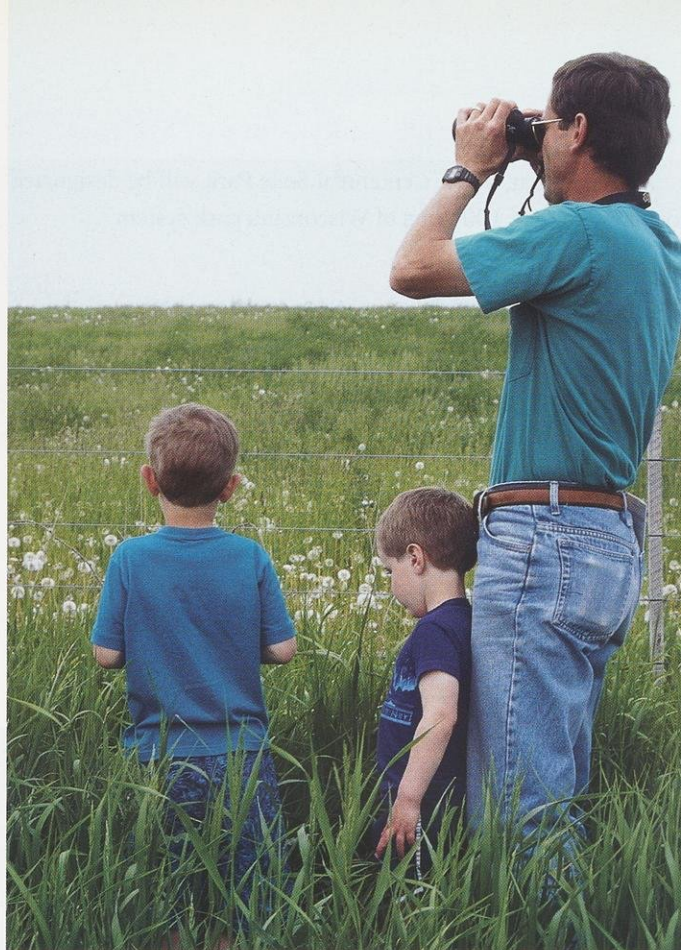
To help people locate viewing sites, DNR wildlife staff, in cooperation with the state Department of Transportation and local highway departments, have posted highway signs with a binocular logo that point the way to public lands where wildlife may be most readily seen. The "Wisconsin Wildlife Viewing Guide" provides directions to 76 of the state's premier wildlife areas, and offers tips on when to visit to see wildlife at peak periods when species naturally flock, feed or migrate.

Fishing: Anglers and angling opportunities

Over the last 30 years the number of licensed anglers has remained fairly stable, averaging 1.5 million adult anglers. About 37 percent of Wisconsin residents age 16 and older say they use waters of the state for fishing, and an estimated 537,000 nonresidents annually visit the state to fish.

The catch-and-release philosophy is taking hold among anglers. Musky anglers in particular are willing to release their fish to fight another day. Anglers keep only one musky for every 123 they catch.

(above) More than 700 miles of converted railroad rights-of-way are the backbone of Wisconsin's state trail system, providing recreational opportunities for thousands of visitors each year. (right) Wisconsin's public lands offer ample opportunity to view wildlife at peak periods. Wildlife watchers number more than 2 million and spend almost \$592 million annually on their pastime.



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New license system increases convenience

In March 1999, the DNR launched its Automated License Issuance System (ALIS) which allows hunters and anglers to buy all licenses and permits at all license agent locations or by calling toll-free 1-877-WI-LICENSE. The department sold 690,104 deer-hunting licenses for the 1999 gun-deer season — the second highest figure ever, including more than 45,000 transactions totaling \$1.687 million in sales on the day before the season opened.

Some 95,130 bonus deer gun permits were sold over-the-counter in 1998, all of them at DNR locations. Because of the greater availability of ALIS sales sites, a total of 203,358 bonus permits were sold in 1999, most of them by non-DNR vendors. At \$12.00 each, the increased revenue generated by these additional 108,228 permits was \$1.3 million, all of which was earmarked for the wildlife damage program.

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The viggles years

We had the fishing edge for years, and couldn't tell a soul.

Dave Crehore

Story illustrations by Tom Lowes

I clearly remember the first largemouth bass I ever caught. It was in 1950, but I could take you to the same lake tomorrow, find the same little bay and cast to the same lily pad.

It was a Saturday morning in June, and I was eight years old. Dad rowed a creaky rented boat across the flat calm of Hartlaub Lake, a 30-acre pothole about a half-hour southwest of Manitowoc. A rosy light fanned over the horizon from the sunrise that was on its way.

Dad rounded a point and let the boat drift toward a lily pad bed on the east shore. He held a forefinger across his lips and pointed to my rod, meaning that I should pick it up, very quietly.

"Make an easy cast to the outside edge of the pads," Dad whispered. "Wait for the splash rings to disappear. Count to 30. Then give the plug a jerk so it'll 'bloop' on the surface. Reel up the slack line. Wait for the rings to disappear. Count to 30. Bloop it again."

We drifted within a reasonable cast of the pads. I was pretty good with my trusty, solid-steel TrueTemper bait-casting rod and precious Pflueger Supreme reel. I swooshed the rod back and launched a ponderous, red-and-white Heddon Chugger plug toward the pads. It landed with a splat, almost on target. The rings disappeared. A puff of pre-dawn breeze riffled the water. 28, 29, 30. Bloop!

Swirl! Hit! Bolts of lightning coursed up the line, down the rod and into my hands. "Nail him!" Dad yelled, and I leaned back to set the hook.

Wow! This was no fussy little bait-stealing bluegill, but a fish with a mind of its own. Nothing Dad said during the sleepy drive from town had got me ready for a fish that actually fought back, that yanked the rod tip down into the water and pulled line

off the Pflueger against the pressure of my thumb on the spool. Down, down he bored, and then shot to the surface, jumping clear of the water and shaking the hooks of the Chugger with a terrifying rattle.

But in a minute or two it was over. Dad scooped up the bass with a flick of the landing net, and I was face to face with 16 inches of mean, green largemouth. My bass was only three times as long as the big cedar plug he had tried to eat. He wasn't Old Beelzebub, the 10-pound, bulge-bellied bass of my dreams, but at that moment he was the most important fish in the world.

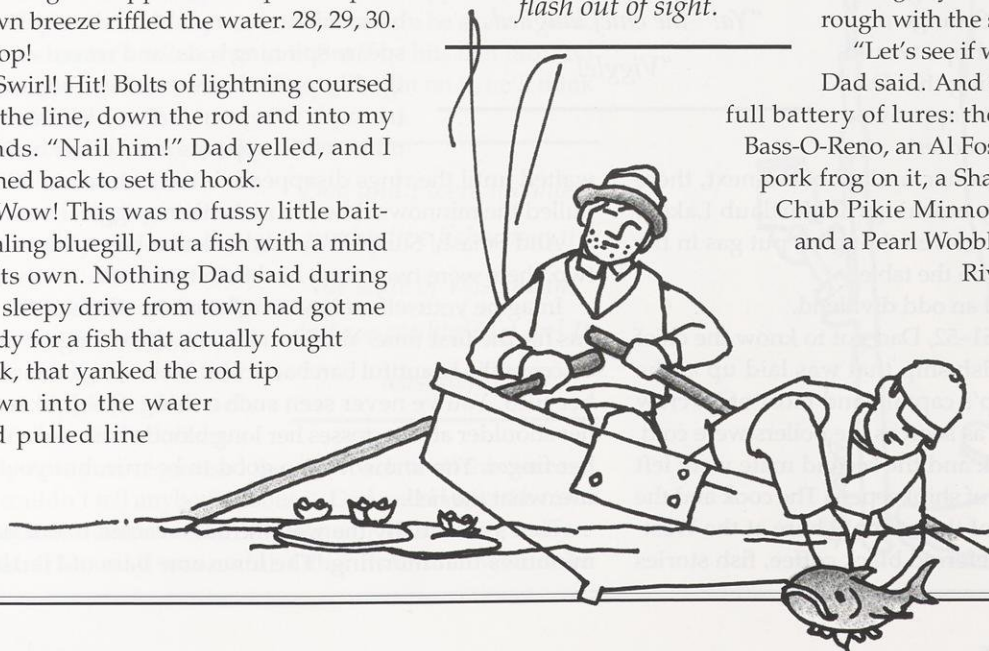
Dad popped the Chugger's massive hooks out of the bass's mouth. He handed the fish to me. I held it fearfully by the lower jaw and felt the prickles of its teeth.

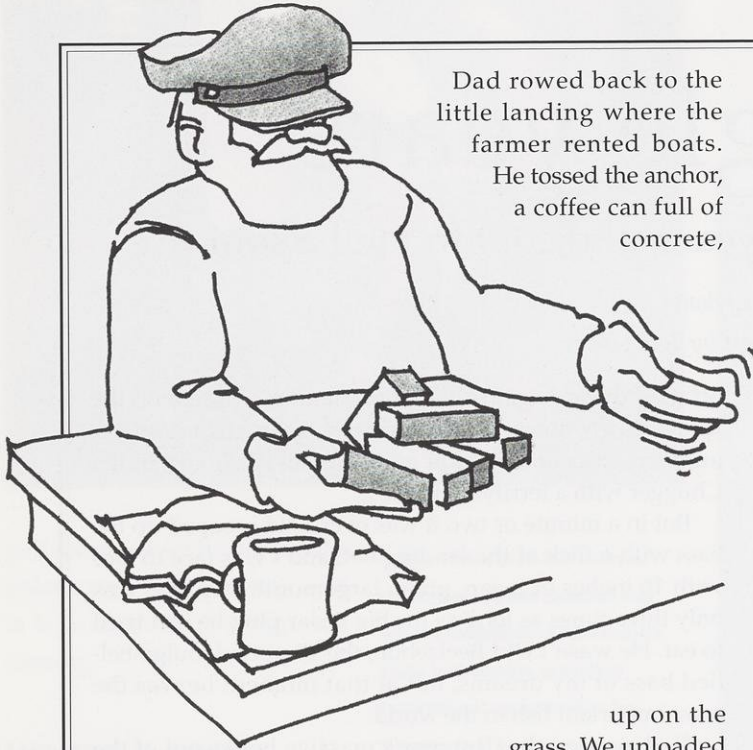
"What d'you say we give him a second chance?" Dad asked. I knew what that meant. I slipped the bass into the water and watched it flash out of sight.

"What d'you say we give him a second chance?" Dad asked. I knew what that meant. I slipped the bass into the water and watched it flash out of sight.

My first bass, come and gone in about five minutes. Only a memory. Loss and gain, pride and pain swirled around in my head. I had wanted that bass, and yet I didn't want it dead. I glanced up at Dad. He was smiling at me, a steady smile of approval, man to man. I swallowed hard and felt the aching throat that comes before tears. But I wasn't a kid any more. I was eight years old and had to take the rough with the smooth.

"Let's see if we can catch a bigger one," Dad said. And so we fished through our full battery of lures: the Chugger, a Lucky 13, a Bass-O-Reno, an Al Foss Oriental Wiggler with a pork frog on it, a Shannon Twin-Spin, a Creek Chub Pikie Minnow, a Jitterbug, a Flatfish and a Pearl Wobbler, made of genuine Ohio River clam shell. But by ten o'clock it was obvious that the bite was over. It was time to go home and mow the lawn.





Dad rowed back to the little landing where the farmer rented boats. He tossed the anchor, a coffee can full of concrete,

up on the grass. We unloaded our rods and stood looking out over the lake. Dad thumbed some Edgeworth into his pipe, struck a match on the sole of his shoe, and lit it.

"This is a nice little lake," Dad said. "We'll have to come back some time."

But we weren't back — not for two years. The shipyard at Manitowoc suddenly got busy, and Dad was the engineer who had to inspect construction and repairs. He started working six and seven-day weeks. He'd leave before I got up in the morning and get home late, eating a warmed-up supper at the kitchen table, still wearing dirty, sweaty white coveralls. Strange men from noisy fabrication shops would call at 2:00 a.m., demanding that Dad drive down to the yard to approve a weld or witness a hydrostatic test.

For the rest of that summer, and all of the next, there was no time for Saturday mornings at Hartlaub Lake. I began to hate the shipyard, even though it put gas in the Studebaker and meat loaf on the table.

Then the shipyard paid an odd dividend.

During the winter of '51-'52, Dad got to know the chief engineer of a small Finnish ship that was laid up at the yard for repairs. The ship's captain and most of its crew headed home for Finland as soon as the boilers were cold, but the old chief, the cook and the second mate were left behind as a skeleton force of shipkeepers. The cook and the second mate spent most of their time ashore at the Westfield Bar, but the chief preferred black coffee, fish stories

and his pipe. So did Dad, and before long he was eating most of his lunches and midnight snacks with the chief, who told tales of Finland's giant pike and salmon in his broken, out-of-tune English.

One night in late winter, after a pot of eggshell coffee and a couple of corned beef-and-onion sandwiches, the chief handed Dad a half-dozen little cardboard boxes.

"Second engineer, he's coming back pretty soon, then I go home. You like to fish so you try these," the chief said.

The boxes held peculiar little minnow-shaped wooden fishing lures, painted blue above and white below, each with a piece of celluloid under its chin. They didn't look like much to Dad, but the chief grinned enthusiastically and made big-fish gestures with his hands.

"They made from balsavood," the chief said.

"They float. You pull them, they go down and they —." He made a sinuous motion with his hand.

"Swim?" Dad said. "Wiggle?"

"Ya!" the chief laughed. "Viggle! A man in my town make them, catch big pike."

Dad didn't know it, but he had been given the first Rapala lures in North America, handmade in Finland by Lauri Rapala. Billions of U.S. and Canadian fish that had never seen a balsa minnow were waiting, stupid and hun-

gry, for the first Rapala to wiggle by. But a foot of ice covered those fish at the time, and Dad left the lures on his desk at the shipyard until May.

And then came a Saturday morning with no welding, shell plating or tank tops to inspect.

Dad and I were back at Hartlaub Lake. We rented the same little boat with the same coffee-can anchor, the same leaks and squeaks. We tied two of the balsa minnows on our brand-new Shakespeare spinning rods, and rowed over to the lily pads that were the scene of my triumph two years before. We cast our minnows to opposite ends of the bed. We

waited until the rings disappeared. We counted to 30. We pulled the minnows down to make them wiggle.

And Smash! Slurp! We each hooked a bass. After those two, there were two more. And then two more.

Imagine yourself an innocent farm boy who's at the circus for the first time. You blunder into the wrong tent and discover the beautiful bareback rider in the act of removing her tutu. You've never seen such a thing. She looks over her shoulder at you, tosses her long blonde hair and crooks her finger. You know it's too good to be true, but you figure, what the hell.

That's essentially the way the bass reacted to our balsa minnows that morning. The lonesome bass of Hartlaub

"They made from balsavood," the chief said. "They float. You pull them, they go down and they —." He made a sinuous motion with his hand.

"Swim?" Dad said. "Wiggle?"

"Ya!" the chief laughed.

"Viggle!"

Lake didn't just bite the Finnish viggles, they slobbered over them. They knew they'd regret it, but it didn't stop them for a second.

Our first slow row around the lake yielded 32 bass. The second time around we caught 17 more, along with a couple of tugger walleyes and a pike of nightmarish size. We let them all go.

Dad was counting. "Enough," he said. "That's 49 bass, and there's no point making pigs of ourselves for one miserable fish. Besides, I've got a backlash here that's like the Sunday crossword – it'll take a week to work it out."

Dad picked up the oars and started to row back to the landing. "Cut off those viggles and hide them in the tackle box," he said, "and then tie on some Flatfish. The farmer who rents the boats has been watching us, and I don't want him to see what we've really been using."

At the dock, the farmer was enthusiastic. "Jeez, you guys were really catching 'em, enso?" he said, all smiles. He looked carefully at the lures dangling from our rod tips. "Flatfish, eh? Orange and black Flatfish. And sonny, you had a blue and silver one. Well, well!"

After the farmer left Dad sat down on an overturned boat and lit his pipe.

"I have never, ever, had a day of fishing like this in my life, and neither have you, nor are you likely to again," Dad said. "If we'd kept all those bass, we would have cleaned out the lake. We've got to keep these viggles quiet. Very quiet. Otherwise everybody will be wanting one."

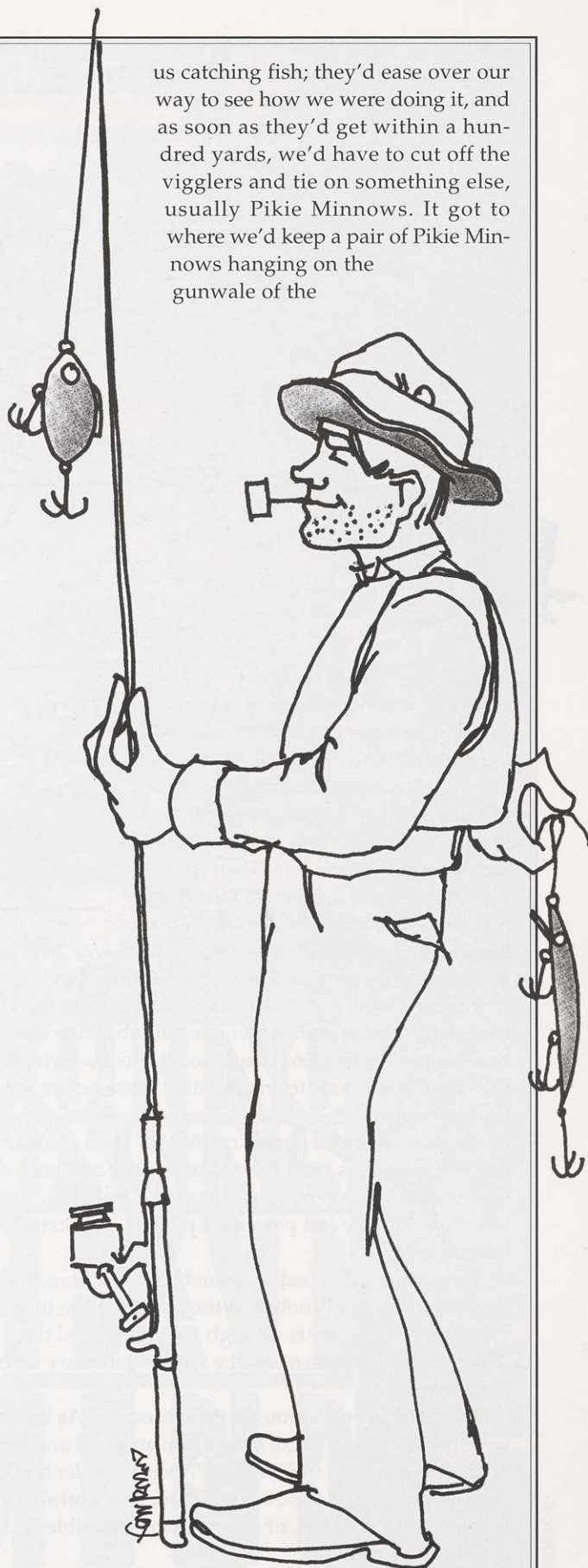
And then began a halcyon time in our lives: the voggle years. God, did we catch fish! The viggles caught bass on High Lake in Vilas County, and just about everywhere else in the North Country. They caught walleyes and muskies on the Big Chip. They caught giant crappies on the Mississippi. And there was a day among the smallmouth on the Red Cedar River that was absolutely obscene.

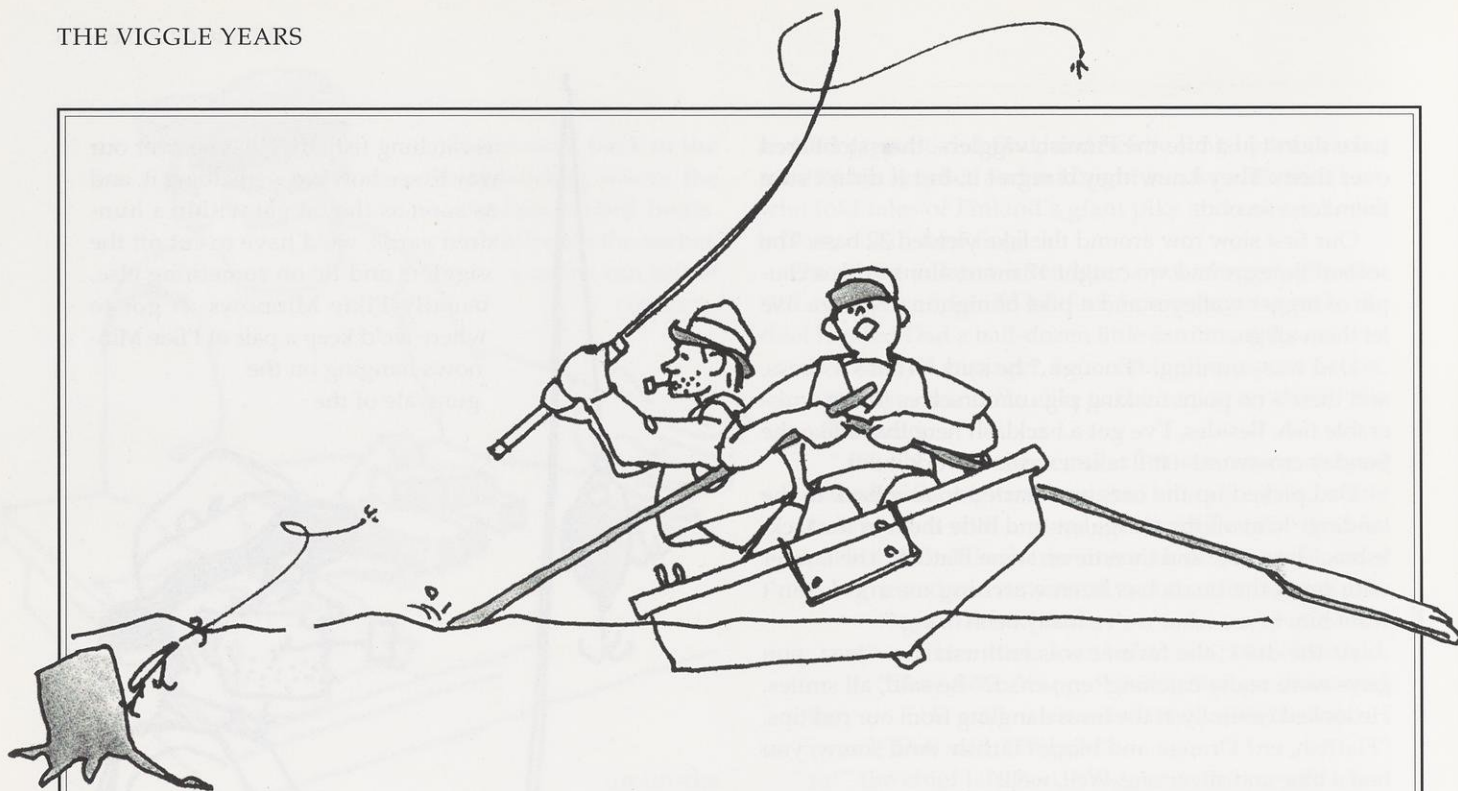
It wasn't hard to figure out what was happening. A fish is a simple soul, and if you show him a lure he's never seen, chances are he'll take a shot at it. But if he hits that lure and gets off, or watches other fish being caught on it, he'll think twice the next time it comes by. The fish we were catching had learned to avoid the big wooden plugs thrown at them by thousands of fishermen. In time they would learn to avoid viggles, too. But it would take them a *long* time to learn about viggles when only two fishermen had them.

*Dad and I were the most
productive fishermen in
the state of Wisconsin,
but we couldn't let on! It
was awful.*

By now you've guessed the drawback to all this success: We couldn't tell anybody about it. Dad and I were the most productive fishermen in the state of Wisconsin, but we couldn't let on! It was awful. Other fishermen would see

us catching fish; they'd ease over our way to see how we were doing it, and as soon as they'd get within a hundred yards, we'd have to cut off the viggles and tie on something else, usually Pikie Minnows. It got to where we'd keep a pair of Pikie Minnows hanging on the gunwale of the





boat, so they would be handy.

But it wasn't long before the gods of fish and fairness got their revenge. Our viggler began to disappear. On one horrible day, two were stolen right off our rod tips at a boat landing. A month or so later, another was lost to a musky that simply overwhelmed us. Then a small-mouth the size of a sewer lid ran off with one in Jackson Harbor. After that, we began fishing the remaining two viggler with heavy line and tuna-gauge wire leaders that killed their viggle.

The final blow was a stump on the bottom of the Manitowish River that claimed viggler number five during a bass fishing trip in 1956. Thank God it was Dad who lost it. We spent a half-hour trying to pull it loose before the line finally snapped.

There was a brief period of silence. Then Dad cut the last of the viggler from the end of my line and held it up. "We should have kept a pair for seed," he said. "As it is, this guy's like the last passenger pigeon. He's extinct and doesn't know it."

The viggler years had come and gone. As Lincoln probably said, you can't fool all of the fish all of the time, and we were philosophers enough to understand that. But damn, it was tough to rejoin the ranks of ordinary unlucky fishermen.

The passing years brought their anodyne. As the fifties wore on, the shipyard got busy again and Dad and I spent more time shooting and hunting. The last viggler hung in a place of honor from a joist in our basement workshop. The memories it called up, of course, were indelible and did not need enlargement.

The final blow was a stump on the bottom of the Manitowish River that claimed viggler number five during a bass fishing trip in 1956.

And then, one day in 1959, the inevitable happened. Dad and I stopped at Sporting Goods Supply in Manitowoc to pick up some shotgun powder, and Lloyd Bottoni pushed a couple of little cardboard boxes across the counter for us to look at. Inside were balsa minnow lures, each with a piece of plastic under its chin. Viggler.

"These are the latest thing, Dave," Lloyd said to Dad. "Some guy in Finland makes them by hand and catches all kinds of fish with them. They're called Rapalas."

"But we had those..." I blurted. Dad caught my eye and shook his head. I shut up. Dad bought two of them and picked up the powder.

Out in the car, we took the Rapalas out of their boxes. They were viggler all right, painted black on top and gold on the bottom.

"Well, they aren't extinct any more," Dad said.

"What's wrong with telling people we had Rapalas in 1952?" I asked.

"It would just be bragging," Dad said, "and the Good Book says that pride goeth before destruction, and a haughty spirit before a fall."

He lit his pipe. "Secrets are over-rated," Dad said, "but I think this one is worth keeping. Save it for your memoirs."

And so I did. □

Dave Crehore is the regional DNR Public Affairs Manager in Green Bay.

The Niagara Escarpment forms cliffs, caverns and drama as it arches through eastern Wisconsin.

Doug McLean

Picture yourself on a high cliff, enjoying a panoramic westward view over the waters of Green Bay, Lake Winnebago or Horicon Marsh. That cliff, called the Niagara Escarpment, is a geologic formation that runs hundreds of miles through our state and beyond, forming a great circle all the way to Niagara Falls at the New York–Canada border.

Along the escarpment you can explore crevasses, caves, and rockfalls, see beautiful rock formations, or search for fossils, Indian artifacts, rare plants and animals. You can hunt deer along this cliff, sometimes seeing them below you or above you; fish the deep waters near its wall; or hike paths that climb from the cool springs at the bottom, through huge tumbled blocks of limestone, to the smooth high ground above.

The Ledge, as this escarpment is often called, is where I do many of these things. From my home, I overlook more than 20 miles of the Ledge winding north toward Fond du Lac and up the east shore of Lake Winnebago. Let me point out many of its secrets that you may enjoy, too.

The layer supporting the Ledge

The Niagara Escarpment is a 40- to 100-foot cliff that passes through the eastern third of our state, continues north of several of the Great Lakes, sometimes under water, into Canada, and down to Niagara Falls. From there it enters the Appalachians, where it is crumpled and folded, then goes south into Pennsylva-

The Niagara Escarpment is a narrow, durable, ancient sedimentary rock layer that forms cliffs, caves, ridges and natural towers 40–100 feet high along its length.

EXPLORING WISCONSIN'S GREAT CLIFF

DOUG MCLEAN

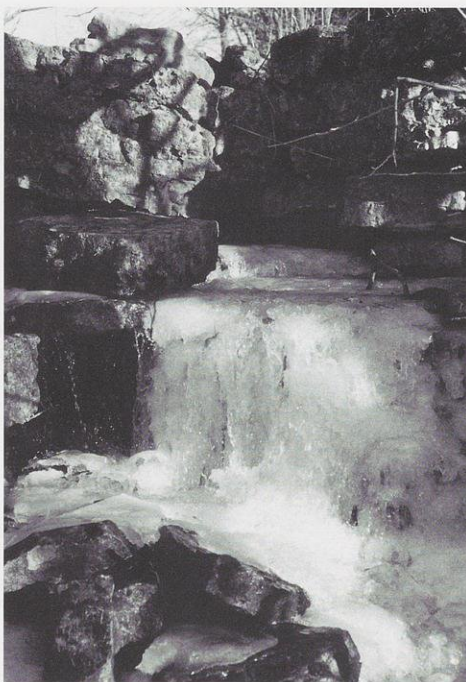


nia, Ohio, Indiana, and back through Illinois into Wisconsin.

This cliff is the edge of a vast sedimentary rock layer, one of several in the layer cake of sediments that formed on the bottom of ancient seas. This layer is like a giant saucer, with its western edge in Wisconsin, and its eastern edge at Niagara Falls. Some layers were composed of erodible material, others of limey material from the bodies of marine life. The Ledge is a hard limestone layer called Niagara dolomite, and it contains fossils of the simple life forms existing at that time. The Ledge is 400 million years old. The Rockies are only 70 million, and the Appalachians 300 million.

When the seas receded, the edges of the layers were exposed and most of them weathered into obscurity. The Niagara layer has retained its cliff edge because the layer beneath it is soft shale, which erodes quickly, leaving the dolomite overhanging. The dolomite eventually breaks off again and again, forming a new cliff face each time — just as it has at Niagara Falls, where the process is so dramatic that it can be measured in miles per century.

One other thing is responsible for the look of the Ledge: Ice. Mile-thick moving ice of successive glaciers obliterated the cliffs in some places and created huge fissures and crevasses in others. Although the cliff would be higher and sharper today without the glacial bulldozing, the crevasses and caves are left



In Wisconsin, the escarpment mainly forms modest ridges, faults and waterfalls, but it arches into majestic cliffs and the mighty Niagara Falls in western New York and Canada.

DOUG MCGLEAN

as great places to explore.

Much of the Ledge is wooded. There is too much fallen rock at its base, too little soil on top, for farming. There is often water at the base in the forms of springs, marshes, and lakes. Springs pop up at the base because dolomite, though hard, is fractured, filtering groundwater down until it comes to the underlying layer of shale, which is almost impermeable; as a result, the water is forced out in springs.

Life on the Ledge

Deer love this environment, and I like to bow hunt them here. Of the handful I have taken, all but one were taken here. A few years ago, a wounded deer led us on a daylong winter trek up and down the Ledge before we got it. On another occasion, I found my deer lying within inches of falling over the cliff. My stand that day was in a tree that leaned over the Ledge, so that, if I spotted a deer down below heading for one of the trails, I might "head 'em off at the pass."

Foxes, coyotes, rabbits, and other small animals den in the rocks. Wild turkeys, recently released on the Ledge

here in Fond du Lac County, frequent the sheltering cliff. I walked along the top edge of the cliff last December and was startled from time to time as one turkey after another exploded from the rocks and yew bushes directly below me. Goose and duck hunters sometimes place blinds at the top of the Ledge, hoping for closer shots.

Unusual plants, birds and animals find the Ledge's microclimate congenial. The only grouse I ever saw in this county was seen here, as well as the only pileated woodpecker. The springs, the coolness of cliff and crevasse (snow has remained as late as August in some crevasses), and the shelter of rockfalls have combined to make an atypical environment. Walking fern, which puts down rhizomes from its leaf tips to form new roots, ground-hugging American yew bushes, and plenty of limestone-loving red cedar, which often clings to the cliff face with roots squeezed into fissures, can all be found on the Ledge. A friend showed me one 14-inch diameter section of red cedar from the cliff face that had 259 growth rings.

When I was a teacher, my imaginative students reported seeing all kinds of things on the Ledge: Rattlesnakes, cougars, bears, a wild man. The only one that was verified was the wild man — and he wasn't very wild; just fed up with society.

The same kids did bring proof of other things found on the Ledge: Fossils, crystals of calcite, dolomite, and garnet; and, best of all, artifacts. One boy climbed down into a crevasse, then into a narrow, roofed fissure. Inside, on a natural rock shelf, he found a three-inch spear point. In a narrow passageway among the crevasses, I found my own favorite point one day when I was out with my own bow and arrows. Near Mayville there is a cave where Indian rock paintings were found, and old-timers there spoke of Indian trails along the Ledge.

Artifact hunters do not hunt among the rocks so much as on the land that slopes down from the Ledge toward the marshes and lakes. This space can be as much as a half-mile wide and experienced hunters will search there on old shorelines, now high and dry. Here is

where the most ancient native Americans would have left their artifacts — and a few 10,000-year old points have been found, points in use when woolly mammoths and early men followed the

retreating glaciers.

Fossil hunters find cephalopods, brachiopods, chrinoids, various corals, and other fossils, principally in quarries. When the soil is stripped away, the top surface of the dolomite will also reveal glacial scratches and glacial polish as smooth as a table top, from the abrasive rock “flour” carried by the ice. I had a bit of this polished dolomite made into a belt buckle.

Following the Ledge

To hike on the Ledge, visit the state, county, and township parks located along the Ledge or ask private landowners for permission to cross their property. The longest hike I know of was one taken by two young

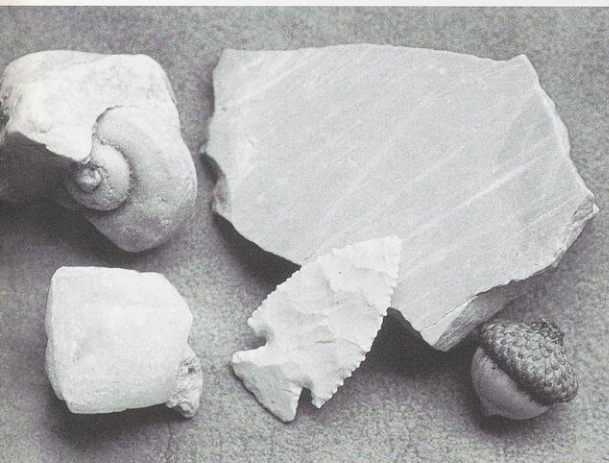
men along 400 miles of the Ledge, where it comes down from Canada toward the Falls. To explore by car, go to Peninsula State Park and take either Shore Road along the base of Skyline Road on the top with its many overlooks and a tower; or drive out in the country and follow the escarpment along highways and back roads. Keeping it in sight will sometimes be a challenge, especially in southern Wisconsin. Usually, it appears as an elevated tree-covered line, with only a little rock showing in summer, except in the road cuts.

In some places the glaciers have obscured the Niagara Escarpment; in others, rivers have cut through it (Sturgeon Bay), and erosion has formed bays in it. The west shore of Door County, facing Green Bay, is the Niagara Escarpment, where you can see wave-cut terraces from ancient high water levels at the end of the Ice Age.

Have you ever noticed that, to get in or out of the villages along this shore, you must drive down or up steep roads? You are descending or climbing the Niagara Escarpment. On the east shore of Door County, the dolomite slopes gently into Lake Michigan, so that you can sometimes wade out into the lake a good distance. Though many people drive up and down the escarpment daily without realizing it, I remember boring my kids every time we drove over it by saying, “Here we go, over the Falls!”

While it may be easy for us to drive the Ledge, early settlers found it a barrier to travel. Near my home, a steep township road switches back down the Ledge, and it has a name — the Breakneck. There is another in Dodge County, and near Byron Marsh, far from any roads, I discovered a very old switchback, its stone wall crumbling, its surface choked with growing trees. It would not have been noticeable, except that winter snow outlined the man-made wall.

Many settlers who came here were not surprised to find cliffs. Half a dozen villages within a small radius in Fond du Lac and Dodge counties have the same names as a half dozen villages in New York State, just east of Niagara



(above) Fossils were trapped in the sedimentary rock that is older than the Rockies and the Appalachians. Points and spearheads were formed from the tough rock.

(below) Outcroppings on the Door County shore form the fractured, jumbled rock that defines the coastline's rugged beauty.



DEBORAH PROCTOR



ROBERT QUEEN

(above) Inland, along Calumet County farmland, the escarpment appears as a ridge.
(right) Softer rocks underneath this dolomitic rock wore away leaving blocks of fractured stones like these on a hiking path near Lake Winnebago.

Falls. Westward-moving settlers brought their hometown names with them. The coincidence is that both localities are situated on the Niagara Escarpment. The question is, did the settlers know that they had moved to the same geologic formation, or did they just think that the new spot looked like their former home?

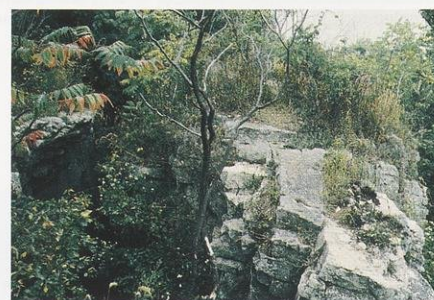
When this land was settled, economic uses were found for the Niagara dolomite, and the stone is still important today. Dolomite can be transformed into lime for farm and industrial use, or it can be crushed for road construction. Dolomite is used as building stone. Some is cut at right angles to its original horizontal position, producing a fresh look. Some is pried apart at its horizontal seams, giving a natural look. Most expensive of all is naturally weathered dolomite. Limestone construction can be seen in many old and new buildings. In my 100-year-old remodeled home there is an old basement stairs that now leads to nowhere, beautifully built of hand-hewn slabs of dolomite.

In early times, wells in dolomite produced good-tasting hard water. But fractures

in the rock can allow surface water to enter wells, carrying pollutants. My first two wells had this problem. My third 540-foot well is cased through the dolomite and, from a layer of sandstone, produces safe, soft, iron-rich water. Back in prohibition times, one local entrepreneur poured waste mash from his illegal still into an old well. Through the fractures the stuff entered another well a quarter mile away, giving the water a mild Jack Daniels flavor.

Over the centuries people of many cultures discovered the Niagara Escarpment. Why not discover it for yourself? Like the bored teen-ager that walked it with my wife and I, you may have your boredom relieved. While we walked along the top, this person climbed down to explore below. For the next hour, yelps of discovery echoed up to us as she discovered secret passageways and robbers' dens among stone battleships and castles. More cries came to us as she was startled by scurrying, flying creatures, just as they were startled by the human intrusion into their cool, shadowy world of rock canyons.

Perhaps as you walk and climb these cliffs, you, too, will meet at eye level a



JEAN B. MEYER

sleeping owl, a cecropia moth, a flying squirrel, and you may be halted by the beauty of exotic flowers and strange fungi. Possibly, there will be for you a snow-white arrowhead lying among the rocks, a little time capsule from the past, releasing to your imagination histories long buried in the decaying humus on which it lies. Or maybe you will only be able to explore the escarpment by car, to admire the ancient, mossy rocks, durable through so many millions of years, yet slowly crumbling, as do all things. Then let these rocks stretch in your imagination to the far-away place where Niagara's waters plunge over them. Go ahead, explore the Niagara Escarpment. It has been there a long time, waiting for you. □

Doug McLean writes from Brownsville, Wis.

Big lessons from small places

Simple, solid beginnings can mold a lifetime and provide a foundation for making tough choices and finding opportunities.

That was certainly the case for C.D. "Buzz" Besadny who rose from Kewaunee, Wis. to a distinguished career as a wildlife researcher and administrator to lead the Wisconsin Department of Natural Resources from 1980 through his retirement in 1993.

To honor his work and commitment to outdoor stewardship, the Natural Resources Foundation of Wisconsin created the C.D. Besadny Conservation Grants that annually provide \$100 to \$1,000 to give individuals, groups and communities a start in restoring wild habitat, teaching environmental topics, constructing nature trails, planning sites for nature study, producing teaching materials, doing outdoor research and building structures that give people greater access to the outdoors. From 1990–99 some 161 grants supported projects including these:

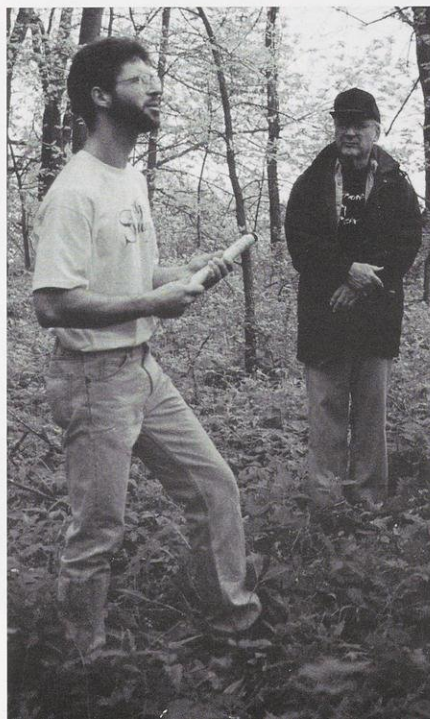
Wildlife/fisheries enhancement (45 projects) — Pike Lake Chain restoration, Moquah Barrens sharp-tailed grouse project, Duncan Creek Watershed project, Tamarack Creek restoration, small dam removals, Ben Nutt Creek trout habitat, Mormon Coulee Creek restoration.

Environmental education (31 projects) — Environmental learning stations in the Drummond School Forest, Adopt-a-Waterway program support, a mobile environmental education center, a bicycle-powered generator to teach about energy, educational "discovery" trunks for class use, support for a Youth

The C.D. Besadny Conservation Grants provide seed money to restore habitat and launch outdoor discovery.



ELLWOOD H. MAY CENTER



MISSISSIPPI VALLEY CONSERVANCY

Stewardship Program, support for environmental education centers in Milwaukee schools.

Nature trail improvements (26 projects) — interpretive boardwalks, wildlife refuge trail, nature trail in the Webster School Forest, wetlands nature trail, a bog boardwalk and an ethnobotanical nature trail on the Lac Courte Oreilles reservation.

Outdoor nature study areas (16 projects) — interpretive butterfly gardens, bird and butterfly entry garden and reading retreat, a hummingbird garden, a bird feeding station for a school, a butterfly garden and garden life cycle site, a demonstration area showing invasive plants.

Educational materials (15 projects) — an environmental awareness video project, a birding hotspots on Chequamegon Bay brochure, library materials for the Alma Public Library, a field library for the Wisconsin Waterfowl Association.

Outdoor structures (11 projects) — a pier for aquatic education, amphitheater seating for a school forest, a nature boardwalk, an outdoor classroom shelter, an exercise flight pen for injured raptors.

Research (7 projects) — oak savanna research in southwestern Wisconsin, a breeding bird survey on the Nicolet National Forest, yellow perch marking off

(above left) "The sky's the limit" at the Ellwood H. May Center in Sheboygan where Besadny grant money bought globes and sky charts for use in family stargazing programs.

(left) Armund Bartz, DNR, talks with Ferryville landowners about saving bluffs and river bottoms along the Mississippi. Grants helped map and survey the region.



NATURE'S CLASSROOM. SPRING GREEN



IOLA BOY SCOUT TROOP 631

the Door County coast to determine movement patterns.

Here's a closer look at some recent projects:

Bat boxes battle bugs — The Golden Sands Resource Conservation & Development Council is in the heart of the central Wisconsin vegetable growing country. In large areas the land has been cleared of trees and shrubs to make way for irrigation equipment. The council is building and testing artificial houses for bats to entice these voracious bug eaters back to the region. Higher populations of bats could reduce the need for chemical pesticides. Groundwater under the thin, sandy soils in central Wisconsin is particularly susceptible to contamination from the large amounts of pesticides and fertilizers used to raise potatoes, peas and other vegetables. The five-year project will test which house designs and locations bats prefer in this attempt to restore bat populations in the nine-county Central Sands area.

Bat savvy — In Chilton, the Ledge View Nature Center is working on the mental game of bat conservation — teaching adults and young children to understand bats and value their contributions to a healthy environment. Besadny grants purchased slides sets and books about bat conservation, bat houses and a bat detector used to locate bats overhead on night hikes. School groups, adult programs and scouting troops visit the center and have fun seeing videos, doing art projects, playing special bat games and watching bats to better understand these animals.

Saving coulee bluffs — The Mississippi Valley Conservancy works with individuals and communities to preserve fragile blufflands and river bottoms along the Mississippi River. The area's steep slopes are home to rare plants. Forested areas along the river are vital migration routes for rare and declining migrating songbirds as they move from their tropical winter homes to their northern nesting and breeding grounds. Grants were used to make aerial surveys and maps of the most fragile areas including oak forests, rocky outcroppings, steep-bluffed "goat prairies," sandy river terraces and vast river bottomlands. The grants also purchased



TREMPEALEAU COUNTY SPORTSMAN'S CLUB



LEDGE VIEW NATURE CENTER

(opposite top) Nature's Classroom groups explore wetlands.

(opposite bottom) Lola scouting groups restore stretches of the Little Wolf River.

(top of this page) Trempealeau community groups build a pier so people with disabilities can wet a line on Second Lake.

(above) Jean Haack teaches about bats to New Holstein Elementary students.

signs to mark properties and recognize landowners who have agreed to conserve fragile lands that provide unique habitat, preserve natural communities, and sustain scenic spaces along the bluffs and verdant ravines along the magnificent river corridor.

"The sky's the limit" — At the Ellwood H. May Environmental Park in Sheboygan a \$500 grant helped buy globes, sky charts and star finders so kids would understand more as they watched the stars and the weather. The

program fills a gap in the science curriculum offered at school, and it's fun. Children learn about the planets, seasonal weather patterns and a bit of astronomy. A companion two-week summer program of Nature Adventure Camps encourages campers, scout groups and 4-H clubs to come as families to the center for evening stargazing. Several different programs were developed and the most popular talks will now be offered to all Sheboygan County schools when they visit the center.

Shaping the outdoor classroom — The Olympia Brown Elementary School in Racine used its grant to build an outdoor classroom where outdoor learning would take off. Fifth-graders and their teachers built benches, work tables and a sheltered bulletin board so students could have a little elbow room to pore over plants and water samples drawn from nearby Lake Michigan and enjoy other hands-on science projects. Students studied vegetable and butterfly gardening, and got involved in a prairie restoration project near the school grounds.

Casting the community ahead — The Trempealeau County Sportsman's Club combined their grant with other community fund-raising to build a community pier accessible to people who use wheelchairs, walkers and canes to get around. Second Lake in Trempealeau is tree-lined with a steep rocky bank that drops off. People who didn't have boats had little opportunity to fish, watch wildlife or just enjoy watching the sunset on the water. The new dock with a smooth, concrete approach extends 30 feet and ends in a 30-foot x 10-foot T surrounded by strong railings. Now everyone in town can get a little closer to the water in safety.

Sprucing-up the school forest — The Prairie Farms School District in western Wisconsin used its grant to help the community step out into the forest. Sloping land on the east end of the forest tract was pretty steep. Now the area has been graded and stairs formed with railroad ties, soil and gravel make is easier to take a hike through the forest trails, read the displays and use the site for jogging and walking.

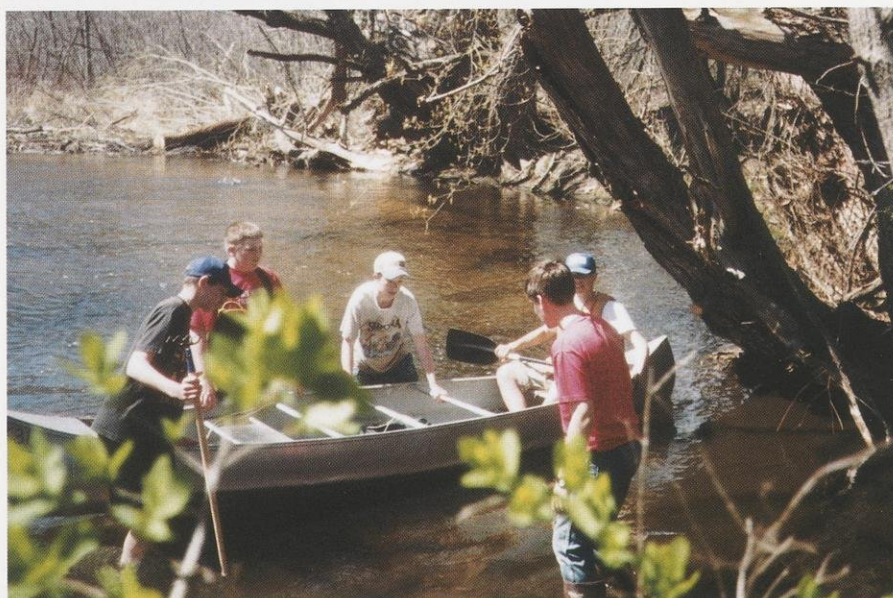
Supplying the tools to explore a



OLYMPIA BROWN ELEMENTARY SCHOOL



GOLDEN SANDS RESOURCE CONSERVATION & DEVELOPMENT



IOLA BOY SCOUT TROOP 631

wetland — Nature's Classroom of Spring Green used a grant to buy water pollution testing kits, soil field testing kits, Secchi disks, biological microscopes, waders and nets. Students do five-day field studies collecting water samples, sweeping streams for aquatic insects, and examining plants on the shores of Lake Beulah near Mukwonago. The chemical conditions of the lake are measured, water samples go under the microscope and students participate in the Adopt-A-Waterway program to share water quality data with other schools over the Internet.

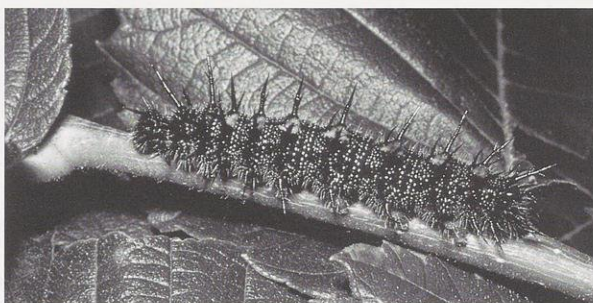
Finishing touches for a community park — Sawyer County used grant funds to build nature trails and add wildlife landscaping along the old DNR fish hatchery at Hatchery Creek. The property is the only county-owned park and adjoins the famous Birkebeiner ski trail. Community service groups like 4-H and Trout Unlimited joined forces with DNR 14 years ago to improve streamside habitat along the old hatchery grounds, build park and picnic areas, and construct a public pavilion and restrooms. The Besadny grants add some finishing touches to this community project including planting cedars, hemlock and shrubs used by wildlife for food and cover. Funding will also give 4-H'ers the supplies to build birdhouses and nest sites along the nature trails.

With support, the C.D. Besadny grants can continue annually keeping communities interested and engaged in outdoor enjoyment and wise outdoor management. The grant program, currently with about \$200,000 in endowments, has set a goal of reaching \$250,000 to continue the community dividends from investing in outdoor opportunities. If you are interested in joining this effort, contact the Natural Resources Foundation of Wisconsin, P.O. Box 129, Madison, WI 53701-0129, phone (608) 266-3138 or fax (608) 266-2452. □

(top) C.D. Besadny grants bought materials for an outdoor classroom in Racine.
(middle) Bat box designs are being tested in Wisconsin potato fields.
(left) Brush was cleared and habitat structures installed on the Little Wolf River.

continued from page 2

After feeding and reaching mature size, the two-inch spiny larvae find safe places to pupate and transform into adult butterflies. Newly-emerged adults are easy to recognize as their wings are whole, brightly colored and unblemished. The mourning cloaks are North America's longest-lived adult butterflies, often surviving ten months because the adults have it pretty easy. They bask, rest and feed, storing up energy for winter hibernation. You can see mourning cloaks well into autumn before they seek shelter under tree bark, in cavities or in old



JOHN BAKER

The mourning cloak larva has black spines with red dots at the base. The red on black pattern often signals a poisonous or dangerous organism in nature.

open buildings where they can escape winter's icy blasts.

Even in winter, don't be surprised to see a mourning cloak floating about,

fooled into thinking it's spring by a warm day. As late afternoon temperatures retreat below the freezing mark, the butterfly ends its brief winter emergence and returns to a hiding spot until warmer weather prevails. Then the cycle will start again as territorial males and wandering females meet in a chance encounter on a wooded trail. □

Anita Carpenter trods the wooded paths near her Oshkosh home.

Readers Write

WANT TO WRITE US?

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

LEGISLATIVE RAID

I am writing in regard to an issue of concern to the conservation community in Wisconsin — the legal but unfair stealing of DNR funds [from this magazine].

Federal forestry funds provide \$1.8 million to states to compensate local towns for lost tax base due to national forests located within their jurisdiction. Originally, this money was given directly to townships in lieu of taxes. The last state budget changed the system by mistake and gave the money to school districts in these areas, thus causing a serious financial hardship for many local townships.

To correct this situation, the Legislature looked at using state funds to make the towns "whole" again. Due to a difference between the Senate and Assembly versions, a conference committee was created to identify state funding that would provide assistance to northern Wisconsin townships without hurting the school districts by taking this money away.

Unfortunately, rather than

using general tax dollars, some legislators tried to play games by taking money from certain DNR programs.

First, the State Assembly decided to make up half the funds through General Purpose Revenue (GPR) [state taxes] and take half from the DNR motor boat funds. The Senate rejected that approach and returned it to the Assembly requiring general funds. A conference committee modified the bill by taking more general funds, but also taking \$450,000 from the *Wisconsin Natural Resources* magazine fund. The magazine fund is generated through subscriptions and small donations — this solution seriously compromises [the magazine's] operation in the future.

I strongly opposed this thinly veiled effort to steal these funds that were generated through the effective efforts of selling the *Wisconsin Natural Resources* magazine, and I believe that this solution was dead wrong.

It is no wonder that DNR staff is demoralized when they see the Legislature using their successful

efforts to cover other expenses. This is politically, ethically and morally wrong.

On one hand, we tell agencies to be as self-sufficient as possible and then take their money and spend it on other activities. The magazine is paid for by [your] individual subscriptions. Its readers cover all staff, mailing, printing and other costs. NO TAX DOLLARS ARE USED! Magazine subscribers should be outraged. If we do not return these dollars, the cost of the magazine will surely go up.

Now, \$450,000 has been taken from their fund and given to townships to cover a financial mistake made in the last budget. It was wrong, and come January, hopefully the Governor and Legislature will correct this "stealing" of subscription money. Every outdoors person in Wisconsin should demand it.

*State Sen. Jim Baumgart
Ninth Senate District
Sheboygan*

We take our commitment to you, our readers, very seriously. And we will work to convince state legislators to restore these funds so we can continue mailing you the magazines you have paid to receive. Like Sen. Baumgart, we think the expropriation of your subscription funds to pay for a

tax program is dead wrong and bad public policy. It is an especially curious decision in a year when the State of Wisconsin had a \$360 million surplus.

When the Legislature allowed the old Wisconsin Conservation Bulletin to become a color magazine back in 1976, lawmakers told us we had to make it on our own. Wisconsin Natural Resources would have to pay its own way covering salary, printing, mailing and subscription costs of delivering magazines to subscribers. We have met that challenge for 24 years and continue to provide a magazine that explores outdoor places, discusses emerging outdoor issues and encourages your partnership in protecting natural resources without spending state tax money. We are proud that we have operated as a business whose bottom line has been to provide you with a quality publication at a bargain price.

We will also ask legislators to restore the statutory protections that kept magazine funds from being diverted for other purposes as long as we kept our promise to deliver a quality product at a fair, affordable price. In addition, we will ask state legislators to restore the \$451,400 of your subscription money that was diverted to other purposes.

Your support would also be

appreciated. Legislators need to know that you value this magazine. They need to know how you feel about your subscription fees being diverted to pay for a tax program. They need to hear that you expect your subscription payments will only be used now and into the future to fulfill your subscription to Wisconsin Natural Resources magazine. If you agree, contact your representatives in the state Assembly and Senate and ask them to give your subscription money back to this magazine.

PROTECTING SHORES

Similar projects to those described in your April story "Less work, more beauty, better protection" are occurring on the Upper St. Croix Priority Watershed Project near Solon Springs and Gordon, some 150 miles from the Upper St. Croix projects mentioned in Douglas County. Our environmental consulting firm along with a handful of excited lakeshore owners began our first projects in 1997. Since then, interest in restoring shorelands in northwestern Wisconsin has soared. By the end of 1999, more than 60 projects had been started on 27 different lakes in Douglas, Bayfield, Burnett, Sawyer and Washburn counties. Increasingly, people who own property on rivers and lakes are gaining a better understanding of the ecological and aesthetic benefits of restoring shorelines to as native a state as possible.

We use native flora for aquatic plantings, groundcovers, shrubs and trees. The greatest advantage to planting native species in a riparian area is the plants require less maintenance, once established, than most non-native species. Trees and shrubs along the waters provide shade for fish and places for shoreline birds to nest and locate food. Plants in the water and near the shore provide cover for fish, frogs, salamanders, turtles and aquatic insects that form the massive food source of the lake ecosystem. All of these creatures depend on the native grasses, flowers, shrubs

and trees along the shore.

By the time readers see this, we will have installed another 40 projects on 15 lakes. The good news is that these shoreline rehabilitation projects begin to return ecological function back to inland waters slowly, but surely.

*Paul Hlina
Leaning Pine Native Landscapes
South Range*

BY THE NUMBERS

We interested several readers in exploring ways to restore a natural look to lakeshores in our April issue, but we threw them a curve in finding resources mentioned. One of the 800 numbers only worked from Minnesota and the other only worked from Wisconsin. Let's try this again. Readers seeking "The Living Shore" videotape can call (715) 346-3424. "Lakescaping for Wildlife and Water Quality" is available from the Minnesota Bookstore at (651) 297-3000.

ON HUNTS AND BAIT

The bait debate in the letters column has brought me out of my shell.

The main reason I love our wonderful state is its natural resources. All of my most memorable experiences are times spent outdoors watching two bucks fight in a field, seeing badgers chase squirrels, having hawks and owls land almost within arm's reach, and last year seeing an eagle take a turkey right out of a roost.

I've bow hunted for 15 years and take part in the gun hunt mainly for the camaraderie. For me, hunting is a natural experience where you go into the woods and read the signs nature gives. The basics are food and reproduction, and both signs are easy to find. Farmland provides plenty of sign where deer use cornfields, alfalfa, beans or potatoes. If you hunt big timber, it's not any different — acorns, maple leaves, mushrooms, moss and downed trees all attract deer.

Finding spots where deer travel in and out from these areas is easy enough. You need to look

for trail and droppings. During the rut, bucks hang out big signs all over the woods in scrapes on the ground and rubs on trees. All the letters from people who don't know how to hunt without bait makes me think they need to spend more time before Opening Day walking the woods and looking around. A big part of the hunt is taking pleasure in all the other things you can see.

*William McIntyre
Merrill*

TROPHY HUNTS AND LAND PRESSURE

I have a few observations on the continuing discussion about trophy hunting and so-called Quality Deer Management. I'm concerned that hunters who advocate passing up small bucks and focusing on trophy animals harm the image of hunting. Advocating selectively killing an animal because it has a big rack has negative connotations for many people. I work with many non-hunters, and I can attest that the trophy hunting mentality pushes some fence sitters over to the anti-hunting side.

Personally, I don't care if I shoot a trophy buck. My time in the woods is limited, I hunt for the pleasure of being out with friends and family, and I love to eat venison. I don't begrudge the trophy hunter's personal decision, but I don't want it pushed on me or others.

I'm most concerned because in Wisconsin, the big buck mentality has helped create and foster a terrible problem of finding a place to hunt. Landowners typically charge \$300 to \$600 per person for access because they think their land can produce "the big one" that hunters are seeking.

I hunt in western Wisconsin with my family in Eau Claire and Trempealeau counties. Until 1990 or '91 we hunted in Buffalo County, but we stopped because of fees that ranged from \$300–\$500 per person. Two or three years ago, my wife, father and I stopped at a farm and asked to hunt grouse along a hillside. The farmer agreed — for \$25 per per-

son. At \$75, those would have been expensive grouse, so we declined.

Those who doubt these fees need only read the classified ads in the newspapers during summer and early fall where long-term leases for hunting and hunting rights for the nine-day deer season are listed. For people with high disposable income, these access fees may not pose a problem, but for others, fees lead them to decide hunting isn't worth it any more.

*Brad Larson
Oshkosh*

THEY'RE BACK!

I have a beautiful nest of four killdeer eggs right in my garden. I looked all over, even contacted the Audubon Society, to find out how long that nest would be in use...without success. Thank you for "A call from above" (April 1997) on your website. All my questions were answered.

*Jane
Website visitor*

TOO MANY PEOPLE

Your April insert "Warming Trends" presented a beautiful discussion on what I would call the secondary causes of warming and pollution — emissions of various types and how we can reduce them. Population is the primary cause. Because limiting people production runs counter to our economic system of greater consumption and counter to the philosophy of some religious groups, we tend to sidestep the real issue.

In recent years, I've seen more publicity given to population problems, but it seems so little and so late. Are we already too late? Must we have government intervention? We seem to be having more and more wars, starvation, flooding and disease than ever before. I realize this is tender ground, but population limits will have to be considered sooner or later.

*Reno W. Kuehnelt
Wausaukee*

WISCONSIN TRAVELER

Picture this

Wildlife watching is the nation's second most popular outdoor pastime. (The first is...no, not *that!* Try gardening.) In Wisconsin, more than two million people enjoy viewing birds, butterflies, deer and a host of other critters each year. TRAVELER would guess that a good three-quarters of those folks if not more carry cameras to capture what they've seen on film.

Whether you enjoy taking the occasional snapshot with a point-and-shoot, or prefer to pack a 4x5 and a tripod into the backcountry for landscapes *a la* Ansel Adams, why not consider

showing your work to others who also love and enjoy the outdoors?

Wisconsin's oldest state park, **Interstate State Park** in St. Croix Falls, celebrates 100 years of providing outdoor recreation with a photo contest. Submit your work of either Wisconsin Interstate Park or Minnesota Interstate Park (on the opposite bank of the St. Croix River) in one of six categories.

Winning photos in each category receive ribbons and will be displayed at both parks. The Grand Champion photographer will win an additional grand prize. Entries accepted through August 6. 715/483-3747.

Buckhorn State Park in Juneau County would like to see your images of wildlife, wildflowers, plants, people and open landscapes...all taken within park boundaries, of course. The park will accept entries for its photography competition

a backyard butterfly garden. The "Butterfly Bonanza" runs through August 20. Open 10 a.m.-4 p.m. daily. 608/246-4550. www.olbrich.com (Don't forget your camera.)

To watch an event so wild it's not even taking place on Earth, visit the "Darkest Park on the Door Peninsula" (**Newport State Park** in Ellison Bay) for the annual drama of the Perseid

Meteor Shower. Last year's visitors saw more than 50 meteors in an hour's time. That's a lot of stardust, friend. Bring a blanket and a flashlight. August 12, 8-11 p.m. 920/854-2500. (Don't forget your tripod.)

Could there be a more



DON BLEGEN



JOAN COLLINS PUBLICITY

through September 30. 608/565-2789.

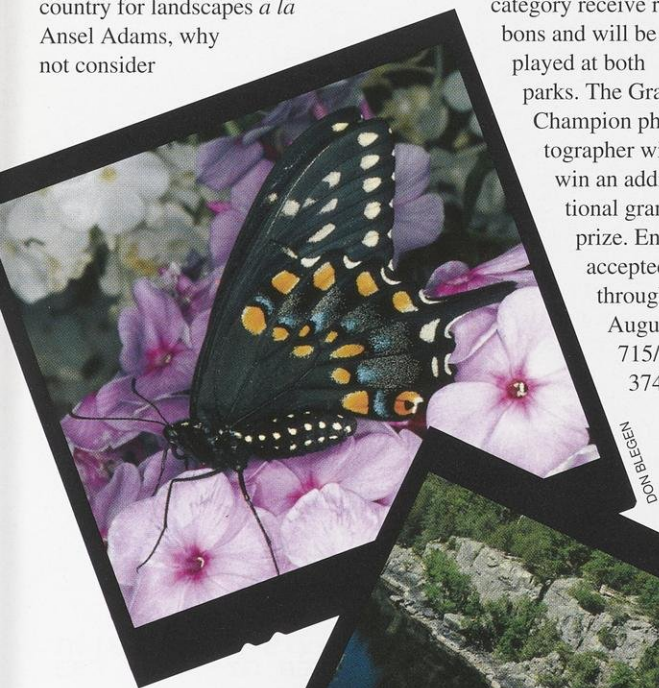
P.S. *Wisconsin Natural Resources* is always on the lookout for fine outdoor photography. Review our photographer's guidelines on the World Wide Web (www.wnr-mag.com/guides/phowri.htm#photo), and if you're interested, drop us a line!

If the August heat has you in a swoon, do your wildlife watching the easy way: Visit **Olbrich Botanical Gardens** in Madison, where thousands of butterflies flit freely within the friendly confines of the refreshing Bolz Conservatory. You'll see 24

species of domestic butterflies and three moth species native to Wisconsin and tropical areas of the U.S., including painted ladies, swallowtails, and zebra longwings. You can also learn how to plant

Shoot and savor summer fun on film. (above) Take landscapes on a riverboat cruise on the Julia Belle Swain.

delightful (or more romantic) way to watch a river's life and wildlife unfold than from the decks of a real **steamboat**? The *Julia Belle Swain* plies the Mississippi River from LaCrosse north to Winona, Minn., and south to Prairie du Chien. Along the way, you'll pass by sloughs and islands, home to many migrating birds. Take a short sightseeing excursion, a dinner cruise, or a trip lasting several days, such as "Autumn on the Upper Mississippi" — a five-day cruise from September 21-25. The steamboat docks at Riverside Park in La Crosse. For a trip schedule, see www.juliabelle.com or call 1-800-815-1005 (in the La Crosse area, 608/784-4882). (Don't forget the film!) □



NEEDS NO



BONNIE GRUBER

Capture a black swallowtail on phlox. Snap the St. Croix River from Interstate Park.

Wisconsin, naturally



BASS LAKE FEN STATE NATURAL AREA

Notable: A wonderful variety of aquatic habitats reward visitors to this 77-acre preserve in southern Waushara County. Bass Lake is a small, sand and marl-bottomed lake ringed with bulrush and cattails. Perched on the northeast shore is a 20-acre calcareous fen —

an alkaline wetland dominated by calcium-loving plants. In late summer, look for grass-of-Parnassus, fringed gentian, shrubby cinquefoil, nodding ladies' tresses, and purple false foxglove. Away from the lake, the fen grades into tamarack swamp and shrubby sedge meadow. Sandhill cranes, waterfowl, and other wetland birds make extensive use of the natural area.

How to get there: From the intersection of State Highways 73 and 22 in Wautoma, go south on 22 about 4.3 miles, then east on County Trunk Highway YY 0.9 miles to a parking area on the south side of the road. Walk south along a lane 0.75 miles to the lake. Wisconsin Atlas: page 53, grid B5. For a map or more information, contact the State Natural Areas Program, DNR, Box 7921, Madison, WI 53707.

