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WISCONSIN NATURAL RESOURCES

April 2002 $3.00

Whooping crane recovery

64 field trips to Natural Areas

Fishways and dams

The long-distance flights of shorebirds

Spring begins with a peep, but the chorus quickly joins in.

Sleigh bells in the swamp

Anita Carpenter

Pleasant music like tiny sleigh bells breaks the nocturnal silence of a flooded woodland. First one bell is heard, soon accompanied by another and another until hundreds have joined the chorus. Spring has barely begun to warm the land and yet, on this early April evening, northern spring peepers, Wisconsin's smallest treefrogs, have emerged from hibernation and returned to the temporary ponds to renew the rites of spring and courtship.

Northern spring peepers, *Hyla crucifer crucifer,* measure just over an inch. Females are slightly larger. Their smooth dorsal skin may be light tan, gray, olive, or dark brown with a large characteristic X pattern on their back. The legs have a few dark cross bands, the belly is white, and the vocal sac is dark. Because of their small size and their ability to change skin color to blend in with the background, treefrogs are difficult to find. More often they are heard and not seen.

continued on page 37

WISCONSIN NATURAL RESOURCES

April 2002
Volume 26, Number 2


DNR BUREAU OF FISHERIES MANAGEMENT


GERALD H. EMMERICH, JR.


WHOOPING CRANE EASTERN PARTNERSHIP

FRONT COVER: The killdeer is one of three shorebirds that winters in Wisconsin. The rest make migratory trips of thousands of miles.
STEPHEN J. LANG Madison, Wis.

BACK COVER: Parfrey's Glen, Sauk County. For a map or more information, contact the State Natural Areas Program, Bureau of Endangered Resources, DNR, P.O. Box 7921, Madison, WI 53707.

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Masters of the wind

Transient shorebirds stop in Wisconsin to refuel on their far-reaching migrations.

Sumner W. Matteson and William K. Volkert

Every spring, the greatest long-distance migrants in the world—shorebirds—pass through Wisconsin on an extraordinary journey from as far away as southern South America to breeding grounds in arctic Canada, many flying 8,000 miles or more. This elegant group of birds, mostly comprised of sandpipers and plovers, frequents coastal and inland *stopover* sites — mud flats, marsh edges, flooded fields, ephemeral pools and the shores of lakes and lagoons — to refuel on invertebrates: insects, crustaceans, mollusks and worms.

Similar long-distance fall migrations occur every year as shorebirds retrace their journeys or fly south along the north Atlantic coast across to Surinam and down South America. Despite these remarkable flights, shorebirds are often little appreciated as they are less colorful than wood warblers and other songbirds, and not as prominent as hawks, owls and eagles. We encourage you to take a closer look.

A variety of sizes, shapes and habits

Foraging shorebirds have bills of varied shapes and sizes designed for feeding on invertebrates in upland and wetland habitats. Shorebirds are opportunistic and take the largest, easiest-to-catch invertebrates; some, such as the willet, greater and lesser yellowlegs, common snipe and the ruddy turnstone, consume a diet from insects to crabs. In the Apostle Islands, we have observed ruddy turnstones rolling herring gull eggs out of nests in attempts to break the shells, and ruddy turnstones are notorious predators of common tern eggs.

Marauders aside, shorebirds are delightful to watch; most pick or probe for food from mud flats, beaches, shallow waters and shorelines, but with noticeable differences that reflect variations in bill length and habitat. The American avocet uses its long, thin, upcurved bill to sweep side to side through shallow water and mud. Both yellowlegs typi-

Sanderlings are one of 41 shorebird species that migrate through Wisconsin on transcontinental migrations. They breed on the Arctic Ocean and winter throughout the southern U.S. and South America, often making an 8,000-mile journey.

cally pick and probe after invertebrates in shallow water and chase minnows from time to time. Godwits use their long bills to deeply probe mud flats and shallow pools. The constant bobbing of spotted sandpipers is a familiar sight as they dart hither and yon along shorelines for insect prey. And in mixed flocks of western and semipalmated sandpipers, the western's longer bill allows it to probe deeper water. In general, water depth and body size of foraging shorebirds correlate: larger birds forage in deeper water up to about seven inches deep.

The casual observer may not even be aware of shorebirds since their earth-toned and light shaded plumage blends in well with the immediate surroundings of flooded farm fields, shorelines and mud flats. These excitable birds cannot be easily approached and are best seen through a high-powered scope or binoculars from a road edge, a dune or while standing along some far-flung beach accessible only by boat.

The sandpipers, along with phalaropes and closely related birds, comprise the largest family *(Scolopacidae)* of Wisconsin shorebirds (33 species). All totaled, 41 shorebird species have been recorded in the state during the past half-century; this includes five species (from another part of the country or from another continent) characterized as "accidentals" that arrive on the winds of a major storm system, and seven species that breed in the state. Shorebirds range in size from the least sandpiper—the smallest sandpiper in the world at only 6 inches in length and weighing scarcely more than a half ounce, to the marbled godwit, which stands 18 inches high and weighs about a pound.

Transcontinental travelers

Imagine one of these sandpipers — the white-rumped sandpiper — which weighs only one and a half ounces and measures about seven and a half inches long, flying every spring from Tierra del Fuego at the southern tip of South

SUMNER W. MATTESON

WILLIAM K. VOLKERT

Given shorebirds' reclusive natures, wide-ranging habits and nocturnal migrations, it's very difficult to make accurate population estimates during migrations and on their remote breeding grounds. *(inset)* Some breeding grounds in the High Arctic, like the vast polar desert of Ellesmere Island are roadless and all but inaccessible.

America to its tundra nesting grounds in the Arctic — a 9,000-mile journey! This diminutive bird flies high in the thin night air — as do most shorebirds — resting during the day at inland and coastal sites in Wisconsin and elsewhere across the continent. The best time to see white-rumps in Wisconsin is during the third week of May through the first week of June. In fall, the numbers are far fewer because they follow a different migration route — principally from Hudson Bay along the north Atlantic Coast south through the West Indies and northern South America, though some come through Wisconsin between mid-July and early October.

Then there is another renowned long-distance migrant — the sanderling; its white two-ounce frame scurrying along the beach on distinctive black legs is common in late summer on our Great Lakes shores. This eight-inch bird flies every spring from coastal South America to breeding grounds in northeast Greenland, a peregrination exceeding 8,000 miles. (Sanderlings also nest in northern Alaska, across portions of northern Canada, and fairly close to the North Pole on Ellesmere Island.) Sanderlings are best observed migrating through Wisconsin from May 20–30 in spring and mid-August to early October in fall.

Not to be outdone, the lesser golden-plover flies from South America to nest in the High Arctic tundra and elsewhere in Canada and Alaska. This bird, abundant here in the mid-1800s, travels farther in a single flight than any other Wisconsin shorebird (except for the less common Hudsonian godwit), reportedly flying nonstop for 2,000 miles to the Gulf Coast before refueling. And the black-bellied plover, a circumpolar nester, migrates from the Arctic Circle to wintering grounds as far south as central Chile and northern Argentina. The peak for the black-bellied is from May 15–25 in southern Wisconsin and from May 21 to early June in the north; for the golden-plover, May 1–15, along the Lake Superior and Michigan coasts and in our southern and eastern counties. During fall, the latter half of September into early October is a peak period for both species.

The killdeer is the most common of our six plover species. It is a "short-distance" migrant that winters in the Gulf and South Atlantic states and nests here on gravel parking lots, grassy park areas, rural roadways and farm fields.

The plover family also includes the semipalmated plover, which breeds from northern Alaska and the High Arctic south into Canada and winters as far south as central Chile and Argentina (Patagonia). Then there's the rare, state-endangered piping plover, a Great Lakes beach and dune denizen that has nested in the state intermittently, with two Wisconsin nests observed on Lakes Superior and Michigan shores during 2001. No one knows for sure where our few piping plovers winter, but it is likely between the Georgia coast and the Texas Gulf Coast.

Stopover habitat is critical en route

Since shorebirds often feed in temporarily flooded fields and in shallow wetlands (including so-called ephemeral wetlands), some of their stopover habitat has disappeared due to development and agricultural use. Significant

SHOREBIRDS BREEDING, MIGRATING OR WINTERING IN WISCONSIN

Species	Breeding	Migrating	Wintering
Charadriidae Family			
Black-bellied Plover *(Pluvialis squatarola)*		X	
Lesser Golden-Plover *(Pluvialis dominica)*		X	
Snowy Plover *(Charadrius alexandrinus)****		X	
Semipalmated Plover *(Charadrius semipalmatus)*		X	
Piping Plover *(Charadrius melodus)**e*	X	X	
Killdeer *(Charadrius vociferus)*	X	X	X
Recurvirostridae Family			
Black-necked Stilt *(Himantopus mexicanus)****		X	
American Avocet *(Recurvirostra americana)**		X	
Scolopacidae Family			
Greater Yellowlegs *(Tringa melanoleuca)*		X	
Lesser Yellowlegs *(Tringa flavipes)*		X	
Solitary Sandpiper *(Tringa solitaria)*		X	
Willet *(Catoptrophorus semipalmatus)*		X	
Spotted Sandpiper *(Actitis macularia)*	X	X	
Upland Sandpiper *(Bartramia longicauda)*	X	X	
Whimbrel *(Numenius phaeopus)**		X	
Long-billed Curlew *(Numenius americanus)****		X	
Hudsonian Godwit *(Limosa haemastica)*		X	
Marbled Godwit *(Limosa fedoa)*		X	
Ruddy Turnstone *(Arenaria interpres)*		X	
Black Turnstone *(Arenaria melanocephala)****		X	
Red Knot *(Calidris canutus)*		X	
Sanderling *(Calidris alba)*		X	
Semipalmated Sandpiper *(Calidris pusilla)*		X	
Western Sandpiper *(Calidris mauri)***		X	
Least Sandpiper *(Calidris minutilla)*		X	
White-rumped Sandpiper *(Calidris fuscicollis)*		X	
Baird's Sandpiper *(Calidris bairdii)*		X	
Pectoral Sandpiper *(Calidris melanotos)*		X	
Purple Sandpiper *(Calidris maritima)**		X	
Dunlin *(Calidris alpina)*		X	
Curlew Sandpiper *(Calidris ferruginea)****		X	
Stilt Sandpiper *(Calidris himantopus)*		X	
Buff-breasted Sandpiper *(Tryngites subruficollis)**		X	
Ruff (exotic) *(Philomachus pugnax)**		X	
Short-billed Dowitcher *(Limnodromus griseus)*		X	
Long-billed Dowitcher *(Limnodromus scolopaceus)*		X	
Common Snipe *(Gallinago gallinago)*	X	X	X
American Woodcock *(Scolopax minor)*	X	X	X
Wilson's Phalarope *(Phalaropus tricolor)*	X	X	
Red-necked Phalarope *(Phalaropus lobatus)*		X	
Red Phalarope *(Phalaropus fulicaria)***		X	

* Rare: published reports average eight or fewer yearly records. ** Casual: published reports average one record every 3–5 years. *** Accidental: reported 1–7 times during the 20th century. [e] State endangered species

Shorebirds — what are they?

North American shorebirds comprise five families of mostly sandpipers and plovers with oystercatchers, avocets, stilts, and the very rare Northern Jacana. There are 214 shorebird species worldwide, of which 62 North American species are depicted in *The Sibley Guide to Birds* by David Allen Sibley. Fifty of these birds regularly occur or breed in various U.S. states, 36 (72 percent) occur in Wisconsin, ranging from common to casual occurrence, and an additional five species are considered accidental. Wisconsin's 41 shorebird species are listed here, along with their classification.

The piping plover is a rare find and is state-endangered. Only 18 pairs nested in the Great Lakes in the mid-1980s. This nest, found on the Lake Superior shore in 1998 was the first active nest found in Wisconsin for 15 years.

SUMNER W. MATTESON

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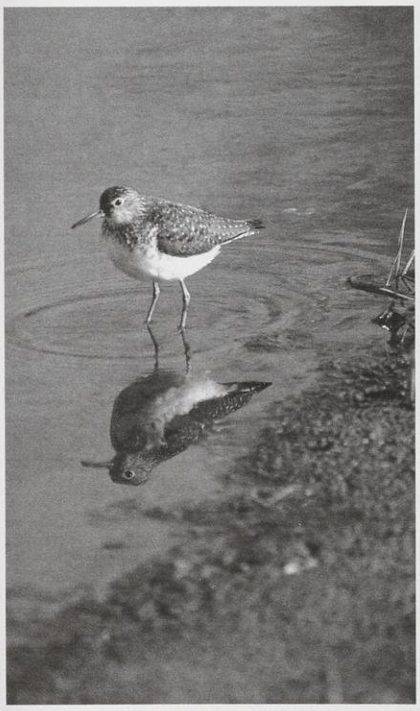
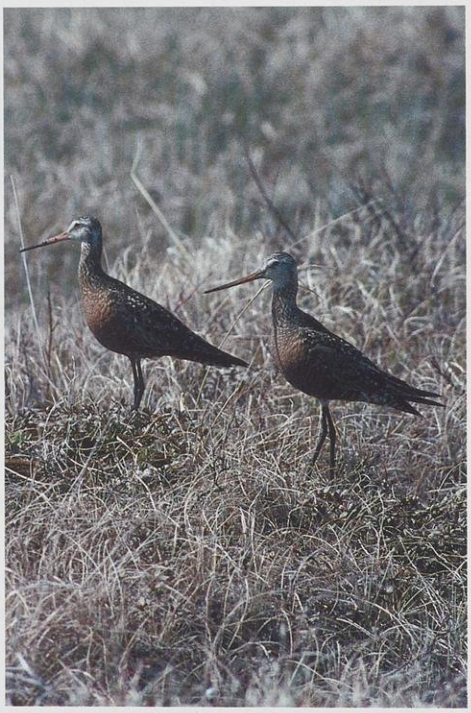


STEPHEN J. LANG



WILLIAM K. VOLKERT

SUMNER W. MATTESON

STEPHEN J. LANG

WILLIAM K. VOLKERT *(FAR LEFT)* STEPHEN J. LANG

SCOTT NIELSEN

conservation efforts are stemming large wetland losses, but ephemeral areas don't enjoy the same protection. Hence migrating shorebirds are under considerable pressure to find suitable sites to rest and refuel.

Shorebirds must arrive on Arctic breeding grounds in good physical condition to nest successfully during the brief Arctic summer. The body fat these birds accumulate during stopovers in Wisconsin and other midwestern states is critical for completing their long, arduous migration, as well as providing energy to produce viable eggs. As breeders, shorebirds exhibit a variety of mating strategies from monogamy to polygyny. Polyandry (females pairing with multiple males) and promiscuity are rampant among some species.

Estimating population sizes of long-distance migrants is difficult. Biologists rely on several methods, including surveys at annual staging sites, such as Delaware Bay on the East Coast, San Francisco Bay, and the Copper River delta in Alaska. Monitoring long-term population changes is a major objective of the United States Shorebird Conservation Plan. The plan aims to identify and maintain wintering, breeding and migration habitat, stabilize declining populations, maintain common species and restore shorebird populations in the Western Hemisphere through cooperative international efforts. To that end, a growing coalition of public and private groups have organized the Western Hemisphere Reserve Network to identify and protect important migration routes.

In Wisconsin, the Wisconsin Society for Ornithology works closely with the Department of Natural Resources on shorebird management. Contributions to WSO's Sam Robbins Shorebird En-

Take a close look at some elegant shorebird migrants that stop to refuel in Wisconsin.
(opposite page, clockwise from upper left)
Lesser yellowlegs, a flight of dunlins, spotted sandpiper.
(this page, clockwise from upper left)
Solitary sandpiper, Hudsonian godwits, American avocet, common snipe (a year-round resident). It's critical to enhance the shallow waters and marshes that provide nutrient-rich foods and rest areas for these long-distance migrants.

(BOTH PHOTOS) SUMNER W. MATTESON

Banding piping plover chicks provides a means to track their incredible journeys and their tenuous populations.
(right) **Long Island, off Chequamegon Point northeast of Ashland, is a remote but productive place to see shorebird migrants.**

dowment Fund underwrite the costs of modifying water levels on three state wildlife areas to accommodate shorebirds: Theresa Marsh in Dodge County, Mead Wildlife Area in Marathon County and Crex Meadows in Burnett County.

Water drawdowns promote the growth of aquatic vegetation as waterfowl food and create mud flats during peak shorebird migration.

Habitat ranging from exposed mud flats to shallow water provide ideal conditions for a variety of species, from small shorebirds ("peeps") to large waders such as godwits, willets, dowitchers and yellowlegs. Drawdowns also attract a variety of unusual shorebirds that provide ideal viewing opportunities for birders.

During spring migration, shorebirds often congregate in shallow, receding wetlands where large numbers of midge larvae, particularly bloodworms, overwinter. Drawdowns mimic these conditions. Partial drawdowns, where at least 20 percent of the impoundment is less than eight inches deep, are usually all that is needed to create food sources for invertebrates, which in turn attract shorebirds.

When semipermanent wetlands are managed for shorebirds, uplands surrounding the emergent vegetation are flooded in early spring, killing wet meadow plants and providing detritus for midges. While spring and fall drawdowns help migrants, winter drawdowns are important for longterm shorebird management. The process typically starts with a drawdown in early July to promote moist soil plants that will decompose over winter, then water is slowly returned to the basin in late April so midge larvae will flourish in nutrient-rich detritus. Water is kept shallow from mid-July to late September/early October to produce midges required by southbound migrants.

Since flooded fields and shallow water habitats change year to year depending on snowmelt and spring rainfall, management efforts are critical for sustaining shorebirds. By meeting their needs, we and future generations can guarantee that these masters of the wind will long visit us on their marvelous, transcontinental journeys.

Sumner W. Matteson is an avian ecologist with DNR's Bureau of Endangered Resources. William K. Volkert is a DNR naturalist and wildlife educator at Horicon Marsh.

Choice places to see shorebirds in Wisconsin*

An excellent reference for the aspiring shorebird watcher is Daryl Tessen's *Wisconsin's Favorite Bird Haunts, Fourth Edition,* published by the Wisconsin Society for Ornithology, Inc. This beautifully illustrated book includes a detailed description, with maps, of 135 places to visit for birds, including shorebirds:

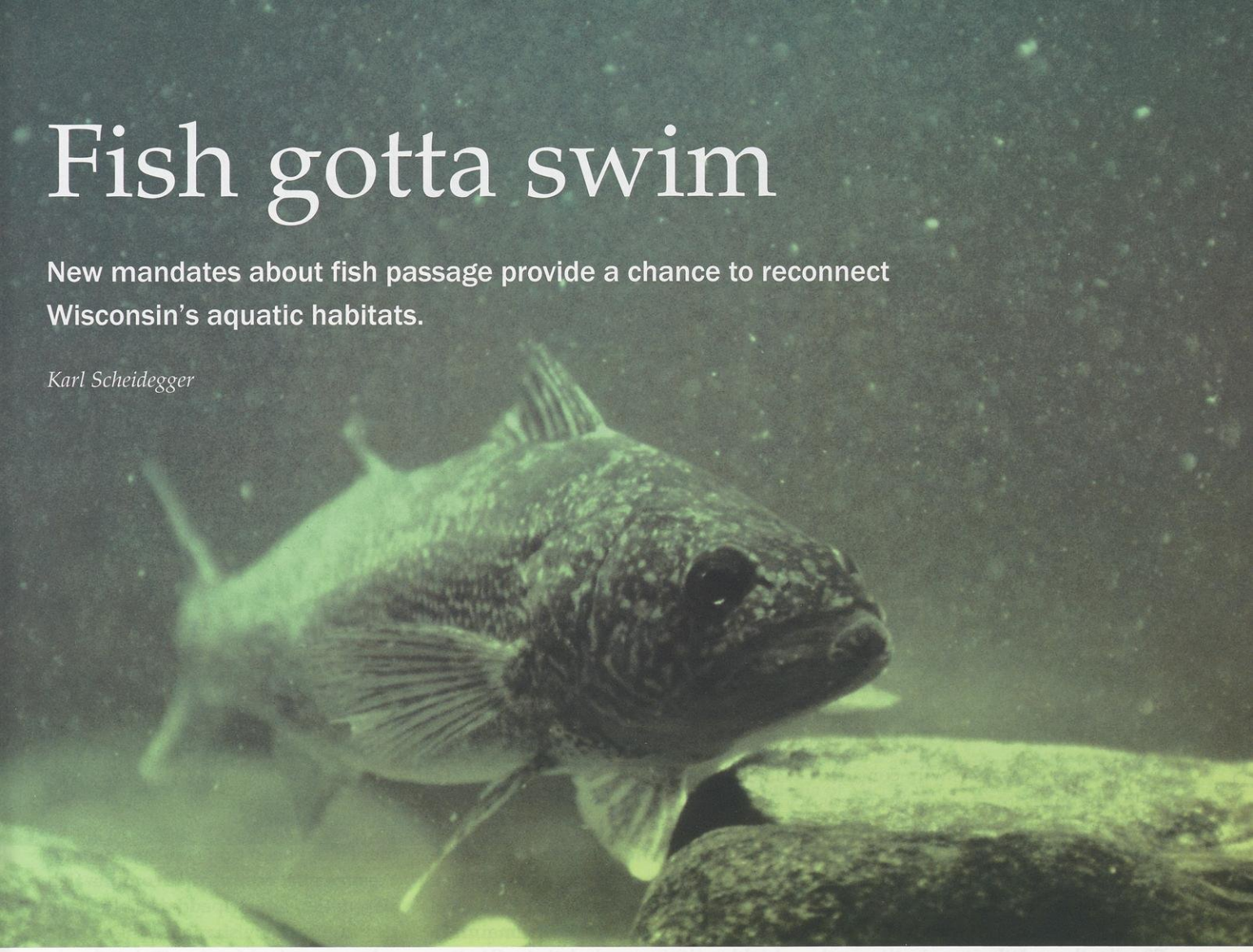
1. Nine Springs Lagoons, Madison, Dane County
2. Theresa Marsh State Wildlife Area, Theresa, Washington County
3. A & W Ponds, Beaver Dam, Dodge County
4. Big Eau Pleine Reservoir, Mosinee, Marathon County
5. Horicon Marsh, Horicon, Dodge County
6. Teal Flowage — Mead Wildlife Area, Milladore, Marathon County
7. South Rice Lake — Mead Wildlife Area, Milladore, Marathon County
8. Ken Euers Natural Area, Green Bay, Brown County
9. Peshtigo Point, Peshtigo, Marinette County
10. Seagull Bar, Marinette, Marinette County
11. North Fork Flowage — Crex Meadows, Grantsburg, Burnett County
12. Long Island/Chequamegon Point, Odanah, Ashland County
13. Milwaukee Coast Guard Impoundment
14. Manitowoc Harbor, Manitowoc County
15. Two Rivers, Lake Michigan shore, Manitowoc County
16. Wisconsin Point, Superior, Douglas County

*As listed on the Wisconsin portion of the Western Shorebird Survey website — www.wss.wr.usgs.gov.

Fish gotta swim

New mandates about fish passage provide a chance to reconnect Wisconsin's aquatic habitats.

Karl Scheidegger



You're cruising down the highway, the top is down, the wind rustles your hair and everything seems perfect. Then you see one of those dreaded flashing Road Construction or Detour Ahead signs. For the car driver a detour is frustrating, but you know the route will guide you in the right direction and eventually onto your original destination.

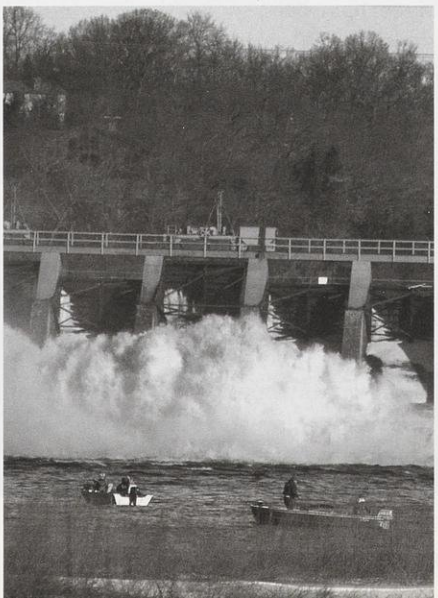
It's different in the aquatic world, where impediments in the water truly mean "You can't get there from here."

Wisconsin has been blessed with diverse and plentiful rivers — more than 12,600 rivers and streams meander through 44,000 miles of terrain. These ribbons of life nourish and sustain the state's aquatic plants and animals.

Water flow and levels are controlled, channeled or blocked by human-built structures — usually dams — on a majority of these aquatic highways. More than 3,700 dams of various sizes have been built on Wisconsin's rivers and streams to power sawmills, increase water flow to float logs downstream, to operate grain mills, or for navigation. Larger dams generate hydroelectric power to supply paper mills, other industries or homes. Smaller dams were maintained or constructed to create reservoirs, control water levels in natural lakes, or to control floods.

Dams have been built on almost all of the major rivers in the state including the Chippewa, Flambeau, Fox, Black, Wisconsin, Peshtigo, Menominee, Oconto and Iron rivers, as well as on numerous smaller streams. A series of large dams and reservoirs — the Lock and Dam System — was constructed on the Mississippi River to maintain a navigation channel for barges. There's no denying that some dam construction has been beneficial for the state's economy and recreation. But it is equally clear that dams have impeded the movement of numerous aquatic organisms — most obviously, fish.

The Prairie du Sac dam stops fish like the walleye *(above)* on its traditional spawning run. Anglers often find good fishing *(below)* just below dams. Fishways could open up longer reaches of the Wisconsin River for fish migration.



STEPHEN J. LANG

DON BUSH *(INSET)* DNR BUREAU OF HABITAT PROTECTION AND FISHERIES MGT.

Beckman's Dam on the Rock River in Green County is the site of a recent fishway success story. The fishway gradually sweeps off the bottom left side of this photo up shallow steps.
(inset) **Plastic Fosler tubes through each step allow even small minnows to easily migrate the gentle rise upriver.**

Do fish really need to move?

Wisconsin's river fish swim considerable distances to meet their needs. Smallmouth bass in the Embarrass and Wolf rivers migrate in excess of 50 miles between prime summer and winter habitats. Smallmouth bass in the Mississippi River migrate in spring more than 70 miles through three navigation pools on their journey up the Black River. Channel catfish have remarkable homing behavior and seasonal movements between the Wisconsin and Mississippi rivers. Returns from tagged catfish show they travel distances well over 70 miles. Lake sturgeon tagged at the mouth of the Wisconsin and Mississippi rivers have been shown to move up and down the Wisconsin River, residing for a short time (possibly to spawn) below the Prairie du Sac Dam — a journey of over 90 miles!

River fish move in search of sufficient quantities of critical habitat. Fish seek suitable refuge during periods of high or low water, in the harsh winter and during high-temperature droughts. They travel up and downstream to find food, good spawning habitat and well-protected nurseries.

Dams separate some river fish species from the habitat they need to sustain their populations. Fish populations caught behind dams become isolated and fragmented, unable to tap the genetic diversity that contributes to a population's strength.

Fishways and other methods (elevators, trapping and transferring) that allow fish to travel to their historical spawning grounds help maintain healthy, vigorous populations. Creating ways for fish to bypass dams could restore ranges for some of our high-profile, endangered or threatened species.

Providing passage for fish is important to an ecosystem as well. Barriers such as dams, culverts or dikes prevent fish from migrating or moving to a given river reach, which pose consequences for other organisms that depend on the presence of those fish. Mammals, birds, amphibians, reptiles, other fishes and invertebrates prey on fish eggs, larvae, juveniles or adults. These predator-prey relationships are important ecological interactions between aquatic and terrestrial ecosystems, and within the aquatic ecosystem itself. Such interactions can be interrupted, decreased or severed entirely when fish can no longer swim to historic portions of their range.

Here's an example: To survive and flourish, freshwater mussels rely on fish to colonize upstream habitats. Young mussels must parasitize specific host fishes to move upstream any distance. That's why fish presence and diversity reflects mussel presence and diversity in many cases. It is not surprising that some of the most diverse mussel beds are found in dam tailwater areas, where fish can no longer continue their upstream journeys.

All this being said, there are situations in which dams assist fish populations rather than block their progress. Dams have stopped the spread of piscine diseases, contained contaminated fish populations, and prevented exotic species from increasing their ranges. Dams can also stop "naturalized" non-native species like the brown trout from competing with native trout.

A first pass at fish passage

Although unimpeded fish movement in rivers was recognized as important well over 150 years ago, technology developed to effectively pass fish around or through dams has been slow, with a lot of trial-and-error. Most of the experiments had been done on the East and West coasts, where anadromous fish populations of striped bass, blueback herring, hickory shad and the Pacific salmon required free movement for reproduction. Little effort had been directed at midwestern, warmwater "resident" fish species.

The term "fish ladder" tends to have a negative connotation today because the early ladders were so ineffective in warmwater situations. This poor performance was due mainly to the general lack of knowledge of basic fish biology — how fast fish swim, what kind of water flow attracts them, and how and when they move.

From 1908 to 1912, fishways were evaluated on the St. Croix River at St. Croix Falls, the Kilbourn Dam on the Wisconsin River, the Eureka Dam on the Fox River, and the Weyauwega Dam on the Wolf River. At St. Croix Falls, not a single fish used the fishway. One sucker went through the fishway at Kilbourn. There were two bass, three pike, two suckers, one carp, 13 bowfin and one sunfish that successfully navigated the ladder at Eureka, and 49 suckers

Experimental sturgeon fishway in Massachusetts. The circular ladder with scaffolding at the top of the photo is shaped like a screw-like inclined plane to allow fish to reach the top of the dam in minimal space.

Can Wisconsin's swimming dinosaurs bypass dam technology?

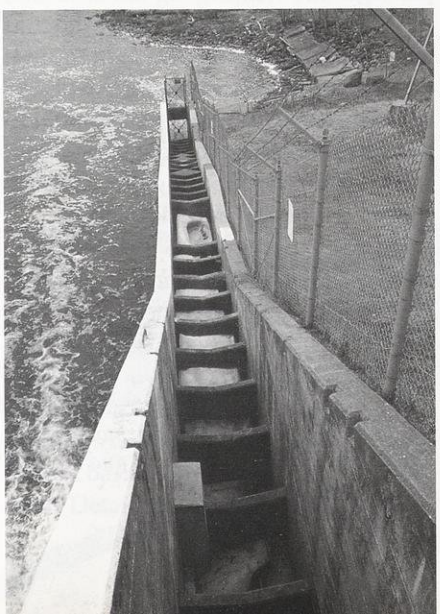
Can a fishway be built that will make sense to large, primitive fish that grow to five feet or more? Over the past several years, researchers in Massachusetts have been working with Wisconsin biologists to answer that very question. They have developed and are testing a circular fishway designed to let lake sturgeon pass around dams. The circular design takes less space, but still provides the critical flow volume and velocity. The results are promising. The fishway will ultimately be used to pass sturgeon on the Menominee River, a boundary water between Wisconsin and the Upper Peninsula of Michigan.

passed over the dam at Weyauwega. Understandably, none of these early fishways was considered even mildly successful. They became concrete monuments to failures of a bygone era.

How effective any given fish passage will be depends on the design, the species involved, and the site conditions. Our knowledge and understanding of fish behavior in passing around manmade obstacles has grown substantially, particularly in the last decade. Researchers have advanced fishway design by identifying critical swimming speeds and attraction flows. We now can predict with reasonable certainty how key warmwater species such as walleye, largemouth bass, northern pike and lake sturgeon will react to a fishway.

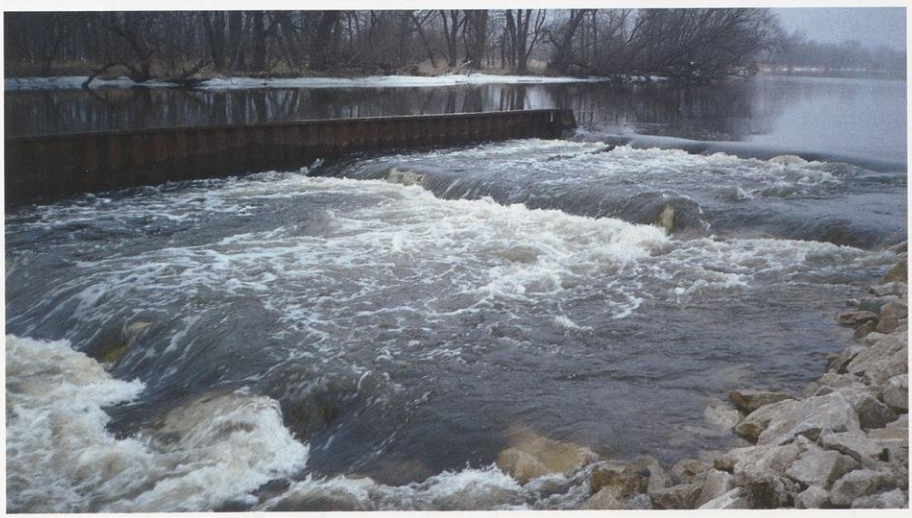
There is a considerable body of literature documenting the successes of newer fishways around North America. The Eureka fishway on Wisconsin's Fox River is one. This rock ramp or "roughened chute" constructed in 1988 allows successful migrations of a variety of fish

Fish could not successfully migrate up the old, steep fish ladder at Eureka Dam on the Fox River.



DNR BUREAU OF HABITAT PROTECTION AND FISHERIES MANAGEMENT

The fishway at Eureka Dam was replaced in 1988. The new design lets walleye, perch, lake sturgeon and smaller forage fish pass with ease.



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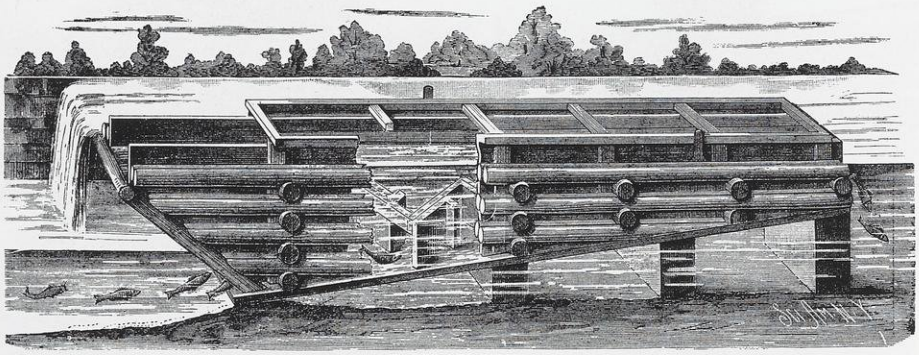
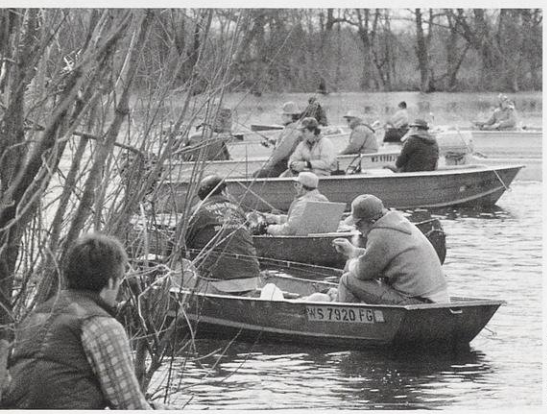


ROGERS' FISHWAY.

The mandate to provide ladders so fish can bypass dams is more than 120 years old. Here's a design from the 1880 Commissioners of Fisheries Report.



DEAN TVEDT

Anglers pile up where fish piled up below the old Eureka Dam in this 1978 photo.

including walleye, yellow perch, suckers and redhorse, gizzard shad and lake sturgeon.

Several fishways, used mostly by spawning fish that migrated entirely within a freshwater system of rivers and lakes, have been monitored in the Canadian provinces of Alberta, Saskatchewan, Manitoba and Ontario. Species that used the fishways included grayling, whitefish, cisco, northern pike, walleye, sauger, yellow perch, white sucker, common carp and burbot. Several fish ladders have been constructed and evaluated at sites in Michigan; coho and chinook salmon, suckers and redhorse, steelhead, channel catfish, smallmouth bass, common carp and walleye migrate up through these ladders without difficulty. An additional 17 operating fishways (and two under construction) in Michigan target species such as salmon, steelhead, brook and brown trout, walleye and northern pike.

The free movement of fish has a long history

Wisconsin's earliest natural resource law, promulgated by the territorial legislature in 1839, required the construction of fish passage structures on navigable waterways. Wisconsin Fish Commission reports from the late 1800s and early 1900s document public concern about the impeded movement of fish, particularly in tailwater areas. A report from 1878 discusses the fishes' inability to move back upstream and, as a result, "congregate together in large numbers at the base of dams, where they are slaughtered by the thousands by improvident men and reckless boys." Even today, it is no secret that some of our most popular fisheries are found at dam tailwaters.

Wisconsin statute states that "The department [Department of Natural Resources] may investigate and determine all reasonable methods of construction, operation, maintenance, and equipment for any dam so as to conserve and protect all public rights in navigable waters..." The definition of "public rights" has been broadly construed by Wisconsin courts to include fishing, protection of habitat, natural scenic beauty, and the protection of water quantity and quality.

Additionally, for most of the 1900s, the statute also read "...the department may order and require any dam heretofore or hereafter constructed to be equipped and operated, in whole or part with good and sufficient fishway or fishways..."

Progress on the fish passage front took a slight and unfortunate detour several years ago. The 1999 budget bill revised the almost century old statute by removing the DNR's authority to require fish passage. The department can now only require passage after two things occur: 1) rules are created and promulgated that clarify the fish passage prescription process (what, where, when, how, etc.), and 2) a cost-share program is implemented and money is available to dam owners for fish passage work.

Over the past several years, DNR staff has been working with the hydropower and paper industries, municipalities and other dam owners to develop these important rules. A process for proposing fish passages calls for a thorough evaluation of environmental benefits and includes a planning procedure with plenty of public input. Fish passage techniques may vary from changing a dam operation (for example, opening gates at critical periods) to a natural, sloped rock ramp, to a full-blown concrete structure. Costs, likewise may vary from several thousand dollars to several hundred thousand dollars.

Because dams have been constructed on public waters and many for private benefit, resource managers, anglers and public interest representatives believe the responsibility of providing funding for passage rests with the dam owner. The proposed cost-share program will require the DNR and others to ensure that financial assistance is available before fish passage can be ordered at a facility. The rules also mandate that fishways be evaluated for effectiveness and to learn how subsequent structures may be improved. The Natural Resources Board will ultimately review the rule package.

Developing rules for fishways has been long and certainly challenging. However, once the new fish passage rules are in place, the department and dam owners can begin to work cooperatively on reconnecting some of the state's fragmented aquatic habitats.

And perhaps when Mr. Walleye cruises up one of Wisconsin's aquatic highways in the future, the phrase "You can't get there from here" will only be a "passing" thought.

Karl Scheidegger is a fisheries biologist for DNR's Fisheries Management and Habitat Protection program in Madison.

Adventures in rare places

Annual field trips visit 64 State Natural Areas.

Christine Tanzer

ROLAND S. MARKS

Expert ecologists are leading 64 trips to State Natural Areas to celebrate the program's 50th anniversary.

Join us on a new adventure! To honor the 50th anniversary of the State Natural Areas (SNA) program, all of the Natural Resource Foundation's field trips this year visit the places that preserve our best examples of rare habitat, scenic places and unusual geography. The trips are led by DNR experts sharing their enthusiasm and knowledge of some of Wisconsin's most beautiful properties. Many trips are new this year and probably will not be repeated in future years.

Register now

Signing up for trips is easy, and most are free of charge. Space is limited and trips that can accommodate fewer than 20 people are indicated in the listings below. We expect to fill trips quickly and trips are filled on a first-come, first-served basis, so register as soon as possible. Details and directions to each trip site will be sent to registrants two weeks before each trip.

Trips are numbered chronologically from early April through mid-October. Assume the trips fall on weeknds unless noted in the listings.

Register for trip by number and tell us how many people are in your party. An annual one-time registration fee costs $15 per family/group for Foundation members; $25 for nonmember family/group. This year, the $25 fee also includes an introductory one-year membership to the Natural Resources Foundation to keep you abreast of our activities.

A handful of trips list per person costs in addition to the registration fee to cover the price of meals and transportation provided. All trip fees are nonrefundable. Parties on waiting lists who cannot be accommodated will receive refunds in July and October. Groups are limited to only one canoe trip per year because these outings are so popular.

To register, clip or photocopy the form, list the trips that interest you by number, calculate the fees, submit one check for all trips payable to the Natural Resources Foundation, and mail completed forms with checks to NRF Field Trips, P.O. Box 2317, Madison, WI 53701. If you have questions or physical limitations, call Christine Tanzer for trip details before registering at (608) 264-8548 on Wednesdays. A recorded toll-free message that is available after 5 p.m. each day at (866) 264-4096 provides updates as field trips fill.

Field trip registration form

Name _____

Street address _____

City/state/zip _____

Phone (daytime) _____ (evening) _____

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

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

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

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

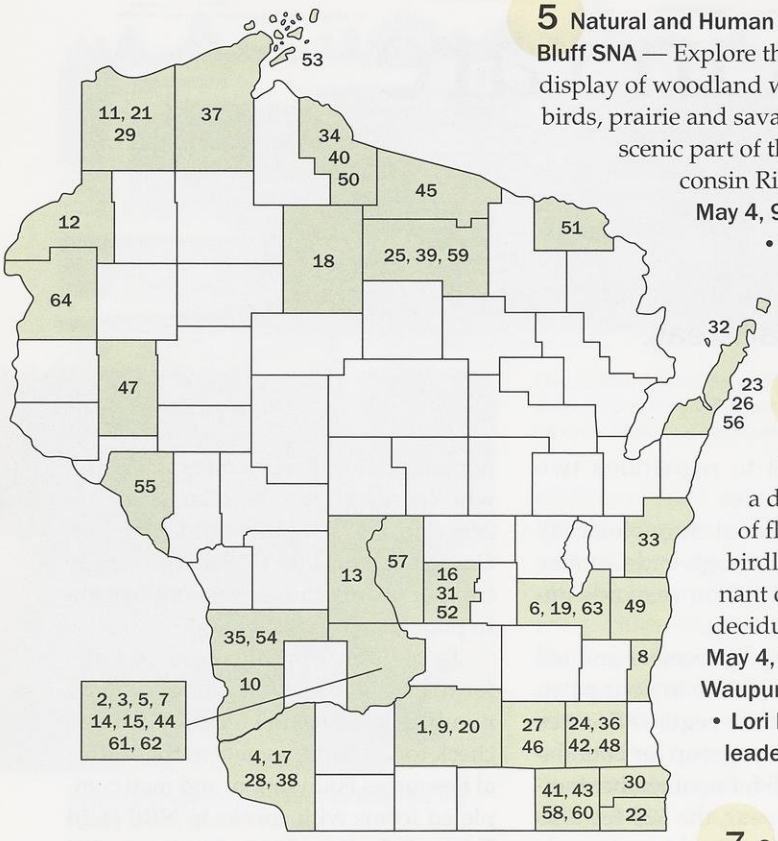
Annual trip registration fee: NRF Members — $15 / Non-members — $25 _____

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

TOTAL ENCLOSED $ _____

Make checks payable to Natural Resources Foundation of Wisconsin

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



1 Frog's Night Out — Learn to know frogs by their songs while exploring the Mazomanie Bottoms SNA along the Wisconsin River.
Thursday, April 11, 6:45–8:45 p.m. • Mazomanie, Dane Co. • Bob Hay, leader

2 Ice Age Geology of Devil's Lake SNA — Enjoy spectacular views while gaining a new appreciation of this beautiful place.
Friday, April 26, 9 a.m.–noon • Devil's Lake State Park, Sauk Co. • John Attig and Gary Warner, leaders

3 Parfrey's Glen SNA — Explore the natural and human history of a spectacular 100-foot deep gorge; Wisconsin's first State Natural Area!
April 27, 9–11:30 a.m. • Devil's Lake, Sauk Co. • David Bouche, leader

4 Wyalusing Walnut Forest SNA — Hike through this mature forest, which includes some magnificent black walnuts. Warblers may be migrating too!
May 4, 9:30 a.m.–noon • Wyalusing, Grant Co. • Scott Johnson, leader

5 Natural and Human History of Ferry Bluff SNA — Explore the exceptional display of woodland wildflowers, birds, prairie and savanna along this scenic part of the Lower Wisconsin River.
May 4, 9:30–11:30 a.m. • Sauk City, Sauk Co • Ken Lange, leader

6 Waupun Park Maple Forest SNA — See a dazzling display of flowers and birdlife in this remnant of the southern deciduous forest.
May 4, 10 a.m.–noon • Waupun, Fond du Lac Co. • Lori Radunzel-Davis, leader • Limit: 15

7 Spring Ephemerals of the Baraboo Hills — A glorious carpet of nodding trillium, wild geranium, spring beauties and more await you under the canopy of maple and basswood at McGilvra Wood SNA.
Friday, May 10, 9 a.m.–noon • West Baraboo, Sauk Co. • Craig Anderson, leader

8 Ecology of Cedarburg Bog SNA — Spend Mother's Day exploring a galaxy of aquatic plants and animals, a "patterned bog," sedge meadows, marshes and swamps in southeastern Wisconsin.
Sunday, May 12, 9 a.m.–noon • Saukville, Ozaukee Co. • James Reinartz, leader

9 Canoe Hook Lake Bog — Paddle around exploring various wetlands including a sphagnum bog mat. (Bring your own canoe or kayak.)
Friday, May 17, 9 a.m.–12:30 p.m. • Oregon, Dane Co. • Kelly Kearns, leader • Limit: 20

10 Spring Flora of Mississippi River Bluff Prairies — See spectacular views of the Mississippi River valley from atop 400-foot bluffs and steep "goat prairies" at Rush Creek SNA.
Friday, May 17, 9:30 a.m.–1 p.m. • Ferryville, Crawford Co. • Armund Bartz and Ron Lichtie, leaders

11 Canoe the Brule River — Spend a day exploring the Upper Brule River and Bois-Brule Conifer Bog SNAs by canoe. (Limited canoes available for free use. Indicate if you need one.)
May 18, 9 a.m.–4 p.m. • Solon Springs, Douglas Co. • Jen Punzel and Steve Petersen, leaders • Limit: 18

12 Barrens and Prairies of Burnett County — Learn about barrens and prairie management at the Crex Sand Prairie & Kohler-Peet Barrens SNAs, then venture to a lowland hardwood forest at Norway Point Bottomlands SNA along the St. Croix River.
May 18, 9 a.m.–noon • Crex Meadows, Burnett Co. • Jim Hoefler, leader

13 Archaeology of Cranberry Creek — Discover Cranberry Creek Mound Group SNA, the largest remaining Indian mound group in the state, built 1,000–2,000 years ago. See conical and effigy mounds shaped like birds and animals.
May 18, 1–3 p.m. • Necedah, Juneau Co. • Bob Birmingham, leader

Trips are timed to capture nature at its peak. These birders watch migrating birds at Wyalusing in Grant County.

14 Pygmy Forests & Glades of Devil's Lake — Explore the Red Oak Forest SNA in Devil's Lake State Park. Climb the talus slope to see the pygmy forest, prairie openings and bedrock glades.
May 18, 10 a.m.–1:30 p.m. • Devil's Lake State Park, Sauk Co. • Kelly Kearns and Ryan Magana, leaders

15 Wisconsin's Desert: Spring Green Prairie SNA — See prickly pear cactus, reptiles, grassland birds, wide open spaces, dry prairie, sandblows and a wonderful sunset vista of the Lower Wisconsin Riverway from atop a bluff.
Friday, May 24, 6–8 p.m. • Spring Green, Sauk Co. • Kristin Westad, leader • Limit: 12

16 Birding at Comstock Bog SNA — Learn about wetland ecology as we explore the edges of this 1,000-acre bog. Look for wetland birds such as yellow rails, LeConte's and Henslow's sparrows, and nesting sandhill cranes. Examine sundews and other exotic bog plants.
May 25, 9 a.m.–noon • Montello, Marquette Co. • Bill Brooks, leader

SCOTT NIELSEN

Nodding trillium add color to a summer wildflower walk.

17 Prairies of Blue River Bluffs SNA — Visit a unique Wisconsin River bluff prairie community.
May 25, 9 a.m.–noon • Boscobel, Grant Co. • Matt Zine, leader • Limit: 15

CHRISTINE TANZER

18 Birds of Memorial Grove Hemlocks SNA — Catch a glimpse of blackburnian warblers, blue-headed vireos, winter wrens and other birds that inhabit this towering old-growth forest of hemlocks, yellow birch and basswood.
May 25, 8–9:30 a.m. • Pike Lake, Price Co. • Linda Parker, leader

19 Spruce Lake Bog Bounce — See carnivorous plants, "bouncing" soils and rare flowers such as moccasin flowers and grass pink orchids.
Thursday, May 30, 6:30–8:30 p.m. • Dundee, Fond du Lac Co. • Jackie Scharfenberg, leader

20 The Future of Our Oak Woods — Explore the white oaks of Olson Oak Woods SNA adjoining the Madison School Forest.
Friday, May 31, 3–5 p.m. • Verona, Dane Co. • Rich Henderson, leader

21 Sea Kayak the Pokegama Bay Wetlands 1 — Paddle diverse wetland communities at Dwight's Point/Pokegama Wetlands SNA in the St. Louis River estuary near Lake Superior. Beginners welcome! Sea kayaks and instruction will be provided by outfitter.
June 1, 9 a.m.–4 p.m. • Superior, Douglas Co. • Frank Koshere, leader • Limit: 14 • Cost: $55 per person kayak rental; $25 per person with own kayak and gear

22 Chiwaukee Prairie SNA — Explore the richest prairie in Wisconsin, with more than 400 plant species! The shooting stars should be at their peak.
June 1, 9–11 a.m. • Kenosha, Kenosha Co. • Kelly Skaife, Chris Spaight and Marty Johnson, leaders

23 Wildflowers in Their Glory — The Ridges Sanctuary SNA is famous throughout Door County for its numerous wildflowers. Hike through boreal forest along ancient beach ridges.
Friday, June 7, 1–2:30 p.m. • Bailey's Harbor, Door Co. • Paul Regnier, leader

BILL WEEGE

Help band osprey on trip 40 or just watch them on trip 25.

24 Kettle Moraine Savannas and Bluffs — Explore the remnant oak savannas of the Kettle Moraine Oak Opening SNA, and native dry prairie at Bald Bluff.
June 8, 9 a.m.–noon • Southern Kettle Moraine, Waukesha Co. • Matt Zine, leader • Limit: 18

25 Eagles & Osprey of the Willow Flowage — Cruise the 6,400-acre Willow Flowage by luxury boat and hike through its northern forests.
June 8, 10 a.m.–4 p.m. • Willow Flowage, Oneida Co. • Ron Eckstein, leader • Cost: $20 per person

26 Door County Old Growth — Enjoy a hike along the Lake Michigan shoreline through Toft Point SNA, a fine example of old-growth forest with towering white pines and hemlocks.
June 8, 9:30 a.m.–noon • Bailey's Harbor, Door Co. • Roy and Charlotte Lukes, leaders • Limit: 15

27 Canoe Red Cedar Lake SNA — Paddle to adventure in this gorgeous shallow lake, home to black terns and sandhill cranes. (Bring your own canoe.)
June 8, 9:30 a.m.–noon • Cambridge, Jefferson Co. • Doris Rusch, leader • Limit: 14

28 Walk in the Pine Relicts — Discover small forests of red and white pines in southwestern Wisconsin at the Snow Bottoms SNA.
June 15, 9–11 p.m. • Montfort, Grant Co. • Matt Zine, leader • Limit: 18

CHRISTINE TANZER

Donna Mosca talked about migrating monarch butterflies at Bong Recreation Area.

29 Sea Kayak the Pokegama Bay Wetlands 2 — Paddle the Dwight's Point/Pokegama Wetlands SNA in the St. Louis estuary near Lake Superior. Beginners welcome! Sea kayaks and instruction will be provided by outfitter.
June 15, 9 a.m.–4 p.m. • Superior, Douglas Co. • Frank Koshere, leader • Limit: 14 • Cost: $55 per person kayak rental; $25 per person with own kayak and gear.

30 Cherry Lake Sedge Meadow SNA — See the amazing gradation from dry prairie remnants on glacial hills to tamarack wetland and sedge meadows.
June 15, 8–11 a.m. Honey Creek Wildlife Area, Racine Co. • Jim Jackley, leader

31 Orchids at Summerton Bog SNA — Discover the beauty of Wisconsin's treasured plants: orchids! See showy lady's-slippers and grass pinks.
Sunday, June 16, 9:30 a.m.–1 p.m. • Endeavor, Marquette Co. • Scott Weber, leader • Limit: 15

32 Canoe the Mink River SNA — Take a four-hour paddle to see sandhill cranes, ospreys, bald eagles, herons, and a variety of ducks. Then enjoy an hour-long hike through a cedar forest.
Thursday, June 20, 9 a.m.–2 p.m. • Rowleys Bay, Door Co. • Carolyn Rock and Terrie Cooper, leaders • Limit: 16 • Cost: $12 per person for canoe rental

33 Unearthing a Buried Forest — Celebrate the summer solstice hiking forested ridges and wet swales of Point Beach Ridges SNA. Then adventure to Two Creeks Buried Forest SNA to see remnants of a buried 12,000-year-old spruce/pine forest along a Lake Michigan Bluff.
Friday, June 21, 10 a.m.–3 p.m. • Two Rivers, Manitowoc Co. • Thomas Meyer, leader

34 Canoe the Upper Flambeau — Paddle the Upper North Fork of the Flambeau River from the Turtle-Flambeau Flowage dam south. Experience white water rapids. (Intermediate canoe skills needed.) Canoes and lunch provided.
June 22, 9 a.m.–3 p.m. • Springstead, Iron Co. • David Olson, leader • Limit: 16 • Cost: $17 per person

DONNA KRISCHAN

Search for rare flowers like the prairie white-fringed orchid.

35 Ferns of Mt. Pisgah SNA — Hike the cliffs of the Kickapoo River to see ferns and a unique hemlock forest.
June 22, 9 a.m.–1 p.m. • Wildcat Mountain State Park, Vernon Co. • Tim Kessenich, leader • Limit: 15

36 Butterflies at Scuppernong Prairie Learn natural history of butterflies including the endangered poweshiek skipper.
Friday, June 28, 9:30–11:30 a.m. • Eagle, Waukesha Co. • Susan Borkin, leader • Limit: 15

37 Canoe Bark Bay Slough SNA — Take a paddling adventure through this picturesque estuary on the south shore of Lake Superior and lunch on a sandbar. (Canoes and lunch provided.)
Friday, June 28, 9 a.m.–1 p.m. • Herbster, Bayfield Co. • Greg Kessler, leader • Limit: 15 • Cost: $10 per person.

38 A Desert in Wisconsin? — Discover the sand blowouts and dry prairie of the Blue River Sand Barrens SNA. Look for lizards, lichens and other species adapted to the dry, desert-like environment.
June 29, 9–11 a.m. • Muscoda, Grant Co. • Lori Radunzel-Davis, leader • Limit: 15

39 Old Growth Forests: Ecology and Management — Discover the majesty of old-growth red pines as we hike through the Tomahawk River Pines SNA.
July 13, 10 a.m.–3 p.m. • Woodruff, Oneida Co. • Ron Eckstein, leader

40 Turtle Flambeau Flowage Tour & Osprey Banding — Take a scenic boat ride through the flowage, visit osprey nests and help band nestlings. This trip is a fundraiser for the osprey monitoring program.
July 13, 8:30 a.m.–4 p.m. • Mercer, Iron Co. • Bruce Bacon and Roger Jasinski, leaders. • Cost: $50 per person

41 Walk on Water at Beulah Bog SNA — Explore bog flora including carnivorous plants, mosses, sedges and tamaracks. See dragonflies, hear bullfrogs, and walk on a floating, quaking mat of vegetation.
Friday, July 19, 9 a.m.–noon • East Troy, Walworth Co. • Thomas Meyer, leader • Limit: 12

42 Rare Fish and Mussels of the Mukwonago River — Immerse yourself in the clear waters of the Mukwonago River SNA to wade, snorkel and discover the amazing underwater world of freshwater mussels and rare fish.
July 20, 10 a.m.–3 p.m. • Mukwonago, Waukesha Co. • Lisie Kitchel and Kurt Welke, leaders

43 Prairie Restoration at Young Prairie SNA — Enjoy a jaunt through this wet-mesic prairie. Blazing stars, yellow coneflowers and compass plants should be in bloom.
July 20, 9 a.m.–noon • Whitewater, Walworth Co. • Matt Zine, leader • Limit: 18

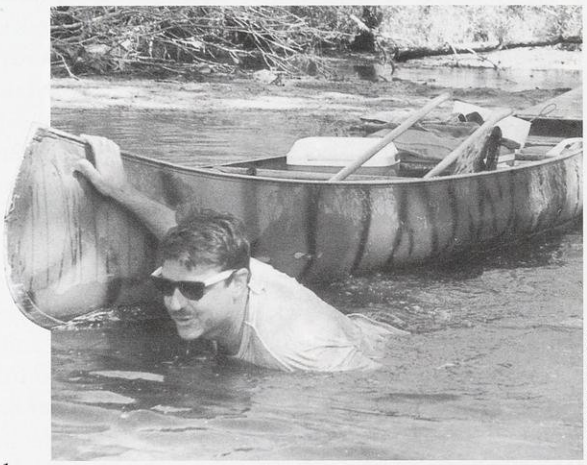
44 Pine Hollows in the Baraboo Hills
Hike to the bottom of Pine Hollow SNA where hemlocks cast a deep shade and provide habitat for unique plants and birds. Visit a shallow cave in a sandstone cliff. (Some strenuous hiking.)
Friday, July 26, 9 a.m.–1 p.m. • Denzer, Sauk Co. • Jim Welsh, leader • Limit: 15

45 Primeval Plum Lake Hemlocks SNA — Hike this celebrated old-growth hemlock forest on an isthmus between Plum Lake and Star Lake.
July 27, 9 a.m.–noon • Woodruff, Vilas Co. • Paul Matthiae, leader

46 Leopold's Favorite Prairies — Explore the beauty of virgin wet-mesic prairies in Faville and Snapper Prairie SNAs. Faville was protected through the efforts of Aldo Leopold.
July 27, 9:30 a.m.–1 p.m. • Lake Mills, Jefferson Co. • Mark Martin, leader

47 Canoe to an Island Savanna — Combine two passions — canoeing and hiking prairie/savannas! Paddle an easy stretch of the Chippewa River to the Caryville Savanna SNA. Hike through this high quality island savanna, then cool your toes in a shallow sand beach. (Bring your own kayak.)
July 27, 10 a.m.–2 p.m. • Meridean, Dunn Co. • Deborah Konkel, leader

48 Prairies Peak at Summer Bloom! — Explore the rich, low prairies at Glacial Lake Scuppernong SNA to see compass plant, prairie dock, bobolinks and upland sandpipers.
August 3, 9 a.m.–noon • Eagle, Waukesha Co. • Ron Kurowski, leader



CHRISTINE TANZER

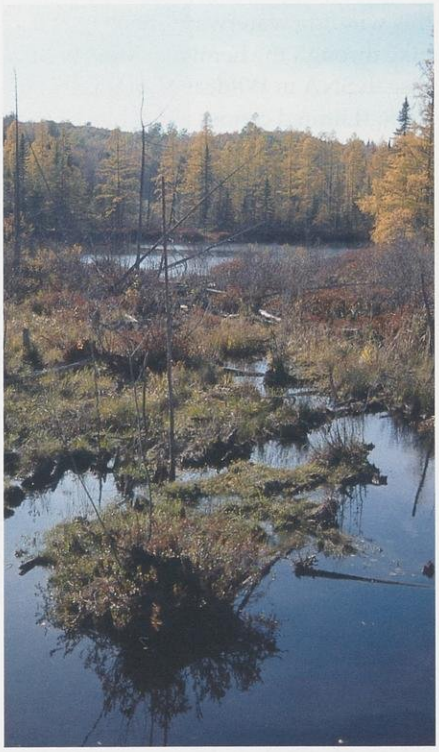
Get into the Mukwonago River on trip 42 to explore freshwater mussels.

49 Ozone Injury at Kohler Park Dunes — Join an air quality expert for a hike on the Kohler Park Dunes SNA trails along Lake Michigan to look for signs of ozone injury on a variety of plants.
August 17, 9:30 a.m.–noon • Kohler Andrae State Park, Sheboygan Co. • Ed Jepsen, leader • Limit: 6

50 Largest Tract of Old-Growth — Hike the largest contiguous tract of unmanaged old-growth forest remaining in Wisconsin at Moose Lake Hemlocks SNA, a magnificent example of Wisconsin's pre-settlement northern landscape.
Friday, August 23, 8 a.m.–2 p.m. • Mercer, Iron Co. • Randy Hoffman, leader

51 Spread Eagle Barrens SNA — Visit the largest pine barrens in northeastern Wisconsin to learn about bracken grassland ecology. Wonderful vistas await on this rolling landscape of blueberries, jack pines and bracken ferns.
August 24, 9 a.m.–1 p.m. • Florence, Florence Co. • Stu Boren, leader

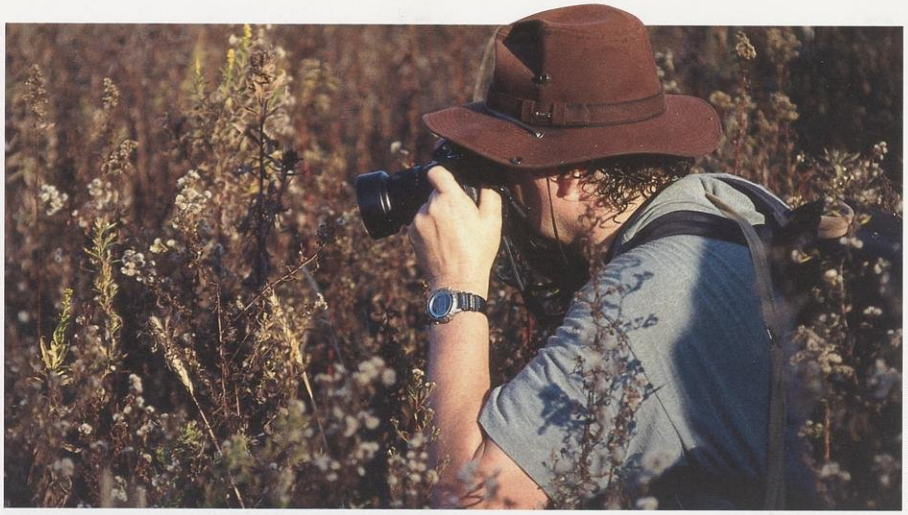
52 John Muir's Boyhood Haunts
Discover the lake, wetlands, prairie and savanna of Muir Park SNA. Then it's off to Observatory Hill SNA to have lunch atop a cedar glade with a spectacular view.
August 24, 9:30 a.m.–1 p.m. • Montello, Marquette Co. • Mark Martin, leader



ROBERT QUEEN

Several trips visit diverse types of wetlands.

53 Apostle Islands Beach & Bog — Hike a mile of boardwalk along the coast of Madeline Island. See lagoons, open bog, wet forests and pines of the sandy beaches of the Big Bay Beach & Bog SNA.
Thursday, September 5, 1–4 p.m. • Big Bay State Park, Bayfield Co. • Renee Talbot, leader



GERALD H. EMMERICH, JR.

Bring your camera, savor the trip later.

54 Canoe the Kickapoo — Water-carved sandstone cliffs line the banks of this winding waterway. Then enjoy a hike through the hemlock forest of Mt. Pisgah SNA in Wildcat Mountain State Park. (Limited canoes available for free use. Indicate if you need one.)
Friday, September 6, 11 a.m.–4:30 p.m. • Ontario, Vernon Co. • Hank Kuehling and Dave Siebert, leaders • Limit: 18

55 Timber Rattlesnakes & Prairie Reptiles — Learn the ecology of the rare and elusive timber rattlesnake as we hike the late-flowering prairies of Brady's Bluff SNA. Asters and goldenrods should be at their peak.
Friday, September 6, 9 a.m.–1 p.m. • Perrot State Park, Trempealeau Co. • Armund Bartz, leader

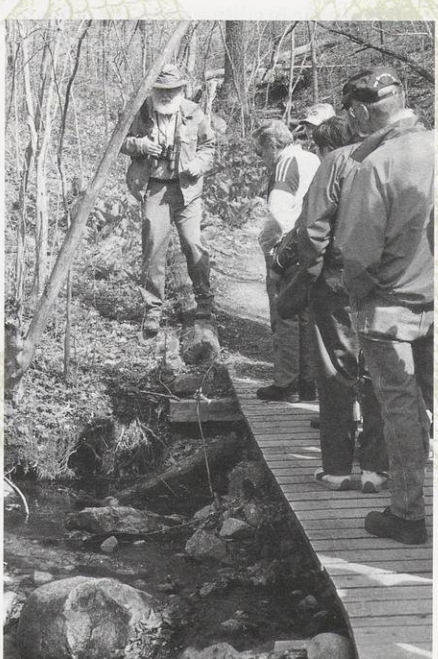
56 Lake Michigan Sand Dunes — Go where human feet are not usually allowed on an exclusive journey through the sand dunes along Whitefish Dunes SNA.
Friday, September 13, 10 a.m.–2 p.m. • Whitefish Dunes State Park, Door Co. • Carolyn Rock, leader • Limit: 15

57 Lunch on Lone Rock — Discover Quincy Bluff and Wetlands, a huge wetland complex bordered by soaring mesa-like sandstone bluffs. We'll lunch atop Lone Rock, which offers a stunning view of the wild landscape below.
Friday, September 13, 10 a.m.–2 p.m. • Adams, Adams County • Rebecca Isenring, leader

58 Magic Springs at Bluff Creek — Explore Bluff Creek Springs, Fens & Oak Woods SNA where numerous springs seep out of gravel hillsides, rare wildflowers make an appearance. Gentians and ladies-tresses orchids bloom here.
September 14, 9 a.m.–noon • Whitewater, Walworth Co. • Ron Kurowski, leader

59 Canoe to Old-Growth Islands — Paddle down the Tomahawk River with stops on remote islands under canopies of towering old-growth red pine. (Bring your own canoe.)
September 14, 8 a.m.–3 p.m. • Hazelhurst, Oneida Co. • Randy Hoffman, leader • Limit: 12

Several natural areas have boardwalks so visitors can stay dry and tread lightly in these rare communities.



CHRISTINE TANZER

60 Colorful Lulu Lake SNA Wetlands — Hike through oak savannas, woodlands, sedge meadows, calcareous fens, shrub carrs, and emergent marsh while enjoying autumn colors.
Friday, September 20, 1–4 p.m. • East Troy, Walworth Co. • Heather Patti, leader • Limit: 12

61 Geology of the Baraboo Hills — Hike the picturesque bluffs at Devil's Lake, then enjoy a van tour with hiking stops at the scenic Peewit's Nest and Abelman's Gorge SNAs, and a rock hunting expedition into the Pink Lady Quarry.
September 28, 9 a.m.–4 p.m. • Devil's Lake, Sauk Co. • Phil Fauble, leader

62 Autumn Dells Hike — Take a 3.5 mile trek through the Dells of the Wisconsin River SNA, a gem of the Wisconsin landscape not normally accessible to the public. (Terrain is rugged.)
Sunday, September 29, 9 a.m.–1 p.m. • Wisconsin Dells, Sauk Co. • Thomas Meyer, leader

63 Kames Awash in Autumn Color — Travel back in time to see how White Kame and Dundee Kame SNAs were created under the glacial ice.
October 5, 9:30–11:30 a.m. • Jackie Scharfenberg, leader • Dundee, Fond du Lac Co.

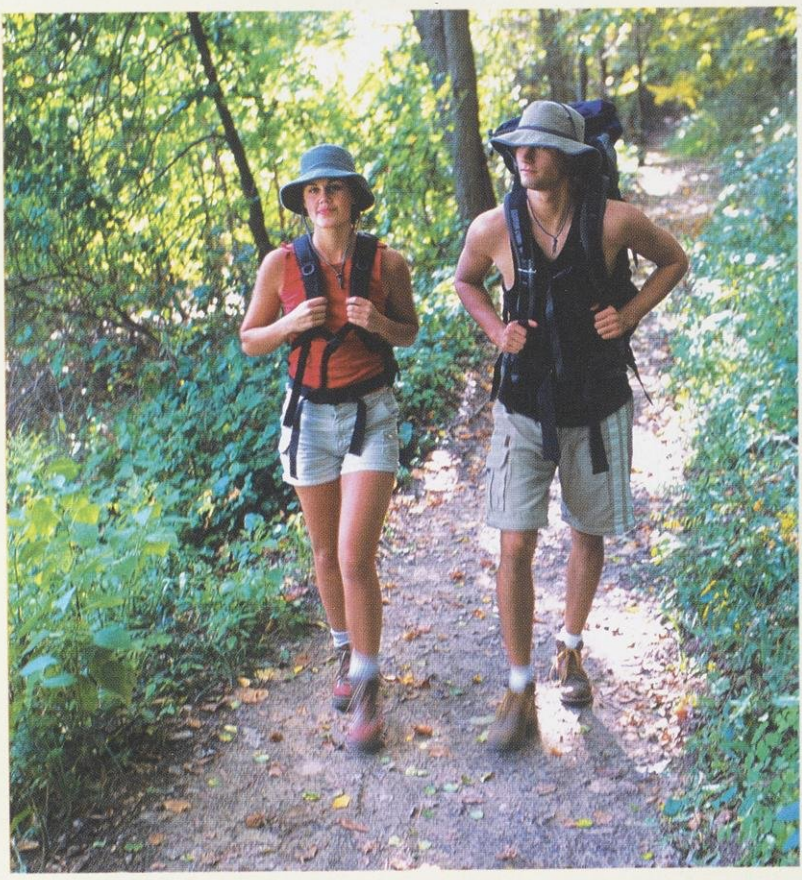
64 Cactus of the St. Croix River — Discover native cactus and the harsh, lichen-encrusted environment of Centennial Bedrock Glade SNA. Then hike to the Dalles of the St. Croix River SNA for breathtaking overlooks and views of the world-famous glacial potholes.
October 12, 9:30 a.m.–2 p.m. • Interstate State Park, Polk Co. • Julie Fox-Martin, leader

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

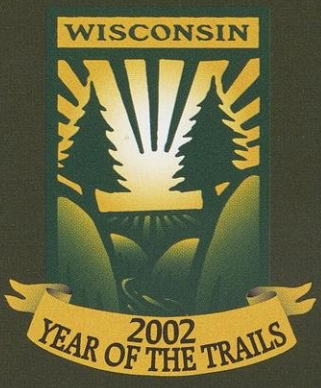
WISCONSIN

Stay just a little bit longer

2002 SPRING SAMPLER



A time to explore.



During 2002, Wisconsin is celebrating the "Year of the Trails." The yearlong celebration recognizes Wisconsin's extensive network of recreational trails and includes communities statewide. Join in the occasion and explore a Wisconsin trail this spring.

NATURE'S REAWAKENING

Spring's first signs are water droplets. The temperature climbs, and soon, the last traces of snow have disappeared. The shoots of crocuses and daffodils break through moist soil. Trees unfurl leafy buds, and robins flit from branch to branch.

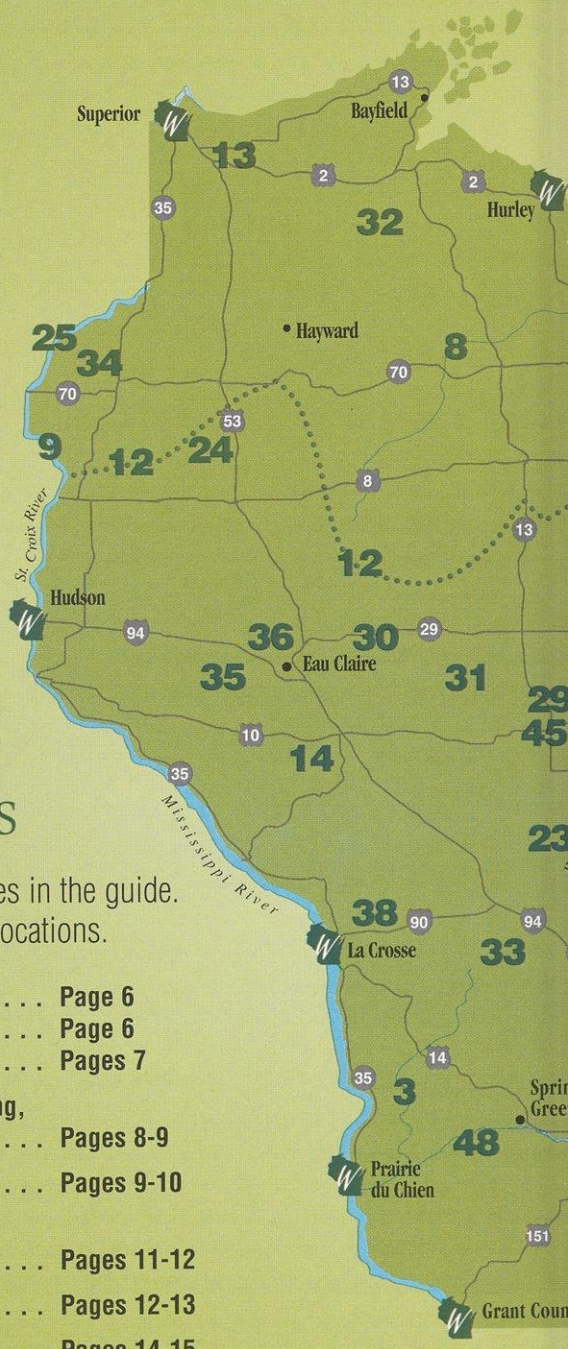
The wind becomes a balmy breeze.

Spring is here!

It's a long-awaited season that beckons us outdoors, offering a cure for cabin fever. Hike through a greening forest and watch for awakening signs of wildlife. Feel the mist from a rushing waterfall. Dig out those clubs and hit the links. Grab a spot on the bleachers for a season opener. Head out with fishing pole in hand. Paddle spring currents or pedal scenic trails.

Come to Wisconsin, and get reacquainted with spring.

Facing page: Strong Falls, Marinette County by Jim Bach.

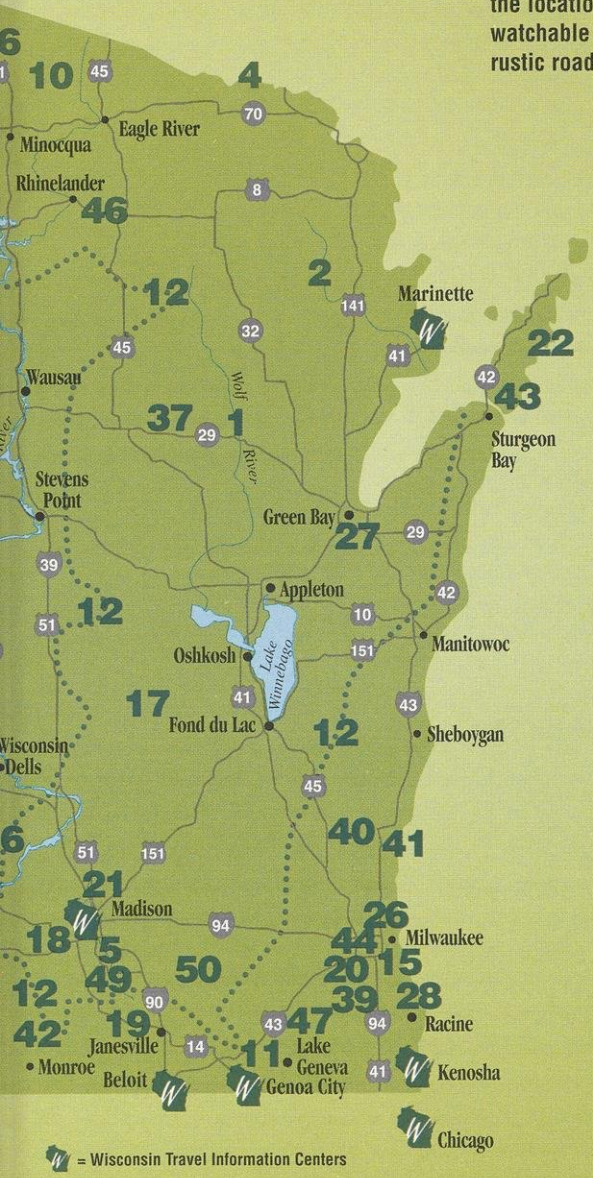


CONTENTS

This map identifies activities in the guide. Numbers identify specific locations.

Historical, Wildlife & Rustic Road Highway Signs

As you travel in Wisconsin, look for these road signs that identify the location of heritage sites, watchable wildlife spots, and rustic roads.



HIT THE LINKS

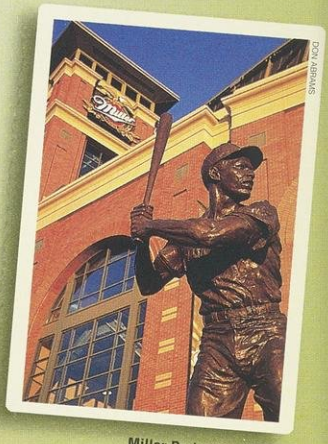
Learning the basics.

Wisconsin's rolling, wooded landscape has been described as the best natural golf course terrain in the country. With nearly 500 courses open for public play, there is no shortage of courses to choose from. Beginners and families will appreciate Wisconsin's abundance of scenic and forgiving par-3 layouts, while more experienced players will find challenging, PGA-level facilities in nearly all corners of the state. Springtime is popular with players of all handicaps, since the links are less crowded and many facilities offer special seasonal discounts.

For more information on golf courses throughout Wisconsin visit www.wisconsin4golf.com. For a free guide to the state's public golf courses, call 1-800-432-TRIP.

ROOT FOR THE HOME TEAM

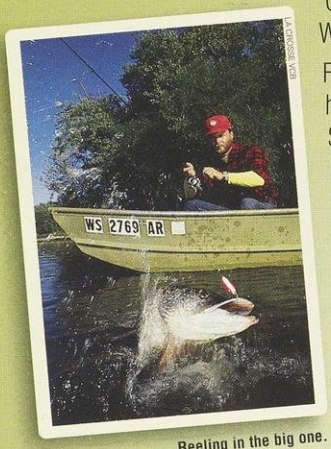
As surely as warm breezes fill Wisconsin's springtime air, so do the sights, sounds and smells of America's national pastime – baseball. The **Milwaukee Brewers** (414/902-4400; www.milwaukeebrewers.com) open their 2002 season at Miller Park on April 5. The new epicenter of Wisconsin baseball, the retractable-roof stadium will be in the national spotlight when it hosts the 2002 Major League Baseball All-Star Game. Fans who'd like to watch the all-stars of tomorrow should visit Pohlman Field in Beloit, where the Class A **Beloit Snappers** (608/362-2272, 1-888-SNAP-2-IT; www.snapperbaseball.com) play. As the Brewers' Midwest League affiliate since 1982, the Snappers have been a launching pad for a number of prominent major leaguers. Appleton's **Wisconsin Timber Rattlers** (1-800-WI-TIMBER; www.timberrattlers.com), the Seattle Mariners' Class A affiliate, also have a long history of developing major league talent. Fans can also catch future stars playing for the **Wisconsin Woodchucks** (715/845-5055; www.woodchucks.com) in Wausau, the **Madison Mallards** (608/246-4277; www.mallardsbaseball.com) in Madison and the **Eau Claire Cavaliers** (715/834-3520) in Eau Claire.



Miller Park, Milwaukee.

CATCH FISHING FEVER

To anglers, no other Wisconsin season is more eagerly anticipated than spring. As March temperatures bring open water throughout the state, the excitement begins. It continues to grow in April, when spawning runs of walleye and steelhead bring anglers to the Wolf River and lower Lake Michigan feeder streams. Then, on May 4 it bursts into full bloom as hundreds of thousands of anglers take to the water for the traditional "Opening Day" of inland lake fishing. Here are a few of Wisconsin's hottest early-season fishing spots:

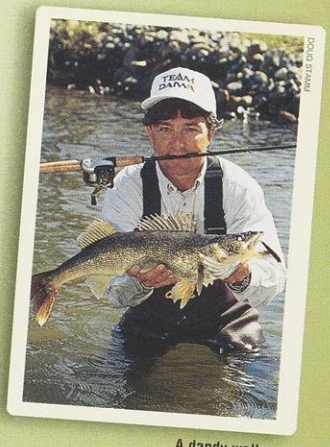


Reeling in the big one.

Famous for its catfish, the **Mississippi River** also holds large populations of bass, panfish and walleye. Species are similar in its tributary, the lower **Wisconsin River**, while the middle and upper stretches of the river offer plentiful sauger, northern pike and muskie.

Early season anglers are also drawn to **Price**, **Vilas** and **Oneida** counties. With more than 3,000 lakes between them, these three Northwoods counties offer virtually endless opportunities for fishermen in search of walleye, northern and bass, as well as trophy muskie.

April's walleye run on the **Wolf River** is an annual rite of spring for many anglers. By May, much of the walleye population has moved down river into the **Lake Winnebago** system, which also includes **Lake Poygan**, **Lake Winneconne** and **Lake Butte des Morts**.


A dandy walleye.

Although Wisconsin is perhaps most famous for its walleye and muskie, it is quickly gaining a reputation among fly-fishermen. The state offers more than 2,500 miles of trout streams, which hold significant populations of native brook trout and stocked brown and rainbow trout. Among the best are the Bois Brule, in northwestern Wisconsin, the Kinnickinnic, in western Wisconsin, and the Mecan, in the state's center.

Indigenous trout of a different sort attract anglers to Wisconsin's two Great Lakes. Lake trout are a prized catch on both **Lake Michigan** and **Lake Superior**, as are steelhead, coho and chinook salmon.

For a free Wisconsin Fishing Guide, call 1-800-432-TRIP or visit travelwisconsin.com. For information on regulations, contact the Wisconsin Department of Natural Resources at 608/266-2621 or www.dnr.state.wi.us.

PADDLE WISCONSIN WATERS

Wisconsin's spring melt means waterways are in prime condition for canoeing, kayaking and rafting. With rivers and streams running higher, clearer and faster than at any other time of year, paddle-sports enthusiasts have their choice of destinations, from lazy rivers to rushing rapids.

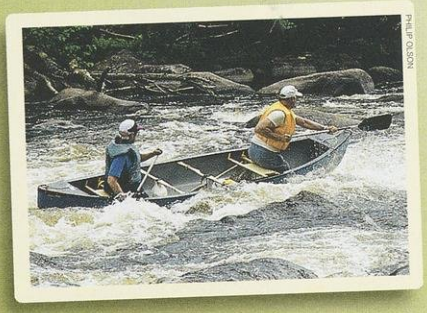
1 Grab a paddle, hop in the raft and hang on. The **Wolf River** in northeastern Wisconsin challenges even the most experienced paddlers as it thunders along 20 miles of powerful rapids ranging from class 1-5. (1-888-526-4523; www.newnorth.net/antigo.chamber/)

2 For those looking for heart pounding thrills, the **Peshtigo River** in northeastern Wisconsin is sure to get the adrenaline pumping. With rapids ranging from class 2 to 5, the Peshtigo lives up to its billing as "the best whitewater in the Midwest." (1-800-236-6681; www.marinettechamber.com)

Canoeing the Kickapoo River.

3 Translated locally as "crooked river," the **Kickapoo River** lives up to its name by twisting and turning through more than 125 miles of scenic southwestern Wisconsin landscape. Visitors can enjoy views of sandstone bluffs, farmlands and wildflowers as they paddle along the slow flowing river. (608/872-2504; 608/337-4775)

4 Forming the boundary between Wisconsin and Michigan, the calm water of the **Brule River** in northeastern Wisconsin offers one of the most scenic settings for a leisurely cruise as it winds its way along the Chequamegon-Nicolet National Forest. (715/479-2827)



Whitewater on the Wolf River.

5 Paddlers looking to get out and enjoy the fun while in the capital city of Madison can put into the **Yahara River**. The river flows through the heart of the city, connecting Madison's chain of lakes, including Mendota and Monona. (1-800-373-6376)

6 Stunning natural beauty captures the eye as the **Manitowish River** meanders through the forests of Vilas County. Cruising along on the same gently flowing currents that once carried Indian and French fur traders and pioneers to the Manitowish Waters chain of lakes, paddlers enjoy the opportunity to spot a variety of wildlife including beaver, deer and playful otters. (715/543-8488, 1-888-626-9877; www.manitowishwaters.org)

7 Part of the famed Turtle-Flambeau Flowage, the **Turtle River** is an ideal place for intermediate paddlers to escape back to nature with calm waters and simple rapids. Majestic loons can often be spotted as they play a game of hide and seek with paddlers. (715/561-2922)

8 From gentle flowing currents to exciting whitewater rapids, the **Flambeau River** in north-central Wisconsin offers a spectacular paddling experience for any skill level. The Flambeau River State Forest sets the backdrop as paddlers enjoy nearly 60 miles of natural beauty. (1-800-269-4505; www.co.price.wi.us)

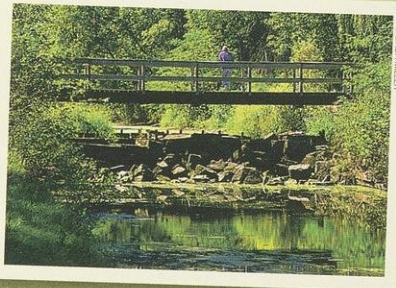
9 Rolling along more than 250 miles of Wisconsin's northwestern border, the **St. Croix National Scenic Riverway** has become one of the state's most popular canoe adventures. Eagles, ospreys and herons can often be seen soaring over the majestic cliffs that line much of the riverway. (715/483-3284; www.nps.gov/sacn/)

WITNESS SPRING ON FOOT

That first breath of balmy spring air in Wisconsin draws us outdoors. What better way to enjoy the season's mild weather than to stroll through a greening landscape? With Wisconsin celebrating the "Year of the Trails" in 2002, it's the ideal time to experience the state's natural beauty on foot.

10 The **Northern Highland/American Legion State Forest** in Boulder Junction spans more than 220,000 acres, offering plenty of room for hikers who want to experience the sights and sounds of nature in springtime. Hundreds of miles of hiking trails traverse forests, wetlands and meadows where wildlife is abundant. (715/385-2727; www.wiparks.net)

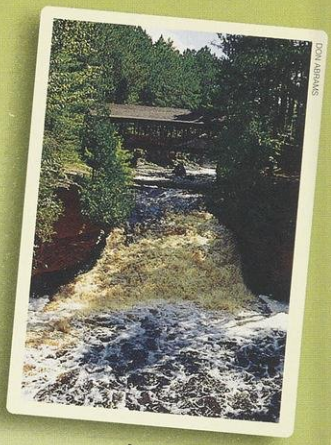
11 In the resort town of **Lake Geneva**, a 26-mile path encircles the lake, offering walkers the chance to stroll along the shoreline and gaze at historic mansions once owned by famous Chicago families such as the Wrigleys, Maytags and Wackers. (1-800-345-1020; www.lakegenevawi.com)



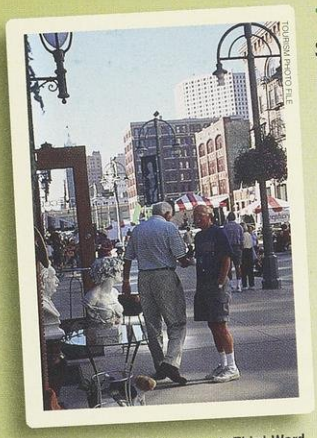
Ice Age Trail, near Portage.

12 One of only eight National Scenic Trails, the **Ice Age Trail** follows what is considered to be one of the best glacial imprints nationwide. This renowned trail winds through 31 Wisconsin counties, covering almost 610 miles of topography created thousands of years ago by the state's last glacier. (1-800-227-0046; www.iceagetrail.org)

13 Covering 825 acres, **Amnicon Falls State Park** in Superior is perched on ancient lava beds dating back more than one billion years. Hikers can take in scenic views of the Amnicon River dropping dramatically off the Douglas Fault, where it creates three waterfalls. A historic, 55-foot-long covered bridge is a favorite overlook. Home to Wisconsin's highest waterfall, **Pattison State Park**, also in Superior, is an ideal place to see the rushing waters caused by the spring melt. The park's Big Manitou Falls drops 165 feet, making it the fourth highest waterfall east of the Rocky Mountains, while its counterpart, two-pronged Little Manitou Falls, drops 31 feet. (608/266-2181; www.wiparks.net)



Amnicon Falls State Park.

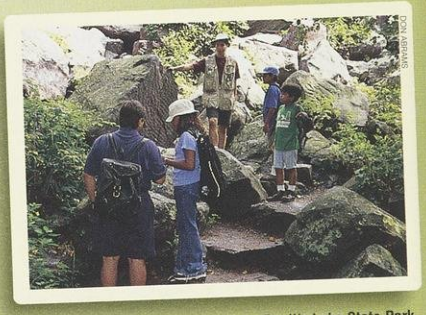


Strolling Milwaukee's Third Ward.

14 Winding its way through more than 35 miles of scenic marshlands, farmlands and wooded hills, the **Buffalo River State Trail** creates the perfect spring escape for nature lovers. Along the way from Mondovi to Fairchild, hikers can be spotted taking a break on the banks of the Buffalo River to cast a line in pursuit of a trophy trout. (608/534-6409)

15 For a springtime stroll through a vibrant, urban district, **Milwaukee's Third Ward** is an ideal spot. Art galleries, antique shops, performing arts venues and cafés line the streets of this hip neighborhood. This pedestrian-friendly area is also home to the new William F. Eisner Museum of Advertising and Design and the Milwaukee Art Museum. (1-800-554-1448; www.officialmilwaukee.com)

16 Ever popular **Devil's Lake State Park** in Baraboo gets its name from the 360-acre, spring-fed lake that is the park's centerpiece. Fifteen miles of hiking trails wind through woodlands, along the lakeside and up the surrounding boulder-strewn, quartzite bluffs that rise 500 feet above the shoreline and offer spectacular lookouts. (608/266-2181; www.wiparks.net)



Devil's Lake State Park.

17 Those who enjoy taking a leisurely stroll through the heart of a quaint small town find that **Princeton** has much to offer. The city's downtown is filled with unique shops, from stores featuring antiques and collectibles to boutiques specializing in handmade quilts, home décor and European bath products. (920/295-3877; www.princetonwi.com)

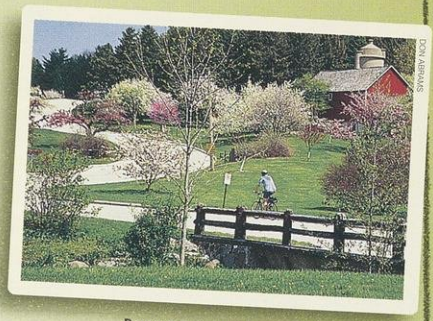
ENJOY WISCONSIN'S WILDLIFE

Spring means a flurry of activity among Wisconsin's flora and fauna. Across the state, visitors can enjoy the blooming of gardens and meadows, the budding of forests and the scurry of wildlife.

18 Madison's 1,260-acre **University of Wisconsin Arboretum** showcases the restored prairies, forests and wetlands of the state's pre-settlement era. In the spring, this world-renowned site is graced by hundreds of flowering trees and shrubs, including a famous lilac collection. (608/263-7888; www.wisc.edu/arboretum)

19 Dedicated to world peace, **Janesville's Rotary Gardens** display plants and landscaping schemes from around the world. The 15-acre gardens include Japanese rock, English cottage, French, Italian and American perennial styles. (608/752-3885; www.jvlnet.com/~gardens)

20 At **Boerner Botanical Gardens** in Hales Corners, the rebirth of 50 acres of formal gardens is an impressive spring sight. More than 3,000 perennials, 5,000 rose bushes, vast expanses of tulips and the nation's largest flowering crabapple orchard – totaling 400 varieties – are on display. (414/425-1130; www.countyparks.com/horticulture)



DON ARMSTRONG

Boerner Botanical Gardens, Hales Corners.

21 The tulip and wildflower exhibits at **Olbrich Botanical Gardens** in Madison are seasonal highlights, while the indoor Bolz Conservatory offers a refuge from springtime showers. A tropical rainforest housed in the 50-foot-tall glass pyramid includes more than 550 species of exotic plants, a rushing waterfall and birds such as canaries and waxbills. (608/246-4550; www.olbrich.org)

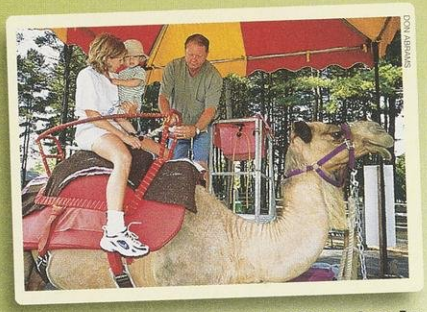
22 The **Ridges Sanctuary** in Bailey's Harbor is home to delicate wildflowers and other rare plants, including more than 25 varieties of native orchids. Seven miles of hiking trails follow the unique sand deposits that were left thousands of years ago when Lake Michigan reached farther inland. (920/839-2802; www.ridgesanctuary.org)

23 The 44,000-acre **Necedah National Wildlife Refuge** is a popular stop for migratory waterfowl, including geese, ducks, sandhill cranes and trumpeter swans. This spring, a small flock of whooping cranes is expected to make history when the birds complete their first unassisted migration back to Wisconsin. (608/565-2551; http://midwest.fws.gov/necedah/)

24 Wildlife abounds throughout the 500-acre **Hunt Hill Nature Center and Audubon Sanctuary** in Sarona. The peaceful surroundings of wooded glacial hills, tamarack bogs and clear lakes are home to more than 240 species of birds including nesting ospreys, loons and bald eagles. Visitors can also keep an eye out for fox, beaver, otter and bears along the center's four miles of trails. (715/635-6543; 877-777-8383)

25 Now a nesting place for thousands of ducks, geese and sandhill cranes, **Crex Meadows** in Grantsburg was once the bottom of a huge glacial lake. The 30,000 acres of prairie, marsh and woods are a prime bird-watching location, where great blue heron, ospreys and bald eagles have also been spotted. (715/463-2896; www.crexmeadows.org)

26 Home to more than 2,500 animals, the nationally recognized **Milwaukee County Zoo** includes a new big cat exhibit, renovated timberwolf exhibit and an acclaimed dairy complex in a century-old barn. The zoo's animals represent 300 species of mammals, birds, reptiles, fish and invertebrates. (414/771-3040; www.milwaukeezoo.org)



The NEW Zoo, Green Bay.

27 The 35-acre **Northeastern Wisconsin (N.E.W.) Zoo** in Green Bay features both exotic and native animal species, from an African-crested porcupine to a North American river otter. Animals are grouped into Prairie Grassland, Wisconsin Trails, Children's Zoo and International areas. (920/434-7841; www.co.brown.wi.us/parks/newzoo)

28 One of only 14 accredited zoos nationwide that offer free admission, the **Racine Zoo** houses more than 250 animals. Among the zoo's residents are an African penguin, snow leopard, Chilean flamingo, red kangaroo and a white-handed gibbon. (262/636-9189; www.racinezoo.org)

29 **Wildwood Park & Zoo** in Marshfield spans more than 60 acres and houses animals from mountain lions and grizzly bears to elk, buffalo and prairie dogs. (1-800-422-4541; www.ci.marshfield.wi.us)

30 Located 10 miles east of Eau Claire, **Beaver Creek Reserve** encompasses 360 acres of diverse habitats, from prairies to forests. Along the groomed trails on the banks of the Beaver and Deinheimer creeks, visitors may catch a glimpse of a hawk, deer, beaver or great blue heron and marvel at the abundant wildflowers native to the reserve. (715/877-2212; www.beavercreekreserve.org)

RIDE SCENIC TRAILS

The seat of a bicycle is the perfect vantage point for taking in the glory of spring. Wisconsin's many trails offer opportunities to choose a path less traveled and notice the beauty of the season. Add the statewide celebration of 2002 as the "Year of the Trails" and cyclists have all the more reason to head out and ride to the occasion.

31 Whether looking for a casual off-road journey or an extreme mountain biking challenge, the **Levis Mound Trails** in Clark County offer 34 miles of scenic biking around and over mounds once surrounded by glacial ice. (715/743-5140)

32 More than 300 miles of trails wind their way around the picturesque landscape of the Chequamegon-Nicolet National Forest giving mountain bikers on the **CAMBA Trails System** the perfect way to escape back to nature. (1-800-533-7454)

33 Once filled with the sounds of powerful locomotives rumbling across the central Wisconsin countryside, the **Elroy-Sparta State Trail** is now home to the sounds of laughter and fun. Known as the country's first rails-to-trails conversion, it rolls through 34 miles of bicycle-friendly towns, scenic valleys and three, century-old rail tunnels. (608/337-4775, 608/463-7109; www.elroy-sparta-trail.org)

Elroy-Sparta Trail.

34 Named after the rhythmic sounds made by crews working on the original rail line, the **Gandy Dancer State Trail** treats visitors to spectacular scenery and history along its route. Stretching for 47 miles between the towns of St. Croix Falls and Danbury, the trail's crushed limestone surface lets riders enjoy an easy, relaxed ride. (715/349-2157; www.mwd.com/burnett)

35 Northwestern Wisconsin's rolling terrain, natural beauty and network of trails have made it a favorite among bikers of all ages. Once a water highway that floated logs and lumber during the logging boom, the Red Cedar River is now the scenic backdrop for the **Red Cedar State Trail** (715/232-1242). The 15-mile trail meanders along the river on its journey from Lake Menomin to the Chippewa River. Once there, riders can cross a classic iron bridge to the **36** **Chippewa River State Trail** (715/232-1242). The 22-mile trail from the Red Cedar State Trail to Eau Claire follows the twists and turns of the Chippewa River.

Mountain biking.

37 Winding its way through charming meadows, farm fields and woodlots from Wausau to Green Bay, **Mountain-Bay State Trail** is the longest bike trail in the state. More than 20 bridges greet visitors during the nearly 90-mile journey. (920/448-4466)

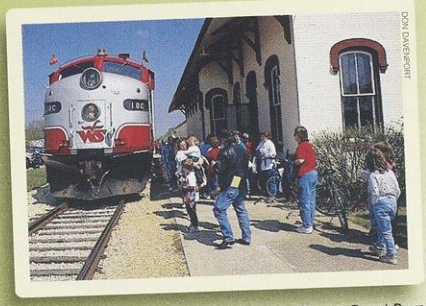
38 Alive with history and pleasant small towns, the **La Crosse River State Trail** rolls along the La Crosse River Valley from La Crosse to Sparta. Don't forget to give a wave to the train engineers on the nearby rail line. (608/337-4775, 1-888-540-8434; www.lacrosseriverstatetrail.org)

39 Kids and parents alike can enjoy a full day of mountain biking on the **John Muir Trail** in southeastern Wisconsin. In addition to more than 30 miles of challenging off-road riding, a new children's trail has been added to give the younger legs the perfect terrain to challenge themselves. (262/594-6200; www.wiparks.net)

CELEBRATE THE SEASON

Wisconsin welcomes spring's arrival with a variety of special events. From ethnic celebrations to food festivals, events statewide entertain visitors of all ages.

40 The sweet aroma of fresh maple syrup tempts the senses as visitors explore the history of maple sugaring at the **Maple Sugarin' Open House** at the Riveredge Nature Center in Newburg, March 23-24. Stroll through the maple trees during a self-guided tour of the sugarbush and sample the delicious syrup drizzled over fresh pancakes. (262/375-2715; www.riveredgenc.org)



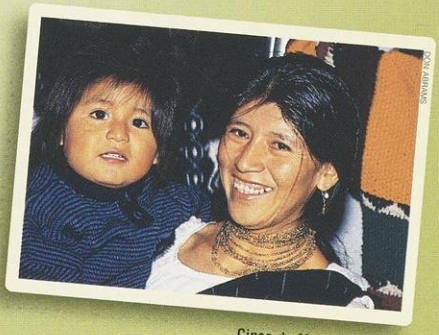
Green County Depot Days.

41 Community fun is on the menu as visitors gather for the 51st annual **Port Washington Smelt Fry**, April 5-6. Diners bring their own condiments to share and pass, sparking laughter and fun. (262/284-9069)

42 Hop aboard the train and listen to the clickity-clack of the rails as the **Green County Depot Days** celebrates Wisconsin's rich railroad heritage from April 27-28. Train lovers from across the state are treated to train and speeder car rides, live music, depot tours and a variety of railroad history displays and activities. (1-888-222-9111; www.greencounty.com)

43 Enjoy the scenic beauty as thousands of acres of apple and cherry blossoms and more than one million daffodils and tulips paint the Door County landscape with brilliant colors during the **Door County Festival of Blossoms**. Running from May 1-31, the celebration is highlighted by arts and craft fairs, the Sturgeon Bay Shipyard Tour, May 11, and the Door County Lighthouse Walk on May 18-19. (920/743-4456, 1-800-527-3529; www.doorcountyvacations.com)

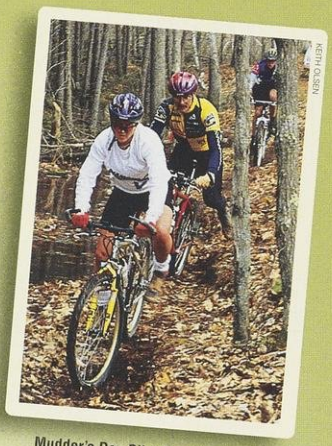
44 The lively sounds of mariachi bands greet visitors at the annual **Cinco de Mayo** celebration in West Allis, May 4-5. Traditional dances, complete with colorful costumes, delicious Mexican food and plenty of family fun help put a smile on festival-goers faces. (414/389-6000; wistatefair.com)



Cinco de Mayo, West Allis.

45 A sure sign of spring, the **39th Annual Marshfield Art Fair** held on May 12, helps celebrate Mother's Day as more than 100 artists from throughout the Midwest display works including paintings, pottery and fiber arts. (715/384-3454; www.marshfieldchamber.com)

46 Wisconsin's scenic Northwoods provide the backdrop as nearly 200 riders ring in Mother's Day with the **Mudder's Day Bike Race** in Rhinelander, May 12. The 22-kilometer course challenges riders with twists, turns and enough mud to make any mother nervous. (1-800-236-4386; www.rhinelanderchamber.com)


KEITH OLSEN

Mudder's Day Bike Race, Rhinelander.

47 Home to the world famous taste of Nestle Chocolate, Burlington takes to the streets to celebrate its delicious confection May 17-19. The **Chocolate Festival** treats chocolate lovers of all ages with a parade, carnival, children's activities and plenty of free chocolate delights. (262/763-3300; www.chocolatefest.com)


SUZETTE Burlington

Burlington Chocolate Festival.

48 The morel mushroom takes center stage during the **Morel Mushroom Festival**, May 17-19. The delicious smell of sautéed mushrooms fills the air as lovers of the woodland delicacy enjoy a parade, carnival and mushroom contests. (608/739-3182; www.muscoda.com)

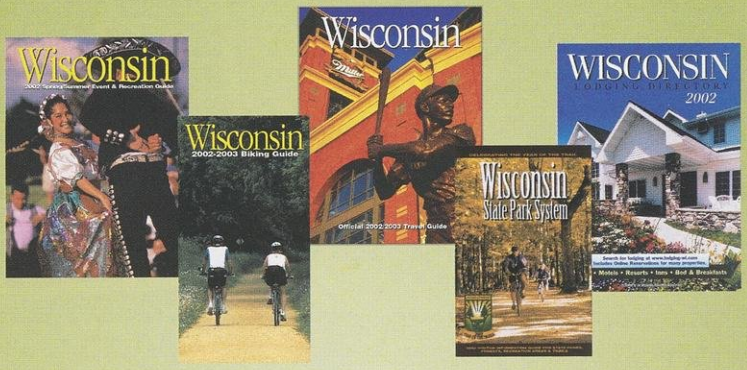
49 Scandinavian pride takes to the streets of Stoughton as the city celebrates the Norwegian Constitution Day with the largest **Syttende Mai** festival outside of Norway. Traditional costumes, folk dancing, parades and ethnic food help bring the city to life from May 17-19. (1-888-873-7912, 608/873-7912; www.stoughtonwi.com)

50 Fort Atkinson takes a step back in time as the **Buckskinners Rendezvous** transports visitors to the Pioneer era of the 1830s, from May 25-26. Costumed participants, authentic food, demonstrations and trade goods help to recreate life in an early fur-trading encampment. (920/563-3210; www.fortchamber.com)


ANDY RAMSHAW

Syttende Mai, Stoughton.

MORE FREE WISCONSIN TRAVEL GUIDES



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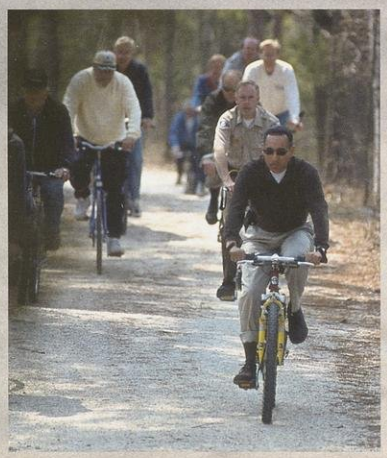
Making headway

In an Earth Day message, Secretary Bazzell accounts how many things are going right and what efforts are under way to stay the course.



When time allows, Secretary Bazzell hits the trails to visit with DNR employees who manage public properties.

Darrell Bazzell

April and Earth Day provide a natural benchmark to look at the last year's accomplishments and set a course for the next year. I'm pleased that DNR staff and our partners made headway in so many areas, and I'm happy to discuss the common course we are settling with citizens to improve the natural world. Here are some of the projects that struck me as noteworthy.

Forestry restructuring — Our forestry bureau was reorganized as a division to raise the prominence of these programs. The new bureaus include Forest Protection, Land Management, Forest Administration and a Forest Sciences group. We have also audited how state forestry funds are expended.

One important goal of our restructuring is finding new ways to serve the growing number of private landowners who want to develop long-term plans for their woodlots. Currently just over two million private acres are managed under the Managed Forest Law

ROBERT QUEEN

Foresters work on public lands and with private property owners to sustain tree harvest while enhancing aesthetics and recreational values of forested lands.

and almost half a million acres under the Forest Crop Law. We are currently recruiting and hiring additional foresters authorized by the Legislature to help private landowners manage their forested acres. We also expect to increase our commitment this year to forestry education, urban forestry, gypsy moth suppression and grants to promote sustainable practices on county forests.

Master Planning continues on major properties — the Northern Highland American Legion State Forest and the Brule River State Forest.

Dam removals — Historically, Wisconsin rivers and streams were liberally dammed to provide power, water supplies, control floods and impound water for recreation. Most of the 3,700 dams were built between 1850–1900 and more than half statewide are still privately owned. All dams require regular attention and maintenance to avoid catastrophe from failures and flooding. Moreover, dams can form barriers that impede natural fish migration from spawning grounds. Since the late 1800s, 700 dams have washed out or been removed. Since 1967, we have deliberately removed 50 dams that outlived their useful lives.

I'm pleased to say that the work of carefully assessing and removing antiquated dams continues. Last fall, the last of four dams was removed on the Baraboo River restoring free flow on 120 river miles. For the first time since the 1840s, walleye, sturgeon and other fish have full access to spawning areas and summering grounds on the Baraboo. The number of fish species found along the river has more than doubled, and we believe the Baraboo River may be the longest undammed river in the nation. I'm pleased to report similar removal of aging dams including the Franklin Dam on the Sheboygan River, the Orienta Dam on the Iron River, the Deerskin Dam on Deerskin Creek and the Ward Dam on the Prairie River.

Tight budgets still allow for too few inspectors to assure dam safety statewide, but we are making headway in removing old dams and restoring free-flowing waterways.

Northern Initiative — Our commitment continues to work with northern Wisconsin communities to define the unique features of our Northwoods and develop the mechanisms to guide reasoned future growth. Northern Wisconsin remains a wonderful place to work and a nationwide destination for retirees to enjoy excellent quality lifestyle at reasonable prices. Maintaining the flavor of the Northwoods experience in the face of mounting development pressures, demands of a robust tourism industry, efforts to keep forestland productive and opportunities for community employment stretch the fabric of natural resources that knit the region together.

One important strategy is protecting the north's most delicate features from human pressures. The Northern Initiatives Wild Lakes and Shoreline Protection Project worked with partners to set aside nearly 15,000 feet of fragile shorelines. The Forest Legacy Project used federal funds to buy partial development and access rights to 72,000 acres of private forestland in northern Wisconsin. Another $4 million in federal funding awaits the President's signature so we can sustain these forestlands and slow the fragmentation of wooded areas.

Wisconsin Lakes Partnership — This year we enter our second decade of working collectively with the Wisconsin Association of Lakes, lake districts, the UW-Extension, shoreline owners and recreationists to protect Wisconsin lakes. We aim with

partners to monitor lake water quality, protect and restore shoreland habitat, reduce on-water conflicts among users, forestall the invasion of exotic aquatic organisms, and encourage lake education programs. I get recharged at this time of year by meeting with more than 600 lake activists at their annual convention, just as I was impressed last fall by a statewide symposium to examine the threats to groundwater quality. The continued commitment of the Wisconsin citizenry to our surface waters, groundwater and wetland protection is gratifying. It's a visible sign of our collective will to sustain a healthy outdoors.

Encourage outdoor experiences and enthusiasm among children — That enthusiasm among adults should be mirrored by our efforts to educate and interest children in these same issues. I'm so pleased that DNR remains an important partner and an agent in helping children have fun with nature and value its importance.

This last year, more than 4,600 adult instructors helped introduce more than 32,000 students to safe hunting. Snowmobile and ATV instructors reached 13,600 students; boating instructors taught on-water skills and judgment to almost 7,400 students, young and old. Hundreds of additional volunteers led fishing clinics and held trapping workshops.

DNR staff also encourage hands-on experiences through special youth hunts, outdoor workshops and talks at our Sandhill Outdoor Skills center in Babcock, programs at Havenwoods, and by providing day programs and overnight experiences to more than 90 schools each year at our MacKenzie Environmental Center in Poynette. This year we also hired Michelle Grimm, a family outdoor skills coordinator, to set up and lead after-school and weekend programs for families in southeastern Wisconsin.

And as you'll read elsewhere in this issue of the magazine, DNR staff will be leading 64 trips this year to show the public the beauty of our State Natural Areas as well as the range of rare plant and animal communities we preserve in these special gems.

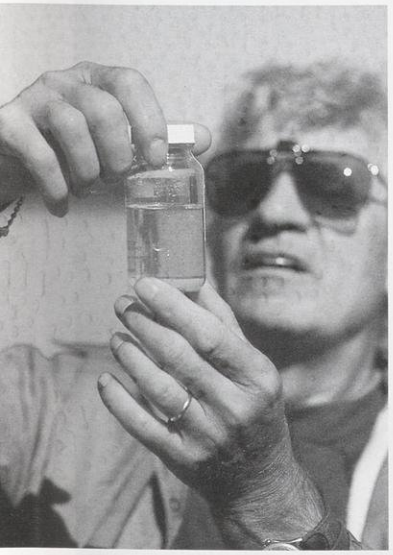
Those children we don't reach directly hopefully get interested in the outdoors through some of our other educational outreach. Our partnership with Discover Wisconsin Productions puts a TV show, "Into the Outdoors," into homes each weekend morning to encourage kids to explore the outdoors. We participate in two international environmental education programs — Project WILD and Project Learning Tree — to train teachers and provide classroom-ready materials so environmental themes can be built into their academic coursework. These programs have reached more than 1,200 teachers in Wisconsin. Other special educational outreach like the Easy Breathers program in Milwaukee allies with high school students to teach their communities about the consequences of air pollution. Teacher workshops have also led six schools to examine the release of mercury from school science labs.

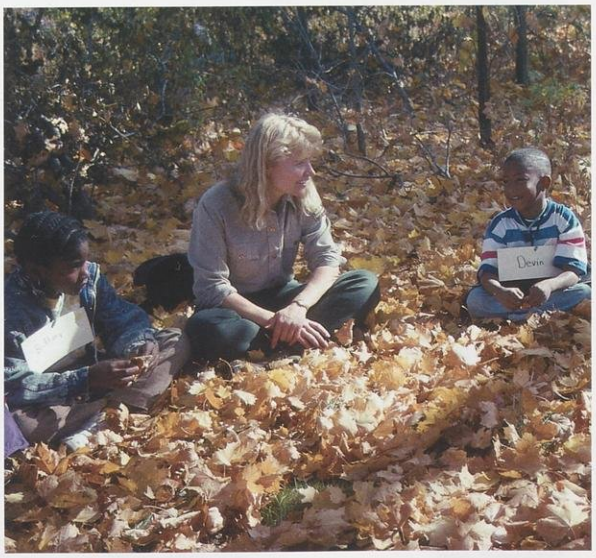
Our Environmental Education for Kids program, *EEK!*, provides class materials and a website where kids can research their science papers, make seasonal observations, learn about outdoor careers or just read interesting facts about Wisconsin plants and animals. More than 40,000 students each month are logging-on and using *EEK!*

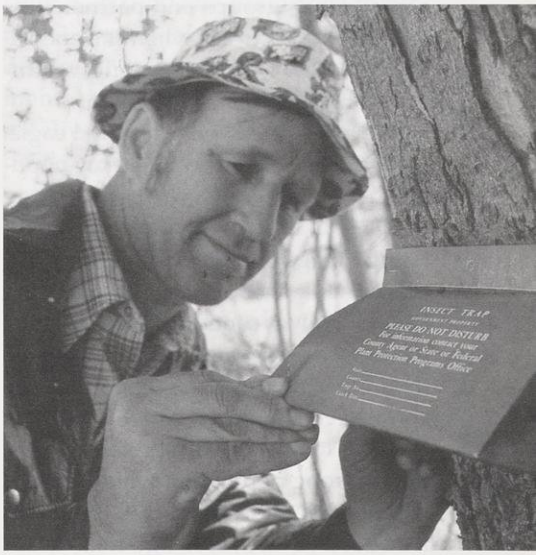
A systemic approach to thwart invasive species — On land, by sea and air, our native species are continually threatened by exotic species whose invasion threatens our natural diversity. Monitoring and retarding the spread of invasive species is a costly and important battle to wage.

The "land battle" requires both scouting and action to contain the spread of more than 24 invasive plants, shrubs, vines and trees. Such species as garlic mustard, wild parsnip and reed canary grass will only be contained by an educated citizenry trained to recognize the plants and equally trained to safely hand-pull these plants, grub them out, apply biological controls or chemical controls when the plants are most vulnerable. Partnerships with garden clubs,

Partnerships help track lake water quality, keep kids curious about the outdoors and track the spread of invasive organisms like gypsy moth.







nature centers, highway maintenance crews and dedicated land managers banded together in the Invasive Plants Association of Wisconsin can educate and encourage public works volunteers to stem the spread of these species.

The "war at sea" to contain such aquatic invaders as zebra mussels, lamprey, rusty crayfish and Eurasian water milfoil got an important boost when the Governor formed a Governor's Task Force on Invasive Species a year ago and allocated $300,000 a year to combat invasive species. Slowing the spread of these organisms will include adult and student education to recognize the invasive species, thoroughly clean boats at launch sites, handle bait carefully, watch shoreline vegetation and participate in programs to introduce safe biological controls.

The "air war" will include trapping and spraying to slow the spread of gypsy moth, reducing mosquito populations and testing crows that may spread West Nile Virus. Deer herds and domestic cattle will need continued surveillance to quickly identify and contain such virulent diseases as Bovine Tuberculosis, Chronic Wasting Disease and Cranial Abcessation Syndrome.

Recovering extirpated species — One of the most gratifying aspects of our natural resources work is the satisfaction and spiritual joy when we successfully reintroduce a species to Wisconsin. Equally gratifying are the new friends we make along the way. Friends groups and partnerships are especially strong when the end result is a new species running, swimming or flying free in Wisconsin.

We have successfully restored eagle, peregrine falcon and wild turkey populations. More recently, timber wolves are on the road to recovery, despite a debilitating mange outbreak. We have hopes that elk and whooping cranes are not far behind. Wolves continue to make strong recovery in Wisconsin, and we believe the timber wolf will soon no longer be considered endangered here. That will allow us to manage the species to maintain a strong population while controlling problem individuals. Elk were reintroduced seven years ago near Clam Lake and there is general support to establish a second herd in eastern Jackson County.

We hope whooping cranes will join that tally and return to Wisconsin for the first time in 123 years. We are off to a humbling beginning. A partnership of nine state, federal and private nonprofit organizations is working to re-establish whoopers in Necedah. Eight juvenile birds were led by ultralight plane on a 1,218-mile journey to wintering grounds in Florida. This spring, five survived and are expected to return to Wisconsin. From such small steps, we hope stronger numbers of cranes in more diverse flocks will take wing and spread.

Record growth at hatcheries — As long as we're discussing species growth, I should mention we should take pride in the fine year our renovated fish hatcheries had producing fish. The Spooner and Woodruff hatcheries produced a record number of walleyes and muskies for stocking. Muskellunge production reached a record 60,000 at the Gov. Thompson Hatchery in Spooner and more than two million walleye. Staff at the Art Oehmcke Hatchery in Woodruff produced 30,000 large musky fingerlings as well as record walleye production, 100,000 lake trout fingerlings and more than 120,000 wild brown trout strains.

Surely measures of progress are our programs to restore extirpated species like the gray timber wolf. Soon they may be delisted as an endangered species in Wisconsin.

STEPHEN J. LANG

ROBERT QUEEN

Fish hatcheries had a great year in 2001 producing healthy game fish and bait fish to feed them. Still, runoff from urban streets and fields keep 61 percent of our lakes and 44 percent of our river miles from reaching clean water goals.

DNR FILE PHOTO

It will take decades to remove PCB-laden sediments from the Fox River, but the remedial work must continue.

Controlling runoff in cities as well as the countryside — The nutrients, soil and chemicals carried in water runoff continue to plague our waterways. Our considerable investments in the last 25 years have reduced pollution from wastewater treatment plants by 95 percent, and reduced runoff from agricultural lands by 70 percent, but there's more to be done. Forty-four percent of our river miles and 61 percent of our lakes can't support a full range of fish, aquatic insects and plants. The culprit remains runoff and contributions from city streets, homes, parking lots and business are every bit as important to control as rural runoff.

We are asking the Legislature to approve the plans that carry out the law they passed in 1997 — the most sweeping environmental reform in a decade. More than 153 Wisconsin municipalities will need to carry out plans to stem runoff. That need will influence the way subdivisions are developed and change practices for managing golf courses and maintaining public parks. It will change how water is collected from parking lots and the ways leaves are collected from homes. Homeowners will learn about alternatives for collecting rainwater from roofs and gutters. We will learn why it's important to slow down rainwater and encourage it to soak in near our homes and businesses. We will work so storm sewers carry water with less pollution and convey smaller amounts of rainwater directly into lakes and streams.

We anticipate spending $65 million annually to stem runoff in Wisconsin and we awarded almost $7 million last year to 43 municipalities to improve local waters degraded by runoff pollution.

Wisconsin successfully taught its citizens to reduce waste and recycle more. We face that same challenge to better control stormwater from our homes and communities.

Space constraints lead me to briefly mention other achievements we will be tracking and working on during the next year:

- **Mercury containment** — Impending rules aim to reduce mercury emissions from power plants by 30 percent in the next five years, 50 percent in the next 10 years and 90 percent in the next 15 years. A state-local partnership also encouraged 11 communities to collect thermometers and other items containing mercury from schools, businesses, homes, farms, medical clinics and hospitals. New health advisories gave anglers and their families easy-to-follow advice for lessening the likelihood of mercury exposure from eating fish.
- **Protecting isolated wetlands** — The Governor, lawmakers, DNR and conservation groups made Wisconsin first in the nation to restore protection to small wetlands that were vulnerable to filling and dredging as a consequence of a January 2001 ruling by the U.S. Supreme Court. Swift state action was but one step in a collective strategy to reverse the loss of wetland acres.
- **Cleanup plans for the Lower Fox River and Green Bay** — Plans to clean-up PCB-laden sediments from a 39-mile stretch of the Fox River were announced last October. The plans call to remove 67,000 pounds of PCBs trapped in 7.25 million cubic yards of sediment while minimizing health consequences of contaminated spoils that remain thereafter.

What other issues will we face? Well, certainly the challenge of giving rivers the same attention we have afforded lakes. Certainly fine-tuning our recommendations for managing the state's deer herd and incorporating environmental protections as proposals for meeting Wisconsin's future energy needs are forwarded. The challenge to continue our considerable progress in leaner economic times will continue to test how well we can balance the value we place on quality outdoor resources with other pressing needs.

Darrell Bazzell is secretary of the Wisconsin Department of Natural Resources.

An airborne metal "mom" may save whooping cranes from extinction by teaching young cranes how to fly — and migrate.

ON A WING AND

Robert J. Manwell
Story photos courtesy of the Whooping Crane Eastern Partnership

At the edge of Necedah National Wildlife Refuge stands an iron sculpture, "Freedom, Liberty and Courage," that depicts three tall birds — whooping cranes — that were once part of this great wetland. The birds disappeared from this place over 123 years ago and very nearly disappeared from the face of the earth altogether.

After the last glacier, when grass was the dominant vegetation, cranes ranged from coast to coast and from the arctic to central Mexico. In time, forests replaced grassland and water tables subsided, shrinking crane habitat. Some cranes such as the sandhill adapted to a less watery environment, while the whooping crane didn't change and stayed within ever-narrowing confines.

Settlers, pushing the frontier west, found the large birds to be a free, welcome addition to their table fare. Milliners found the large white feathers fashionable. In a vast land of great resources, everyone thought there would always be whooping cranes around some place. No one ever imagined how soon we would run out of some places — and whooping cranes.

But for this species, on a cold fall morning in October 2001, a new beginning was about to unfold.

Lift-off!

Fifty or so people stood on the edge of the Necedah marsh that day, clustered in small groups, hands stuck deep in pockets to warm cold fingers. Their first clue that history was in the making was the drone of small aircraft engines. Approaching from the south, three tiny yellow aircraft came into view. One dipped low and landed, briefly disappearing behind the intervening vegetation.

It quickly rose into the air again, but this time it was not alone. Stretched out in two loose chevrons from the aircraft's wingtips were eight young whooping cranes. These were the first wild whoopers to fly over Wisconsin in 123 years. They were embarking on the first leg of a 48-day, 1,218-mile journey behind the slow-flying ultralight airplane driven by a costumed pilot they thought of as a parent.

A quick whooper history

Available accounts of whooping crane populations put their numbers at somewhere between 700 and 1,400 in the mid-

A PRAYER

1800s. Whooping cranes never numbered very many as far as we know. They are reclusive and shy, females lay just two eggs each year if they lay eggs at all. Their nests are vulnerable to predators and they do not adapt well to much of what people call "progress": the draining of wetlands, the plowing of prairies, the raising of tall buildings, towers and power-lines. What is clear is that by the 1940s, only about 15 to 20 whooping cranes remained in the world.

Whooping cranes imprint on a costumed pilot and are trained to follow their "mother" on a 1,218-mile migration to wintering grounds in Florida.

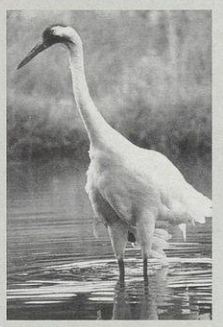
This small flock showed up every fall at what is now the Aransas National Wildlife Refuge on the Gulf Coast of Texas about 75 miles north of Corpus Christi. What wasn't known was where they disappeared to each spring.

In 1946, the National Audubon Society appointed researcher Robert Porter Allen to study the life history of whooping cranes on the Texas wintering grounds, trace their migration route and search for their nesting area.

The whoopers' breeding ground finally was revealed in 1954, when a fire crew flying over Canada's Wood Buffalo National Park sighted three cranes in the air near the Hay River. One year later, the nesting area was confirmed when Allen located a whooper nest.

From this meager beginning, concerned biologists began the slow task of rebuilding the population of the largest of all North American waterfowl. Out of this effort grew the present day International Whooping Crane Recovery Team — a group of Canadian and U.S. wildlife managers dedicated to the recovery of the endangered species.

WHOOPING CRANE VITALS



- Species: *Grus americana*
- Height: up to five feet
- Weight: males average 16 pounds; females, 14 pounds
- Wingspan: up to eight feet
- Color: juveniles — ruddy brown with some whitish tinges and black wing tips, eyes blue. Adults — feathers white except for black wing tips, eyes yellow, bill yellow, legs black, feet black, red patch on top of head
- Primary threats: disease, power lines, loss of wetlands due to climate change and drainage
- Call: many vocalizations, most prominent is probably the unison call, which is audible for up to two miles (listen to the calls on WCEP website: www.bringbackthecranes.org/media/presskit/)
- Life span: up to 25 years in the wild
- Reproduction: Cranes pair for life and mate at about four to five years of age. Female usually lays two eggs, only one of which survives to fledging stage. Nests are built in shallow wetlands from surrounding vegetation.

The Endangered Species Act requires that a recovery plan be created to improve the population health of the species. The plan devised by the recovery team calls for establishing geographically separate flocks of wild whooping cranes, so that if disease, bad weather or other natural or human-caused disaster affects one flock, the remaining flocks can continue the work of survival.

Step one was to place a non-migrating flock of 14 birds in central Florida at Kissimmee Prairie, managed by the Florida Department of Environmental Protection. That original 1993 flock now numbers 75 birds and new birds are added each year. A pair of adults from this flock has successfully nested and produced a pair of chicks, but both were lost to predators. Hope remains high that this pair will mate again and others in the flock will follow.

The Wisconsin choice

Setting up a non-migratory flock was important and a great accomplishment in the preservation of the species. But whooping cranes are migratory birds and the difficulty of establishing a migrating flock was much greater. Where would they nest? Where would they winter? How would they learn a safe migration route? This was new ground in the practice of wildlife management, requiring new ideas, new techniques and new approaches.

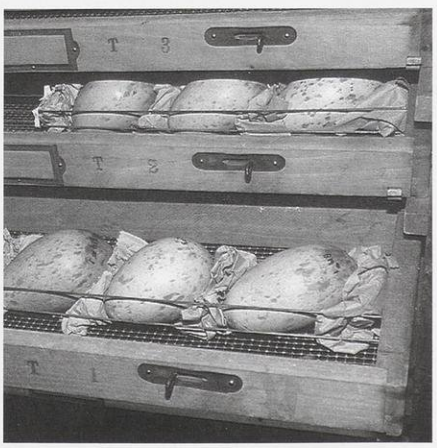
A search to find suitable northern nesting habitat started. Whoopers are reclusive and require large areas of shallow wetland habitat with average water depths of 24 inches or less. They need sufficient food sources, reasonable protection from predators, and water relatively free of pollutants, lead shot and avian disease.

Ultralight planes led the Wisconsin flock on a 48-day journey to the Florida wintering grounds.

Biological criteria weren't the only items on the list. The local human population needed to be receptive to having an endangered species reintroduced to their environment, and public access to the rearing, flight training and nesting sites had to be controlled to protect the new flock.

Three Wisconsin sites offered promise: Crex Meadows, Horicon National Wildlife Refuge and the adjoining state Horicon Wildlife Area, and Necedah National Wildlife Refuge adjoined by the Meadow Valley State Wildlife Area. In September 1999, the Whooping Crane Recovery Team decided on Necedah. At

Eggs for the Wisconsin flock were hatched in Maryland. Young cranes were flown here as six-week-olds. The young birds never heard human voices to keep them wild and wary.



the same time, the Whooping Crane Eastern Partnership (WCEP) was formed to carry out the project. A group of nine state and federal agencies, private nonprofit organizations and two fundraising foundations, "Wee-Sep" quickly established extended partnerships with 20 eastern states, two Canadian provinces and the Eastern and Mississippi Flyway Councils to cover all the ground a growing whooping crane population might one day visit.

Migration 101

Eggs for the Wisconsin flock came from captive rearing stock at the U.S. Geological Survey's Patuxent Wildlife Research Center in Maryland. The eggs were hatched at Patuxent and when the chicks were old enough to travel they were flown — via donated charter plane — to Wisconsin for training and imprinting on the Necedah surroundings to ensure they would return to Necedah in the spring.

In the wild, juvenile whooping cranes learn to migrate from adults in their family group. But there are no adult whoopers for young cranes to learn from in Wisconsin. Operation Migration, a nonprofit Canadian-U.S. organization dedicated to exploring the possibilities of human-led migrations, has been developing techniques to train birds to follow ultralight airplanes.

The organization's co-founders, William Lishman and Joe Duff have flown with Canada geese, trumpeter swans, sandhill cranes and now, whooping cranes. Some readers may remember seeing the movie *Fly Away Home,* which was based on Lishman's work.

Key to the success of the technique is the young crane's instinct to imprint on the first large object it sees upon hatching — in this case, a crane-head hand puppet, a white-costumed handler and the aircraft.

Like other migratory birds, whooping cranes are able to remember and navigate on their own after first being shown the route. The recovery migration route was chosen to closely follow routes used by wild sandhill cranes, but with slight detours to avoid large cities like Chicago and Atlanta.

Staying wild, staying safe

Training began before hatching, when recordings of the aircraft's motor were played in the incubator as soon as the chicks began to pip or tap on the inside of their shells with their bills. After hatching, the chicks were fed and nurtured with the hand puppet, then gradually introduced to the costumed handler and to the aircraft in an outside pen.

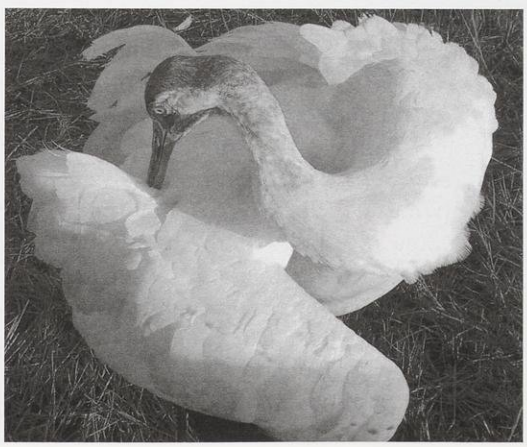
Once wild animals become accustomed to humans, they tend to lose an important survival skill — human avoidance. The whooping cranes in this project were raised according to a strict isolation protocol. They never experienced an uncostumed human and the handlers never spoke within hearing distance of the birds. Recorded crane calls were played to accustom the cranes to their own "language," to calm the birds when frightened, and to entice them to follow the handler or the aircraft.

At about six weeks of age, the juvenile birds were put into individual shipping cages and flown to Wisconsin where they were checked by veterinarians and released into an outdoor pen.

Whooping crane partners

The Whooping Crane Eastern Partnership consists of representatives from: International Crane Foundation, Whooping Crane Recovery Team, National Fish and Wildlife Foundation, Natural Resources Foundation of Wisconsin, Operation Migration, Inc., U.S. Fish and Wildlife Service, U.S. Geological Survey — Patuxent Wildlife Research Center, U.S. Geological Survey — Wildlife Health Center in Madison, Wis. and the Wisconsin Department of Natural Resources.

WCEP Website: www.bringbackthecranes.org
For teachers: www.learner.org/jnorth



Costumed surrogates teach the young chicks the skills they will need to survive. *(middle)* **A whooper preens its feathers after a long day's flight.** *(right)* **The whooping cranes were caged at night in their Florida resting area. Even so, a bobcat got into the enclosure and killed one of the cranes.**

Ultralight-led migrations may continue for the next 4–5 years. Biologists estimate it will take a flock of 125 whoopers to produce and sustain 25 breeding pairs.

Costumed handlers conducted all the work in complete silence.

Over the next weeks the birds grew rapidly and began to develop flight feathers. Each day, just after sunrise, they were let out onto a flat grassy area in front of the pen where an ultralight airplane sat, waiting. At first, the cranes walked slowly behind the airplane, picking up tasty mealworms dropped by the pilot from a crane puppet. Soon, the birds were running and hopping as the aircraft taxied faster. When flight feathers were developed enough to create lift, the young cranes ran, set their wings and glided a few feet until one day, they left the ground in full flight.

The early flights were very short, lasting only a few minutes. Cranes normally soar; they ride thermals, or upwellings of warm air, to great heights, then set their wings and glide for miles. Soaring uses little energy compared to flap-flying like a crow or songbird. For a bird as large as a crane, flap-flying is very tiring; it takes many weeks to build up flight muscles and endurance.

Following an ultralight, the cranes in front of the line can "surf" on the "wake" of air spilling off the aircraft's wing; the birds farther back must work harder. The wake forms best in still morning air. With a tailwind, it's possible to cover 80 to 90 miles a day on migration. The average flight for this first fall migration was 48.7 miles. With a headwind, which breaks up the wake, the pilots and birds usually remain on the ground. In 2001, poor weather and headwinds grounded the migration for 23 days out of 48.

The cranes arrived at Florida's Chassahowitzka National Wildlife Refuge on December 3 — 1,218 miles from their starting point in Wisconsin. Researchers anticipate the whoopers will return to Necedah on their own this spring. The sandhill cranes led down to Florida by ultralight the previous year returned on their own to Necedah to within 100 yards of their training area.

Why whooper recovery is important

The Whooping Crane Recovery Team aims to restore two flocks of at least 25 breeding pairs in addition to the existing Wood Buffalo-Aransas migratory flock. This would bring the population to a level where whooping cranes could be downlisted from endangered to threatened under the Endangered Species Act. In Wisconsin, biologists feel that it will take a total population of about 125 birds to provide 25 nesting pairs. Ultralight migrations may continue for the next four to five years as the flock increases. After that, it is expected that young of the year will learn the migration route from adults.

Why is whooping crane recovery important? One reason is that humanity has an obligation to practice wise stewardship of our soil, air, waters, flora and wildlife. We have the capacity to plan for the future of our natural world. This project is a significant step toward slowing the disturbing trend in species extinction.

Wisconsin has made great progress in returning extirpated species to the land. Completing this project will return one more piece of Wisconsin's natural heritage to the landscape, and will add to the list of things that make Wisconsin a great place to live. There is excitement in anticipating the day citizens or their children will be able to look skyward at the sound of a whooper's bugle and see a group of these remarkable birds fly overhead.

Robert J. Manwell is the public affairs manager for DNR's endangered resources, parks and wildlife programs as well as Outreach Team Leader for the Whooping Crane Eastern Partnership.

Persevering for preservation

The result of five decades of dedicated effort, the State Natural Areas program today conserves 333 extraordinary Wisconsin places.

Paul Matthiae

For four years, photographs taken at different State Natural Areas (SNA) have occupied the back cover of *Wisconsin Natural Resources* magazine. Each beautiful image is accompanied by a brief description of the property and directions on how to find it.

Shame on us for not telling you more about Wisconsin's SNA program a little sooner. You see, for *50 years* this special conservation initiative has sought out and protected the unusual species, habitats and landscapes that lend Wisconsin its unique natural character.

State Natural Areas are selected from the most pristine remaining native communities and natural features. As reservoirs of natural diversity they provide habitat for endangered and threatened species. They have special scientific and educational value as benchmarks of the presettlement landscape.

When it began, the SNA program was the first of its kind in the nation,

SNAs protect pristine native communities and some serve as "benchmark" reference areas for researching land management techniques. As part of an oak savanna restoration project at the Lulu Lake SNA, oxen were used in a study of alternative low-impact logging practices on steep slopes. Dave Schrupt, a volunteer, allowed his oxen to be used for this project.

BETTY HUIZENGA

DAVE WESTOVER

Natural areas preserve the best examples of what Wisconsin looked like before European settlement.
(below) Some natural areas are marked with routed signs. Others are simply marked with a small metal sign. Make sure you stay within the property boundaries when visiting natural areas.

and Elvis was just another crooner in black leather. Today, the SNA program continues to quietly go about its vital work of protecting ecologically significant lands. And as for Elvis — well, when was the last time you saw him?

Recognizing the need for protection

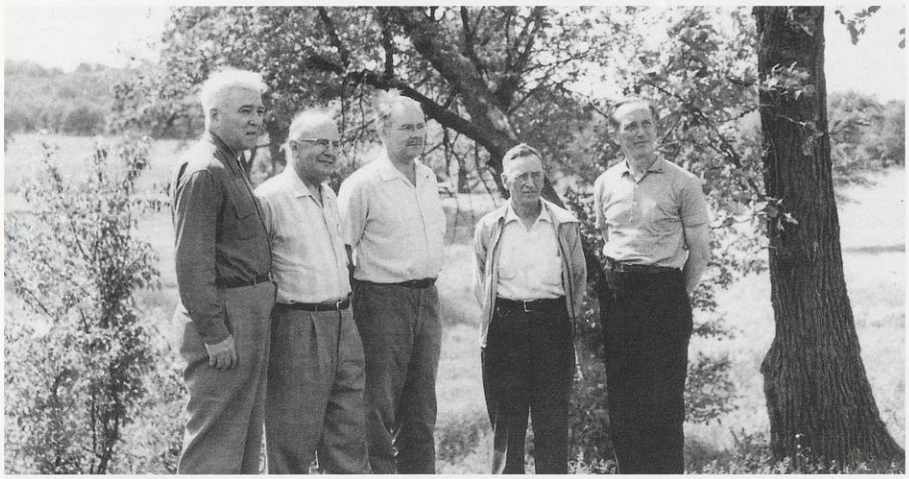
In the mid- to late 1800s, naturalists and scientists such as Increase Lapham and C.L. Cheney observed that intensive logging and agriculture adversely affected Wisconsin's native wildflowers and trees. These concerns went unheeded until the 1930s, when a new generation of scientists and citizens faced with devastated forests, drained wetlands and plowed-under prairies and savannas expressed concern over the loss of native vegetation.

In 1938 a group of scientists including Aldo Leopold from the University of Wisconsin and John Curtis, then a research assistant in botany at the UW, developed a plan to "conserve wild flowers as a natural resource." The intent was to convince local communities to protect patches of land to enhance the beauty of their locales. A botanical survey conducted by the State Planning Board recommended investigation of 10 geologic sites and 13 botanic sites.

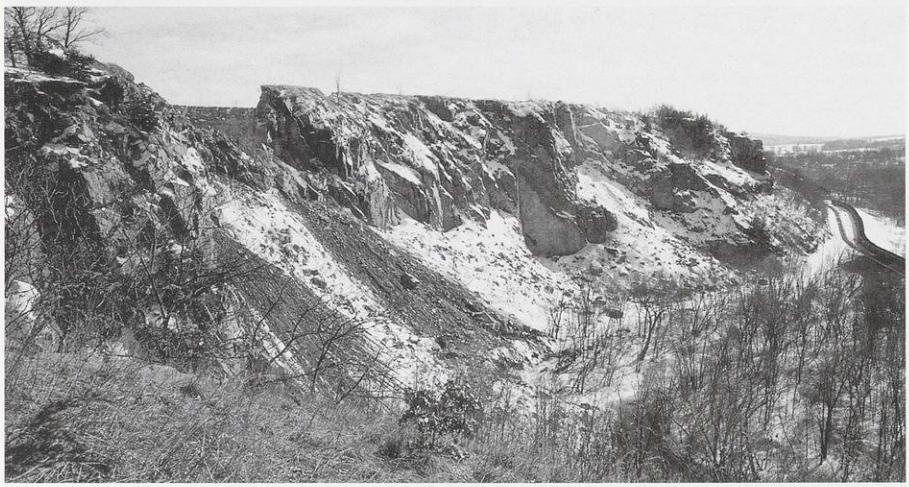
THOMAS A. MEYER

In 1945 the Wisconsin Conservation Commission acted on a motion by Commissioner Aldo Leopold to establish an advisory committee of scientists — the Natural Areas Committee — to begin the process of acquiring natural areas of particular value, by gift or purchase. Following recommendations of the new committee, the Conservation Commission purchased its first natural areas at Parfrey's Glen and Cedarburg Bog, both prized for their special geologic features and botanical attributes.

In a few years it became clear that simply acquiring properties would not be enough to protect them. State Forester C.L. Harrington was one who expressed concern over how the new natural areas should be managed. Joseph Hickey, a retired professor at the UW Department of Wildlife Ecology, related how UW sci-



DNR FILE PHOTO



DEAN TVEDT

(top) One of the first State Boards for the Preservation of Scientific Areas. *(l to r)* C.L. Harrington, Albert Fuller, John T. Curtis, Alvin Throne and Carl Welty. The board advised the state on which properties to set aside first and how they should be managed to maintain their unique qualities.
(above) SNAs also preserve unique geologic formations like Abelman's Gorge in Sauk County.

entists addressed Harrington's worries in 1950:

"Nobody had ever told him [Harrington] what 'natural areas' were for. Should they be given fire protection, opened to hunting and fishing, managed for sustained timber production, and so on? A long series of explanations were now given by soil scientists, botanists, zoologists, wildlife managers, and the like as to why they wanted primitive reference areas in their research and teaching. As the afternoon wore on, Harrington finally got the idea. 'I see what you mean,' he said slowly. 'What you are talking about are *scientific areas*.'

"The scientists were not about to haggle over terms. Yes, they agreed, that's what they were talking about. Harrington then said he knew nothing about 'scientific areas' and that the Wisconsin Conservation Department (WCD) would need a committee of scientists to advise it on how to preserve and manage such areas."

Hickey drafted the necessary legislation with John Curtis, UW plant ecologist. They presented it to the chairman of the Senate Committee on Conservation. In July 1951 the Wisconsin Legislature passed a bill establishing the State Board for the Preservation of Scientific Areas. The first meeting of this group, which replaced the Natural Areas Committee, was held in November 1951 — and the first state-sponsored scientific/natural areas program in the country was born.

The six-member board wasted no time. By the end of 1952, 16 scientific areas had been established; by the end of 1961, 33 sites encompassing 3,200 acres had been designated. Most of these sites were established on WCD lands because there were no funds available for purchasing private lands. Prompted by a report published by the Wisconsin Academy of Sciences, Arts and Letters, the Legislature authorized a much-needed budget of $36,200 in 1965–66 and $33,800 thereafter to provide staff and support for the program. In 1966 Cliff Germain was hired as the first full-time staff person and program coordinator.

Then, in 1967, Wisconsin's government was reorganized and the State Board for the Preservation of Scientific Areas became the Scientific Areas Preservation Council, and changed its role from an independent board to an advisory body to the newly formed Department of Natural Resources (DNR). The change diminished the council's political influence and legislative authority, but expanded its working relationship with the new DNR.

An inventory of biological communities

Preserving rare plants and animals was an admirable goal, but many realized the council's work would also need to encompass a complete set of terrestrial and aquatic communities. To accomplish this formidable task, Germain and the council needed a system to find the best remaining examples of natural communities in pre-European settlement condition. To locate these treasures, in 1969 a pilot program to inventory natural areas by county was initiated in Dane County. Designed to locate and rank these best remaining examples, the inventory recorded the site's geology and soils, vegetation and animals, unique habitats and more. It marked the beginning of systematic, county-by-county natural area inventories in Wisconsin and around the country.

The first round of inventories was completed in 1983; however, inventories are never complete and continue today with close focus on special needs and concerns. The re-inventory of counties 10 or more years later confirmed the worse fears of staff — the highest quality sites were being lost at a rate of 10

percent or more every 10 years to development, wetland drainage or timber harvest. The inventory ranking system focused efforts to preserve the most ecologically significant sites statewide.

The inventory also assists local governments protecting important resources. Many of these areas have found their way into parks and greenbelts.

A cooperative breeding bird census initiated on selected scientific areas assisted by the Wisconsin Society of Ornithology complemented the county inventories. During the 1980s, coordination for the census shifted to the Scientific Areas program and the continued cooperation of state birders expanded. This census provides vital information on the presence of rare species, their ecological requirements, and management methods essential to assuring their survival.

By 1971 the council had designated 81 scientific areas. While most of the sites were located on DNR properties, a number were on private lands, other government or agency holdings and conservation organization land. Developing strong partnerships was crucial to preserving areas threatened with loss or alteration. Today, 36 partners — including county and municipal governments, U.S. Forest Service, U.S. Fish and Wildlife Service, and organizations such as The Ridges Sanctuary, Audubon Society, and nature centers — have designated 115 Scientific (and later Natural) Areas on their lands.

Among the many partners, The Nature Conservancy (TNC) has played a strategic role in the overall success of the Scientific/Natural Areas program. TNC has designated and dedicated many of its own areas and helped the Department of Natural Resources acquire many others.

To stem the continued loss of ecologically significant private lands, especially in southern Wisconsin, the council received $50,000 a year in land acquisition funds from the State Outdoor Recreation Act Program (ORAP) in 1972.

Some 180 scientific areas had been established by the early 1980s. More state and federal funds were becoming available for land acquisition; in 1983, nearly $900,000 was committed to take options on 1,000 acres.

GERALD H. EMMERICH, JR.

GERALD H. EMMERICH, JR.

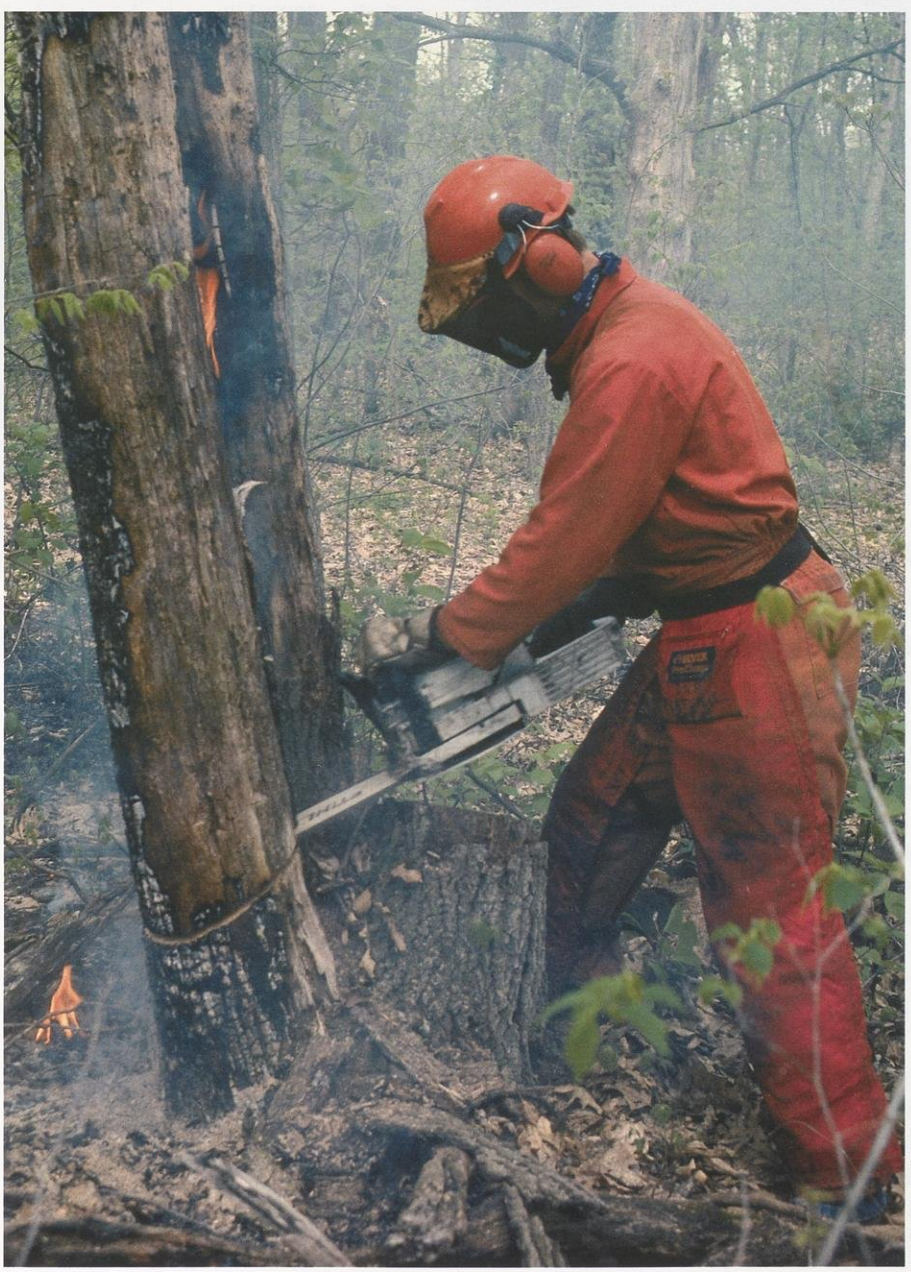
SNAs aim to save a diverse mix of rare plant and animal communities.

As more new properties were acquired, the old concern surfaced again: How best to manage scientific areas? Due to the lack of operating funds, management on many scientific areas had been spotty and was often conducted with the help of volunteers. Those contributions continue today, but this approach alone didn't assure follow-up management. A prairie once burned to control invading brush and trees would soon be overgrown again.

To guide future growth, the council developed the Scientific Area Long Range Plan in 1983. The plan recognized the need to emphasize management, acquire more baseline data, and foster research and educational uses. Comprehensive management plans were developed and implemented for each area in cooperation with the site property manager.

In 1985, urged by TNC, the Legislature passed the Natural Heritage Act. This act established the Natural Heritage Inventory program as a section within DNR's Bureau of Endangered Resources, and created a much stronger system for permanently protecting Scientific Areas, which would now be called State Natural Areas (SNA). Permanent protection of qualified SNAs could now be accomplished by legal dedication. Articles of Dedication provide protection in perpetuity for natural area use and may not be taken for other uses without a finding of greater public need by the Governor and the Legislature.

DNR FILE PHOTO



THOMAS A. MEYER

The act also provided funds for managing natural areas, and created the Natural Heritage Match Grant program. This grant program provides additional funds by matching, dollar for dollar, donations of cash, gifts of natural areas, or conservation easements by private individuals and organizations.

Working on a landscape scale

Up to the mid-1980s, natural area protection had been focused on saving relatively small, highly threatened remnants often isolated amid agricultural lands and rural developments. While these areas conserved plants, and to a degree native invertebrates and small animals such as birds, mice and shrews, the properties were generally too small to survive encroachment by other native and exotic species without aggressive management.

At the same time, research and inventory information pointed toward a new, more effective approach for conserving and restoring natural communities. This approach called for assessing large landscapes, which contain multiple interacting ecosystems. Working at landscape scales helps restore intervening degraded ecosystems, provides connecting corridors between remnant natural areas and addresses problems of species composition, genetic exchange, structural requirements and ecological processes or functions.

Funding limited staff ability to address both buying and managing properties at landscape scales. To alleviate this problem, the State Natural Areas program received $1.5 million a year for acquisition from the 1990 Knowles-Nelson Stewardship Fund. Another Stewardship provision — the Grants to Nonprofit Conservation Organizations — allows DNR to share the cost of acquiring land with conservation groups. The Stewardship program has been re-

It takes a delicate hand to protect a natural area's finest qualities yet make them accessible to the public and researchers.
(top) **Building a boardwalk through Big Bay Sand Spit and Bog SNA.** *(bottom)* **SNAs need selective cuts and plant management to keep invasive trees and weeds from changing the nature of the plant communities we are trying to preserve.**

newed, as Stewardship 2000, for another 10-year period.

The SNA program receives additional funding to support its operations from the Endangered Resources license plate program and from the Challenge Fund for Endangered Resources, which matches each dollar contributed to the Endangered Resources Fund with an additional dollar.

Through grants from private foundations, sport and conservation organizations and federal agencies, the SNA program has been able to address management issues. Approximately 150 sites are managed by brushing, exotic species control and prescribed burning. Other functions supported by increased funding include baseline data collection, creation of a native plant seed farm system in cooperation with the Wisconsin Department of Transportation, funding of research crucial to natural areas management, and expanding opportunities for the public to use natural areas.

Public use of SNAs has grown steadily over the years. Approximately 50 research projects are being conducted annually, and many thousands of student hours in formal classwork occur each year on natural areas. An estimated 500,000 citizens use SNAs for nature study, photography, bird watching, hiking and, on public lands, hunting and fishing (except where prohibited in parks or where private land conflicts may exist).

Today, 333 SNAs occupy a total of 122,000 acres. One hundred and eight SNAs have been legally dedicated. Scores of endangered and threatened species are protected on these properties — but simply protecting these small, often isolated sites isn't enough. We now know that to save species we have to save functional ecosystems, and those ecosystems are best addressed when studied and established at landscape scales of a few thousand acres to 40,000 or greater.

It won't be easy. Increasing numbers of visitors attracted to natural areas can disturb or destroy the very attributes SNAs aim to protect. Land uses surrounding SNAs can turn these protected areas into isolated islands, or counter their long-term sustainability. And more intensive management will be needed to control the spread of non-native species.

The first 50 years of Wisconsin's quest to preserve its unique natural character were spent finding the places that best exemplified the state's ecological variety. In the next 50 years, we will face the task of integrating rapidly evolving conservation biology research and inventory information into an effective protection program. The SNA program and its many partners welcome the challenge.

GERALD H. EMMERICH, JR.

Sites like Happy Hills Glade in the Baraboo Hills provide a rich carpet of beautiful trilliums on a summer day.

Paul Matthiae headed the Natural Areas Section from 1986–1998. The program's first coordinator, Cliff Germain, helped with this story.

continued from page 2

As one of the first spring sounds in the wetland, males begin calling when the water temperature warms to about 45°F. When singing, the males typically climb on and cling to vegetation overhanging the water. To produce the shrill, clear, high-pitched notes that sound like jingle bells, spring peepers push air from their lungs through two slits in the mouth to inflate a vocal sac. The inflated sac, resembling a thin sphere of bubblegum about to burst, seems much too large for the size of the tiny treefrog. And the peep seems much too loud to come from such a small creature. A full chorus of northern spring peepers has great carrying capacity and on still nights may be heard a quarter- to a half-mile away. At close range, the sound seems deafening. Spring peepers may continue to call until late May or early June when courtship ceases for another year.

Males call to attract females. Actually there is very little, if any, courtship. As soon as a gravid female arrives at the pond, an eager male clasps her from on top and behind her forelegs, a position termed amplexus. The clasping may stimulate the female to lay her eggs. As she deposits eggs singly or in clusters of two to three on submerged vegetation, the male is stimulated to release sperm, a form of external fertilization. Amplexus continues until she has laid 800–1,000 eggs. Only spring peepers know how long this egg-laying activity takes.

A.B. SHELDON

On still nights, a spring chorus of peepers can be heard up to a half-mile away.

Each one-millimeter egg, protected by a clear, gelatinous membrane, hatches in two to three days into a three-millimeter tadpole. The young tadpoles feed on plant material, increasing in size, growing legs, and absorbing their tails. In June when the transformation is about complete, the froglets leave the pond for the woodland and their diet switches to delectable insects such as mosquitoes and flies.

Treefrogs are typically walkers and climbers, not jumpers. They've adapted to a terrestrial and arboreal existence aided by discs on their toes. Just below the disc surface are special glands that secrete a sticky, adhesive fluid that enables treefrogs to adhere to slippery, vertical surfaces. That's why you may have been surprised to see a treefrog clinging to a cabin window. In autumn, males may occasionally be heard calling from the trees, perhaps to practice, for no mating occurs at that time. For winter hibernation, spring peepers select secure spots under logs or tree bark.

Enjoy the spring music as the amorous chorus of tiny songsters heralds winter's retreat from Wisconsin's swampy woodlands.

Anita Carpenter listens for nature's lovesick crooners on walks near her Oshkosh home.

ICE FISHING MEMORIES

I must write to tell you how much I enjoyed the winter recreation issue (December 2001). I'm 84, but for 70+ years I lived in Wisconsin and learned at an early age to enjoy fishing…We lived in Waukesha and our early means of transportation to Pewaukee Lake, where we did most of our fishing, was by the electric train…

In the winter we would hike 1½–2 miles to our shack located near the island between Taylors Bay and Keykeiffer Bay. We would spend two or more days at the shanty. In those days, we were allowed 15 lines each. Sometimes we would not get all the lines put in until the second day because the ice would be 18–24 inches thick and the holes had to be dug with an ice bar. Sometimes you would see someone trying to cut a hole with an axe or hatchet — no augers as there are today.

I do not remember any ice fishing equipment for sale in my early days. Each fisherman developed and made his own. I saw many types of tip-ups, some made from a woman's corset stays, umbrella bows, mouse traps, flattened clock springs, rubber bands and even just a piece of brush hung over the hole with a piece of cloth attached to the line. It wasn't until the 1940s that dad found a tip-up for sale. It was an underwater type and very well made. I saved two and still have them for memory's sake.

Spools on which to wind the line were of every kind. Some were made from wire hangers. Some were pieces of round broom handles with a hole drilled in the bottom and filled with molten lead, a screw eye and wire loop at the top. My father was a molder in an aluminum foundry and he had a pattern made and cast his spools of aluminum.

Most of the good ice bars (spuds) were made by a blacksmith. We had two different bars, one for thick ice and one for thin ice to keep the hole from freezing over. Our thick bar was seven feet long so we could chop through 24 inches of ice. It was made from a one-inch round bar with a 2–2½ inch wood chisel brazed to one end. The thin bar was shorter with an old truck spring welded to one end.

The ice skimmers were usually made from a six-inch steel fry pan with holes drilled or punched through it. Some people would attach a wooden handle so they could reach down deeper in the hole to skim off the slush ice.

Our shanty was eight feet by eight feet with two bunk beds that could serve as a seat and table during the day. The shanty was heated with a cast iron laundry stove with a grate that allowed us to burn coal or coke and a flat top for cooking as well as heating.

I think it would be interesting to read more about different types of ice fishing tackle designed and built by anglers over the years.

Bill Clark
Asheville, North Carolina

Thanks for the memories, Bill. We ran a piece "The lure of fish decoys," in February 1995 about old wooden ice lures, but we'd sure do another piece if readers provided stories and photos of their homemade favorites.

WALKING AROUND A LAKE

This past fall and winter, due to the mild weather, we've been able to walk the 20 some miles of the beautiful Geneva Lake shore path. How fortunate we are to have this privilege. I'm concerned why we are not allowed to follow the shoreline path through the Trinke Estates on the south shore. I understood that in years gone by there was a lagoon there, but I believe that isn't the case any more. Now there's a six-foot fence one must detour around by perhaps a

COMMENT ON A STORY?

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

mile. I'm under the impression that one has access to a shore path nearest the lake at all times.

Betty Nichols
Walworth

That particular path traces historical routes that linked Indian encampments along the shore. The 26-mile path is maintained by collective local agreements in surrounding communities. In general, state law guarantees public access to the entire shoreland around public lakes from the water, but not from the land. Shoreland can be sold as part of real estate transactions. On the other hand, no one can be denied access to the water side of the shoreline once you are in the water or boating on the water. Water rights under the Public Trust Doctrine guarantee public access to the shoreline from the water.

There may well be some local covenants that provide for public access to the entire shoreline around Geneva Lake. We provided contacts to The Geneva Lake Environmental Agency and the Geneva Lake Land Conservancy to find out about local rights.

COUNTRY LIVING TAKES SELF-RESTRAINT

To respond to the October 2001 letter "Too many deer or too many suburbs," I couldn't have said it better myself. More and more beautiful natural places are being bulldozed for rural subdivisions. And then to top it off, the subdivisions are named after what was destroyed, like River Woods, Forest Hills, Hunters Glen, etc. The price of a lot is then inflated because "it's in the country," and wooded lots go for a higher price than lots in open areas. City water and sewer may be run out to the subdivision (because the land doesn't pass perk testing), curb and gutter may be added and a maximum number of homes are built to maximize "return on investment."

The sad part to all of this to me is the public doesn't seem to care about the loss of green spaces, habitat fragmentation and its affect on flora and fauna. I realize that human population is increasing and people need to live somewhere. And I'm not saying you can't live in the country. But country living requires exercising intelligent planning, common sense, responsibility and genuine concern for what our presence has on the land and its creatures. Country living is not about changing what's there; it's about preserving, living with and becoming a part of what's already there. Sheboygan County did save Gerber's Lake from development, and the people responsible for that should be thanked.

Where are the voices of the 60's that protested environmental destruction on many fronts? Did the people of that generation, my generation, succumb to economic development, 401K's, mutual funds and the "promises" of Madison Avenue?

Richard A. Stoelb
Sheboygan County

EAT IT

I enjoyed Anita Carpenter's article on the "lowly" wintergreen. But I was surprised she didn't mention its spicy flavor as the best part of the plant. If one can beat the wild creatures to them, the new berries in the fall are the best, especially when one is sitting under a tamarack during a break in chasing partridge. When you are brushing that snow away in the winter and find a plant that doesn't appear rotten, eat it for a frozen surprise. In the spring, when the first few green leaves are on the plant, don't just crush them in your fingers to savor the aroma, chew them, they taste just like the berries. I won't say any more, but just a hint — ice cream!

Bob Gile
Eau Claire

CANDLELIT COURSE

We enjoyed your coverage of winter activities (December 2001). However you missed one of the most unique ski events in Wisconsin, the Book Across the Bay ski race, family ski and snowshoe trek. The race is 10 kilometers on the snow-covered ice across Chequamegon Bay from Ashland to Washburn. It's the third Saturday in February (Feb. 15th in 2003) and starts at 6 p.m. over a course marked by hundreds of candles in ice luminaries. Volunteers staff a rest stop at the half way point in the middle of the bay, providing refreshments. There's a party in a big tent at Washburn's West End Park at the end of the race. The event has grown from approximately 300 skiers to 1,100. For information, visit www.batb.org or call the Ashland Chamber of Commerce, 1-800-284-9484.

George & Carol Eder
Washburn

NORWAY PINE IS A NATIVE

On the back cover of the December issue, I read the following statement in the Pine Cliff State Natural Area description: "This relict is unusual in that all three species of pine native to the state — jack,white and red — are found here,disjunct from their main range to the north."

Since I have planted over a million red (Norway) pine in central Wiconsin in the1950s and 1960s, I was unaware that this tree was native to Wisconsin. Please let me know the status of the red pine.

Joe Pelikan

According to "The Forest Trees of Wisconsin," *red pine (Pinus resinosa) is found throughout the northern part of the state, usually on more sandy lands than the white pine, to which it is second in commercial importance. Isolated stands occur as far south as Pine Bluff in Dane County. It is one of three native pines along with the white and jack pine.*

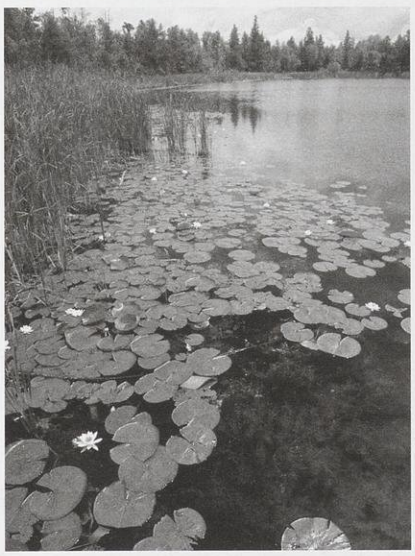
DNR Botanist Thomas Meyer adds: The species is native to northeastern North America, from the eastern provinces of Canada to the western Great Lakes states, including Wisconsin. It is not found naturally outside of this range and is not found in Norway. How it received that common name is unclear. Red pine is still a very important component of Wisconsin's drier northern forests and pine barrens. Because of its ability to grow quickly in poor soils, red pine has, indeed, been planted in vast plantations in the Central Sands and other areas of Wisconsin.

Spring heralds

About this time of year most everyone is looking for signs that winter has truly loosened its frigid grip upon the landscape. Some say winter is down for the count when the first robin of the year flits by the feeder. Others insist the freezin' season makes its grand farewell only after lake ice breaks up, engulfing shanties belonging to sundry and assorted procrastinators, laggards, and the perpetually unaware.

DONNA KRISCHAN

SCOTT NIELSEN



THOMAS A. MEYER

Spring has sprung when you find *(above)* Dutchman's breeches, *(right)* Virginia bluebells and *(below)* water lilies on a walk. Enjoy these sites in southeastern Wisconsin.

The sight of a delicate pasqueflower pushing through the remnants of snow gets TRAVELER's vote for winter's real sayonara. To help you catch these and other spring blossoms at their peak, we asked Don Quintenz at the Schlitz Audubon Nature Center in Milwaukee to direct us to the best wildflower viewing sites in southeast Wisconsin:

North Prairie Cedar Glade & Oak Opening — Located in the Southern Unit of the Kettle Moraine State Forest in Eagle, this habitat bursts into bloom with pasque and prairie smoke flowers from late March to early May. (262) 594-6200.

Renak-Polak Woods — These maple-beech woods are known for spectacular spring wildflower displays in early May. Look for spring beauties, Dutchman's breeches, hepatica and wild geraniums. The woodland is five miles northwest of Racine. (262) 595-3221.

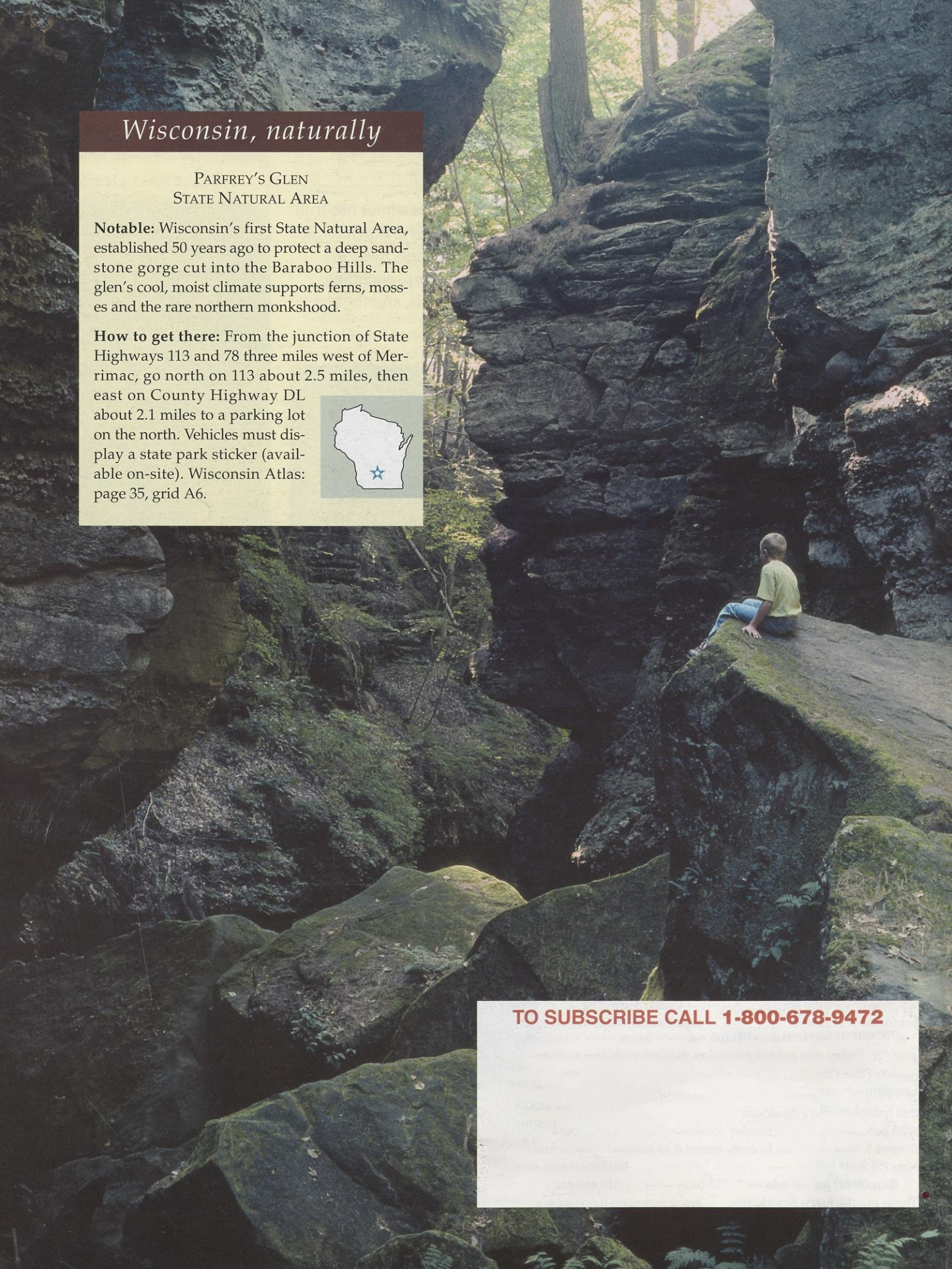
Cedarburg Bog and Beech Woods — Visit these woodland habitats for early May wildflowers. Wild orchids, including the yellow lady's slipper and showy lady's slipper, reveal their beauty later, toward the end of May and into early June, in the bog and cedar swamp. Only groups are given access to these sites, which are used as a research area for University of Wisconsin-Milwaukee biology and conservation students and staff. Call (262) 675-6844 to make an appointment.

Kohler-Andrae State Park — The park's beach and lake dune habitat comes alive with rare and showy sand-loving wildflowers in late spring. Kohler-Andrae is located four miles south of Sheboygan. (920) 451-4080.

Spruce Lake Bog — Late May to early June finds this bog and swamp habitat blooming with orchids and other rare wildflowers. Northern Unit, Kettle Moraine State Forest, Campbellsport. (262) 626-2116.

Chiwaukee Prairie — A wet prairie habitat near the Illinois border along Lake Michigan, the rolling swales of Chiwaukee Prairie are carpeted with a stunning 400 species of colorful prairie wildflowers and grasses. Try the third week in May for optimum viewing. (262) 878-5600.

Bald Bluff — A dry prairie habitat, a host of wildflowers, and a scenic overlook — Bald Bluff has it all! When you visit this prairie in the Southern Unit of the Kettle Moraine State Forest two miles south of Palmyra, please stay on the designated trail. (262) 594-6200.



Wisconsin, naturally

Parfrey's Glen State Natural Area

Notable: Wisconsin's first State Natural Area, established 50 years ago to protect a deep sandstone gorge cut into the Baraboo Hills. The glen's cool, moist climate supports ferns, mosses and the rare northern monkshood.

How to get there: From the junction of State Highways 113 and 78 three miles west of Merrimac, go north on 113 about 2.5 miles, then east on County Highway DL about 2.1 miles to a parking lot on the north. Vehicles must display a state park sticker (available on-site). Wisconsin Atlas: page 35, grid A6.