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WISCONSIN NATURAL RESOURCES

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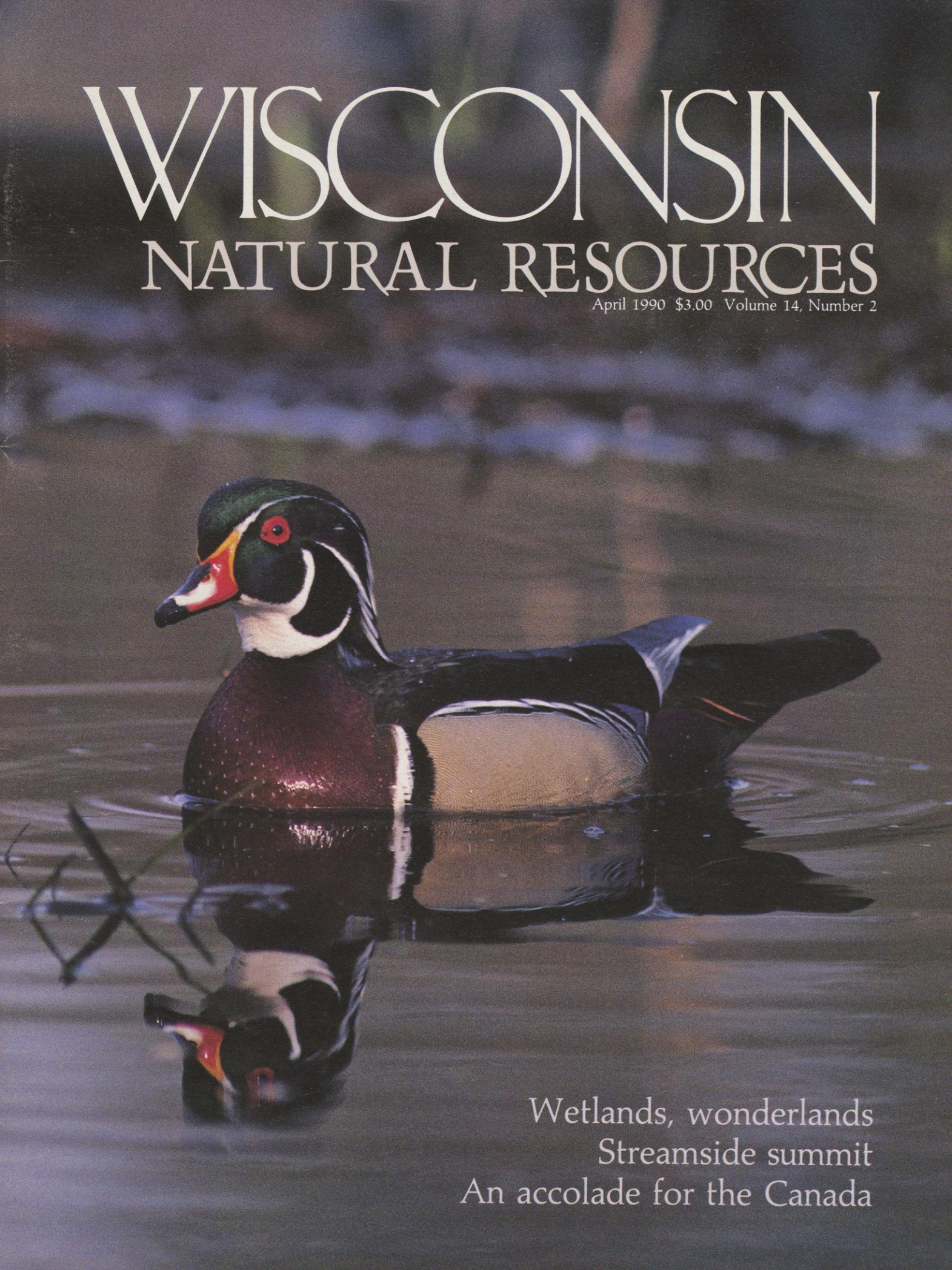

Wetlands, wonderlands
Streamside summit
An accolade for the Canada

Elfins AMONG THE PINES

Anita Carpenter

In the warmth of early May when the blueberries are blooming, pine elfin butterflies emerge to flit among the jack pines, red pines and Eastern white pines in all corners of Wisconsin save the southeast. These diminutive brown butterflies spend most of their short lives above our heads in the upper pine branches. However, for a day or two after they emerge, the males are attracted

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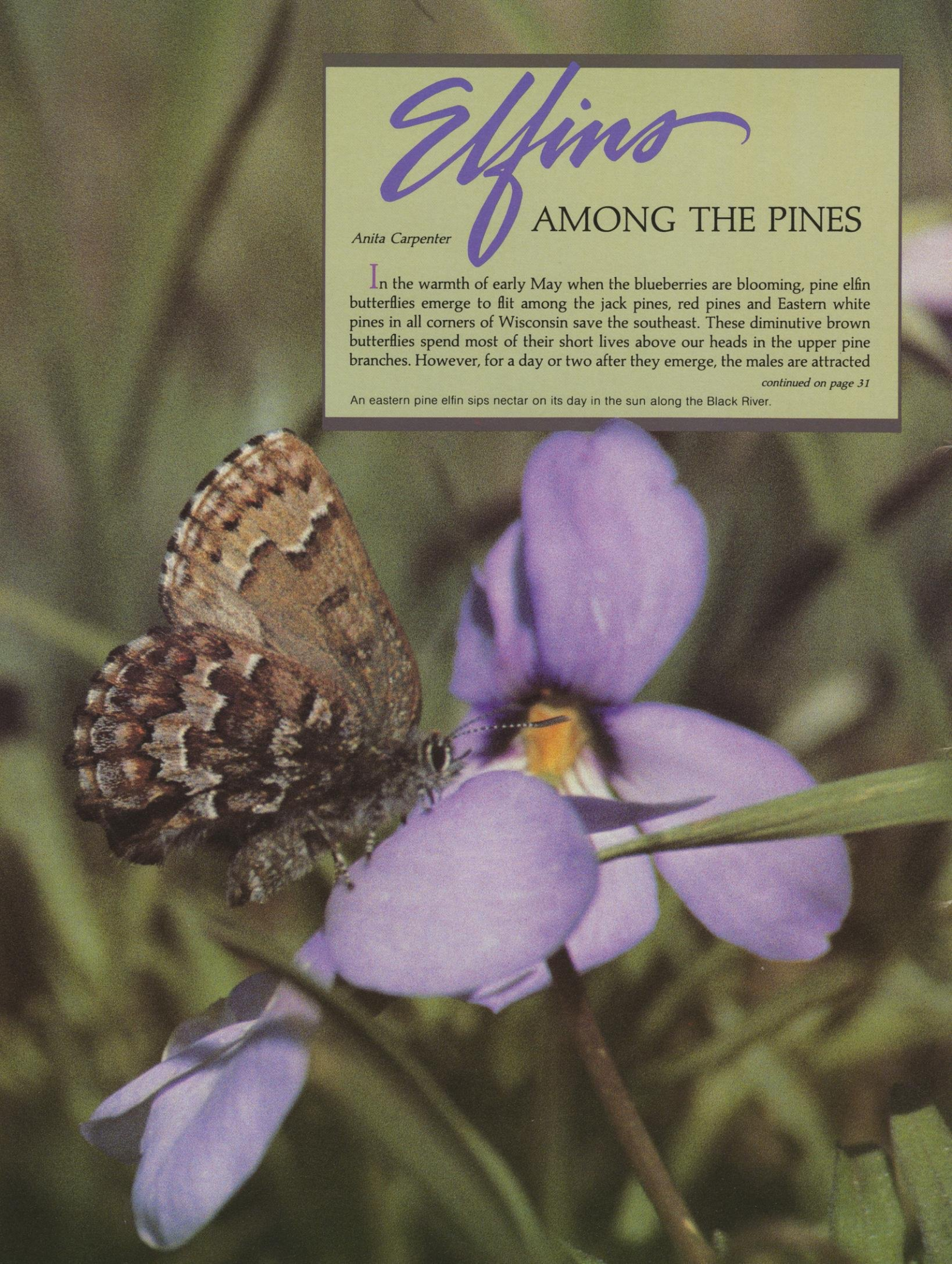

An eastern pine elfin sips nectar on its day in the sun along the Black River.

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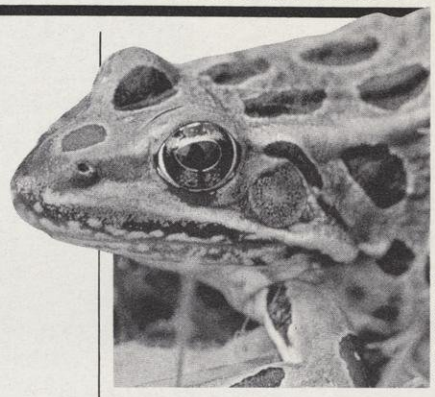


CHARLES FONAAS

DAVE CREHORE

AL HILLERY

FRONT COVER:
A drake wood duck on a beaver pond. GREGORY K. SCOTT, GILMAN, WIS.

BACK COVER:
Spider web on a dewy day.
DON BLEGEN, SPRING VALLEY, WIS.

CALLIGRAPHY BY LINDA HANCOCK

DNR PHOTO

Horicon Marsh is wild again

The struggle to maintain wetlands is recounted nowhere better than at Wisconsin's most famous marsh.

Bill Volkert

The history of Horicon Marsh reflects the vital, abundant life within it. The marsh's story is a tale of life, death and rebirth as the area changed from wetland to wasteland and back again.

It was born as a by-product of the great glaciers of the last Ice Age about 12,000 years ago. The marsh is renowned for its Canada geese and other wildlife, but is equally recognized as a place where visitors can clearly see an extinct glacial lake so valued that the state portion of the marsh's 32,000 wetland acres, waterways, islands, wooded and prairie shorelines forms a unit of the Ice Age National Scientific Reserve.

Archeological records confirm this marsh has been a great hunting ground, used by prehistoric Indians since its waters first thawed out of the Ice Age. Nearly every prehistoric Indian culture known to the upper Midwest lived here at one time or another.

More recent tribes also called the marsh home. Horicon's vast areas of open water and the headwaters of the Rock River formed a natural boundary between the forest-dwelling Potawatomi tribe, who came to the marsh's eastern border from Michigan, and the Winnebago tribe, who settled on the prairie lands to the west of the marsh. In fact, the first recorded name for the marsh was "The Great Marsh of the Winnebagos," giving credit to its early inhabitants.

For nearly 12,000 years the marsh sustained Native Americans. In stark contrast to the European settlers who followed, the Indians only took what they needed from the marsh to live, never changing the marsh itself.

Solomon Juneau, Milwaukee founder and explorer, established a town site on the south end of the marsh in 1838. The first European settlers arrived in the early 1840s. The City of Horicon was officially established in 1845. The first change to the marsh came only one year later.

European settlement

In 1846, the marsh outlet was dammed to provide power for a sawmill, a grist mill and the area's first

Convincing state legislators to restore the valued marsh. May 1939.

iron works. This 150-foot-wide dam impounded a huge area that hadn't been under water since the Ice Age. The dam held back enough water to flood Horicon Marsh nine feet above the level we see today. The resulting 50 square mile Lake Horicon was proclaimed the largest man-made lake in the world.

It became such a popular spot for commerce and tourism that by the 1860s, five steamboats travelled on the lake. However, the lake was only to exist for 23 years. By 1869, disputes arose among local landowners whose land was flooded and made unsuitable for farming. The landowners took their case to the State Supreme Court and the Court ruled in their favor. In 1869, the dam was removed and the area returned to marshland.

Market hunting

The 1870s to the early 1900s marked another era in Horicon's history. Private hunting clubs began to establish on the marsh; the rest was open to unregulated hunting and market hunting.

In those days, wildlife came in such numbers as the settlers had never seen. Ducks, shorebirds and the now extinct passenger pigeon appeared in seemingly limitless numbers. Settlers hunted without restrictions and pushed wildlife resources beyond their limits in only 25 to 30 years.

Hunting techniques of the day have been mostly forgotten. The birds were often baited. Going out into the marsh with sacks of grain, market hunters scattered food about to lure the birds to the site. Once the birds had established a feeding habit, the hunters would wait in their blinds. They shot with punt guns — 2- and 4-gauge shotguns. These guns had 12- to 15- foot barrels; they had to be bolted to a boat or solid stand and would shoot out a flame 25 to 30 feet. Commonly, punt guns could kill 30 to 50 ducks in a single shot. In 1876,

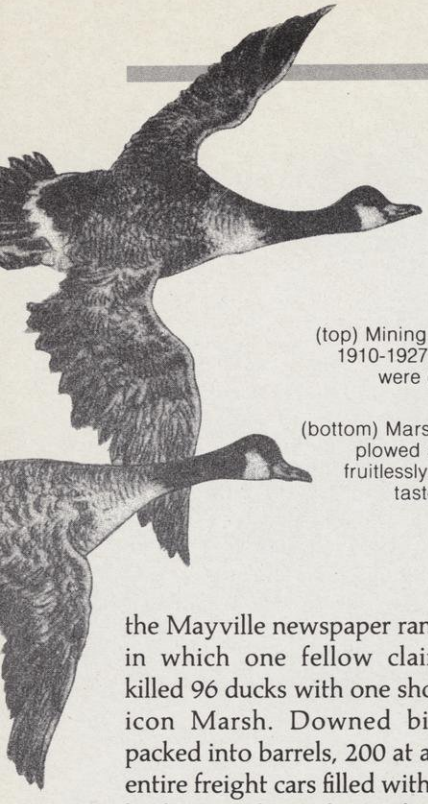
"Ducks, shorebirds and the now extinct passenger pigeon appeared in seemingly limitless numbers."

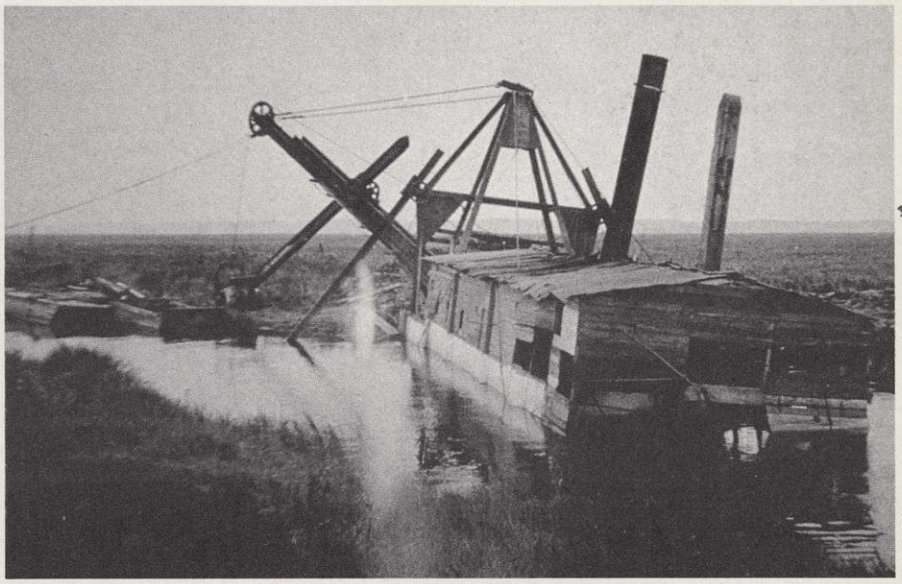
STATE HISTORICAL SOCIETY OF WISCONSIN

Horicon Shooting Club with a day's take of pintails, mallards, black ducks and teal. September 1910.

DNR PHOTO

Sports hunters vied for the few waterfowl market hunters and shooting clubs left them until the marsh was restored starting in the late 1920s.





DNR PHOTO

DNR PHOTO

(top) Mining marsh soils 1910-1927. Peaty soils were ditched and dredged.

(bottom) Marsh soils were plowed and planted fruitlessly. Vegetables tasted like peat.

the Mayville newspaper ran an article in which one fellow claimed he'd killed 96 ducks with one shot on Horicon Marsh. Downed birds were packed into barrels, 200 at a time, and entire freight cars filled with barrels of birds were shipped to Milwaukee and Chicago for sale.

Hunting continued spring and fall. Spring hunting, which was finally banned in 1905, was particularly devastating because birds were nesting. By the turn of the century, skies once filled with endless clouds of birds remained empty.

Given time, protected habitat and restricted hunting in spring, the birds could slowly add to their numbers and might have recovered, but the marsh itself would suffer further disaster.

Ditch and till

By the turn of the century, the land around Horicon had begun to change. Solid hardwood forests had been cut over to make room for farms, cities, towns and roads. The rich soil beneath the prairies was plowed under. In the middle of all this development lay Horicon Marsh, now depleted of its wildlife. People saw one more opportunity to "improve" the marsh for human purposes.

In 1910, an effort to ditch and drain Horicon Marsh for agricultural production began. By contract with a Chicago manufacturer, a dredge was assembled on the marsh. It took four years to dig the main ditch: a 14-mile-long scar cut down the middle of the marsh. At the same time, a series of lateral trenches was dug to gather water and draw it to the central drainage ditch. By 1916, all of the ditches were completed and it appeared the marsh would be converted into some of the richest farmland in the upper Midwest.

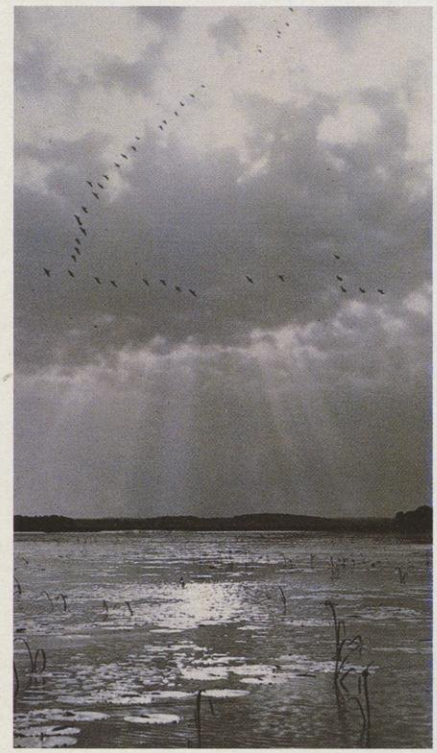
Farmers tried to raise root crops: onions, carrots and potatoes. As soon as the early 1920s, the muck farmers came to realize the marsh's limited potential for farming. In wet years, the marsh retained water into spring, making it impossible to work the land. Even if crops grew, heavy fall rains prevented harvest. The marsh's peat soils grew onions that tasted like peat, and farming plans quickly faded.

Once the water was drained away, the natural plant life plowed under and the heavy soil tilled, the exposed peat began to dry and rot during summer . . . and it caught on fire! Peat fires raged on for a 12-year period. One fire reportedly burned continuously for three years. Devoid of water, stripped of wetland vegetation, ditched, tilled and scorched, the smoldering wasteland lay useless to people and wildlife.

The restoration era

Under the leadership of Louis "Curley" Radke, the Izaak Walton League began the fight to restore the marsh. Their primary battlefield was

1930s-1940s. Rebuilding the marsh. (top right) Louis "Curley" Radke and the Izaak Walton League host an Open House to garner support for the marsh. (middle right) The State Assembly inspects marsh restoration in May, 1939. (below) Solitude and sanctuary for waterfowl.



DNR PHOTO

STATE HISTORICAL SOCIETY OF WISCONSIN

EUGENE SANBORN

HERBERT LANGE

not in Horicon, but in Madison at the State Capitol. For seven long years the Ikes drew support from other conservationists and worked with the State Legislature to forge the Horicon Marsh Wildlife Refuge Bill of 1927. It provided money to buy the land and construct the dam which is still operated today.

Once the dam gates were closed in 1934, the peat fires were doused and original water levels were restored. Marsh supporters hoped that native wetland plants would grow again and the area might function enough like a natural wetland to lure back wildlife. It seemed like a long shot, since no one had restored wetland on such a grand scale. Fortunately, nature is resilient. In only a few short years, the water, aquatic plants and brushy shore began to repair itself.

In 1941, the federal government purchased the rest of the marsh. To-

"More redhead ducks are raised here than on any wetland east of the Mississippi."

ROBERT QUEEN

Exploring Horicon by canoe can take you away from the crowds and closer to egrets, herons and muskrats. The DNR Horicon office can provide maps.

day, the marsh area is an intensive restoration project.

The southern third (11,000 acres) is a state wildlife area, managed by the Wisconsin Department of Natural Resources. The northern two thirds (21,000 acres) are a national wildlife refuge, administered by the U.S. Fish and Wildlife Service. Altogether, we have restored the original 13½-mile long, three- to 5½-mile wide basin, covering 32,000 acres. It is the largest freshwater cattail marsh in the U.S. More redhead ducks are raised here than on any wetland east of the Mississippi. The marsh is managed primarily for waterfowl, but habitat created for ducks and geese also lures other wildlife.

How far have we come and what kind of job are we doing? The wildlife tell us. Every year, more than 200 species of birds are sighted on this marsh. Over the years, a total of 265 species have been seen here; among the sights are a spectacular heron and egret rookery and several rare, threatened and endangered species. In addition, Horicon is home to many mammals, frogs, turtles and fish.

What does this natural history lesson teach us? Some places are best left as we found them. Nature intended these vast wet vistas remain a mixture of water, reeds, grasses, prairies and forests. We didn't appreciate Horicon Marsh nor recognize all its benefits until we destroyed it. Once the marsh was gone, we lost everything; not just one species, but all of the wildlife that depended on it. It has taken us decades to begin restoring the diversity we took for granted when this area was settled.

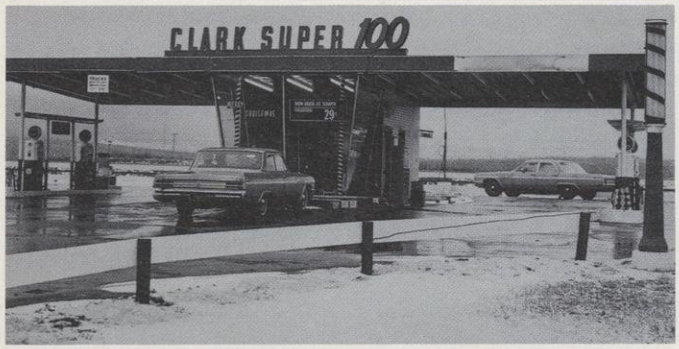
Today, Horicon is much more than a Canada goose marsh. This is a wetland ecosystem, equally important to each of its inhabitants. And also important to people, as a place to enjoy, to learn about wildlife, and to reflect on a human history that could not unearth more abundance than nature gave us. ■

Bill Volkert interprets wildlife management principles, nature and Ice Age geology for visitors to Horicon Marsh.

ISSUE 2

EarthNotes

REFLECTIONS AND SPECULATIONS ON ENVIRONMENTALISM FOR THE 1990s



GARY KIEFNER, MILWAUKEE JOURNAL, COURTESY OF STATE HISTORICAL SOCIETY OF WISCONSIN

"Don't spit in the well: you'll be thirsty by and by."

— Russian proverb

The period 1950 to 1990 stands out as a time when citizens, politicians and government stopped imitating conquistadores and started respecting Mother Earth.

The go-get-'em, Rambo philosophy that sustained pioneer America for more than a century wasn't excised with surgical precision. Some environmental ills slowly incubated, others caused fevered concern and frantic searches for legislative or technological cures, and still others lingered, delayed by political setbacks.

Our commitment to finding long-term cures for environmental ills continues today, buoyed most vividly by successes in controlling visible water pollution during the last 40 years.

Water pollution became a serious, widespread problem as manufacturing and population boomed during the last hundred years. The pace quickened and worsened after World War II, when use of synthetic chemicals became more common.

Modest gains in treating sewage made during the 1930s were lost in the 1950s as industries and cities increasingly used rivers as dumping grounds. In 1955, eight governors established the Great Lakes Commission to conserve water and promote orderly use of the Great Lakes Basin.

Like all Americans, Wisconsinites were bent on redeveloping the civilian economy. Material goods denied in the depression and rationed during WWII were available and affordable. The age of consumerism began in earnest. Folks craved cars, fancy appliances and television sets. Gasoline stations sprouted on neighborhood corners to dispense hot-rod fuel from shiny new tanks hidden underground. Great networks of highways and streets moved young postwar couples from their jobs downtown to their homes in the suburbs.

STATE HISTORICAL SOCIETY OF WISCONSIN

Suburban homes needed to be sewered. By 1956, the federal government began public works programs to cover 30 percent of sewerage costs for new neighborhoods. Communities bent on rapid growth and expanding tax bases outpaced the federal grants: home development sprawled, controls on wastewater from homes were spotty, whole neighborhoods were built incorporating individual septic systems and by 1957, septage haulers were licensed in Wisconsin to gain some means of managing large volumes of wastewater discharged in unsewered areas.

Baby Boom families had little money. Outdoor recreation was cheap fun. Clean water was essential as a backdrop for a family picnic, a weekend campsite or a summer cottage. The Legislature also authorized the Conservation Department to inventory surface waters and related problems.

". . . the Fox River in Wisconsin was one of the most polluted in the country. Until recently, fish kills occurred annually due to wastes from municipalities and from the largest concentrations of paper mills in the United States. At times, dissolved oxygen would be totally absent for distances of up to 20 miles."

— U.S. Environmental Protection Agency publication, 1980

By the mid-1960s, water pollution had reached intolerable levels in many areas.

America modernized, but people still faced old-fashioned health threats from contaminated drinking water and unreliable wells frequently fouled by the homeowner. Many rural dwellers still relied on privies and pit wells. In 1951, Wisconsin outlawed pit wells serving three or more residences.

Following a pattern that would be repeated many times in environmental debates, more stringent proposals were initially defeated. Opposition on this issue came from farm lobbies because pit wells, common on many farms, would be expensive to replace. Cost was the overriding factor even though clean, germ-free water was equally essential to Grade A dairies as homes. Two years later, the state toughened its well code, effectively eliminating pit wells and required all pump installers to be licensed.

During the mid-50s public water supplies in Fond du Lac, Green Bay and other communities threatened to run high and dry when groundwater withdrawn for industrial uses lowered the water table. But broad public concern about groundwater, the source of drinking water for most inland Wisconsin residents, wouldn't surface until the 1980s.

HAROLD HONE COURTESY OF STATE HISTORICAL SOCIETY OF WISCONSIN

Who would have suspected that by-products from wholesome products like canned vegetables and cheese would threaten water quality? Decaying pea vines and dumped whey released nutrients and wastes that depleted oxygen in streams and rivers.

Smelly, unsightly wastes in surface waters stirred public emotions and prompted governmental responses early in Wisconsin's history. Billowing suds from nondegradable detergents smothered streams and rivers in the '50s and early '60s. Thick slimes coated river bottoms choked with paper mill waste. Piles of rotting pea vines left in fields by canneries and milky whey dumped by local dairies and cheese factories leaked oxygen-demanding wastes into rural brooks, killing fish and other aquatic life.

The country first defined a clean drink of water in 1962 standards.

Rachel Carson's "Silent Spring," jolted complacent Americans with warnings of environmental threats caused by a growing dependence on chemicals.

Concern about water pollution began brewing in Wisconsin. In 1963, the University of Wisconsin's Water Resources Committee laid out the fundamentals of public policies to protect water quality. The state also passed a law to investigate and regulate nondegradable detergents. A 1965 ban on "hard" detergents ended most of the soapsuds problem on Wisconsin waterways, but not technological concerns.

The Wild Rivers Act, passed the same year, conferred special protection for the pristine Pike, Pine and Popple rivers.

The year 1965 — still five years before the first Earth Day — marked a significant turning point in Wisconsin's environmental history. Major daily newspapers used vivid photographs and urgent articles to splash Wisconsin water pollution all over the public agenda. The issue dominated state politics for more than a year. That summer, with strong support from lakeside property owners, Republican assemblyman George Borg introduced a bill for a 10-year, $100 million program to make one agency responsible for maintaining clean water. Previously, water programs were overseen by the Committee on Water Pollution, the State Board of Health and the Public Service Commission.

Reading and leading the public mood, Governor Warren Knowles called a special Conference on Water Resources Management that fall. Six hundred officials, experts and opinion leaders converged on the State Capitol to take part in an environmental barnraising that continued for months. The product of this historical, bipartisan effort built the legal and institutional framework which has since guided Wisconsin's approach to environmental protection.

Borg's ideas finally met approval, but not until politicians, bureaucrats and concerned onlookers accused each other of pandering to industry, tinkering with valued state institutions for political gain and vote-mongering.

Emerging from the fray was a reconstituted Department of Resource Development. Governor Knowles signed the Water Pollution Control Act of 1967 and approved major funding to get clean-up efforts moving. U.S. Interior Department Chief Morris Udall hailed the resulting Chapter 144 of the Wisconsin Statutes as the most comprehensive water quality law in the country.

Nor was the federal government idle. In February, 1965 the National Governors' Conference on Water Pollution urged greater federal support to prepare states to combat water pollution. Later that year, the federal Water Pollution Control Act of 1965 directed states to set water quality standards for interstate waters. Wisconsin adopted interstate water quality standards in 1967 and identical intrastate standards the next year. An early test: stemming mercury contamination on the Wisconsin River.

Changes in the structure of state government were not quite over. The Kellett Commission on Government Reorganization led to merging the nascent Department of Resource Development with the Wisconsin Conservation Department, which managed forests, parks, fish and wildlife. The controversial but historic 1968 decision created the Department of Natural Resources, which is directed by an executive chosen by a seven-member, citizens' policy board appointed by the Governor.

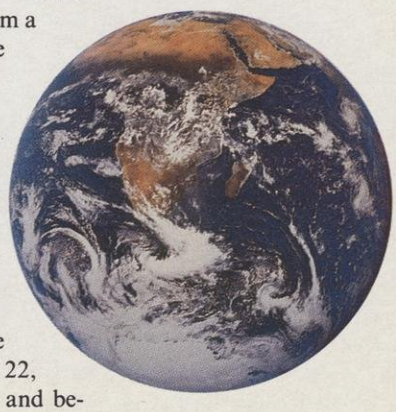
DEAN TVEDT

A sea of foam on the Wisconsin River below the Wisconsin Dells dam in spring,1965 was caused by an ingredient in laundry detergents. Wash water was carried from home washers through sewage plants and into rivers without sufficient treatment. Replacements for these "hard" detergents that aimed to ensure whiter whites and brighter brights unintentionally threatened water quality with phosphorus and other compounds. Today, other chemicals are thoughtlessly flushed into toilets and sewage systems that were not designed to digest or neutralize these wastes before they flow to rivers, streams and lakes.

". . . protecting our valuable water resources is one of the most important challenges facing the State of Wisconsin today."

— Warren Knowles, Governor of Wisconsin, May, 1966

During the late 1960s and early '70s, men landed on the moon and viewed the water-shrouded Earth from a new and humbling vantage point. The unpopular Vietnam War dragged on, college students got restless with the "establishment" and urban folks in less progressive states than Wisconsin finally got concerned about the environment.



Whether you wore bellbottoms or not at the time, Earth Day — April 22, 1970 —gratified its founders and be-

came a national "happening." People got their consciousness raised about Spaceship Earth and their utter dependence on its air, water and land. Once this new view of humankind as part and parcel of a great but fragile blue orb sunk in, major events took place.

President Richard Nixon approved creation of the U.S. Environmental Protection Agency. A galvanized Congress passed the federal Water Pollution Control Act Amendments in October 1972 "...to restore and maintain the chemical, physical and biological integrity of the Nation's water." The law set a system for water quality and waste discharge standards. It set two goals: Make the nation's waters fishable and swimmable by 1983, and eliminate discharges to waterways.

The law turned the tables on industries and communities by making it illegal to discharge pollutants without permission and permits. Prior to this time it was quite acceptable to discharge nearly anything to water. To stop pollution, government had to prove and pinpoint

JANA SUCHY

Requiring discharge permits was the most useful concept ever devised to abate water pollution . . . Carl Blabaum

that a discharge caused problems. The burden of proof in pollution cases shifted from enforcement agencies to the dischargers.

"Pollution control just took off in the 1970s," said Carl Blabaum, recently-retired director of the DNR's Bureau of Wastewater who started a career in state service in 1959 with the old Committee on Water Pollution. "Industry had controlled water for 90 to 100 years. That control suddenly shifted when Congress passed the Clean Water Act."

"Prior to 1970 federal efforts to cope with growing environmental problems were weak and ineffectual. The federal government's role was almost nonexistent and the states were unable to make any real progress without scaring industry away and into some other state where regulations were more lax."

— William Ruckleshaus, EPA administrator, 1983

More legislation followed. In 1972 consumer advocate Ralph Nader predicted polluted drinking water "might very well become the No. 1 consumer problem of the decade."

STATE HISTORICAL SOCIETY OF WISCONSIN

Wisconsin was already working on the problem that same year, completing its first survey of metals in drinking water supplies and banning the use of lead service lines to distribute drinking water.

Congress amended the Safe Drinking Water Act in 1974, requiring periodic tests of various chemicals and bacteria in drinking water along with water system inspections. The law regulates how much of health-threatening substances are allowed in public water supplies and sets other standards regulating drinking water's taste, odor and appearance. To further protect drinking water, Wisconsin revised state's well construction and pump installation codes to keep pace with new technology.

Concerns about the apparent "death" of Lake Erie and the general decline of the Great Lakes prompted a Great Lakes Water Quality Agreement between Canada and the United States in 1972. Back home, fish managers from Wisconsin and other Great Lakes states struggled to rebuild Lake Michigan's fishery by stocking salmon to prey on alewives: exotic smelt-sized fish that spread through the Great Lakes. Lakeshore communities wondered if the water would ever harbor desirable fish life and recreation again.

It took time, but lakeshore residents got their wish — with a catch. Fish came back in huge numbers, water quality improved and recreational possibilities blossomed. But in 1976, Wisconsin issued its first fish consumption advisory, warning people not to eat Great Lakes fish contaminated with a new threat — PCBs (polychlorinated biphenyls) and other products of the Age of Chemicals. The warnings extended along the Mississippi River where the public became concerned about Mississippi River sediment and sewage from the Twin Cities.

New controls on industrial pollution were tested during the drought of 1976 and 1977. Despite low river flows, dissolved oxygen remained high enough in Wisconsin's industrial rivers to support fish life while still accommodating much-cleaner industrial effluent.

The drought also showed water was precious to key Wisconsin businesses, including farms. For 18 months, the state approved 30 percent more irrigation permits than had been approved during the previous 32 years. Writing these emergency permits curtailed much-needed investigations of groundwater contamination caused by salt, cannery stack juices, solid waste disposal sites and petroleum products.

In 1978, a new, voluntary Nonpoint Source Wisconsin Fund program offered to share costs with landowners and communities that took steps to keep soil, fertilizer, street debris and construction site dirt from washing into streams and lakes.

DEAN TVEDT

Measuring dissolved oxygen content of water in a 1968 field test. Techniques for sampling water quality have gotten more sophisticated, but deciding how a host of chemicals threaten aquatic organisms hasn't gotten any easier.

During the Reagan era of the 1980s, states took the lead in protecting the environment due to Washington's reluctance to aggressively address environmental concerns. Acid rain emerged as an environmental threat to Wisconsin lakes. Research projects, which assessed what might happen to lakes sensitive to this pollution, led to a bold acid rain experiment on Little Rock Lake and an innovative acid rain law in 1986. The state added mercury to the list of unhealthy contaminants detected in fish and tightened health advice for PCB-contaminated fish in 1984.

The Council of Great Lakes Governors was created in 1982. The 1985 Great Lakes Charter set a regional strategy which led Wisconsin to pass its first laws regulating water quantity and encouraging water conservation. A 1986 agreement aimed to curb toxic contaminants.

In 1983, Wisconsin's rivers and streams became the first in the country to meet the "fishable and swimmable" national goals set in 1972.

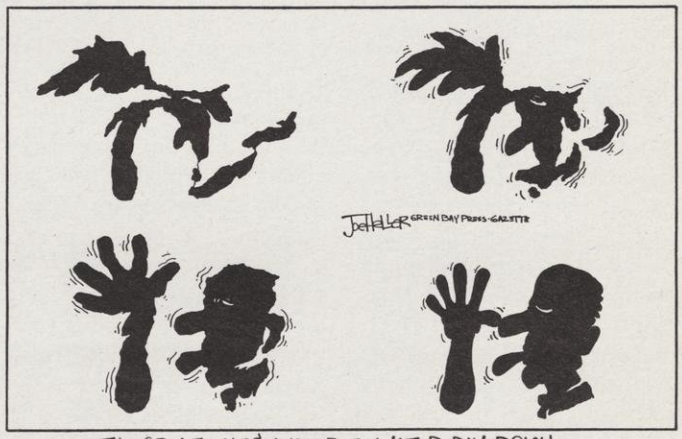
In 1984, Wisconsin permanently banned the statewide sale of laundry soap that contained phosphorus, a nutrient that acts like fertilizer when it enters lakes and streams causing aquatic plants to flourish unnaturally.

Wisconsin's 15,000 lakes emerged as a legitimate focus for water quality protection programs. Though the Conservation Department had monitored water chemistry changes for 40 years on seven study lakes, the DNR began monitoring lake health in 50 lakes statewide in 1986. Rules encouraging nonchemical alternatives for treating nuisance aquatic plants took effect in 1989.

Water experts turned their attention to hidden, invisible water pollutants, starting with groundwater. The state began hunting for volatile organic compounds in drinking water in 1982. Leaking waste sites, the discovery of agricultural pesticides in groundwater used for drinking and other threats led to passage of the landmark Groundwater Law of 1984. The law helps protect Wisconsin's 16,000 public water supplies and 750,000 private wells from contamination. Moreover, its principles for defining groundwater protective zones serve as a national model. Groundwater monitoring became extensive during the 1980s; the effort showed that pesticides, volatile organic compounds, nitrates and other substances were contaminating groundwater at sites throughout the state. The federal government was directed to set standards for 53 more contaminants in 1989 and 25 additional contaminants every three years.

In the mid-1980s, the U.S. and Canada identified 42 Great Lakes harbors and communities where toxicants are contaminating aquatic life and water. Wisconsin began preparing Remedial Action Plans for handling dirty sediments in polluted harbors in Green Bay, Superior, Menominee, Sheboygan and Milwaukee.

In 1989, controversial new rules set standards for toxic water pollutants contained in wastes discharged into surface waters by industries and municipalities.



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THE GREAT LAKES ANSWER TO WATER DIVERSION

What will we need to do to sustain our water future?

Pollution prevention to eliminate toxic metals and other contaminants.

Awareness of so-called **cross media** pollution, so solutions to water pollution problems don't become air pollutants or land contaminants.

Water conservation to reduce water use and subsequent expensive treatment in homes, factories, farms.

Vigilence about water diversion to other parts of Wisconsin and the country.

More public and private teamwork to solve vexing problems, such as contaminated, underwater sediment removal, treatment and disposal.

Sewage treatment innovations ranging from home toilet design to new treatment plant features to reduce water use and sludge buildup.

Groundwater protection: Once it's contaminated, groundwater cleanup is extremely expensive and sometimes impossible. Vigilant protection of this buried treasure will grow more essential as demands on groundwater use grow.

Health risk assessments as water pollutants pose threats to humans. Water quality protection standards will remain fluid, not static, as health impacts are assessed more precisely.

Public education to safeguard a critical natural resource like water.

Pooled expertise where needed to solve and prevent complex water problems. Engineers, biologists, health professionals, educators — especially those who can speak a foreign language beyond English — must work as teams to adequately address complex, global water issues.

Flexible frameworks to address environmental issues which transcend state and federal borders.

ROBERT QUEEN

Getting to the bottom of an unsettling problem. Core samples from lake bottom muds leave a physical and chemical history of water use and abuse. Selecting methods to remove contaminated sediments without threatening aquatic life is a challenge for the '90s.

Earth Notes is produced by the Division for Environmental Quality, Wisconsin Department of Natural Resources, P.O. Box 7921, Madison, WI 53707.

PUBL IE039 90

STREAMSIDE SUMMIT

ANGLERS AND RESOURCE MANAGERS FROM THE SOVIET UNION AND AMERICA SHARE GLASNOST ON WISCONSIN TROUT STREAMS.

Maureen Mecozzi

DAVE CREHORE

DAVE CREHORE

Arm in arm, the soviet delegation wade through a Wisconsin stream with Trout Unlimited director Robert Herbst (second from left).

"Since the earth is two-thirds water and one-third land, that means you should spend two-thirds of your time on the water fishing and the rest of the time on land talking about fishing." —*V.B. Samokhvalov, Deputy Chairman of Rosohotrybolovsoyuz*

With a broad, open-palmed sweep of his hands and a wry grin, Mr. Samokhvalov uttered the familiar justification for spending an afternoon in the company of rod and reel. His companions laughed heartily, nodding in agreement.

That he spoke only Russian and they only English didn't matter; everyone who heard him that sunny September day on the banks of Waushara County's Chaffee Creek understood. It's true that people from different cultures are more alike than they realize — but maybe, just maybe, anglers are more alike than most.

Samokhvalov and 12 Soviet colleagues visited the U.S. and Canada last fall to participate in Salmonid Summit II, a scientific conference sponsored by Trout Unlimited, America's largest coldwater conservation organization, and Rosohotrybolovsoyuz, a federation of Soviet hunting and fishing clubs. In 1986, the two groups signed a landmark agreement calling for annual conferences (the first was held in Moscow in 1988), angling trips and other cooperative efforts to exchange ideas, information and research on coldwater fisheries and environmental issues.

True to Samokhvalov's observation, the Soviet delegation spent about two-thirds of its time in North America fishing or in the field inspecting trout streams and examining techniques used to improve trout habitat, and about one-third talking about fishing at the Wingspread Conference Center in Racine.

The topics of the Soviets' papers — the difficulty of breeding black Barhal trout, attempts at restoring depleted Atlantic salmon populations for sport fishing, how to provide angling opportunities within city limits — mirrored the challenges of conservation and recreation in North America. Species may be different, but basic fisheries management problems facing the U.S. and the U.S.S.R. are the same: Can we stretch our limited natural resources to satisfy the

DNR fisheries managers and trout researchers show how half logs, streambank vegetation and water quality have restored trout populations on the White River.

DAVE CREHORE

diverse demands of a growing human population without destroying resources needed by future generations?

The Soviets' visit to America began with the air traveler's universal experience: Their plane was rerouted, delayed by ill-tempered Hurricane Hugo. Luggage, which contained clothing, slides for reports and gifts for their Western hosts disappeared into the ether between Moscow and New York. Loss of the gifts was especially distressing; generosity is a Soviet tradition and the delegates were embarrassed to arrive empty-handed.

Things didn't get any better after the group arrived in Milwaukee. Twelve members of the delegation were stuck in a hotel elevator for 45 minutes. Later, on a Lake Michigan salmon expedition, the fish feigned ignorance of *glasnost* and refused to bite. (DNR fish biologists speculated that the fish may have been spawning and weren't interested in the bait.)

Wisconsin redeemed itself when the delegates boarded a bus headed to Waushara and Waupaca counties for a look at trout habitat restoration projects. After a picnic lunch, sponsored and served by the local Trout Unlimited chapter at Wautoma's Bird Creek Park, delegates were outfitted with hip boots. "Their waders were lost with the luggage," said Dan Harmon, a TU chapter officer, "so I went to the nearest sporting goods shop and bought the whole stock."

On the way to Chaffee Creek, the bus passed through Wisconsin's Christmas tree country and all aboard were treated to the sight of a flock of sandhill cranes prancing delicately across a corn-stubbled field.

Chaffee Creek, with its artificial gravel spawning riffles and sand trap basins constructed by the Department of Natural Resources and members of the Central Wisconsin Chapter of Trout Unlimited, held special interest for E.L. Bukshtunsky, a senior researcher with VNIRO, the Soviet Ministry of Fisheries. "Little habitat alteration is done in the Soviet Union," he noted. "We currently rely more on stocking than natural reproduction." Bob Hunt and Ed Avery, DNR trout research biologists charged with evaluating this experiment, answered the Soviets' questions about construction techniques and the success of the project.

DAVE CREHORE

Mercedes Aniz, a Spanish forester (right), tells the author how erosion in the mountainous Pyrenees harm trout streams.

On another portion of Chaffee Creek, DNR staff demonstrated a mechanical one-of-a-kind streambank debrusher designed by Terry Hupf, DNR Habitat Supervisor at Wild Rose. Due to the encroachment of tag alder, the stream segment was losing its undercut banks, a favorite resting spot for trout. Hunt explained how the "brush hog" clears the banks of woody shrubs so remaining weeds and grasses are exposed to more sunlight, in effect creating a marshy meadow. The sturdy turf allows the stream to continue undercutting the banks without slumping streambank soils into the water. Extra sunlight reaching the stream increases the amount of aquatic vegetation and, in turn, aquatic insects on which trout feed. Brushy growth has been removed from several trout streams with the debrusher making them more productive. Anglers like the easier fishing conditions, too.

Mercedes Aniz, a forester from Spain, attended the conference in search of ways to halt erosion, which is causing serious degradation of brown trout habitat in the steep, high-banked streams of the Pyrenees. While she snapped photos of the debrusher, Tamara Vinogradova, head of Rosohotrybolovsoyuz's Department of Fishing and Sport Fishing, gazed intently into the water. When asked if she would rather be fishing, she replied: "Of course — if I knew where the fish would rather be!"

At a brief stop on Lunch Creek, delegates saw further results from Hunt's pioneering research on streambank debrushing.

A sizeable delegation of soviet anglers, fish managers and researchers learn about North American trout management first-hand. Next year, U.S. and Canadian teams will get a chance to visit similar projects in the Soviet Union.

DAVE CREHORE

Streamside peristroika

Dedicated Soviet anglers face even greater physical and philosophical challenges than their Western counterparts in restoring quality fishing habitat. The environmental movement is just developing in the U.S.S.R. and conservation groups have a tough struggle convincing government to act on important resource issues. Among the challenges:

Put-and-take stocking philosophy — The Soviet system tends to use production quotas as the major means of measuring productivity. Consequently, raising and stocking fish is seen as more important than improving stream quality as a strategy for better fishing. Western fisheries managers are convinced that fish habitat and a clean environment must be restored before fish stocking will provide long-term improvements for a fishery.

Fiscal burdens — The Soviet hunting and fishing alliances must raise private funds to improve public waterways and fisheries. The groups hire professional resource managers and volunteer their time to improve fishing and public access to fishing. If the resulting improvements are high quality, the projects may be taken over by the government and become less accessible to the average angler.

Fighting "city hall" — Environmental protection has historically been down-played as the Soviet economy industrialized. Moreover, it's more difficult for Soviet citizens to call for tougher enforcement of environmental laws in a country where so much of industry is owned and operated by the government. We face the same malaise on this side of the Atlantic. For instance, military bases, munitions manufacturers, defense contractors and government-managed properties have strongly resisted scrutiny as hazardous waste producers under the Superfund program.

Few partnerships with environmentalists — The environmental movement is in its infancy in the Soviet Union. Gorbachev came to power in 1985. His policies of *glasnost* (openness) and *peristroika* (political and economic restructuring of the Soviet society) are barely three years old. Anglers have had little time or opportunity to forge partnerships with the "Soviet greens" to push for reforms that would improve natural conditions for fishing.

Even in the United States, where environmental reformers, hunters and anglers have freely mingled for decades, we see too few meaningful alliances of environmentalists and conservationists. Too often, the "tree huggers" and the "redshirts" choose to highlight their differences rather than explore their mutual concerns.

Severe environmental problems — Environmental problems severe enough to kill people, cause human illness and harm fish are much more common today in the Soviet Union than in the United States. Fyodor Morgun, head of the Soviet's first governmental environmental agency, the State Environmental Protection Committee, cited some of his country's serious environmental challenges:

- Factories are still allowed to dump totally untreated wastes into waterways. Major rivers like the Volga, Dnieper and Don are seriously polluted; great seas like the Caspian, Aral and Baltic are considered ecological disasters.
- The Soviet economy is largely dependent on smokestack industries like steel and chemical production. These businesses have not been required to meet environmental standards and their waste streams are inadequately treated. As a consequence, wherever there are sizable populations — in about 102 Soviet cities where 50 million people live — air pollution rates are at least 10 times above health standards. Angling is more popular in urban areas than in the country, so fish are exposed to these pollutants too.
- The failure of large collective farms has led Soviet farmers to apply massive amounts of chemical fertilizers and pesticides to boost harvests. For example, in the vegetable-growing regions of Azerbaijan, typical fertilizer rates are 35.7 pounds per acre; 160.5 pounds per acre on grapes. Excess chemicals leach into groundwater and surface waters contaminating both streams and drinking water supplies. Infant mortality rates in this region are 118 per 1,000 births, among the highest in the world.
- Erosion — Every year approximately 2.5 million acres of cropland in central Asia are abandoned due to lack of regular water supplies. Abandoned, tilled soils erode and blow, carrying dust and sediment to streams.
- Spectacular failures in environmental manipulation. Shores of the Aral Sea, once the world's fourth largest body of water and a famous fishing region, receded 30 miles in 30 years. The Amu Darya and Syr rivers were diverted from the Aral to irrigate cotton fields in Trukmenia and Uzbekistan. Water diversion shrunk the Aral Sea by 40 percent, leaving a brackish sea that can't support fish life and 10,000 square miles of salty, blowing desert. Adding insult to injury, salty dust cut productivity on farms miles from the arid Aral.

— *David L. Sperling*

"Conservation starts with the first cast."

—Trout Unlimited slogan printed on a T-shirt worn by D.K. Dyrin, senior researcher of the Zoological Institute of the Academy of Sciences of the U.S.S.R.

DAVE CREHORE

(left to right) Erasm Bakshtansky, soviet salmon researcher; Robert Hunt, DNR cold water fisheries research leader; Erena Moyseyeva, translator; and her father, Professor Peter Moyseyev, Dean of Ichthyology and Fisheries of the USSR All Union Institute of Food Industry compare notes on trout.

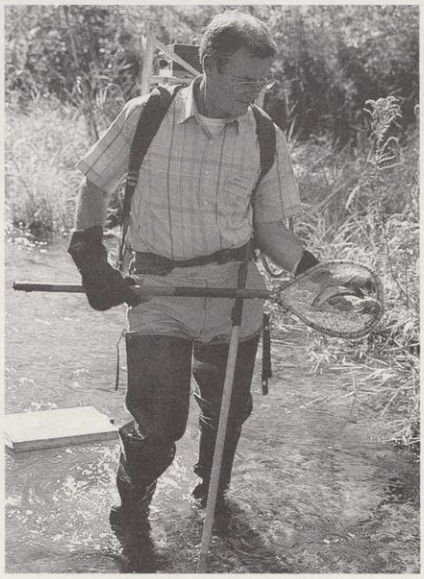
The group moved on to the West Branch of the White River, a popular site for studying and fishing wild trout. Kent Niermeyer, DNR natural resources technician, used a backpack electroshocker to bring dozens of browns and rainbows to the surface for inspection. As the Soviets followed Niermeyer upstream for a closer look at the one- to three-year-old trout, Larry Claggett, DNR cold-water fisheries specialist, explained that there had been a 10-fold increase in large trout in the improved river segment after the installation of half-logs and devices to channel current and provide cover.

Before the bus returned to Wautoma, the delegation was treated to the sight of fly-fisher Bob Heding in action on the White River. According to one Trout Unlimited member, Heding, a former DNR land acquisition and habitat expert who was instrumental in protecting and improving many central Wisconsin's streams, could cast and "take the eye out of a gnat at 50 feet." Although no trout rose to the occasion, Heding's graceful casting technique drew admiring looks from Soviets and Americans alike.

The savory smell of roasted pork greeted the delegates as they arrived back in Bird Creek Park. Hosted by the Central Wisconsin Chapter of Trout Unlimited, the pig roast was a relaxed, festive event, perfect for exchanging technical questions and a few good fish stories.

V.A. Sporov, chairman of the Volgograd chapter of Rosohotrybolovsoyuz, explained that lying about the size of fish has reached epidemic proportions in the U.S.S.R. "Whenever a fisherman spreads his hands apart to show the fish's length, we tie his hands together," Sporov said. "But then, this liar will use his cupped hands and say, 'This was the size of my fish's eye!'"

Ice fishing is very popular with Soviet anglers, according to Michail Kaverzin of Irkutsk. "On Lake Baikal — it is a beautiful lake, at more than a mile deep, it is the deepest inland body of water in the world — we ice fish . . . if we can chop a hole deep enough to reach water." The ice is often three or four feet thick on the lake, Kaverzin said, but below the ice lurk sturgeon upwards of 150 pounds, lake trout requiring a creel the length of the Trans-Siberian railroad, and omul, a species of whitefish so delicious it makes the angels smile.



DAVE CREHORE

Kent Niermeyer skillfully used a backpack electroshocker to stun trout just long enough to show where quality streams hold healthy trout.

Tamara Vinogradova grinned as she spoke of a women's fishing club in Moscow. "They ice fish in city ponds stocked with rainbow trout and carp," she said, "jiggling the line, teasing the fish to insanity so they will bite!"

A fellow delegate mentioned with pride that Ms. Vinogradova had been

"The more time you spend fishing, the longer you live. The time spent fishing is added on to your life!"

—Michail Arhipovic Kaverzin, Chairman of the Irkutsk Society of Hunters and Fishermen

DAVE CREHORE

The summit left time to enjoy fishing too. Here, fly-fishers share techniques.

a leader in establishing urban fishing programs in ponds and cleaning up rivers to provide more fishing opportunities for anglers in the U.S.S.R.

When asked to share some advice for American anglers, Igor Kamshilin, head of the laboratory of VNIRO's Scientific Institute of Fisheries, recommended Alexander Pushkin's "The Tale of the Fisherman and the Golden Fish." The popular poem, written by one of Soviet Union's most beloved authors, is a succinct lesson in humility and respect for the power of nature.

Before retiring to face another busy day of field trips in Wisconsin (the Wild Rose Fish Hatchery and Milwaukee's Great Lakes Research Laboratory were on the itinerary) the delegates met for a nightcap in the lounge of their Wautoma hotel. Here the talk turned to more serious matters: habitat degradation caused by hydroelectric dams and power plants; pollution; the slow pace of passing laws to protect the environment. "The Soviet people are becoming more active environmentally," observed D.K. Dyrin. "Rosohotrybolovsoyuz put pressure on the government to close a paper mill that was polluting Lake Baikal. But there is much more to do. . . ."

Including penning a letter to Mikhail Gorbachev, George Bush and Canada's Brian Mulroney, asking for international collaboration in fish conservation and related environmental issues. As the delegates left to put the finishing touches on the document, Mr. Sporov proposed traditional toast: *Na zdorovie* — "to your health."

"And the fishes' health, too!" added Mr. Kaverzin. ■

Maureen Mecozzi is Associate Editor of Wisconsin Natural Resources magazine.

ФОРЕЛЬ ДЛЯ ВСЕХ

TROUT FOR ALL

Serious Soviet anglers (like the ones out chipping ice on Lake Baikal) are members of Rosohotrybolovsoyuz, the All-Russian Union of Hunters and Fishermen.

To join, an angler pays the equivalent of $10 per year and is required to spend four days a year working on outdoor projects in his or her district. At present, the U.S.S.R is divided into 15 Soviet Socialist Republics, somewhat similar to our states. Rosohotrybolovsoyuz divides these republics into districts. The Russian Republic, for instance, has 71 districts.

Each Rosohotrybolovsoyuz club gets a 10-year "lease" on a district from the government. From then on, club members are responsible for maintaining the property for outdoor recreation, sometimes hiring professional wildlife and fisheries biologists who can provide advice and assistance. The members build cabins and buy boats and other equipment, which they can all use free-of-charge. Each district has youth divisions to teach young people how to hunt and fish.

At the end of the 10-year period, the government may renew the lease or decide to place the district under its control.

Where do the three million members of the All-Russian Union of Hunters and Fishermen buy their rods, reels, line and tackle? At one of 700 Rosohotrybolovsoyuz stores around the country. The organization operates 54 factories to make the equipment. Which means, if a Soviet angler doesn't care for the spinners and jigs on sale at the local Rosohotrybolovsoyuz shop, he or she will have to improvise.

Big dividends. Al Stranz, DNR assistant environmental impact coordinator and ORC team member, hoisted a big smallmouth bass from the recovered river below the Stiles Dam.

The born-again Oconto River

They're swimmin' and fishin' where a flowage was 20 feet of polluted ooze only 10 years ago.

Story and photos by Dave Crehore

Back in June of '76, shortly after I moved to Green Bay, I spent a late afternoon looking at a cottage and some property on the Machickanee Flowage, a 465-acre impoundment of the Oconto River. The real estate ad was tempting, and so was the cottage when I saw it. A nice little place — shoreline frontage, two bedrooms and room to build more if necessary. Very reasonable price, too. About a 25-mile commute to Green Bay, but that wasn't bad.

The realtor was busy elsewhere that day, so I had plenty of time to look and think. What a great location! There would be grouse and deer hunting out the back door, and three-fourths of a square mile of what looked like pretty good bass water out the front door. Paradise.

The sun was setting when I walked down to the water to have a look. There were no fishermen around; it was odd to find no one fishing on such a beautiful night. Stranger yet, there was no sign of a boat or canoe around the cottage. Looking up the shore at the handful of other houses, I saw no boats in front of them, either.

The initial glow was beginning to wear off. There were darned few buildings here, for a lake so close to Green Bay. Why? And the price — why was it so reasonable?

By now it was a half-hour after sunset. Prime time for mosquitoes in early June, but there were only a few,

The drawdown exposed a huge volume of soft, oozing wastes from years of pulping waste disposal on the Machickanee Flowage of the Oconto River. Exposed sediments dried out and shrunk in volume.

not the hordes I expected. Out on the flowage, there weren't any rising insects dimpling the water, no swallows swooping to catch them, and no night shift of bats showing up to take over from the swallows.

What was wrong with this place? I started looking for signs and sounds of life. There weren't many. No frogs singing, only a few lily pads. Hardly any bugs. No boats. No fishermen.

What was this, the Dead Sea?

As it turned out, it almost was. Not knowing what the future would bring, I didn't buy the cottage — but I should have.

The river that went to hell

In its upper reaches, the Oconto River is one of our most beautiful and productive streams. From its many branches and tributaries in northeast Wisconsin, it grows as it flows downstream to Suring, in western Oconto County. From there it heads generally south towards Gillett then eastward, through Oconto Falls to Oconto, where it enters Green Bay.

Pollution hasn't been much of a problem on the upper Oconto. But when the river reaches Oconto Falls, civilization intrudes: Pulp and paper mills have operated there since the late 1800s.

Pollution of the lower Oconto turned serious in 1931, when a pulp mill at Oconto Falls switched to an ammonia-based sulfite pulping process. From then on, the medium-sized Oconto River had to fight off large quantities of pulping wastes. It was a mismatch; state records and the recollections of local residents testify to the river's losing battle.

In 1941, for example, a Wisconsin Conservation Department warden investigating a fish kill on the river found no dissolved oxygen in the river in Oconto, 20 miles below the mill at Oconto Falls. Chemical changes caused by the pollutants had used up the oxygen — and when there's no dissolved oxygen, fish can't breathe.

DNR files contain other examples of nearly total oxygen depletion in this river stretch, and there are records of fish kills between 1953 and 1977. At times, conditions in the Oconto got so bad that fish staged mass migrations up tributary streams, looking for water they could live in.

The effects of pollutants weren't limited to the river and its unlucky fish. Oconto residents will tell you that in the 1960s, sulfurous gases from the river discolored white paint on houses. In the small town of Stiles, about six miles downstream from the mill, gases from the river once discolored porcelain kitchen and bathroom fixtures, as well as cups and saucers in closed cupboards.

Attempts were made to reduce the damage caused by pulp mill wastes. The Scott Paper Company, which purchased the mill in 1953, built a storage lagoon for spent sulfite liquor and a waste clarifier to reduce biochemical oxygen demand and dissolved solids.

But these measures brought little improvement. In 1975, the year before I looked at my "paradise" cot-

continued on page 28

an accolade for the Canada

SPRING AND FALL, THIS WINGED CRIER OF CHANGING SEASONS DRAWS HEADS SKYWARD.

Clay Schoenfeld

The Canada goose is a bird of surprising contradictions. In his classic guide to North American birds, Arthur Cleveland Bent calls the Canada "the most generally well-known of any of our wildfowl." Yet probably only ornithologists know there are at least 15-20 subspecies, or "races," of Canada geese. They range in size

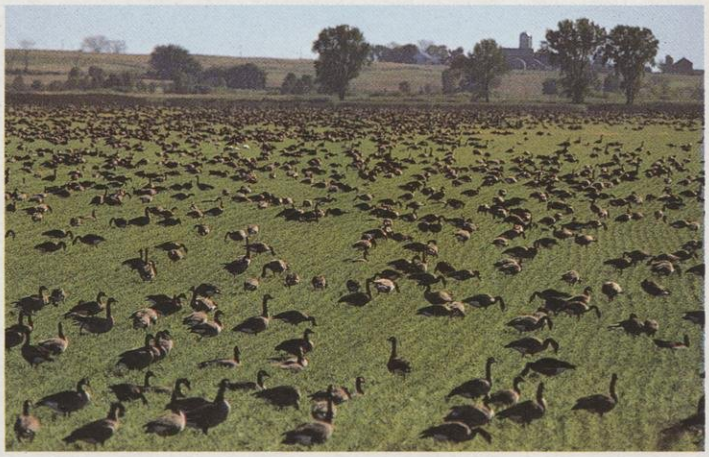
JOSEPH BUTSCK

STEPHEN J. LANG

(top left) Black neck, white cheek patch and a distinctive honking call unmistakably mark the Canada goose for millions of admirers.

(top right) Geese rest at Horicon Marsh during spring and fall migrations. The marsh lies 450 miles north of wintering grounds in southern Illinois, 850 miles south of breeding grounds along the southern shore of Hudson's Bay.

(bottom) Geese are largely not bothered by cold or rain. Hormonal changes caused by decreasing and increasing daylight trigger migration.



MARK WALLNER

STEPHEN J. LANG

from the three-pound cackling Canada of the Pacific coast to the 16-pound giant Canada of midwestern prairies. (The subspecies most familiar to Wisconsin waterfowl watchers are the mid-sized *Branta canadensis interior,* belonging to the Mississippi Valley Population and *Branta canadensis maxima,* the giant Canada goose that breeds here in summer.)

Regardless of variations in size and coloration, every Canada exhibits a common hallmark — black neck and head and a prominent white cheek patch.

Bent also calls the Canada "more persistently hunted over a wider range of country and for a longer period of time than any other American game bird." Yet today, in the face of a sharp decline in overall waterfowl numbers (except the lesser snow goose), the Canada goose is generally doing quite well, thank you. It's present in greater abundance than in prehistoric times in some places, such as on central Wisconsin's famous Horicon Marsh.

Strictly speaking, there are two true genera of geese: the *Anser,* including the white-fronted goose and snow goose, and the *Branta,* which include the Canada goose and the brant. But such distinctions don't bother waterfowl watchers. To them a Canada goose is a goose, pure and simple, although it may go under many local nicknames like bustard, honker or *oir a cravat.*

For generations the Canada goose has stood for wildness, its semi-annual migrations evoking faraway places with strange-sounding names. Yet one wildlife manager has called the Canada "the most easily managed and the most manipulated species on this continent."

The usual stories about the Canada goose describe wise and wary birds, yet some flocks develop such a tradition of dependency that they lose all fear of people.

One of the reasons the Canada goose appeals so strongly to people may well be the widely-held belief that geese mate for life. Actually adultery, divorce and remarriage are not unknown among Canadas. As one breeding-ground observer says, "We've seen some instances of mate-switching that would do Hollywood stars proud!"

The range of the Canada supposedly sweeps from the Arctic coast to the Gulf of Mexico, yet great numbers of birds increasingly winter well north of their traditional grounds. In many latitudes the sight of a goose in March is no longer a sign of spring.

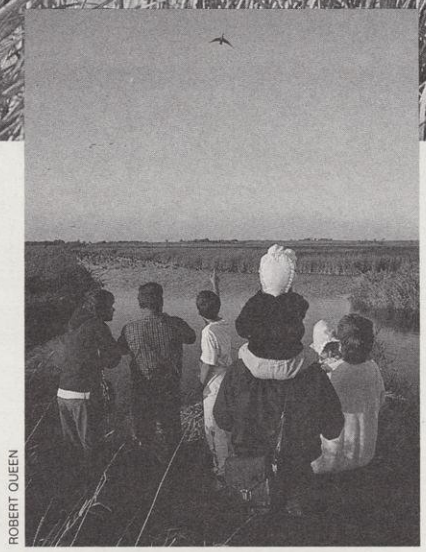
The Canada's comeback during the past 50 years is certainly one of the greatest success stories in American wildlife management, yet the resulting situation around a few public hunting grounds is a blot on American sportsmanship — shoulder-to-shoulder shooting, the race to claim a cripple, the exchange of cusswords, sky-busting.

Rightly done, goose hunting is pure poetry. There is field shooting — locating the feeding geese one day, digging a pit in the dark of night, calling in distant gaggles of geese to your decoys at dawn. There is the hunt on a sand bar with the voice of the river in your ears like an organ. And there is the mixed hunt on a duck marsh, where geese are an unexpected bonus that makes a morning extra memorable.

There is a special magic about a marsh dawn. One moment there is nothing but dark, and then with a rush, the night is gone and far to the northeast an arrow of waterfowl cleaves the sky. They appear to be geese. Are they moving steadfastly south or are they looking for a place to land? Can they hear you? These are the immemorial questions that haunt a goose hunter. You give them a plaintive toot on your call. They turn your way. Majestically the flock swings high over you, softly conversing. After an agonizing pass to the west they come pumping back. In a pandemonium of honking they set their wings and glide down, black landing gear lowered and rumps white against the far hills. With a great splashing they come to rest out in the middle of the pond. For one awful second you look right into the eye of wild nature.

Despite any contradictions inherent in the story of the Canada goose, on one point there's consensus: From manifold vantage points geese are

ROBERT QUEEN



ROBERT QUEEN

Distinctive blue and white signs with flying geese mark the national refuge borders. Pointing fingers mark the real thing.

seen by uncounted millions at some season of the year — high in the air, pulsing onward over hill and valley, river and lake, forest and plain, country, town and city, their wild clangor quickening pulses and cocking heads like no other outdoor phenomenon. More North Americans may identify with the Canada than with any other form of wildlife; it is displayed on more tea towels, ash trays, weather vanes, letterheads, postage stamps, calendars, wall paintings and old-fashioned glasses than any other species, not to mention on the boundary markers of U.S. Fish and Wildlife Service refuges.

In short, the Canada goose commands our affection and accolades. It is the big game of waterfowl — the king, the aristocrat, the trophy. It represents a heritage of free skies, the challenge of miles and seasons and our own wild desire to ply our wings.

GERARD FUEHRER

Canada geese migrate in loose family groups. With a good tail wind, they cruise at ground speeds of 60 mph.

HERBERT LANGE

By reputation, geese mate for life. In fact, "divorce," "remarriage," and "adultery" are not uncommon among Canadas.

The Canada, as perhaps no other outdoor creature, has had the power to inspire a concern for outdoor husbandry in human breasts. More than half a century ago one of Wisconsin's most colorful conservation leaders, "Curley" Radke, got on the stump at an early meeting of the infant Izaak Walton League to make a dramatic plea for the restoration of a great refuge.

The call was heard, by plain people and by politicians, from Weyauwega to Washington. The restoration of Horicon Marsh slowly became a reality. The ducks came back and the geese found the marsh to their liking, too.

The masses of big birds milling today over Horicon represent more surely than a walk on the moon a triumph of humankind. As Aldo Leopold observed, for one species to protect another is really a new thing under the sun. We have saved geese. In that fact may lie some evidence of our essential humaneness.

Tradition has it that geese in the Temple of Juno once saved the city of Rome. In 390 B.C. the Gauls attacked and drove the Romans to a steep, rocky, fortified hill known as the Capitol. One night the Commander, Manlius, was awakened by the cackling of the sacred geese. Rushing to the wall, he saw that the Gauls had almost mounted it. His shouts and the noise of the geese alerted other defenders and Rome was saved.

The sights and sounds of Canada geese in the spring skies over Wisconsin likewise alert us of the 20th century. There is a profound message in the music of migrating Canadas. It says we are all passengers together on a single Spaceship Earth, sharing a common seamless habitat — in the words of Gaylord Nelson, "a sort of intricately woven fabric; snip one thread and the entire cloth begins to unravel; stitch up one tear and you begin to repair the whole."

So as we save the geese, the geese save us.

Writer, hunter and columnist Clay Schoenfeld is a professor emeritus from the University of Wisconsin-Madison School of Journalism and Mass Communication and the Institute for Environmental Studies. He writes from his cabin in Iowa County.

Matt Gudel of Middleton, Wis. got hooked fishing the Chippewa Flowage.

Fishing buddies

A gesture of friendship removes barriers for a weekend of fishing on the Chippewa Flowage.

Story and photos by Naomi K. Shapiro

The angler's book of rules has its fair share of paradoxes: On one hand, you never tell your buddy exactly when and where the fish are biting. On the other hand, even seasoned old salts believe everyone deserves an equal chance to catch fish.

That basic tenet leads some ardent anglers to even the odds for disabled people who otherwise might not have an even chance to get hooked on fishing.

For the third year, a gathering in Hayward from May 18-20 will give several hundred anglers with disabilities the means to chase walleye, bass, northerns and panfish around some of Wisconsin's prettiest water: the Chippewa Flowage. The event, called Fishing Has No Boundaries, was conceived and developed by Hayward fishing guide Bobby Cammack. He believed the fun of fishing ought to be available to more people with disabilities, he had a hunch there were plenty of disabled anglers who were looking for a chance to cast a line, and he knew the Chippewa Flowage would be a great place to host a long weekend of fishing.

Right on all three counts.

Last year, more than 284 disabled fishers and their attendants from Wisconsin and throughout the United States converged at Hayward to explore this famous fishing ground with some new-found friends.

Participants included young and old, women and men. It didn't matter if the anglers' disabilities were mental or physical — they enthusiastically-came aboard in wheelchairs, on crutches, on motorized vehicles, or by holding onto a rail to stabilize a weakened or arthritic gait.

Cammack gently commanded enthusiastic support from more than 300 dedicated volunteers. These helpers from seven Midwest states, some themselves disabled, were on hand to see that everyone had a good time. More than 100 fishing guides volunteered their skills and often their rigs for the weekend. Others skippered pontoon boats for disabled guests. Landlubbers helped lift or carry participants into the boats. Emergency medical technicians, radio communicators, photographers, electricians, food preparers and trouble-shooters chipped in. Thirty members of the Rock Valley Anglers Club of southern Wisconsin brought six pontoon boats and $1,200 they'd raised to support the event. Gas, bait, food and coffee were donated by Hayward area businesses.

The Lac Courte Oreilles band of Chippewa Indians (LCO) added special help and flavor to the event. From the opening Indian drum ceremony of

welcome and a prayer for good fishing, to the "award" ceremony at the end of the weekend, the LCO were an important part of the Hayward community's hospitality.

All anglers have one weakness in common: they love to try new tackle and hardware. The disabled anglers were treated to displays of special fishing equipment just for them — electric rod and reel combinations, fish-grabbers, pole holders, retractable hooks, automatic knot-tiers, and harnesses — whatever could help a person throw out a line and reel in a fish.

Everyone learned quickly that the word "can't" doesn't often appear in a disabled person's vocabulary. A man with no arms or legs — told there likely was no special equipment to help him — took a fishing pole between his shoulder and cheek, slowly moved the reel toward his mouth, opened the bail with his tongue and threw out a line.

Duane Kuenstling of Waterloo, Iowa, learned about the event from an outdoor television show, and "came to see how other handicapped people fish." Born with one arm and underdeveloped legs, married, and the father of an eight-year-old son, Kuenstling gets around in a special motorized chair.

"We're working together for a common goal," Lac Courte Oreilles spokesman Art Tainter (right).

"I learned about Fishing Has No Boundaries from my contacts with Special Olympics," said a developmentally-disabled young girl from Adams, Wis. Her group made and sold souvenir coffee mugs as a fundraiser.

Art Tainter, Lac Courte Oreilles tribal representative praised the event: "Bobby Cammack does a fine job . . . (he is) one of the best fishermen in this county and Wisconsin."

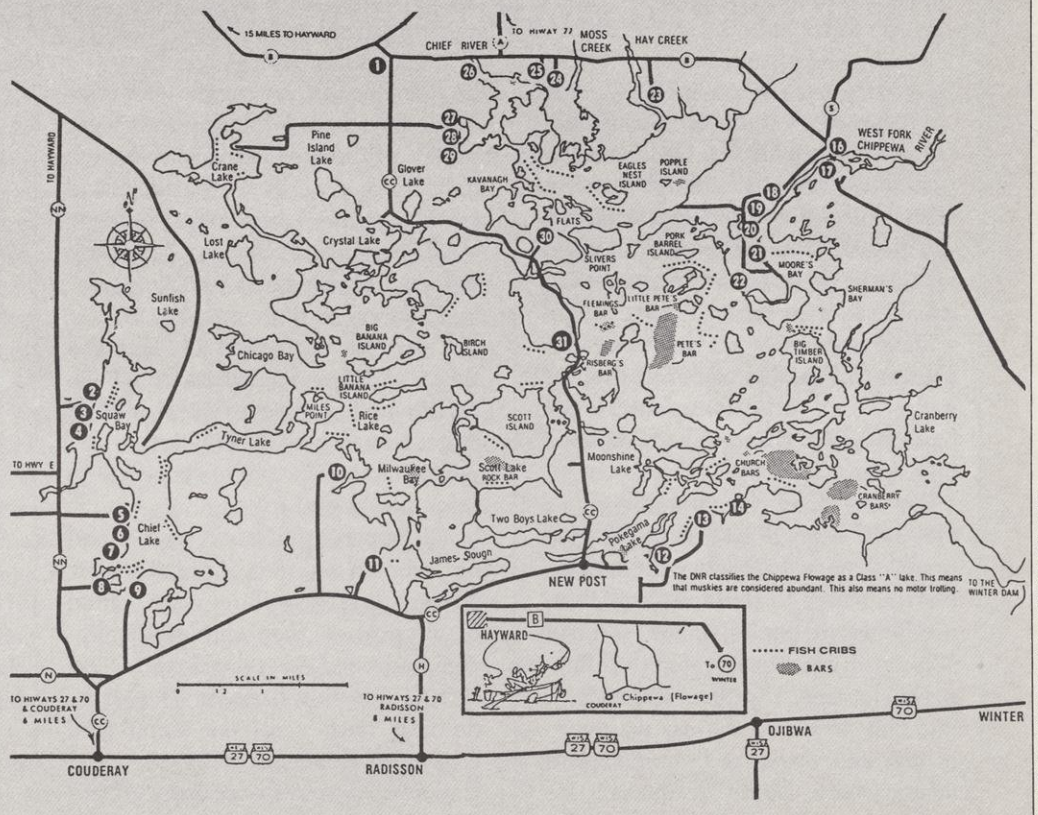
Tainter noted the LCO's peaceful participation in stark contrast to spearfishing strife elsewhere in northern Wisconsin. "We're unique over here in the Hayward area," Tainter said.

Indeed they are. The Hayward and Indian communities have worked together for years, and all have benefitted from that simple trust. According to local authorities, there was not one "treaty rights" incident in the Hayward area during the 1989 spearfishing season.

Explore The Big Chip

The Chippewa Flowage is surely among the most beautiful waterways in Wisconsin. Its 17,000 acres (14 miles long and nine miles wide) have 120 islands, myriad inlets and bays. Recent purchase by the State of Wisconsin will keep "The Big Chip" wild and natural, preserving a great fishery, breathtaking scenery and wild habitat for nesting eagles, loons, ducks, osprey, deer, bear, coyote and other wildlife.

Shoreline on the flowage is owned and managed by several entities. The Lac Courte Oreilles band owns half the frontage. The Wisconsin Department of Natural Resources manages 30 percent. The United States Forest Service manages 12 percent, and the balance is privately owned. The water — 11 natural lakes impounded into one huge flowage — is open to everyone from public boat launches.



COURTESY OF HAYWARD AREA CHAMBER OF COMMERCE

Diane Loebaka, Hayward, Wis., prepared to come aboard. One out of six Fishing Has No Boundaries anglers were women last year.

Tainter went on to say: "We're working together for one common goal. As people, no matter what color skin, we can get along. Each one is special. [We are in] the most unique place in Wisconsin, on one of the most beautiful lakes. The LCO Tribal Government is dedicated to getting out and extending their hands, not only locally, but all over the state. We're willing to help. We know we can work together and we have to, for cultural, political, and especially, economic reasons."

Cammack was equally complimentary: "The LCO are a terrific bunch of people. They're for better fishing and they show that people are willing to help other people."

Stony Larson, who teaches social studies at the LCO school and leads the opening drum ceremony said, "It's a great thing for people to come together in good will. We're glad we can be a part of it."

The volunteers say they get as much or more from the event as the anglers. "Everyone is always smiling," said Cammack. "You don't ever hear a discouraging word from anyone. There's a lot we can all learn from that."

"I'm not a person to get touched easily," said Rice Lake guide Bruce Arnold, "but it's hard to explain how you feel when a grown man tells you it's the biggest fish he's ever caught."

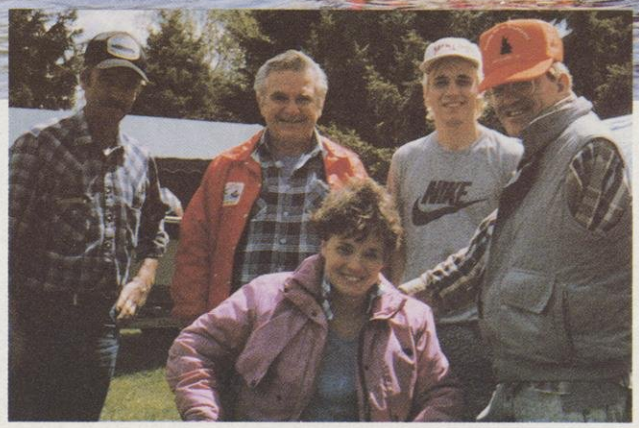
"It just fills up in your heart," added Rock Valley angler, Lobby Haase of Beloit.

Guides cheered as their guests caught fish, posed for pictures and basked in the admiration of their fellow participants. Then the guides cleaned, filleted, bagged, and iced a few of the fish for the proud anglers.

During the three-day event, participants caught and released 90 percent of the estimated 1,700 fish their guides skillfully stalked on the 17,000 acre flowage. Bald eagles and herons

How to take part

Fishing Has No Boundaries is held annually on the third weekend in May. Space is limited and disabled anglers are accepted for the program on a first-come, first-served basis. There is a nominal registration fee, but many agencies can make arrangements for participants. For more information, contact Bobby Cammack, Fishing Has No Boundaries, P.O. Box 175, Hayward, WI 54843.



(above) Fish on! Guide Wayne Gutsch readies the net for the Kivimakis from Sparta. (left) Hayward guide Jerry Ross and former governor's aide John Van Hollen hosted State Rep. Joe Tregoning, his wife Jeanne and son Josh for the outing.

Good fishing keeps 'em smiling.
(top photo left to right in foreground) Dave Cooks, Franklin; Rick Benavides, Waterford; Melanie Beckman, Appleton.
(bottom) Mary Gehlvach, Minnetonka, Minn.

soared and flew overhead as if to confirm there were plenty of fish available for everyone.

Every angler a winner

Cammack stresses that Fishing Has No Boundaries is an educational event, not a fishing contest. Each participant receives a gift packet with lots of fishing goodies.

There were more than a few damp eyes at the closing award ceremonies last year as those who caught lunkers proudly walked or rolled forward to claim their prizes.

Dave Cooks, an angler from Franklin, Wis. summed up his feelings about his weekend on the water: "The experience was very rewarding ... Fishing Has No Boundaries not only means disabilities are no problem, but we found there's no difference between people."

Naomi K. Shapiro is a freelance writer and publicist from Madison, Wis.

OK, I'm hooked! How do I volunteer to help?

If you own a pontoon boat and would be willing to skipper for a guide and anglers, call Bobby Cammack at (715) 634-3185. If you or an organization can help fund the event, call the above number or write to Cammack at P.O. Box 175, Hayward, WI 54843. Fishing Has No Boundaries is a non-profit organization. "Last year we ran about $6,000 short of covering our costs," Cammack noted.

APRIL 1990

INSIDE

VOLUME 2 NO. 2

CIRCUS WORLD MUSEUM

Birth of the Big Top

Jump on the bandwagon and join the parade to Baraboo!
Circus World Museum

To run away and join the circus: What disgruntled child or disaffected bean counter hasn't contemplated such an escape?

If the roar of the greasepaint seems louder each time you punch the clock, perhaps it's time to escape to Wisconsin — known to Big Top fans as "The Mother of Circuses." Over 100 circuses have called Wisconsin home since 1847. Cheap, abundant hay and feed made the state one of the few places in the nation where elephants, hippos and giraffes could snack with impunity.

Wisconsin, mother of circuses, has an undisputed favorite child: Baraboo. Circus tradition remains strong in this south-central city of 8,000. Why? Hop on Traveler's bandwagon to find out!

Six circuses had their beginnings in Baraboo, but the largest and most famous was run by the Ringling Brothers: Al, Alf T., John, Charles and Otto.

After the brothers had performed together and individually in shows and carnivals throughout Iowa, Minnesota and Wisconsin for several years, they opened a circus on May 19, 1884 in Baraboo. Six hundred "Baraboobians" (John's nickname for the locals) paid 25¢ each to see the Ringlings and their small company juggle, tumble, and perform balancing acts and comedy skits. John Ringling was the only clown in the show.

Not one horse graced the ring that day; the only animal of note was an educated pig, cloistered in a sideshow tent. Still, the rural audience, desperate for entertainment of any kind, was dazzled by the unique combination of gaudy buffoonery, acrobatic skill and animal exotica. The circus made a profit that first season and from then on, the five brothers devoted their lives to creating the greatest show on earth. They established winter quarters in the city on the banks of the Baraboo River.

By 1891 the circus was billed as "Ringling Bros. World's Greatest Railroad Shows, Real Roman Hippodrome, 3 Ring Circus and Elevated Stages, Millionaire Menagerie, Museum, Aquarium and Spectacular Tournament Production of Caesar's Triumphal Entry into Rome." By 1919, the Ringlings employed over 1,000 roustabouts, performers, animal trainers, cooks and ticket-takers under a big top

Continued on page 4

No room at the inn?

No problem. With a copy of the **1990 Wisconsin Lodging and Travel Guide** tucked in your glove compartment, you'll always have a place to stay.

This handy booklet prepared by the Wisconsin Innkeepers Association lists 950 hotels, motels and resorts alphabetically by city. Each entry includes a range of rates and the amenities offered: from cable TV, saunas and whirlpools to kitchen facilities and non-smoking rooms. Consult the guide for the answer to the question most frequently asked of innkeepers: "Do you take pets and children ... together?" Don't leave home without it! Write the Division of Tourism Development, 123 W. Washington Ave., P.O. Box 7606, Madison WI 53707; call 1-800-432-TRIP. Or, pick up a copy at any Wisconsin Information Center.

Make a Date

You'll want to include these events in your Wisconsin itinerary:

May 5-6: **Great Green Lake Garage Sale**, Green Lake County. White elephants on the loose throughout the entire community! Eeeek! (414) 294-3231.

May 18-20: **Muscoda Morel Festival**, Grant County. A weekend of food, fun and oration to honor the celebrated fungus. (608) 739-3639.

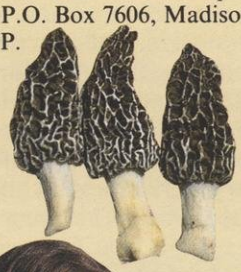
May 27: **Easton Pie & Ice Cream Social**, Adams County. How do you spell cholesterol? (608) 339-7554.

June 3: **Free Fishing Day**, Wisconsin. Wet a line without paying a dime. (608) 266-2272.

June 21: **Burlington Annual Street Dance**, Racine County. Polka on the pavement or boogaloo down the boulevard. Your choice. (414) 763-6044.

Don't miss a moment of Wisconsin! Write for the Calendar of Events, Wisconsin Division of Tourism Development, 123 W. Washington Ave., P.O. Box 7606, Madison WI 53707, or call 1-800-432-TRIP.

Stephen J. Lang



Robert Read

Robert Queen

1990 spring tour!

When spring fever strikes, the only sure cure is a Wisconsin adventure. Traveler suggests #6 — one of 23 special auto tours prepared by the Division of Tourism.

Begin in Hudson, St. Croix County. As you head north on Highway 35, look for dogwood in bud at **Willow River State Park**. At Somerset, scout the banks of the Apple River for a future tubing outing in July. In St. Croix Falls, visit **Interstate Park**, the **Ice Age Interpretive Center** and the **St. Croix National Scenic Riverway**, where you can learn more about the natural history of the area while your eyes adjust from the white glare of winter to spring's soft greens.

Go east on Highway 8, then north on Highway 46. Stop for lunch in Balsam Lake. Continue on to Frederic and west on Highway 48 to Grantsburg, home of **Crex Meadows Wildlife Area**.

With spring migration in full swing, this 30,000-acre prairie and marsh rivals Grand Central Station for hustle and bustle. Two hundred and sixty bird species have been sighted at Crex; some settle in for summer while others stop for a bit of R & R, then move on. Bring binoculars for a closer look; a field guide will help identify ducks (20 different kinds), warblers, sharp-tailed grouse, herons, hawks and other feathered fans of Crex. A map for a self-guided auto tour is available at the interpretive center.

What's ahead? Webster, home of a reconstructed fur trading post; bingo at the St. Croix Tribal Hall in Turtle Lake; and the awakening of a new season at every turn.

Willow River State Park, (715) 386-5931; Interstate Park, (715) 483-3747; St. Croix National Scenic Riverway, (715) 483-3284; Crex Meadows Wildlife Area, (715) 463-2899; St. Croix Tribal Bingo, (715) 986-4161. For a copy of Wisconsin Auto Tours, a 120-page full-color book featuring 23 road adventures with attractions, phone numbers and maps, write the Division of Tourism Development, 123 W. Washington Ave., P.O. Box 7606, Madison WI 53707 or call 1-800-432-TRIP.

Follow Auto Tour #6 to Crex Meadows and you may get a glimpse of Tympanuchus phasianellus, *better known as the sharp-tailed grouse.*

Neal Niemuth

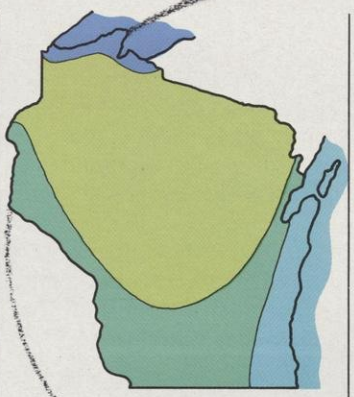
With a kite, you can be airborne without ever leaving the ground. Wisconsin's coasts are great places to fly, as the wind-speed map below shows. Robert Queen

The world on a string

Tuck a kite into your kit and have the world on a string when you tour Wisconsin this spring. A kite won't take up much space, and when the moment is right, you can unfurl your colorful surrogate and soar the updrafts like a hawk.

Wind, the essential element for kite flight, is caused by the unequal warming of air, land and water by the sun. Fickle April, with one foot lingering in winter and the other lurching toward summer, is the windiest month in Wisconsin (except in Milwaukee, where January winds are more than capable of blowing the head off a stein of lager).

Spring winds blow more strongly during the day than at night; on average, the highest winds occur in early or mid-afternoon, the lowest near sunrise. A bright yellow sunset indicates a good stiff breeze the next day.



Now that you know when to fly, you need to know where. Land masses adjacent to large bodies of water make the best launching sites. **Milwaukee's** lakefront parks and beaches, **Kohler-Andrae State Park** south of Sheboygan and **Whitefish Dunes State Park** north of Sturgeon Bay are good places to try on Lake Michigan, where wind speeds average 12.6 to 13.4 mph in the spring. Or, take to the air at **Big Bay State Park** on Madeline Island in Lake Superior, with an average springtime wind of 13.5 to 14.3 mph. No matter where you fly in Wisconsin, you're sure to set your kite against a backdrop of stunning scenery.

Some tips for a successful flight:

—if the kite refuses to climb past a certain height (assuming you're not out of string), let out a small amount of string, then give a few short tugs on the line.

—if the wind is strong, add more tail for better control. Too long a tail, however, will cause a kite to rise slowly and be sluggish in the air.

—don't fly kites over traffic or near electric transmission lines.

Milwaukee County Department of Parks and Recreation, (414) 257-4856; Kohler-Andrae State Park, (414) 452-3457; Whitefish Dunes State Park, (414) 823-2400; Big Bay State Park, (715) 747-6425.

Need more information?

Travel questions: 1-800-372-2737
Travel publications: 1-800-432-TRIP
Road conditions: 1-800-ROADWIS
Outdoor recreation: (608) 266-2277
(608) 267-6897 (TDD)
Historical Society sites: (608) 262-9606

Go fly a kite!

It's a breeze during the 6th annual **Experimental Aircraft Association Kite Fly** on Sunday, May 6 at the EAA Aviation Center, 3000 Poberezny Rd., Oshkosh. Bring your own kite or buy one at the center. Admission: $5 for adults, $4 seniors and students, children 7 and under, free. (414) 426-4800.

Soar with the **Wisconsin Kite Society**, flying every second and fourth Sunday from 1 to 5 p.m. beginning May 13 at the McKinley Marina on Lincoln Memorial Drive in Milwaukee. (414) 277-9121.

Continued from page 1

larger than two football fields. It took 90 double-length railroad cars to move the amusement army from town to town.

Many of the gilded, intricately carved wooden circus wagons the Ringlings used were made by their cousins, the Moellers, who plied their specialized trade in Baraboo. The Moeller brothers built the famous Ringling Bell Wagon — a 12-bell carillon mounted on an ornate chariot.

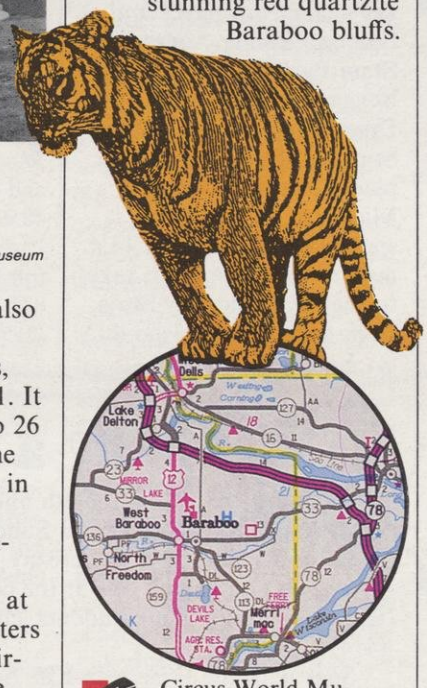
Juggler T.J. Howell keeps everything up in the air during a Circus World performance. Circus World Museum

The Gollmar Bros., also Baraboo residents and cousins of the Ringlings, founded a circus in 1891. It grew from 12 wagons to 26 railroad cars and became the fourth largest circus in the U.S.

Baraboo's circus heritage lives on at **Circus World Museum**, located at the original winter quarters of the Ringling Bros. Circus. Owned by the State Historical Society, the museum's 30 buildings house the world's largest collection of posters, pictures, wagons and rare circus treasures.

But that's just the beginning. At Circus World, you can sit under the big top and thrill to a live one-ring show complete with antics by Happy the Clown, snarls from Jorge Barreda's nine African Lions, and triple somersaults by Mexico's premier aerialists, the Flying Ibarras. Visit the Theatre of Illusion, where magicians challenge the laws of nature! Later, enjoy a lively concert featuring a circus band, steam and air calliopes and the original Ringling Bell Wagon.

Circus World's 1990 performance season opens Saturday, May 5. You'll need an entire day to take in the colossal midway and 50 acres of circus wonders, so plan to spend a weekend in Baraboo: After your day at the circus, tour the historic town where jackpots (tall tales about the circus) abound. For some natural antics, visit **Devil's Lake State Park**, set amid the stunning red quartzite Baraboo bluffs.



Circus World Museum, (608) 356-0800; Baraboo Chamber of Commerce, (608) 356-8333; Sauk County Historical Museum, (608) 356-6549; Devil's Lake State Park, (608) 356-8301.

Rustic roaming

Karol Patzer and Mary Donovan of Waukesha and Carol Petrick of Oak Creek prepare to cruise Rustic Road #18 in Barron County. The three have ridden all 55 of Wisconsin's scenic Rustic Roads; they plan to tour their favorites again this summer.

The image of motorcyclists and motorcycles has improved considerably since 1954, the year Marlon Brando made cinematic history with sunglasses and a sneer in *The Wild One*. Today, motorcycling is a respectable sport, especially popular with retirees who enjoy viewing the American landscape from the seat of a touring bike.

Wisconsin offers delightful scenic surprises to motorcyclists who join the **Rustic Roads Motorcycle Tour**. The tour is a series of rides on Wisconsin's famed Rustic Roads — 55 back roads featuring rugged terrain, native vegetation and wildlife, and outstanding natural or agricultural vistas.

To participate in the tour, motorcyclists traverse at least 10 of the Rustic Roads of their choice for a commemorative patch and 25 or more of the roads for a certificate. To prove they've hit the road, riders submit pictures taken with their bikes in front of the Rustic Road numbered sign. There's no time limit on accumulating the rides, so gas up the Goldwing or your prize Harley hog and go!

For a map and more information about the Rustic Roads Motorcycle Tour, or to forward "proof of ride" photos, write the Wisconsin Motorcycle Safety Program, DOT Office of Highway Safety, P.O. Box 7910, Room 933, Madison, WI 53707-7910 or call (608) 266-7855.

Wisconsin Traveler is produced by Wisconsin Natural Resources magazine in cooperation with Wisconsin's Division of Tourism Development, Department of Transportation, and State Historical Society.

ROBERT QUEEN

DANDELIONS

The tenacious scourge of bluegrass lawns is fondly remembered.

Kathy Warnes

When the poet Emerson said, "a weed is a plant whose virtues have not yet been discovered," he had to be talking about dandelions.

As a dedicated gardener with trowel in hand about to attack the broad expanse of yellow manes waving in the wind, I will

ROBERT QUEEN

STAN DeBOER

If a weed is a plant whose virtues have not been discovered, then praise the tawny dandelion — spicy sprouts are pot herbs, leaves adorn spring salads, dried roots add zip to coffee and bright, yellow flowers are brewed into a golden wine.

argue that the dandelion's virtues remain forever undiscovered, because there are none. As a determined lawn owner grubbing up dandelion roots with about 300 to go, I will mutter darkly about dousing the buttery blossoms with weed killer instead of looking for their virtues. But as an admirer of free spirits, I can appreciate the dandelion as an individual in its own right. I can accept it as a flower-weed that leaves an imprint on the heart and mind as well as on the lawn.

Even the name "dandelion" is poetic. It comes from the French "dent de lion," which means lion's tooth after its jagged leaves. Others think its yellow flowers more resemble lion's teeth. It's not difficult to see a tawny lion sitting in the midst of a field of dandelions, his mane and teeth stained yellow from sniffing, eating, blowing and rolling in dandelions.

The dandelion's family tree is scientific as well as French. The flower is a perennial that blooms spring and summer throughout temperate zones. Its roots extend four to five inches into the ground. When you're trying to grub them out, it seems like the roots extend to China or Australia! The dandelion blossom is actually a bouquet of about 150-200 flowers set in a solid head. Each flower is a perfect seed-producing unit; stems and leaves produce a milky juice or latex, a natural rubbery liquid. A Russian dandelion called Kok-Saghyz yields the best latex of all dandelions.

Dandelions behave differently at night than in the daytime. Their heads close up tightly a soon as the sun goes down, which gives a sort of yellow symbolism to their behavior. On dark days when pollinating insects don't fly, dandelion heads also remain closed. Later in the season when the flowers are fertilized, the heads bend downward to the ground for protection until the seeds ripen. Then the flower stalks become erect and the heads open again.

The dandelion is a world traveler. Its seeds set sail from hundreds of tiny parachutes that float away on the wind to land in the next field or many miles away. These seeds can hitchhike, reaching foreign lands in ships and containers. Once ashore, dandelions adapt themselves to many climate and soil types. Dandelion seeds can even soak in the ocean for 28 days, be carried a thousand miles along the coast, and still germinate.

DAVE MISTEREK

What better for summer bouquets, a chain of flowers or a quiet game of "butter?"

The dandelion does not need a nurturing greenhouse, it's a natural survivor. Moles, rabbits and insect grubs avoid its bitter taste. Its rosette of leaves is also very bitter, so bitter that grazing animals don't gobble it along with grasses. And no matter how many times a determined lawn owner uproots the dandelion, back it grows unless its tap root is yanked from deep in the cold, clingy spring ground.

The flower stalks of the dandelion employ the principles of hollow tube construction. Engineers say this is the strongest and most economical building technique. Even the strongest winds fail to snap off a dandelion stem. Its breaking point comes when tiny, stained fingers snap off its stem to become part of a mason-jar kitchen table bouquet.

If you look at the dandelion as a useful tool instead of a weed, there are many angles to its yellow countenance. Legend has it that the Apache Indians so liked the dandelion as a food source that they hunted the countryside to find it and stuff themselves to the brim with dandelion blossoms. Dandelion sprouts are used as a pot herb, its leaves as a salad and its dried roots as a substitute for coffee. In the springtime for numerous years, older people with wicker baskets on their arms and eager preschoolers with tin cans have gathered dandelion blossoms to make dandelion wine. What could be better after a suitable expenditure of sugar, yeast and time, than sipping the golden taste of sunshine on a bitterly cold winter day?

There is magic in dandelions. Of course, the current generation of dandelions can't possibly match the magical ancients that I remember as a child. Standing at the edge of a field of golden dandelions nodding their heads in the wind, it wasn't hard for me to imagine I sailed aboard bronze Spanish galleons to places with exotic names like Pemba and Zanzibar. I'd stare up at the deep blue sky, watching fluffy white clouds sailing across it like my golden dandelion galleons sailed across the fields below. I'd play "butter" with myself, tickling myself under the chin with dandelions. Occasionally, a carefully-chosen friend would come with me to the dandelion sea and we'd play butter and laugh at the telltale yellow marks on each other's chins.

You have to at least grudgingly admire the tenacity of the dandelion. It does, indeed, thrive on adversity, its roots firmly planted in the garden and lawn. And it's permanent. People change, but dandelions don't. There is a lot of comfort in that. ■

Kathy Warnes writes from the comfort of her front lawn in West Allis, Wis.

DAVE CREHORE

During the drawdown the Oconto River meandered its traditional channel as sediments dried up.

continued from page 16

tage on the Machickanee, the Oconto was carrying 1,100 metric tons of ammonia nitrogen to Green Bay each year, all of it from the pulp and paper mill. At that time, the Oconto was the single largest source of that pollutant on the Wisconsin side of Lake Michigan; the much larger Fox River, which receives wastes from many pulp and paper mills and municipal sewage treatment plants, contributed only 740 metric tons per year.

The plant and animal life of the Oconto showed the consequences of this gross pollution. Within the Machickanee Flowage, insect larvae called sludgeworms were the only invertebrates living in the bottom sediments. The flowage supported few plants: Aquatic vegetation was found in only 17 of 524 Machickanee sampling sites studied in 1979. And the fish population was dominated by rough fish — bullheads, carp and white suckers made up more than 90 percent of the fish in the flowage, while species such as bluegill, yellow perch and northern pike amounted to less than 10 percent.

Above and below the flowage, the river bottom was covered with "sewage bacteria" and organisms such as midge fly larvae and the omnipresent sludgeworms. These species, both tolerant and indicative of pollution, were found in large numbers from Oconto Falls all the way downstream to the Bay.

It's no wonder the flowage was viewed by many as almost beyond redemption. The river was burdened with more waste than it could handle — more than any stream should be expected to assimilate. However, help was on the way. Wisconsin's Pollutant Discharge Elimination System (or permit system, for short) grinds slowly, but it grinds exceeding fine.

Wastes piped from the mill into the river violated conditions of a permit granted a few years earlier by the Department of Natural Resources, and in 1978, the State of Wisconsin and the U.S. Environmental Protection Agency (EPA) took Scott Paper to court. Things began to happen in short order. In February 1978, Scott closed the pulp mill which had caused most of the pollution, while continuing to operate the paper mill. Fortunately, most pulp mill employees were transferred to the paper mill or to Scott facilities in Marinette.

In January 1979, the agencies reached a settlement with Scott that required the company to forfeit $1,000,000, of which $600,000 was set aside to be used by the DNR for the "restoration" — as the court put it — of the river system.

Enter the "ORC"

The job of "restoring" the Oconto River below Oconto Falls was assigned to the DNR's Lake Michigan District. A few days after the settlement was reached, then District Director Charlie Higgs appointed a 12-member committee to undertake the job. The Oconto River Committee, or "ORC," as it was soon known, included specialists in water quality, fisheries management, wildlife management, law enforcement, water regulation, environmental impact and public information.

The ORC first evaluated the situation. The committee needed answers to some major questions, such as:

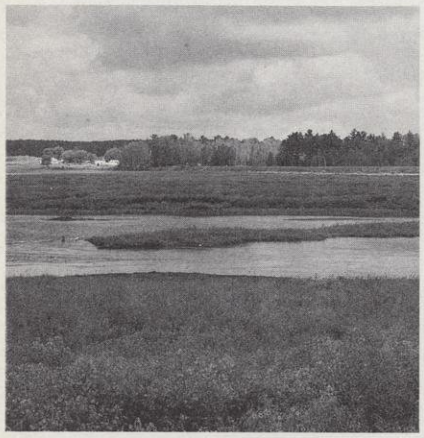
- How much "restoration" was needed?
- How much "restoration" was possible?
- How much could be accomplished with $600,000?

• Which stretches of the river needed the most help?

ORC started by outlining a plan of attack that had three phases: First, a study to find answers to the major questions; second, active management; and finally, an evaluation of results and long-term management.

Saving the situation

Boiled down, ORC's study of current conditions during 1979 and 1980 documented dramatic improvement in water quality on the flowing stretches of the river as soon as the pulp mill stopped discharging in 1978. Below the Machickanee Flowage, the fishery was naturally recovering in 1979 — smallmouth bass, walleye, northern pike, trout, salmon and panfish migrated up the river from Green Bay as soon as the water could support them. Infestations of sewage bacteria and sludgeworms decreased, and were replaced by aquatic plants and insects associated with better water quality.



DAVE CREHORE

Plants grew quickly on the fertile sediments and would provide valuable cover for fish once the flowage was reflooded.

But a serious problem remained: the unbalanced fishery in the Machickanee Flowage and the river above the flowage. The study pinpointed the cause as an incredible quantity of soft sediment — two million cubic yards of black, smelly sludge — which had settled out in the flowage.

This sediment was the remaining legacy of the pulp mill discharges. It covered the natural bottom of the flowage 20 feet deep in places. Most of the sludge was so soft and fine that it formed no definite "bottom"; it was hard to tell where the water left off and the sediment began. Game fish could not spawn on the mushy mix of muck and water; desirable insect larvae and other small invertebrates could not live on it, and aquatic plants could not take root in it.

In addition, the sediment was polluted with organic wastes as well as lead, phosphorus, manganese, nickel, arsenic, cadmium, chromium, copper, iron, mercury, zinc and volatile solids in concentrations that exceeded EPA limits for sediments in Great Lakes harbors.

The discharged sediment was the real cause of the "dead sea," and it was obvious flowage restoration meant doing something about it.

But what could be done? To find out, ORC excavated some of the polluted ooze and placed it in containers to dry out. Four important characteristics of the Machickanee sludge were discovered: First, it was about 50 percent water; second, once the sediment dried out it stayed dry, even when water was added back; third, it was exceptionally fertile; and fourth, pollutants in the sediment tended to stay there and would not enter the surrounding water.

DAVE CREHORE

DNR crews and helpers attracted quite a crowd after waters were chemically treated to remove rough fish when fish habitat was restored. Once restocked with 193,000 bass and walleye fingerlings, two million walleye fry and 3,500 adult bluegills, fishing improved quickly.

It seemed simple enough. The sediment was the problem; get rid of it and you'd have a "restored" flowage. But if all of the sediment were excavated and dried out, ORC would be left with a million cubic yards of polluted solid waste to dispose of somewhere. Even at 1979 prices, dredging, drying, transporting and landfilling a million yards of contaminated sediment would have cost $30 million or more.

Drying out

The compromise solution that ORC developed took advantage of the sediment's unnatural characteristics. Dredging it out would be impossibly expensive, so why not dry it?

In May 1981, the flowage was emptied by gradually opening the gates in the Stiles dam. Within a few days, the sediment was exposed and began to dry out, while the river returned to its original channel across

the flowage bottom. By the fall of '81, as predicted, the sediment had compacted to about 49 percent of its original volume and had grown a luxuriant crop of willows, smartweed, sticktight and nettles. The surface of the sediment was hard and the roots of the new plant growth helped to hold it together.

In September, the Oconto River between Oconto Falls and Stiles was chemically treated to kill all the fish that remained. More than 44,000 pounds of rough fish and 3,350 pounds of game fish were removed. After the chemical treatment, the flowage was slowly refilled, and reached "full pool" September 30.

The value of ORC's experiments was proved when the flowage filled up again. The once mucky bottom of the flowage remained hard, and most important, the pollutants stayed put, tied up chemically in the sediment. By October 1981, ORC had transformed a "dead sea" into a working body of water. All it needed was fish, public access and time to grow.

During the next two years, 193,000 fingerling bass and walleye were stocked in the flowage, along with 2,000,000 walleye fry and 3,500 adult bluegills. Five public access facilities were built on the river and flowage in the 1980s, and two more are under way. The lower Oconto River and the Machickanee Flowage have rejoined Wisconsin's roster of living waters.

The payoff

In the natural resource management and environmental protection business, you don't often get to experience the final results of what you do. Usually they are a long time in coming.

But every now and then you see quick and obvious results, and that's why the Oconto River restoration project has been so satisfying for those of us who were involved in it from the beginning. Since the flowage was reflooded in 1981, we have been rewarded again and again.

The sight of anglers, for example, catching largemouth bass and pike above the dam; trout, walleye and smallmouth below it. Little kids splashing and swimming in the Machickanee. The ospreys and eagles. The migrating loons that drop in. The great blue herons and beavers that have moved in, along with the rest of the birds and bugs that belong there.

We can stand along the river, see its health and productivity, and say "We did that!" — with deference to nature, which did the heavy work.

My big payoff came in June 1984, when my son Tom, then six years old, caught his first largemouth bass on the Machickanee. He cast out a spinner bait, hooked his bass, played it, landed it, and released it. The bass wasn't a monster, since it had only been in the flowage two years. But it was a sign of things to come, a reward of great value. A gift of the river that came back into the fold. ■

Avid angler, photographer and nature nut Dave Crehore is DNR's public information officer stationed in Green Bay.

Readers

BEAVER BACKER

I'm glad to see you covered the beaver management plan in the magazine. I think it's about time the beaver is given credit for the good things it does and not continually damned. I'd have suggested a piece titled "Beaver: the unpaid construction contractor."

Think about the acres of flowages formed by beaver dams and the varying species that benefit from these flooded waters. Similar projects constructed by people would cost thousands of dollars.

I admit, there are areas where we simply can't put up with beaver flowages, but many, many times, beaver flowages don't cause problems and the industrious beaver has many pluses on his side.

Roland W. Schmeling
Watertown, Wis.

HAPPY READER

I want to let you know how much I love your magazine. I'm impressed with the articles because I both enjoy them and learn something. I also appreciate the excellent detail in close-up, real life photos. Keep up the good work!

Barb Neff
Green Bay, Wis.

IN DEFENSE OF SUMAC

I enjoyed "Winter Reds" in the December issue, but I felt sumac was done an injustice when the article implied the seeds are little used by wildlife.

A reference titled American Wildlife and Plants, A Guide to Wildlife Food Habits by Martin, Zim and Nelson, documents that sumac fruits are used by the following Wisconsin birds: ruffed grouse, pheasant, prairie chicken, bobwhite quail, wild turkey, bluebird, cardinal, catbird, crow, purple finch, flicker, evening grosbeak, junco, mocking bird, phoebe, robin, starling, scarlet tanager, brown thrasher, hermit thrush, Swanson's thrush, veery, red-eyed vireo, warbling vireo and the pine warbler. Sumac seeds are also listed as a food source for cottontail rabbit, varying hare and chipmunk.

I hope no one reading the article concludes sumac are not good for wildlife, as the list above indicates.

Carl J. McIlquham
DNR Wildlife Manager
Antigo, Wis.

NEXT ISSUE:
Wild Wisconsin orchids
Neighborhood fossil hunt
Busy boating on the Mississippi
Common questions about spearfishing

Write

SOMETHING OLD, SOMETHING NEW

Notice anything different about this issue of *Wisconsin Natural Resources*? Look closely. You likely can't tell the difference, but our April issue is printed on 50 percent recycled paper. At least 10 percent of this paper was previously used by a consumer. Moreover, all of the recycled fiber in this paper came from Wisconsin sources.

We are experimenting with recycled papers to practice what we preach and to encourage Wisconsin's recycling economy. At the same time, we will not waiver in our commitment to continue providing you with a quality publication at a bargain price. Recycled paper costs a little more, but you're worth it!

INVESTING IN PLAYTIME

The photo on p.7 of your December story on LAWCON shows a colorful playground that was actually built by the Kiwanis Clubs in Racine and donated to the city. I don't believe federal funds had any role in the project, but I agree with the intent of the article on LAWCON funds.

Thomas J. Bunker, P.E.
Chief of Operations
Racine Water and Wastewater Utilities
Racine, Wis.

WET A LINE, PACK A PICNIC. FREE FUN

Grab a line. Grab a pole. Head on down to the fishin' hole! Pack your boots. Take a hike. Go to any state park you like!

To entice more people to fish and enjoy state parks, the Wisconsin Department of Natural Resources sponsors Free Fishing Day and Open House at the state parks on Sunday, June 3.

On Free Fishing Day, would-be anglers can try their luck on any stream, lake or pond open to public fishing. You won't need a license to fish that day, but bag limits and all other fishing regulations apply. Take someone fishing just for the fun of it and let them get a taste for worm dunking or fly casting.

The state parks fling open the gate and dust off the welcome mat to encourage you take a hike, enjoy a picnic, join a nature walk or just smell the flowers at a park. You are always our guests at the park, but free admission on June 3 is an added treat.

Some parks that border lakes and rivers are combining both events. Free fishing clinics are being offered by local fishing clubs to teach youngsters and adults the finer points of angling. Check with local DNR offices or facilities for fishing clinics in your area.

ANITA CARPENTER

Pine elfins take in minerals and moisture on a nature trail in Necedah.

continued from page 2

to moist spots on the ground. Occasionally males and females are attracted to flowers and will pause for a drink of sweet nectar.

Finding them is challenging because the tiny butterflies blend well into their surroundings and dart about with amazing quickness. Although pine elfins (*Incisalia niphon*) are only the size of a quarter, they are the largest elfin butterflies found in Wisconsin.

The males' upper wings are a glossy deep-brown; the females have more orange. The underwings are a gorgeous shade of mahogany and gray-brown distinctively patterned with several small black and white bars.

Life for an adult pine elfin is short, perhaps two weeks. After emerging and drinking, the males perch on top of sunlit pines waiting for females to fly by. After mating, which usually occurs in the afternoon, the female deposits her pale green eggs singly on new branches and buds. When egg-laying is finished, the pine elfin's life cycle is complete.

The young caterpillar or larva emerges after seven days and dines on the young, tender pine needles. After several weeks of feeding and many molts, the slug-shaped caterpillar grows to an inch long. Its pale green color, highlighted with a pair of cream-colored stripes along each side and a white saddle-shaped patch just behind the head, provides ideal camouflage for residence in a cluster of pine needles. When growth is complete, the larva crawls down the pine into the leaf litter on the forest floor and pupates. The black, stubby chrysalis overwinters. Only one brood is raised each year.

If you miss the pine elfin's short spring weeks on the wing, you'll have to wait until the warmth of the following May. When the bird's-foot violets flower, pine elfins will emerge once again to flit among Wisconsin pines.

—Anita Carpenter tracks nature's cycles from her home base in Oshkosh.

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