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A bald eagle is perched on a dark, textured branch. The eagle has a white head and neck, a yellow beak, and dark feathers on its body and wings. Its tail is white. The background is a clear, bright blue sky. The eagle is looking down and to the left.

WISCONSIN NATURAL RESOURCES

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Eagles soar back from the brink

Restore the shore

The art of understanding nature

Easing the pain of natural disasters

Coneucopia

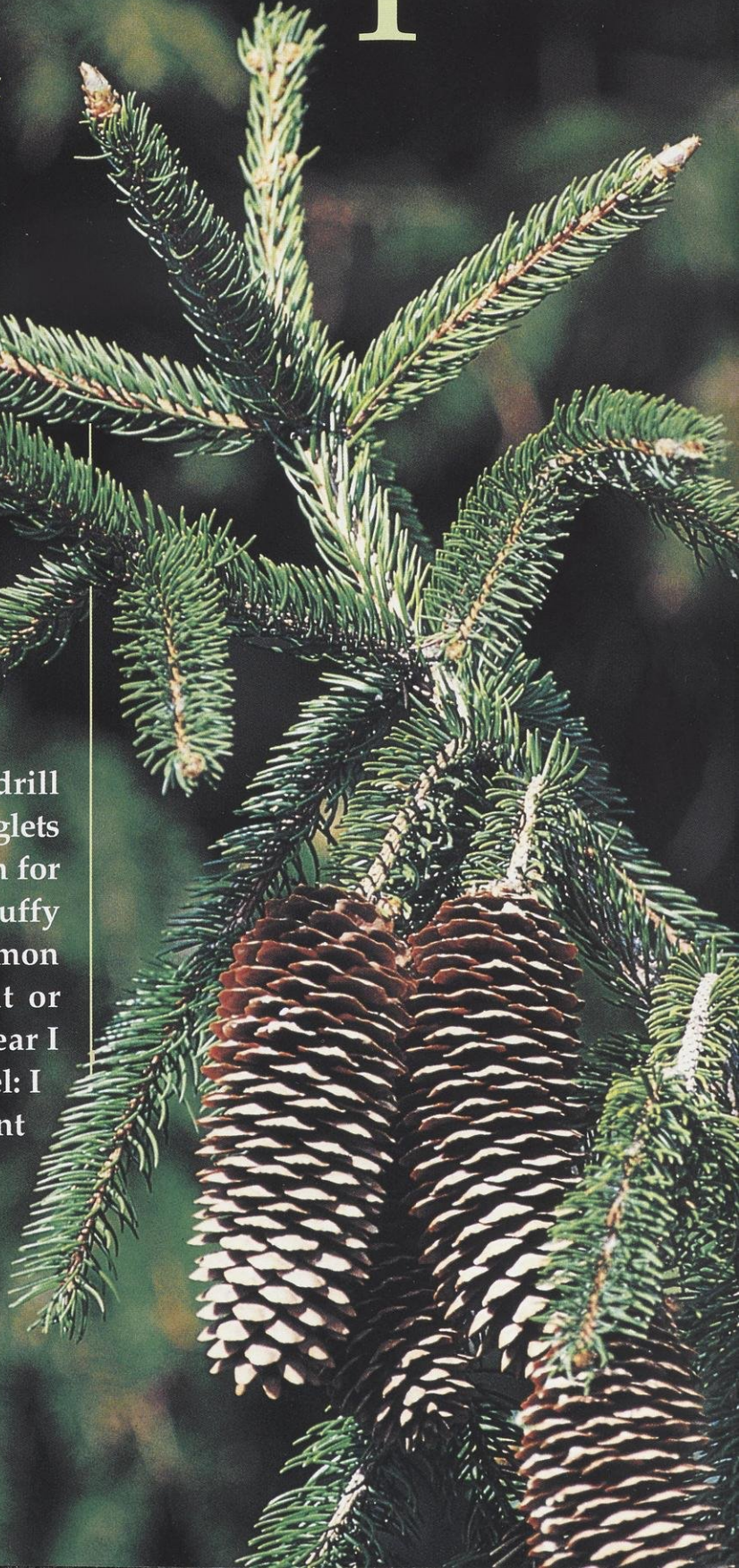
Conifers adapt different strategies in the up and down world of seed dispersal.

Anita Carpenter

From my second story window, I have an intimate view of the Norway spruce which stands majestically tall just outside. This year I've watched blue jays build a stick nest, yellow-bellied sapsuckers drill holes, and migrating warblers, kinglets and ever-present chickadees glean for insects. A gray squirrel with its fluffy tail arched over its back is a common sight dining on a black walnut or shredding a spruce cone. This year I took tree watching to another level: I really focused on the development and maturation of its cones.

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Male and female Norway spruce cones grow on separate branches. The small male cones on lower branches produce pollen in the early spring, then shrivel up. Small female cones grow upright in early spring, perhaps to better gather wind-blown pollen, then the cones seal up and tip over to more easily release seeds when the cones mature in fall.



WISCONSIN NATURAL RESOURCES

December 2007
Volume 31, Number 6



RON ECKSTEIN



COURTESY OF DNR SHORELAND TEAM



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FRONT COVER: In winter, eagles perch on high near open water searching for an easy meal of fish or carrion. Their eyesight is six to eight times better than humans. Eagles soar on updrafts near river bluffs expending little energy in their search for food.

HERBERT LANGE, Hazel Green

BACK COVER: Fox Maple Woods State Natural Area in Florence County. For more information, or to order a guidebook to State Natural Areas, contact the State Natural Areas Program, Bureau of Endangered Resources, DNR, P.O. Box 7921, Madison, WI 53707 or visit dnr.wi.gov/org/land/er/sna.

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INSET: Female pileated woodpecker.

SCOTT NIELSEN

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A bald eagle is perched on a thick, gnarled tree branch. The eagle has a white head and neck, a yellow beak, and dark brown feathers on its body. It is looking towards the left. The background is a dark, out-of-focus forest with some green pine needles visible.

BALD AND

Eagles return to stir
emotion, spur
economics.

Natasha Kassulke

Eagles start building or repairing nests in February or March. The nests that average four feet across and three feet deep are composed of large sticks lined with grasses and other vegetation. Eagle nests are built on hefty tree limbs often high up white pines. The nests are sturdy enough that researchers occasionally find that bears have hibernated in eagle nests during the winter.

BEAUTIFUL

If Benjamin Franklin had his way, the turkey would be our national symbol and the eagle would have gone down in history as "a bird of bad moral character."

So it's a good thing for the eagle that a majority of the Founding Fathers saw beyond the bird's penchant for picking at carrion, and in 1782 designated the eagle as the emblem of the new nation's strength and bravery.

While other birds migrate to sunny coastal communities, the cold months of November through March are good times to find *Haliaeetus leucocephalus* feeding across Wisconsin waterways. These resilient raptors usually can be seen in the greatest numbers in the morning near open water, where they fly back and forth, searching for their first meal of the day.



Battling back

The eagle flyways weren't always as crowded as they are today. Settlement, bounty hunting, logging and pesticides historically took their toll on eagle populations.

In the late 1940s, DDT and other organochlorine pesticide compounds were sprayed to control mosquitoes, and later used as crop insecticides. Dichlorodiphenyl-dichloroethylene (DDE), the principal metabolic breakdown product of DDT, devastated eagle productivity from the 1950s through the mid-1970s. DDE was found in fish the eagles ate. As eagles consumed this contaminated prey, DDE accumulated in their bodies and caused them to lay thin-shelled eggs that would break before hatching. Another pesticide, dieldrin, also built up in the eagles' bodies and caused some to die.

After scientists discovered the dangers of DDT, the chemical was banned for most uses in the United States starting in 1972. Following the DDT ban, and a ban on the

use of dieldrin, the number of nesting pairs of bald eagles in Wisconsin steadily increased, from just 100 pairs in the early 1970s to more than 1,000 pairs today.

Wisconsin recovery

By conducting important eagle survey work from 1973 to 1989, Chuck Sindelar of Waukesha launched Wisconsin's fledgling eagle recovery effort. Rhinelander wildlife biologist Ron Eckstein says Sindelar was surveying eagles as a hobby even before DNR became involved. The U.S. Fish and Wildlife Service supplied the pilot to fly the aerial surveys and Dave Evans, a raptor specialist from Duluth, assisted as a climber to get into the nests and band the eagles.



RON ECKSTEIN

In 1986, DNR approved a Bald Eagle Recovery Plan with the goal of increasing the

self-sustaining population of bald eagles in Wisconsin to 360 breeding pairs by the year 2000. That goal was accomplished and expanded.

Last year, 1,065 eagle nest territories were occupied by breeding adults in Wisconsin. The locations are on file with Wisconsin's Natural Heritage Inventory (NHI), the repository for information on Wisconsin's threatened and endangered species. Today, eagle territories are distributed across much of Wisconsin, with the largest concentrations in Vilas, Oneida, Burnett and Sawyer counties.

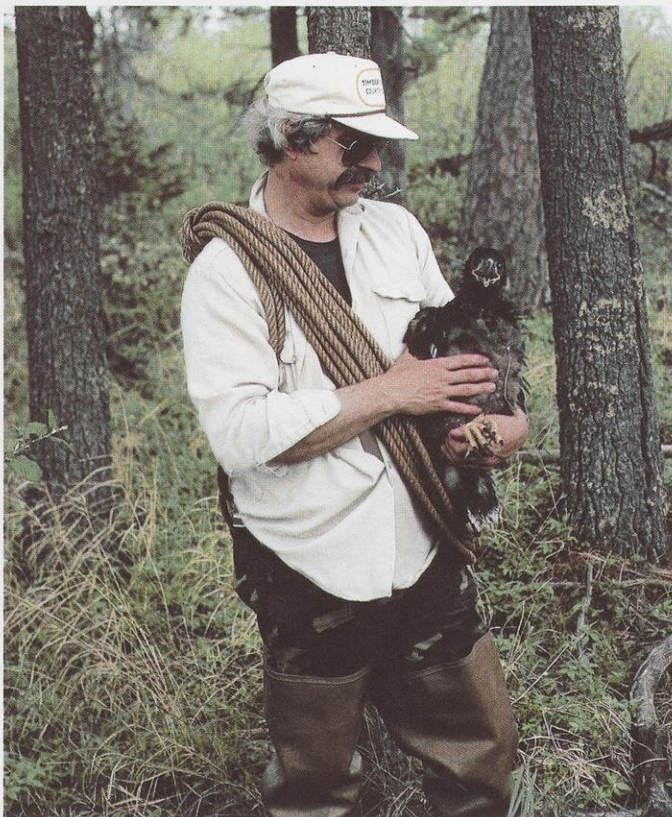
Eckstein, who has been working with eagles since 1975, says his work has taken him right into eagle nests. He has fond memories of sitting in an eagle nest 100 feet off the ground and sharing it with an eaglet as he surveyed forestland in northern Wisconsin.

DNR avian ecologist Patricia Manthey is one of a small group of wildlife specialists who conduct springtime aerial surveys to locate eagle nests and June surveys to count eaglets. "I love to watch eagles taking care of their young in the nest," Manthey says. "The female knows just the right size of morsel of fish to tear off and offer to its young." Manthey also enjoys watching chicks strengthen their muscles as they walk out on branches in preparation for their first flight. "Then, one day they just fly, and fly well," Manthey says. "The first landings, though, are often messy and can involve crash landings."

Public support

Section 6 of the Endangered Species Act provided the initial funding for eagle survey work, along with state funds from the endangered resources tax check-off. Today, Wisconsin's eagle survey program is funded primarily from sales of the endangered resources license plate, the Adopt An Eagle Nest program, and the federal Pittman-Robinson Wildlife Restoration Act Fund.

"The people of Wisconsin very directly paid for eagle recovery," says Randy Jurewicz, a staff biologist for DNR's endangered resources program. "Because of their donations over the years, we have been able to establish exactly where these nests are and that



RON ECKSTEIN

ABOVE: The effective pesticide DDT also accumulated in food chains and caused egg shell thinning in waterfowl and raptors like eagles. Following hearings in front of Wisconsin DNR examiners in 1968, DDT was declared an environmental pollutant. The chemical was banned for use in the U.S. in 1972 and raptor populations have slowly recovered since that time.

LEFT: Charles Sindelar surveyed state eagle populations in the early 1970s even before state recovery plans were developed. This eagle was sent to Missouri as part of a program to re-establish eagles across their natural range.

Remnants found in eagle nests confirm the raptors' diet. This assortment gathered from several nests contained the inedible parts of meals including northern pike jaws, mammal skulls, other bits of bone, and fishing gear.



RON ECKSTEIN

has been pivotal to recovery, because it has allowed us to contact land owners and make sure they are aware that they have eagle nests on their property."

Some communities also have played an active role in monitoring eagle recovery in Wisconsin. Jeb Barzen is a member of the Ferry Bluff Eagle Council research team, which has monitored Sauk Prairie's wintering eagle population through radio tracking and roost counts. The Sauk Prairie community has paid for research and monitoring costs for more than two decades. In the winters of 2002 and 2003, for example, 17 eagles were fitted with radio harnesses and then tracked for three winters at an eventual cost of more than \$75,000.

The data is put to good use: The U.S. Fish and Wildlife Service used eagle winter phenology data to modify their regulation of Highway 12 bridge repairs. Several town boards have incorporated eagle data from the Ferry Bluff Eagle Council in their land-use plans, and some land development projects were adjusted to accommodate eagle needs. Radio-tracking data also helped measure the impact of new diseases like West Nile virus on eagle populations.

Raptor results

After four decades of protection, on August 8, 2007, the bald eagle was officially removed from the federal list of endangered and threatened wildlife.

The nation's symbol has recovered from an all-time low of 417 nesting pairs in 1963 in the lower 48 states to an estimated high of 9,789 breeding pairs today.

"The bald eagle has rebounded from the brink of extinction to reach population levels that have not been seen [in the continental U.S.] since World War II," said U.S. Fish and Wildlife Service Director H. Dale Hall. "This success is the result of a lot of hard work on the

part of federal and state agencies, conservation organizations and individuals across the nation."

To ensure that eagles continue to thrive, the service will work with state wildlife agencies and many volunteers to monitor eagles for at least five years. Sumner Matteson, DNR avian ecologist in Madison, is working on Wisconsin's eagle transition. "Delisting the eagle hasn't lessened the need for eagle education," Matteson contends. If it appears that bald eagles again need the protection of the Endangered Species Act, the service can propose to relist the species.

The bald eagle is currently managed in Wisconsin as a "protected wild animal" under NR 10.02 (6). Bald eagles also remain federally protected under the Bald and Golden Eagle Protection Act, and under the Migratory Bird Treaty Act. The "Eagle Act" prohibits a "take" of bald eagles. "Take" is defined as pursuing, shooting, shooting at, poisoning, capturing, trapping, collecting or otherwise harming an eagle. The act also prohibits "disturbing," which means agitating or bothering an eagle to a degree that is likely to cause injury to the bird, decrease its productivity or lead it to abandon its nest.

Currently, there is no regulatory mechanism in place to permit "take" under the Eagle Act, as there was under the Endangered Species Act. Matteson says that will likely change under proposed federal rules expected to go in effect in June 2008. Once the new rules are in place, bald eagle nests can be removed if take is unavoidable and the ac-

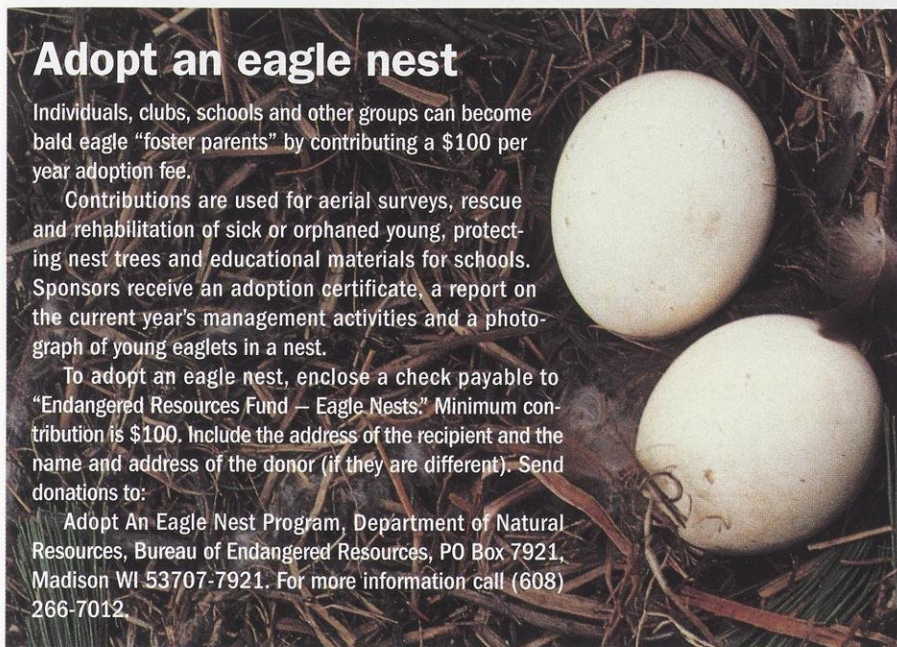
Adopt an eagle nest

Individuals, clubs, schools and other groups can become bald eagle "foster parents" by contributing a \$100 per year adoption fee.

Contributions are used for aerial surveys, rescue and rehabilitation of sick or orphaned young, protecting nest trees and educational materials for schools. Sponsors receive an adoption certificate, a report on the current year's management activities and a photograph of young eaglets in a nest.

To adopt an eagle nest, enclose a check payable to "Endangered Resources Fund - Eagle Nests." Minimum contribution is \$100. Include the address of the recipient and the name and address of the donor (if they are different). Send donations to:

Adopt An Eagle Nest Program, Department of Natural Resources, Bureau of Endangered Resources, PO Box 7921, Madison WI 53707-7921. For more information call (608) 266-7012.



RON ECKSTEIN



RON ECKSTEIN

A one-week old eaglet. Young eagles are able to fly when they are about three months old. They exercise their wings and leave the nest soon thereafter. For the next several weeks the eaglets stay near the nest site and near adults until the young birds become familiar with the area and learn how to find food.

Feathered friends

Delisting of the eagle has caused some confusion about the legality of possessing eagle feathers. For hundreds of years, Native Americans have used eagle feathers for religious and cultural purposes, including healing, marriage and naming ceremonies.

Under the "eagle feather law" (Title 50 Part 22 of the United States Code of Federal Regulations), only individuals of certifiable Native American ancestry enrolled in a federally recognized tribe are legally authorized to obtain eagle feathers.

The U.S. Fish and Wildlife Service established the National Eagle Repository at the Rocky Mountain Arsenal National Wildlife Refuge in Denver, Colo. in the early 1970s to provide Native Americans with the feathers of golden and bald eagles needed for ceremonies. Most of the dead eagles the repository receives have been salvaged by state and federal wildlife personnel.

tivity is necessary for public welfare such as safety at airports, or if the location poses a threat to the eagles themselves.

City cousins

Urban eagle populations also are popping up in Wisconsin. In April 2006, two adult bald eagles made history by building a nest atop a hardwood tree along the Milwaukee River in Mequon. The eagles are believed to be the first pair of eagles nesting in southeastern Wisconsin in more than 100 years.

For Owen Boyle, an endangered resources ecologist with the DNR in Milwaukee, the discovery was an endangered species success story. While it may no longer surprise people vacationing in northern Wisconsin to see an eagle, it is still newsworthy to see a pair take residence near Milwaukee.

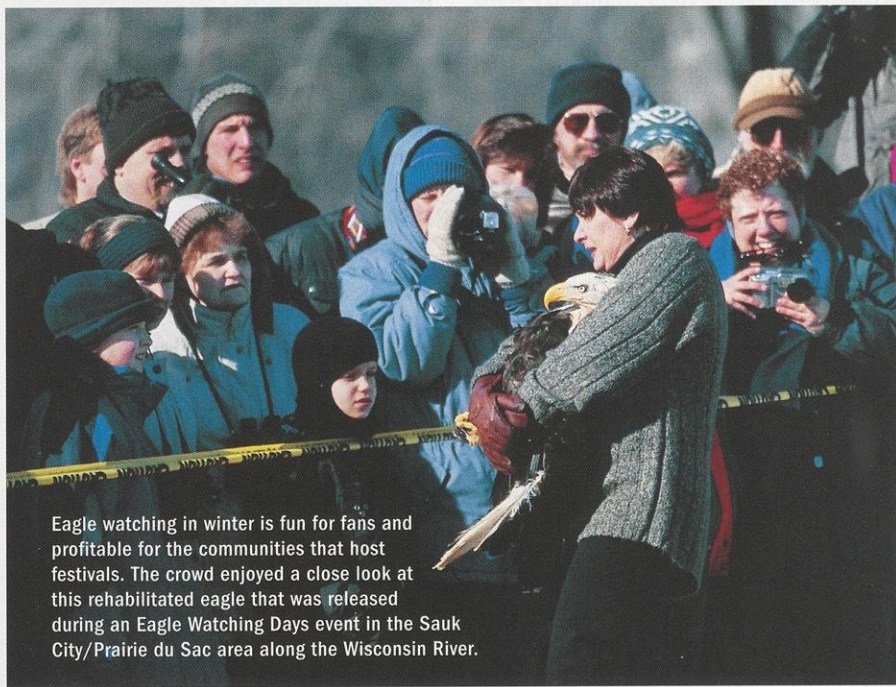
"These eagles are pioneers and have learned to live with people," Boyle says.

Sighting of another pair soon followed on Big Muskego Lake. And the DNR is investigating other unconfirmed urban eagle sightings.

"The recolonization of the eagle in Milwaukee County has been a great opportunity to raise awareness of how we can co-exist with rare species," Boyle says. "I believe eagles are here to stay in southeastern Wisconsin. It's not a coincidence that we have the first eagle nesting in the greater Milwaukee area in 100 years, the same year that the species was delisted. This is a local example of the importance and effectiveness of legislation that protects rare species."

Translocation

Other states benefit from Wisconsin's success with eagles. The first eaglet that hatches in a nest almost always survives, but chances are not very good for the eaglets that follow. Wisconsin's translocation project takes third and sometimes second eaglets from a nest



Eagle watching in winter is fun for fans and profitable for the communities that host festivals. The crowd enjoyed a close look at this rehabilitated eagle that was released during an Eagle Watching Days event in the Sauk City/Prairie du Sac area along the Wisconsin River.

RICH PHALIN

and finds them a new home.

"Nature creates a surplus," Jurewicz says. "So sending the third and sometimes second eaglet to another state does nothing to diminish the eagle population in Wisconsin."

Since 1975, 219 eaglets have been sent to six Eastern states, including the New York City region.

Permits to obtain eagles or eagle parts are issued by the service. Because of the large demand and limited supply, each applicant can apply for only one whole eagle or specific parts equivalent to one bird at a time.

Feathers or parts of bald or golden eagles and other migratory birds may not be sold, purchased, bartered or traded.

They may, however, be handed down to family members from generation to generation, or from one Native American to another for religious purposes.

Ecotourism

The large population of wintering bald eagles makes Wisconsin a premier destination for eagle watching.

Eagle-related events and activities draw tourists, and communities hosting them have lifted the state's visibility as an ecotourism and bird-watching destination. The Ferry Bluff Eagle Council conducted identical economic surveys of eagle watchers in 1994 and 2004 in the Prairie du Sac area and found that about \$1,144,000 is currently generated by visitors during a time that otherwise would be a slow tourist season for community businesses. The survey also showed that eagle tourism income had increased by \$200,000 over the past 10 years in that community.

In addition, the eagle-related events focus national media attention on Wisconsin. In the last several years, bird watching in Wisconsin has garnered national media attention from CNN, CBS *Sunday Morning*, the *Chicago Tribune*, *Audubon*, *Mother Earth News*, *UK Birdwatch*, *Midwest Airlines* magazine, Wisconsin Public Radio and the *Milwaukee Journal Sentinel*.

The road to rehabilitation

Marge Gibson's childhood fascination with birds led to a career as a raptor researcher and a wildlife rehabilitator in southern California. Today, she lives in Antigo where she directs the Raptor Education Group, Inc. With her husband Don, Gibson founded the nonprofit organization in 1990 and now takes about 600 injured birds under her wing each year, including bald eagles.

"When I was a child it was unusual to see a bald eagle in northern Wisconsin," Gibson recalls. Forty years later, she says, that has changed.

But as populations of people and eagles have increased, so has the potential for eagle injury. At one time, Gibson had 36 eagles recovering at her facility. Now she sees about 50 injured eagles annually.

One of the top reasons eagles die is motor vehicle collisions. DNR staff and volunteers recovered over 90 sick, injured or dead eagles in 2006 and the leading cause of death was collision with a vehicle. Most vehicle collisions occur when eagles scavenge car-killed deer.

Falls from nests during windstorms and environmental contaminants also make the list of threats. Diseased fish and poor water quality can reduce eagle success. About three percent of eagles necropsied each year test positive for West Nile virus.

Some eagles are shot illegally by people who dislike birds of prey. Others become tangled in fish line or six-pack plastic. Still others are electrocuted when they perch on power lines.

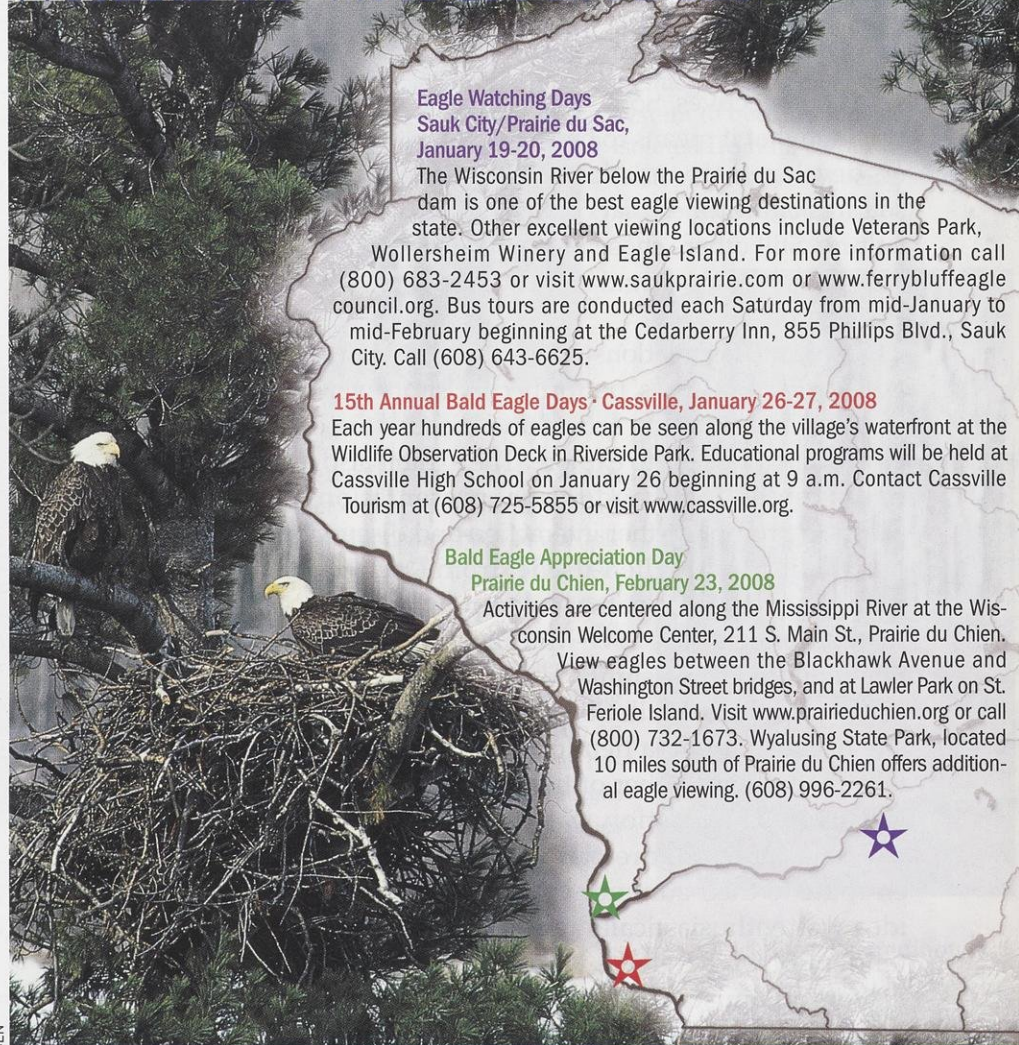
"Lead poisoning remains a big prob-

lem," Gibson says. Eagles become poisoned when they eat waterfowl or deer contaminated by lead shot. Fishing lures are another source of lead. Between 1980 and 1996, The Raptor Center at the University of Minnesota reported lead poisoning in 138 of 650 eagles they treated.

"We need to remember that eagles have done well," Gibson says. "But they have done well through their protection at the state and federal level. While their numbers have increased in Wisconsin, we need to remain diligent and cautious. We need to be sensitive to their needs and the threats that remain so that the eagle doesn't lose the ground it has gained."

Natasha Kassulke is creative products manager for Wisconsin Natural Resources.

WHERE TO WATCH EAGLES



Eagle Watching Days Sauk City/Prairie du Sac, January 19-20, 2008

The Wisconsin River below the Prairie du Sac dam is one of the best eagle viewing destinations in the state. Other excellent viewing locations include Veterans Park, Wollersheim Winery and Eagle Island. For more information call (800) 683-2453 or visit www.saukprairie.com or www.ferrybluffeaglecouncil.org. Bus tours are conducted each Saturday from mid-January to mid-February beginning at the Cedarberry Inn, 855 Phillips Blvd., Sauk City. Call (608) 643-6625.

15th Annual Bald Eagle Days • Cassville, January 26-27, 2008

Each year hundreds of eagles can be seen along the village's waterfront at the Wildlife Observation Deck in Riverside Park. Educational programs will be held at Cassville High School on January 26 beginning at 9 a.m. Contact Cassville Tourism at (608) 725-5855 or visit www.cassville.org.

Bald Eagle Appreciation Day Prairie du Chien, February 23, 2008

Activities are centered along the Mississippi River at the Wisconsin Welcome Center, 211 S. Main St., Prairie du Chien. View eagles between the Blackhawk Avenue and Washington Street bridges, and at Lawler Park on St. Feriole Island. Visit www.prairieduchien.org or call (800) 732-1673. Wyalusing State Park, located 10 miles south of Prairie du Chien offers additional eagle viewing. (608) 996-2261.

To make an eagle mobile: Visit www.dnr.wi.gov/eeek/cool/eaglemobile.htm

SCOTT NIELSEN

THE NATURE OF ART & SCIENCE

TWO EXHIBITS PROVIDE A FRESH PERSPECTIVE ON HABIT AND CLIMATE CHANGE.

David L. Sperling

Science and art each have a place in helping us see, appreciate and think about the natural world. Participants in recent exhibits around the state used two different approaches to envision the changing forces affecting our forests and climate.

"Forest Art in Wisconsin," a three-week outdoor art exhibit held on a 1.5-mile portion of the Raven Trail in the Northern Highland American Legion State Forest, aimed to put a visible, tangible face on what constitutes change in northern forests.

The 28 artists participating in the project viewed change from "native" and "invasive" perspectives. Some looked at ecological themes, interpreting what it means to be an invasive plant or animal. Others developed artwork that showed socially invasive ideas — settings or attitudes that challenged traditional Northwoods culture. Still others chose ideas that intentionally seemed out of place in the forest and were artistically invasive to the natural setting.

As the art installations were set up and later dismantled (or, in some cases, performed), visitors were encouraged to chat with the artists and discuss the concepts each artist intended to explore. The exhibit also featured daily guided tours and formal presentations by the artists to prompt further interaction and discussion.

Exhibit curator Ute Ritschel from Darmstadt, Germany just ended a semester appointment as artist-in-residence at the UW-Madison Art Department. She mounted three similar outdoor art exhibits before setting up this installation. She chose the Raven Trail site because it had a hemlock forest, bog and nearby lake that reminded her of the forests near her home in Germany. The location was convenient for northern residents, and also drew an interesting mix of visitors en route to their summer vacations. It also helped that the idea was enthusiastically received by DNR Forest Superintendent Steve Petersen, who saw an opportunity to offer visitors an unusual experience on the scenic trail.

All the installations stimulated thought, and several pieces in particular caught my fancy:

Jennifer Angus' *BIG BLUE BUGS BLEED BLUE BLACK BLOOD* featured a horde of colorful, fanciful bugs created out of fabric. The army of interlocked beetles marching in lock-step over a long downed log truly gave the impression of an alien invasion in the woodland setting. Angus is an associate professor of Textile Design at UW-Madison.



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Brenda Baker and Henry Drewal's *HOME DIVIDED* used a large wooden nest as a metaphor for warmth and safe shelter. Then they divided the nest with a fence to symbolize the prejudices and social barriers that segregate many peoples who have come to America as refugees seeking a better, more secure life. Baker is exhibits curator at the Madison Children's Museum and Drewal is an art history professor who specializes in studying dispersed African cultures.



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Wolfgang Folmer took a 25-foot basswood trunk, debarked it, planed it smooth, dyed it black and carved narrow tracks into the white wood below to simulate bark beetle trails. His piece *STAMM-BILDER-WEG* produced some beautiful designs reminiscent of horizontal totems or African designs that tell a story as one moves along the trunk. Folmer is an assistant professor of graphics at Haller Akademie in Germany.



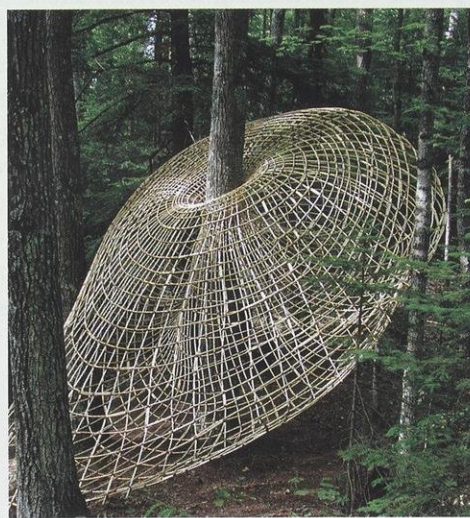
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In *PLENTY*, sculptors Aris Georgiades and Gail Simpson turned the tables on invasive forces in the forest environment. Wooden chain-saws anchored to the forest floor and suspended from tree branches in the forest canopy were coated in a mix of bird seed and suet, giving birds, insects and small mammals the chance to consume and ingest one of the tools of forest habitat change.



KIRSTEN HELD

Jens J. Meyer, from Essen and Hamburg, Germany, used elastic fabric to sculpt the fury and whirling motion of a *TORNADO* in the forest. The swirling, spiraling orbit of the fabric pieces lay in sharp contrast to the peaceful, quiet feeling one got by standing in the center at the eye of the sculptural "storm."



KIRSTEN HELD

Edgardo Madanes of Argentina chose one tree along the Raven Trail and surrounded it with a flowing network of willow wicker in his piece *CHOOSE*. He aimed to give a sense of what it means for an integrated member of a natural system to become separated and isolated from its community — a fresh perspective on being seen as stranger in a strange land.



KIRSTEN HELD

In a bit of urbane reflection, artist Mark Nelson whipped up another example of conceptual art that commented on relationships between people and their environment. In *WHITE COLLAR WOODS*, he wrapped a huge starched, pressed sleeve of a white dress shirt with French cuffs around a growing tree to display his concern that the gentrification of the Northwoods is grafting formality, wealth and class differences onto an older cultural system. In his view, the region has become a recreation magnet for wealthy retirees who change the social dynamic in communities that formerly relied on lakes and woods to sustain the traditional economy.



NOIXGA is a Ho-Chunk word for the black ash tree, which the tribe traditionally cuts into long sheaths or splints for weaving baskets. Artist Tom Jones, a photography professor at UW-Madison, wove basket parts, housing and tribal photos together to bridge past tribal traditions to life in the present — an age in which the emerald ash borer threatens this staple of the natural and cultural forest community for the Ho-Chunk people.

To see photos of each installation, visit www.waldkunst.com/2007/ and click on "catalog."

CLIMATE CHANGE: SEEING THE INVISIBLE, GRASPING THE UNTOUCHABLE

The second partnership using artistic expression to shed light on science and engage community discussion is a traveling art exhibit entitled "Paradise Lost? Artists on Climate Change in the Northwoods." The exhibit began touring the state in February 2007 and will run through March 2008.

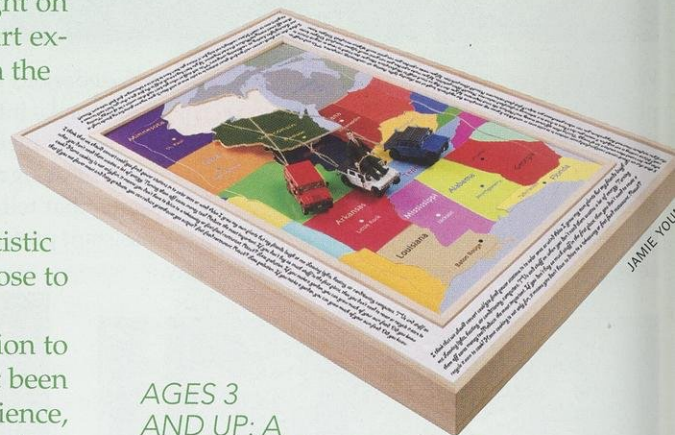
The project began when 20 artists, six educators and seven scientists received a grant to come together in spring 2006 to talk about the nature of climate change and to consider how artistic approaches might interest the public in examining its effects close to home.

As Northwoods naturalist John Bates noted in his introduction to the exhibit: "The science on climate change alone clearly hasn't been enough to tip us into action. Many people simply don't trust science, or scientists. Humans tend to like things black and white, and since science is a continual search for truths that are always evolving and being reinterpreted, the average person is left with a slippery slope to navigate. What statistical studies should I believe? How can I evaluate the scientific data...? Whose interpretation of the studies is closest to the truth... and who are you going to trust?"

The scientists — a climatologist, soil scientist, limnologist, bog ecologist, forest ecologist and geographer — as well as an Ojibwe elder and a community organizer shared three days of discussion as the 20 painters, sculptors, poets and musicians mulled over how art might help nonscientific audiences reflect on climate change.

Bates said that in grappling with the issues, "we talked about the exhibit itself, how it could potentially be interactive, and how attendees and the community at large could contribute." Sometimes the group relied on scientific metaphors — a compass that points out directions and lays out alternative paths, a gyroscope spinning ideas, ethics and actions in a political and cultural debate to ultimately lead to some accepted view.

Through visiting the exhibit and participating in the discussions in each community where the exhibit is being mounted, the participants hope that the visual ideas, poems and artistic pieces will prompt visitors to explore climate change issues on their own. Here are some of the pieces I enjoyed, and portions of the artists' statements about their work:



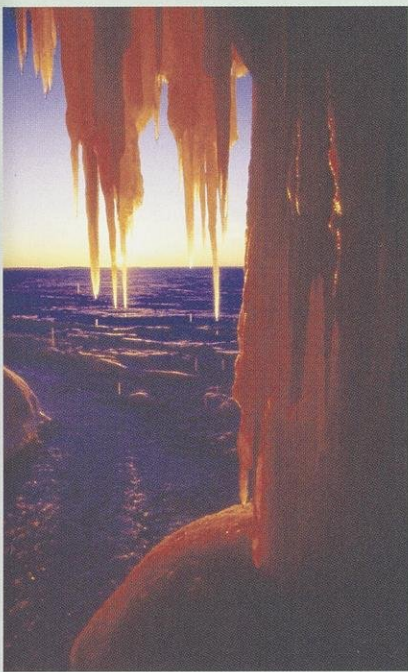
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AND UP: A
PUZZLE FOR OUR CHILDREN —

Climate change is a long-term problem with no easy answers. "Our children and grandchildren will have to put the puzzle back together as we continue to pull the pieces farther away from where they go," said artist Jamie Young. "After learning that global warming predicts Wisconsin will likely have the same climate Arkansas has now, I couldn't get the idea out of my mind."



BONNIE PETERSON

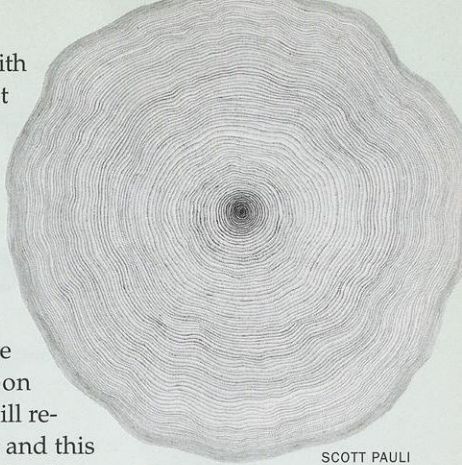




JEFF RICHTER

FEBRUARY 200? — “Just to the north of me lies a superior lake,” said photographer Jeff Richter. “I’ve been observing and photographing its splendor for 30 years. Something has changed....Three images in the exhibit show the extent of ice from February 1995 to February 2005. This last image portrays what I imagine a future February might look like. We know fossil fuels are going to run out in the near future. We suspect we’re doing significant harm to the planet by burning fossil fuels and we know renewable resources are the best long-term solution. What are we waiting for? What are we waiting for?”

GENERATIONS — With pencil on paper, artist Scott Pauli drew a cross-section of a tree trunk whose rings are a natural symbol representing 100 years of growth of a Northwoods red pine. Why 100? Because it represents the average time that a ton of carbon dioxide once released will remain in the atmosphere and this species is one that would only survive farther north as average temperatures rise. “I thought of how every ring affected the next and the form that sometimes seemed like a spider’s web, a satellite view of a storm, an overhead look at waves, a fingerprint,” said Pauli. “I thought about the words of Ojibwe elder Frank Montano and the great power of the circle in nature. As this exhibition moves from place to place, I envision its circles of influence will grow, just like the drawing.”



SCOTT PAULI



JOHN GLAESER

BOG PALUDARIUM — A paludarium is an aquarium/terrarium combination that simulates an ecosystem where the organisms under study require both water and land to survive. John Glaeser compiled a paludarium to simulate northern bog environments. The small realm on display here requires lots of care to sustain the mini-world of wet and dry — daily misting to simulate morning dew, weekly watering, manipulated light and occasional plant pruning. Bog plants and habitat can be fussy, and that’s just the point the exhibit makes for visitors: many habitats are fragile, and climate change will change what can survive in a particular location. It’s a big lesson to appreciate in a microcosm of a desktop display.

Bonnie Peterson’s **IT’S JUST MATH** — This graph depicting 400,000 years of carbon dioxide concentrations is woven together with a mix of photographs, embroidery, silk, velvet and brocade. The central design is surrounded with map fragments, photos from winter explorations in the Lake Superior region and a vision of the ozone hole over Antarctica. Explanations of how carbon dioxide levels are estimated over hundreds of thousands of years are stitched into the orange and pink silks.


In Wisconsin, “Paradise Lost” has toured Rhinelander, Ashland and Manitowish Waters; in Michigan, the exhibit also traveled to Ironwood and Calumet. It’s currently available for public viewing at the Leigh Yawkey Woodson Gallery in Wausau and will end its run in Madison and Minneapolis in spring 2008. Teachers and groups that want to schedule an event in conjunction with the exhibit can contact Dolly Ledin, (608) 222-4865, daledin@wisc.edu or Terry Daulton, (715) 476-3530, tdaulton@centurytel.net. Visit www.wisc.edu/cbe/K12/PDF/paradise_lost.pdf to view an online catalog of the exhibit.

David L. Sperling edits Wisconsin Natural Resources magazine.

A group of scientists, artists, community educators and musicians shared insights about climate change in northern Wisconsin to get creative ideas flowing. The music created for the exhibition and a documentary film about the project will be posted at: www.wisc.edu/cbe/K12/paradiselost.html

JAMIE YOUNG





THE View WE PRIZE

FROM LAND AND WATER

Rules, incentives and awards protect both individual and collective rights to shorelands.

Gregg Breese and Kathi Kramasz

Anyone who has ever spent time along one of Wisconsin's crystal clear lakes or gurgling streams has had a shoreland experience. Whether you are a canoeist who has floated with the current of the hard-working Wisconsin River, a trouterman who has cast flies beneath an overhanging bank, a state park visitor who has cooled off at a beach, or a walker who has spent a few reflective minutes gazing at the calming waves of Lake Michigan, you appreciate how shorelines enrich our lives.

Restoring natural vegetation along the shore looks great, preserves your privacy, and provides refuge for fish and wildlife. It also keeps the soil on your land and promotes clean water along the shoreline, like this parcel on Long Lake in Washburn County.

The Public Trust Doctrine, a body of law that dates back to the time when Wisconsin was part of the Northwest Territory, holds the waters of this state in trust for all the people and forever free. Case law from the past 160 years designated the state as keeper of that trust with the responsibility to protect those public rights. So how does the Department of Natural Resources bring together the collective shoreline experiences of past and present generations to ensure their future enjoyment? Education, experience and regulation.

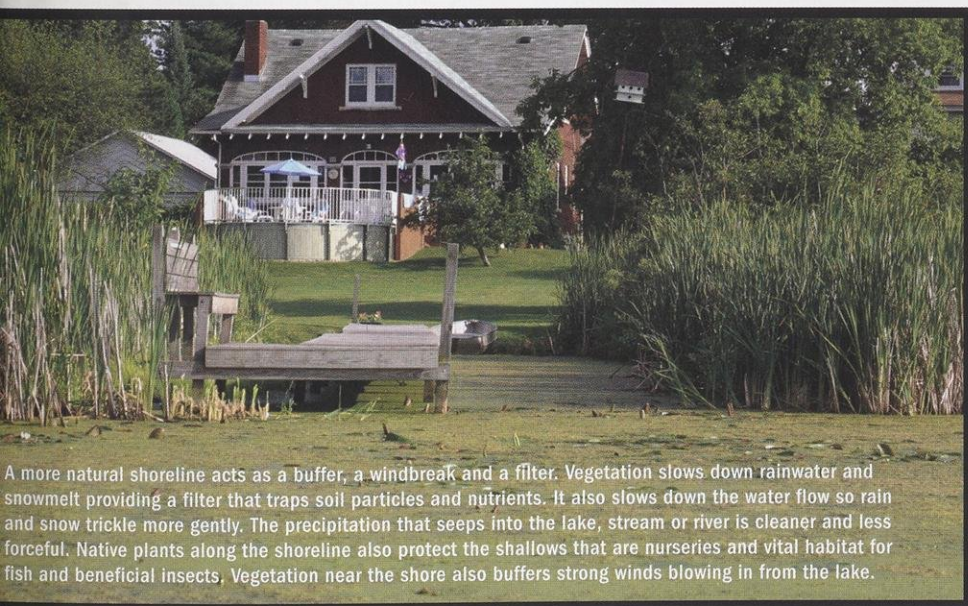
river, stream or floodplain.

Most of these county ordinances were adopted in the early 1960s, but the nature of lakeshore development has changed dramatically since that time. Many small cottages and old fishing resorts have been torn down and replaced with larger year-round houses, townhouses and condominiums. Shorelines that were once unreachable by car are now within an easy day's drive and are part of scenic driving tours. In many parts of the state, lakeshores are being redeveloped as new subdivisions are being planned adjacent

have been a continuing concern. Septic wastes from these cottages can drain right into the water. Erosion right along the shoreline is hard to slow down and there is both physical noise and visual "noise" from allowing development right to the water's edge. That's why zoning rules require a certain setback from the shoreline. In the past, zoning restricted how much these small cottages could be modified or improved, but the homeowners who bought those cottages as fixer-uppers with dreams of building a much more substantial lakeside home didn't care for that restrictive approach. Rather than proscribing what improvements can or can't be made to buildings and boat houses that were built before ordinances were enacted, the public said build a set of rules that ensures we achieve the environmental quality we want to maintain at the water's edge.

Clearly, some of those old, aging structures that are simply built too close to the shore will have to go and larger buildings that replace them will have to be built back much farther from the shoreline. In developing these new rules, DNR staff turned to the emerging science of stormwater runoff management to figure out how to incorporate new ideas to minimize the consequences of nearshore development. It says to the shoreland property owner, if you can figure out how to limit pollution, maintain the biological values of the shoreline, and keep the look of the shoreline unobtrusive and attractive, we can consider more leeway in how you decide to achieve those goals.

The new code would limit the percent of "impervious surface"—roads, paved areas and other drainage over compacted soil where water quickly flows across the land without filtering out nutrients, sediments and pollutants that otherwise quickly flow into the public waters. If a property owner wants to exceed that percent, they have to take steps to offset those conditions. "Mitigation" might include removing a concrete patio, installing a rain garden or creating a vegetated buffer along a portion of shoreline. Many property owners have the mistaken belief that they will have to stop mowing existing lawns. Mitigation will



A more natural shoreline acts as a buffer, a windbreak and a filter. Vegetation slows down rainwater and snowmelt providing a filter that traps soil particles and nutrients. It also slows down the water flow so rain and snow trickle more gently. The precipitation that seeps into the lake, stream or river is cleaner and less forceful. Native plants along the shoreline also protect the shallows that are nurseries and vital habitat for fish and beneficial insects. Vegetation near the shore also buffers strong winds blowing in from the lake.

ROBERT KORTH

State laws require DNR approvals and local review of proposed development at the water's edge. Permits are required to ensure proposed projects don't supersede the greater public rights to a water body. Polluted runoff, removing vegetation and increasing impervious surfaces on the landward side of the shoreline all degrade quality habitat. So the state legislature created rules and a public trust partnership with counties. The counties can then empower local agencies to regulate zoning and land development. The state establishes minimum standards and assists counties in carrying out those programs. Each county has a set of shoreland zoning ordinances that requires permits before altering shoreland within 1,000 feet of a lake, stream or flowage, or within 300 feet of a

to rivers and streams. About seven years ago, DNR lakes specialists and community zoning officials decided it was time to bring the codes up to date by revising development rules.

In seeking participation from a wide variety of users, the DNR formed a Citizen Advisory Committee to identify outdated parts of the shoreland rules. The committee's hard work resulted in a draft that was reviewed at public hearings in 2005. Thousands of comments resulted in substantive changes and new ideas for how to make the rule more equitable. A second round of public hearings was held this summer.

So-called "non-conforming structures," like old cottages that were built much too close to the shoreline in the days before any rules were put in place,

Landscape plans on paper can help you visualize the look, value and privacy that native plantings can bring. The DNR Shoreland Team can provide information and contacts to booklets, people and firms near your home who have experience in restoring the shore.



CARMEN WAGNER

Volunteers help restore a stretch of shoreland on Lake Delavan. A "biolog" is anchored at the shore to protect the bank and trap sediment from sloughing off the land. The fiber roll is composed of coconut husk or excelsior fibers bound with coconut fiber, jute twine or plastic netting. Cuttings or sets are planted into or behind the coir rolls. By the time the "log" decomposes in six to 10 years vegetation has stabilized into a natural-looking shoreline.

offer many different options and will only be required if the property owner proposes to change properties in ways that exceed accepted levels.

Other changes in the new rule include proposed limits on the height of shoreland building to protect natural scenic beauty when viewed from the water. Several sections of the new rule clarify and define practices that counties have enforced for years under old codes, such as limits to tree and shrub cutting along the shoreline.

But the state's rules administered by the Department of Natural Resources will do more than just regulate shoreland property owners. We want to foster education and remind people why it is important to protect these fantastic areas. "We also want to recognize those shoreland stewards who are clearly going above and beyond just 'rules' to truly making a difference and improving the shore," said Shore-

Shoreland plantings make fun family projects and satisfying community service work that quickly grow into long-lasting lakeshore improvements.

CARMEN WAGNER

land Team Manager Gregg Breese. Beginning in 2008, a Shoreland Stewardship Award program will ask property owners, lakes groups, government agents and neighbors to recognize and commend outstanding examples of shoreland protection. The nomination form includes a rating scale to note the practices shoreline property owners are taking to protect the nearshore area. Points are awarded for installing rain gardens, improving natural shorelines and other rehabilitation. Nominations will be due by December 31 each year. Applications, including photos of the nominated properties, will be reviewed, and winning property managers will receive plaques. Several other nominees will receive honorable mention awards and certificates. Nomination forms are available at the DNR website www.dnr.wi.gov/org/water/wm/dsfm/shore.

land Team Manager Gregg Breese.

During the rules hearings and revisions, Breese heard a lot of good stories from DNR staff, lake groups, wetland volunteers and others about their passion for the shoreline and life-altering experiences that happened on lakeshores, riverbanks and stream sides. To share those compelling moments, Breese started collecting the stories he heard. Those narratives from grandparents and children with tales of fish and birds, memories that were funny or romantic, all showed how people feel about Wisconsin's lakes and rivers. They are collected in *Stories From the Shore* a new DNR publication that includes short stories, poems, Native American lore and other tales combined with some basic science and "quick clips" — fast facts about shoreland resources. Authors include DNR staff, shoreline property owners,

shoreline property visitors and other friends. Their tales are organized in three sections — The Land, The Shoreline and The Water. Each section begins with a story and a page listing various plants, animals, bugs and other resources found in that area. Readers will enjoy everything from poetry about New England asters, to a writer's account of a bluff hike on the mighty Mississippi, to a muskrat legend, and even a recipe for coot stew. "We wanted memories to come alive rather than assign topics," Breese said. The book includes a poem about a northern pike and a mosquito, and a Menominee legend about giant reed grass as well as original artwork contributed by students from Watertown High School, pen and ink drawings from a DNR staffer, photos by amateurs and professionals alike, cartoon drawings and graphics. Photoshop art done by the graphic designer brings the shoreline to life.

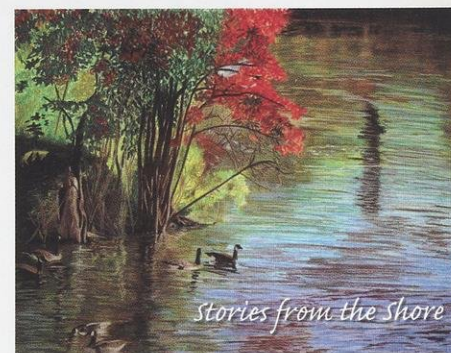
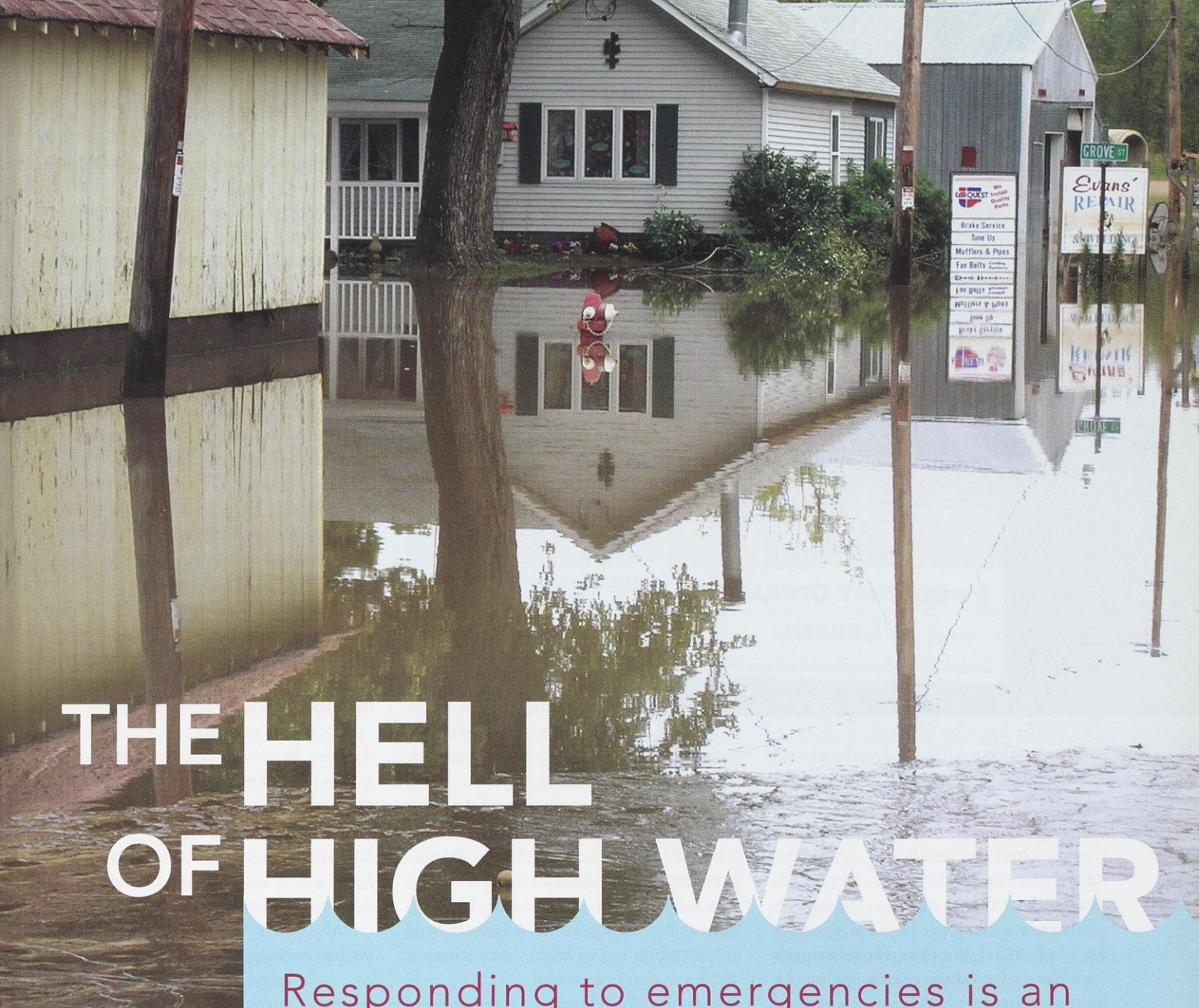


Illustration by DAN BARTLETTE

Stories From the Shore is available online at dnr.wi.gov/org/water/wm/dsfm/shore. Cost: \$10. It reemphasizes the values Wisconsin people want to sustain along with the look and quality of their shorelines.

Gregg Breese is shoreland team leader for DNR's Watershed Management program in Madison. Kathi Kramasz is a water regulation and zoning specialist at DNR's office in Plymouth.



THE HELL OF HIGH WATER

Responding to emergencies is an unseen service until disaster strikes.

Natural disasters each inflict their own devastating pain. Blizzards bring blinding snow, bitter cold and bad driving. Fires scorch the landscape and can burn out homes and communities in a heartbeat. Tornadoes and downbursts barrel through small areas with unbelievable ferocity and destruction. But those are the quick ones. Flooding and drought are usually as much psychological battles as physical loss. Flash floods can wash out hillsides and ravines in an instant, raise rivers and overwhelm dams. Or continual rain can slowly seep into low-lying areas as saturated soils mix with surface water and rising groundwater to bubble into basements. They do their agonizing work hour upon hour and day upon unending day. They test our endurance, cause sleepless nights and lots of silent prayers.

*Kristin N. Turner,
Natasha Kassulke,
David L. Sperling*

Downtown Gays Mills, August 22, 2007. Note partially submerged fire hydrant. Others were totally submerged but the community drinking water supply remained sealed, pressurized and safe. DNR staff worked with local plant operators to regularly check that water supplies were still bacteriologically safe despite flooding conditions.



Diane Kleiboer supervises disaster resources for Wisconsin Emergency Management, coordinating statewide assistance when local communities need help responding to natural disasters like floods, tornadoes and fires as well as man-made disasters like spills and explosions.

During a tour, she explains that on the weekend of August 18, this room, the Emergency Operations Center, was filled and bustling with staff from Wisconsin Emergency Management, the Governor's Office and every state agency, typing at computer stations, talking on cell phones and land lines — sometimes at the same time — watching TV news, listening to radios, sharing

strategies in and out of conference rooms, and reviewing floodplain maps.

"The phones were ringing off the hook and things were going at a feverish pitch," Kleiboer recalls, pointing to remnant maps on the walls showing road closures, agrichemical sites and flooding from that wild weekend. A Department of Transportation webcam is still running displaying an uneventful stream of traffic. Hanging projectors are set to display PowerPoint presentations during the next disaster. Fax machines, phone banks and a conference room stand ready, too. Other communications equipment includes the National Warning System that shares alerts of severe weather.

And, near the door, the always important coffee maker and refrigerator.

"During a disaster response, the adrenaline gets going and we need plenty of coffee," she says. Then the center is staffed 24/7 for days. It's hectic at times, but Kleiboer smiles and says she loves her job because she knows that she is there

when people need her the most.

Wisconsin Emergency Management (WEM) specializes in hazard mitigation, warning and communications, coordinating emergency police services, emergency fire services, disaster response and recovery, hazardous materials, radiological (nuclear) emergency preparedness and training.

Kleiboer has worked for WEM for 32 years and has seen it all, from the severe floods in southwest Wisconsin this summer to the Stoughton tornado of 2005. Wisconsin is vulnerable to a variety of disasters. On average, the state experiences 21 tornado touchdowns a year. According to WEM, disaster-related damages in Wisconsin totaled nearly \$3 billion in the last three decades.

Kleiboer's office one floor above the Emergency Operations Center is filled with three-ring binders with labels like "State of Wisconsin Hazard Mitigation Plan," and filing cabinets containing decades of disaster situation reports.

Her list of contacts is extensive. In a disaster, WEM musters help from Military Affairs, Department of Transportation and State Patrol, Wisconsin Department of Health and Family Services, Department of Natural Resources, Department of Corrections, Department of Workforce Development, Public Service Commission, UW-Extension and Department of Agriculture, Trade and Consumer Protection: all aimed at supporting local governments and local communities in need.

Kleiboer says state response planning is often shaped by national events. In the 1950s the emphasis was on the Cold War followed by nuclear power in the 1970s, the Bhopal gas leak disaster in India in the 1980s, and more recently, September 11, 2001.

For instance, a national program dubbed "BioWatch" reacted to the anthrax mailings

of 2001 to increase awareness and surveillance for airborne biological pathogens. The federal Department of Homeland Security set up partnerships with state, local and tribal environmental and health agencies to maintain a nationwide

**"It's important to
have partnerships
and trust in
place before a
disaster strikes."**

— Diane Kleiboer

For residents of both southern and northern Wisconsin, last summer's odd weather seemed like a continual test of biblical proportions — sustained drought that parched the north, and unending rains that soaked and swamped the southwest and southern counties. Though we suffer individual loss, these emergencies tend to pull neighbors and communities together, first to stave off the onslaught, then to recover from collective loss. And more often than not, people show their best when conditions are their worst. So too with the various government agencies that plan for disaster. Their day-to-day work involves mundane tasks like surveying elevations, engineering berms, inspecting roadways, erecting communication towers and simulating emergency exercises, but when disaster strikes, they muster their forces to provide services when citizens need them most. They can do it efficiently because they plan for those horrible moments.

The nerve center for disaster relief looked different last August. But today, Diane Kleiboer, disaster resources section supervisor for Wisconsin Emergency Management, finds Room 102 of the Military Affairs building on Madison's east side deserted. Quiet.

LARRY SOMMERS

system of air monitors to routinely sample the air near urban areas for the presence and spread of biological agents. The BioWatch system provides early warning to trained first-responder teams nationwide who can react quickly in the event of a mass pathogen release. The program also provides training to local health departments and stockpiles reserves of millions of doses of life-saving medicines if people are exposed to biological or chemical threats.

Following Hurricane Katrina in September 2005, Governor Doyle ordered the state to review its emergency plans. In an October 2005 report, "Review of Wisconsin's Emergency Preparedness Plans," the state reported that most cities and counties in Wisconsin were prepared to respond to small, typical disasters but were not prepared to respond to a large scale catastrophic event.

Since then, emergency officials have worked to identify evacuation routes, mass transportation options and shelters, and have addressed special population needs.

Kleiboer says part of the program's success in handling the August floods was a training program that provided first responders, volunteers, elected officials, emergency managers and others the skills and contact information they need in an emergency response.

"It's important to have partnerships

The incredible force of rushing water bullied fields, homes and roads alike. As record rains continued and rivers swelled, Knapp Creek overflowed State Highway 60 in Richland County eroding and scouring out the highway and embankment.

WISCONSIN DEPARTMENT OF TRANSPORTATION



and trust in place before a disaster strikes," Kleiboer says.

In the event of a real emergency, response and rescue begins at a local level.

"Local response starts right away, and we move fast after a disaster, but don't expect the state emergency system can be there [immediately]," Kleiboer says. "You and your family have to be able to support yourselves for 72 hours. But Wisconsin can be proud. We see a lot of citizens helping citizens." State disaster services train local responders and partner with Voluntary Organizations Active in Disaster (VOAD) who

are often on-scene to support emergency responders. These groups, including the Salvation Army, American Red Cross, humane societies, civic and faith-based groups, often come into a community post-disaster to handle donations and organize volunteers.

Once the community, town or county is able to step in, an Emergency Operations Center is established locally as a central location for briefings and to share information.

Kleiboer recalls that on August 18 the WEM duty officer started getting calls from the southwest part of the state about flooding and the calls picked up into the night. The senior WEM duty officer was called in by 4 a.m. and that morning the Emergency Operations Center in Madison was activated.

"We knew this storm event had escalated to a severe situation and we called in our key agencies," Kleiboer says. "The Department of Corrections had incredible resources — equipment and inmates to help do the work that needed to get done." Health and Family Services offered well testing kits, tetanus shots and mental health counseling. Transportation assisted in road closings. DNR was monitoring dam safety, municipal drinking water supplies and wastewater treatment systems.

Response happened quickly. Communities are required by the Federal Emergency Management Agency (FEMA) to assess and compile damage

Along State Highway 35 just five miles south of La Crosse a mudslide pushed this house off its foundation and onto the roadway. The steep coulees and valleys in southwestern Wisconsin were especially hard hit by unending torrents of rainwater last August.



ALLAN JOHNSON

The big ones

Recent disasters that warranted emergency response in Wisconsin

Siren tornado June 18-19, 2001

Three people die and 16 are injured as a tornado with 150 to 206 mph winds cuts through Burnett and Washburn counties damaging 200 homes.

Ladysmith tornado Sept. 2, 2002

Forty people injured, 150 buildings destroyed and a 64-block area of this Rusk County town is leveled by a tornado causing \$20 million in damages.

Cottonville fire May 5, 2005

Smoldering embers from a campfire spark a 3,400-acre blaze, the biggest in Wisconsin in 25 years, that burns a six-mile stretch, damaging 30 homes and 60 outbuildings.

Stoughton tornado Aug. 18, 2005

A tornado with up to 200 mph winds cuts through a 10-mile area north of Stoughton in southeastern Dane County, killing one and causing \$44 million in damage; one of a record 27 tornadoes recorded in Wisconsin that day.

Flooding in southeastern Wisconsin Sept. 12, 2006

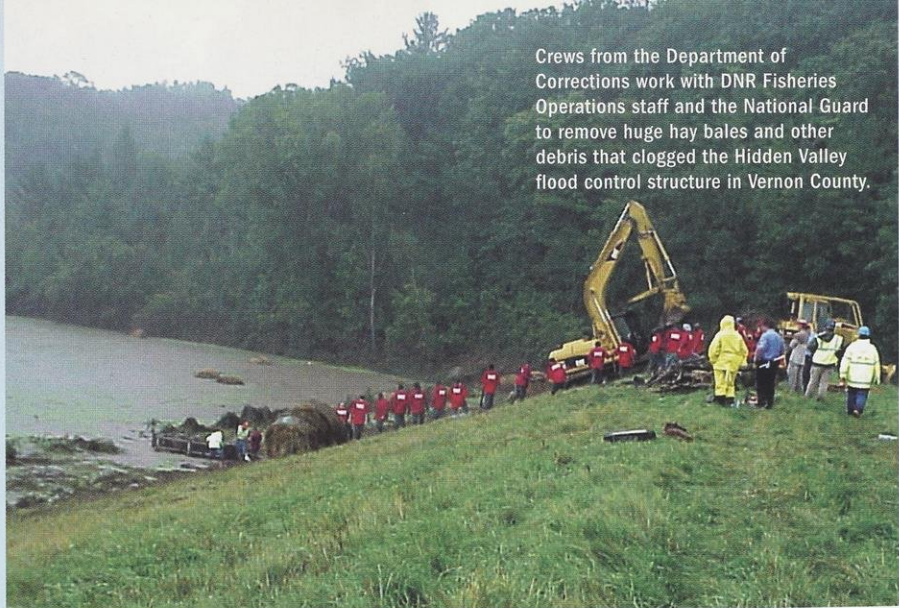
Heavy rains cause flash floods that rip through Jefferson County southeast through Kenosha County and into Illinois, causing extensive flooding.

Falk Company explosion Dec. 6, 2006

Three die and 46 are injured in a morning explosion at a downtown Milwaukee manufacturer, warranting response from five fire companies.

WR&R fire June 22, 2007

A massive fire at a chemical recycling/disposal plant in Eau Claire warrants evacuating a half-mile radius around the plant to avoid the risk of inhaling chemicals released to the air.



Crews from the Department of Corrections work with DNR Fisheries Operations staff and the National Guard to remove huge hay bales and other debris that clogged the Hidden Valley flood control structure in Vernon County.

PHOTO COURTESY OF DAVE VETRANO

reports within 24 hours of a disaster. In addition to summarizing emergency care, these reports estimate how many homes were destroyed or damaged along with an estimated dollar value of damage and amount covered by insurance. The same information is tallied to provide a picture of losses to business, agriculture and public works such as road systems and public utilities.

The Emergency Operations Center brings state agencies together. WEM uses computer software to post all significant events to a site that keeps first responders and state agencies apprised. Public affairs staff compile and send situation reports to legislators, congressional delegates, state agency secretaries and the Governor's Office. Regional WEM directors are sent into the field to assist the counties in identifying resources needed to accomplish critical missions.

"Every agency has a critical role," Kleiboer says. "Local communities know that in a disaster the state will come in to support them, but we don't take over. We are there to meet their needs but not to step on their feet."

By Sunday, August 19, FEMA representatives from the regional office in Chicago were on site assessing damage to begin providing public and individual assistance. Within days a disaster declaration led to quickly opening field offices to handle emergency claims. If homes located in a floodway are damaged 50 percent or more of their equalized value, the property deeds subsequently carry restrictions to prevent future rebuilding on those sites. The local government then receives mitiga-

tion funds to buy out the homeowners (75 percent federal funds, 25 percent state and local funds).

Hazard mitigation is an important WEM mission. Buying properties, engineering solutions and zoning reduce the likelihood of serious impacts in the future. Another lesson for homeowners is to get flood insurance if they live in a floodplain. While many homeowner policies cover wind damage, most people lack flood insurance that can prevent their physical losses from becoming personal financial disasters as well.

How DNR's structure brings quicker response

Natural resource emergencies really show the advantages of having a mix of biologists, foresters, environmental specialists and law enforcement personnel in one agency. At least 1,200 DNR personnel are potential first responders, including spills coordinators, drinking water engineers, wastewater engineers, hazardous waste management specialists, air management engineers, conservation wardens, foresters for fire suppression, dam safety engineers, parks crews, fisheries crews and wildlife management operations crews.

Each of DNR's five regions has a spill coordinator, backup and additional staff who are cross-trained to respond to spills on land or water, and those released to the air. The spill teams train with local hazardous materials (hazmat) teams, firefighters, police and their contractors to quickly contain and recover spilled materials.

ONE WARDEN'S WET WEEK

Vernon County Conservation Warden Shawna Stringham knows firsthand the trauma people experienced during summer flooding in southwest Wisconsin.

Warden Stringham spent the night of August 17 patrolling the county with a Vernon County deputy. It was raining and they were warning campers to move to higher ground. Stringham says when she finally got home about 3 a.m., her phone rang. This time, the flooding had become severe and she was needed to help rescue people trapped on a bus in Chaseburg.

Stringham got her boat and hip waders and went to work.

On Highway 35 she saw a home that came down in a mudslide — while a woman was sleeping inside. Bridges were washed out. A train derailed. The rain kept coming. It was dark. Because the roads were closed and one family couldn't get to the hospital, their baby was born in the Stoddard Fire Department that night.

"The rescues that night were joint attempts by the Stoddard Fire Department, the Vernon County Sheriff's Department and local people who came out to bring us coffee," Stringham recalls. Besides boats, rescuers used ATVs and four-wheel-drive utility vehicles to gain access to homes and vehicles that were unreachable by truck or car.

"We put in a lot of hours and some of our homes were flooded or without electricity, but we couldn't go home knowing that we were dealing with people who had no food, who lost their homes and who had nothing left," Stringham recalls. "The whole county was in turmoil and everybody was busy."

In the hours and days that followed disaster, the crowds came — gawkers and media. Stringham's role shifted to managing crowds, traffic and maintaining security at dam sites. Working with the Viroqua Fire Department she cleaned inlet tubes that were full of storm debris to relieve pressure on area dikes.

Stringham says she is thankful for the incident command training she had received on the job and for the resources she has to share — a boat, a truck, a radio for communications. She appreciated the calls from other wardens around the state offering help.



Boating safety patrols along the Mississippi River give DNR Conservation Wardens Shawna Stringham and Mike Cross experience to respond to emergencies in these same regions when the weather gets rough.

BURT WALTERS

"A lot of people have cell phones today, but those don't always work in an emergency situation," she says. "And that is what we [DNR] can offer — some of the tools that other people or agencies may not have."

The disaster made her even more proud to be working in the area.

"It was bittersweet because you see the turmoil, but you also see the way the community comes together," Stringham says. "I was just a piece of the puzzle that week."

Other DNR programs also incorporate emergency response duties in their daily work.

Hazardous waste specialists are often called upon to help during transportation accidents where fuels and chemicals are spilled. They advise local responders on where to contract with cleanup crews and businesses with environmental monitoring experience. They advise communities how hazardous residues need to be safely collected and recycled or disposed of. They pull expertise from the solid waste management program about disposing of debris or animal carcasses during natural disasters or spills.

Dam safety engineers inspect the integrity of larger dams and recommend security steps to protect them. They routinely work with local government and private dam owners to keep dams in working order and work with zoning offices to limit development in floodways and floodplains.

Drinking water engineers set standards for locating wells and protecting water supplies from potential flooding and contamination. They also help train plant operators to secure their systems

from potential terrorism threats. Wastewater engineers similarly help communities maintain healthy treatment systems and secure sanitation facilities from potential acts of terrorism.

Air management staff monitor air for toxicants and potential biological weapons. They also quickly establish air

sampling around spill sites and fires to check for unhealthy levels of emissions.

DNR's law enforcement conservation wardens and support staff have personnel statewide who have vehicles and communication equipment that locals regularly draw upon during emergencies. David O. Woodbury, emergency



Operators of the Gays Mills treatment system had to canoe through floodwater to reach the plant when the Kickapoo River rose more than a foot. Operators checked pumps to determine how to move sewage from flooded areas so it would not spill into homes and run through the streets. In the past 25 years flood-prone communities have received grants and assistance to relocate their treatment works and water supplies out of the floodway and prepare for such emergencies.

CHARLES CAMERON

response and policy coordinator, oversees the Department of Natural Resources' response to both natural and man-made disasters. The wardens, among the first responders to spills, provide security during disasters, get involved in search-and-rescue missions and are partners with local law enforcement teams responding to emergencies. DNR law enforcement maintains a 24/7 system of duty officers who are trained and prepared to deploy staff and equipment at any time.

More than 220 foresters statewide are trained to suppress forest fires and assist local governments responding to emergencies. The forestry program maintains nine Incident Management Teams whose organizational skills, honed by decades of forest fire fighting, are drawn upon to help coordinate emergency and disaster response. The IMTs have assisted in fighting western fires, tornadoes statewide and Hurricane Katrina recovery.

The state parks program has 150 credentialed officers and 300 seasonal officers statewide who assist in search-and-rescue missions and, like the foresters, have staff skilled in operating earth-moving equipment, tractors and boats needed for emergency response.

Fisheries and wildlife management crews are called upon for search-and-rescue work, clearing debris from waters, and responding to disasters

affecting wild animals and fish, including disease outbreaks.

Actions that keep disasters from becoming catastrophes

Here are some of the specific actions taken by DNR staff in responding to summer flooding last August:

Conservation wardens used their boats to help rescue people from their homes where floodwaters were quickly rising. They also helped evacuate a local radio station that was staying on the air to share emergency communications with their community. Wardens patrolled bridges and highways as torrents of cascading water compromised their safety. As waters receded, the warden force was there helping assess damage to homes and businesses.

The warden force's excellent communications network provided a mobile command post to keep local, county and state units of government in touch during emergency response.

Keeping the taps clean and the toilets flushing where water was everywhere

DNR water supply engineers were busy,



GREG MATTHEWS

"DNR was giving guidance on how to chlorinate wells after flooding occurs to restore safe drinking water."

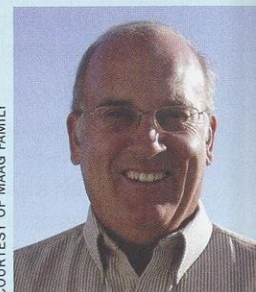
— Steve Ales

too. "Our program's main duty that week was providing advice to those concerned that their private wells were contaminated," said Steve Ales, leader of DNR's South Central Region Drinking and Groundwater Team. "Most of the on-ground work in our area was being done by county and state health departments. DNR was giving

guidance on how to chlorinate wells after flooding occurs to restore safe drinking water. Our strict well codes that require raised well heads, secure caps, well seals and 60 feet of grouted casing kept a lot of people's drinking water secure, even though some of these wells were under water for a while," Ales noted.

That theme was repeated for the municipal wells in the region. Richland County has six municipal water supplies and Crawford County has eight, said Del Maag, DNR municipal drinking water engineer for DNR's South Central Region. Two systems — in Gays Mills and Soldiers Grove — were affected by flooding, but the water systems and pressure were never lost in either community during high water. "None of the other municipal water supplies in those two counties were adversely affected," Maag noted, "which says a lot for the work we have been doing with all those communities over the years to move their water supplies out of the floodway and protect them from contamination."

The only municipal well in Gays Mills is outside of the floodway, Maag said. "In 1987, we required the community to move its well because the old well was in the heart of the downtown area and had flooded more than once. The operators sampled the new well regularly, and the new system on higher ground remained bacteriologically safe during August's floods."



COURTESY OF MAAG FAMILY

"The operators sampled the well regularly, and the new system on higher ground remained bacteriologically safe during August's floods."

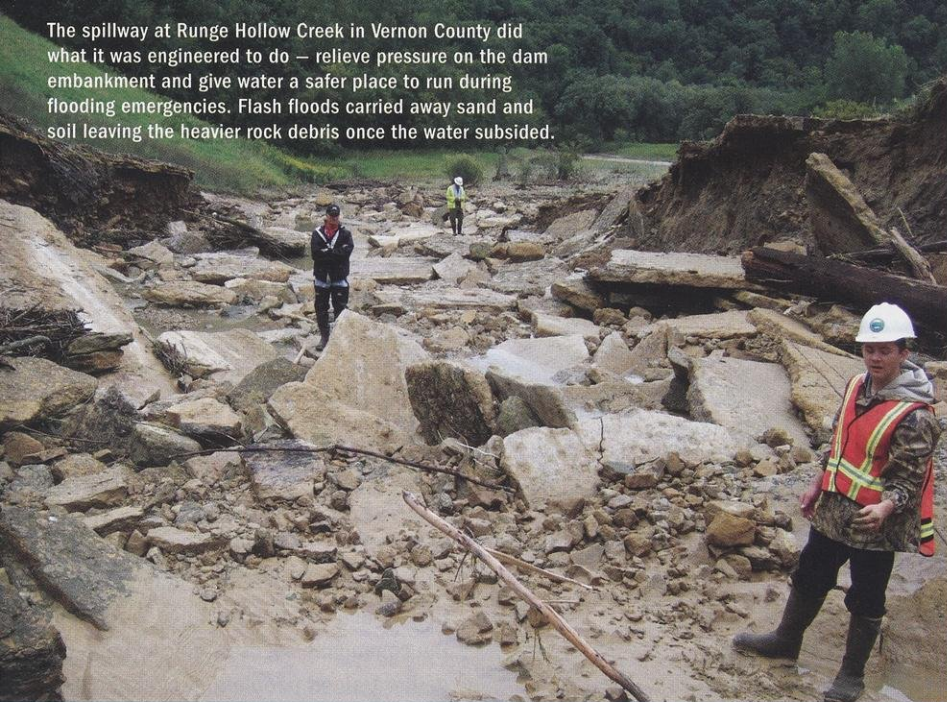
— Del Maag



DNR fisheries crews work with a National Guard road crew near Hillsboro to rebuild a bridge abutment that washed out in the storms.

COURTESY OF DAVE VETRANO

The spillway at Runge Hollow Creek in Vernon County did what it was engineered to do — relieve pressure on the dam embankment and give water a safer place to run during flooding emergencies. Flash floods carried away sand and soil leaving the heavier rock debris once the water subsided.



DNR FLOODPLAIN MANAGEMENT PROGRAM

It's a similar story in Soldiers Grove, Maag said. They had two wells and the old one, drilled in 1942, was right in the floodway of the Kickapoo River. After several flooding events, DNR advised the village to raise the well casing above the 100-year flood level or abandon it and drill a new well outside of the floodway. It's interesting that during the recent flooding the old well was surrounded by water, including water in the pump house, but the water never rose high enough to overtop the well, Maag said. Extending the well casing around that old well definitely saved the water system from contamination and having that second well outside of the flood zone was a definite plus. None of the water mains broke and the system remained pressurized during the flooding. Since the water was continuously chlorinated, this also provided a safeguard, Maag explained.

"A number of lines of defense in state drinking water and groundwater programs are designed to ensure that community wells are constructed and maintained so they are not subject to flooding," said Larry Schaefer, drinking water and groundwater team supervisor for DNR's West Central Region. Community well plans are reviewed to verify that well pump houses are at least two feet above recorded flood elevations. Well casings have to extend several feet above the floor for added protection. "We're mindful of this when wells and pumps are proposed in the floodplain. They can't be placed in the floodway where past flooding has oc-

curred. Backup (redundant) power supplies provide two means of powering wells and these are often further backed up by a mechanical drive off a standby engine in the event of power loss. During this wet weather, our inspectors were in touch with all communities subject to flooding and onsite visits followed to see how those systems fared," Schaefer said.

Preventive work in moving and improving wastewater plants in flood-prone communities also paid off big time during the summer emergency. Julia Stephenson, DNR wastewater engineer in La Crosse provided this summary: In Gays Mills the wastewater treatment plant had higher berms on surrounding ground, but the system still flooded as hydraulic pressure from the incredibly high surface water in the surrounding area backed up into the plant, causing disruptions. The plant itself and the equipment inside remained protected, and sewerage service was restored very quickly. The treatment plants in Wauzeka and Soldiers Grove are also adjacent to the Kickapoo River on somewhat higher ground and did not flood. That's also the case for the Valley Ridge Clean Water Commission site near the Mississippi. The plant operators and public works staff at Ferryville spent long, hard hours to keep that system working.

The battles to provide adequate sewage treatment in flooded areas of Vernon County were even tougher. In Chaseburg the lagoons didn't flood but some lift stations did and part of their wastewater lagoon dike washed out. In

Chaseburg the slope on one of the berms started to fail and a flooded lift station bypassed some untreated sewage. Major flooding in Viola overloaded the main lift station and the treatment pond. In Westby sanitary sewers and the treatment plant's storm pond overflowed, but the plant did not flood. The Viroqua, Readstown and Stoddard systems held as well despite raging waters.

"These are significant victories," said Roger Larson, deputy director of DNR's Watershed Management bureau. "Most wastewater treatment plants are installed at the downstream end of communities as the sewers all flow downstream by gravity. The treatment facilities were especially prone to flooding and could be out of operation for long periods of time or destroyed. The work we started with communities in the early 1980s is really paying off now. By reviewing plans, working with the floodplain managers to provide financial assistance to communities, working with communities to reduce water inflow and infiltration, we are helping communities better protect themselves when disaster strikes. We are assuring that treatment facilities are relocated out of the floodway and are flood-proofed if they are still in the floodplain," Larson said.

Dam busy holding back water

As you'd expect, during flood times the staff who watch floodplains and impoundments were busy trying to keep flooded areas from becoming a deluge. Twelve DNR staff spent night and day inspecting weakened dams, advising owners how to stabilize them, providing emergency assistance, looking for areas where dams or spillways were compromised, helping communities remove clogged debris and assessing the damage when waters receded.

"We have a lot of partners in this process," said Meg Galloway, chief of DNR's Dams and Floodplain Section. "We worked with emergency managers, dam owners, many DNR staff, the Land Conservation Districts who operate the flood control dams, the Department of Corrections, the Natural Resources Conservation Service and FEMA, for starters." It's dirty, wet, dangerous work

Artificial streambank habitat (called a LUNKER) provides cover for fish. During the storms, stream stretches where such structures were installed and where streambanks were engineered to slope more gently suffered much less damage from the coursing floodwaters.



ROBERT QUEEN

ICS — UNIFORM TRAINING TO PROVIDE UNIFORM HELP NATIONWIDE

Though each disaster has unique conditions, each has common needs as well: the community needs to quickly bring together trained people and equipment to handle the emergency. They also need backup staff in case an emergency can't be contained quickly. And responders need to stay in touch with each other to know who is doing what and where.

The Incident Command System was designed to provide a uniform structure and model for responding to emergencies locally, statewide, regionally and nationally. Titles and job responsibilities are defined in the same way so a person responding to an emergency knows what is expected when assigned to "Command," "Operations," "Finance," "Logistics" or "Public Information." Through a series of uniform training courses, practice and practical experience, emergency personnel learn how to coordinate their assistance to respond more quickly and efficiently when disasters strike. Since the same system is employed nationwide, trained personnel can provide backup help as emergencies continue. Typically several shifts of workers are needed for at least several days to respond to emergencies and help communities recover.

Uniform training also allows those dealing with disaster to pull help from a wider pool of responders. Whether the issue is big forest fires, floods or hazardous spills, people trained and practiced in the Incident Command System can be brought in until the issue is resolved to the point where communities move from "responding" to "recovering" from an emergency.

checking the integrity of dams in the pouring rain, checking spillways and dam gates, cleaning debris and making contingency plans.

The public only focuses on dams when the water is rising, but DNR inspectors are working with communities and dam owners year-round on inspections, recommending that communities limit development in floodplains and providing assistance.

In emergencies, skilled staff from many parts of the agency are called to respond. For instance, in the southwestern and western Wisconsin counties, fisheries crews were enlisted to use their expertise in handling heavy equipment, operating dump trucks, repairing roads and riprap to keep bridges open, cleaning out ditches and roadways, keeping channels from overflowing and working with local road crews. Among their most dangerous assignments was removing huge bales of hay that were swept off pastures and lodged in dams and culverts, creating upstream hazards and downstream concerns. In another case, the National Guard air-lifted heavy pumps to DNR Fisheries Operations crews working to drain an earthen dam to keep it from breaching and collapsing near a town.


Habitat improvements that fisheries staff have installed on trout streams provided added benefits to deflect storm damage. When DNR representatives met with state and federal emergency agencies in September to discuss reimbursements for storm repairs, environmental officials had estimated the storms caused \$129,000 of damage where fast-flowing

waters scouring over steep gradients ripped their way through eight coulee country trout streams. In places where fisheries crews had gently sloped stream banks in the floodplain and installed LUNKERS — prefabricated artificial banks that provide cover for fish — very little damage occurred, in spite of the raging powerful floodwaters that drained for many weeks.

Similarly, DNR firefighting crews also pitched in by bringing their portable pumps and hoses to the Gays Mills area to help pump out flooded basements in homes and businesses. The foresters and fire fighting staff are so highly trained in emergency response that their skills in carrying out the Incident Command System were also tapped to help organize local response.

And then there were pigs.

One unusual task that drew a lot of media interest and attention was a very sad case in which 1,800-2,000 pigs were electrocuted as a consequence of storms and flooding at a Sauk County farm. DNR waste management staff helped find a safe and sanitary means to render the swine before their disposal became a health issue.

Just as a network of agencies, communities and trained volunteers coalesce to battle storms, so too diverse strengths and skills from many portions of the DNR workforce are brought together to ease the pain when disaster strikes. 

Kristin N. Turner is a communicator for DNR's Law Enforcement program. Natasha Kassulke is Wisconsin Natural Resources magazine's creative products manager and David L. Sperling edits the magazine.

Christmas Bird Count

Winter is a wonderful time for bird watching — no leaves on the trees.

So, grab your binoculars and a hot beverage of choice, and join in by counting the birds at your feeder between sunrise and sunset. Each year, thousands of birders participate in the Christmas Bird Count (CBC) sponsored by the National Audubon Society (this season December 14, 2007 through January 5, 2008). Visit www.audubon.org/bird/cbc/ for more information.

The CBC is one of the longest-standing examples of how large numbers of amateurs can collect data from a wide, dispersed area — in this case, all the birds they can spot in one of hundreds of designated spots around the country — that then can

be assessed by experts and amateurs alike to identify national trends.

Using the Christmas Bird Count, the National Audubon Society documented declining wintering populations of the American black duck in the 1980s, after which conservation measures reduced pressure on this species. In more recent counts, the conservation group has been tracking significant declines of evening grosbeaks in the Great Lakes region and the Northeast.

The northern cardinal was one of the most frequently reported birds for the 2007 Christmas Bird Count and American robins topped the list as the most numerous species counted, with more than two million robins reported from the

combined 60 states and Canadian provinces.

The CBC has spawned similar data-pooling projects among birders. The Great Backyard Bird Count runs February 15-18, 2008 from 9 a.m. to 5 p.m. To learn more and view an online photo gallery featuring images taken from across the continent, visit www.birdcount.org.

A third opportunity to survey birds in the winter is Project FeederWatch sponsored by the Cornell Lab of Ornithology. Visit www.birds.cornell.edu/pfw for information.



Cold weather can be as hard on pets as it is on people. Here are some tips for keeping your cat or dog cozy.

- Provide shelter if your pet must be outside. Doghouses should be draft-free and large enough to allow the dog to sit and lie down comfortably but small enough to hold in its body heat.
- If your pet becomes frost-bitten, do not rub the frozen tissue. Instead, seek prompt veterinary care and if that is not possible, warm the area by immersing the tissue in warm (not hot)

water or by using water and moist towels. When the tissue becomes flushed, discontinue the warming. Gently dry the area and lightly cover with a clean and dry bandage.

- Keep fireplaces screened. Pets seeking warmth from the fire may get too close and their coat can catch a spark. Fires also contribute to dry skin and respiratory problems in some pets.
- If you are carrying a pet to the vet in the winter, put a hot water bottle or warm blanket in the carrier. Increase your pet's food supply to keep its fur thick and healthy. Adding vitamins E and B-complex will strengthen tissues.

- Don't use metal bowls for food and water when feeding outside. Tongues can get stuck to cold metal.
- Warm engines in parked cars attract cats and small wildlife that may crawl up under the hood. Tap on the hood before starting a car. And remember that anti-freeze has a sweet taste but can be deadly to pets and people if ingested. Wipe up spills immediately and store chemicals out of reach.
- Salt and other chemicals used to melt snow and ice can irritate the pads of your pet's feet. Wipe the feet with a damp towel before your pet licks them and irritates its mouth.



Illustrations by ELIZABETH CAVANAUGH

More watchable wildlife

Wisconsin state parks, forests and trails also offer December opportunities for bird watching.

- **SATURDAY, DECEMBER 1:**
Havenwoods State Forest, Milwaukee, (414) 527-0232

Adult Program: Winter Birding. Dress warmly. Most of the time will be spent outside looking for sparrows, juncos, hawks and owls. We have binoculars to lend if you need a pair. Environmental Awareness Center. 10 a.m. - noon.

Family Program: Night Hunters. With keen eyesight, superb hearing and silent flight, owls are well adapted to nighttime hunting. Unravel some of the mysteries surrounding owls. Environmental Awareness Center. 10:30 a.m. - noon.

- **FRIDAY, DECEMBER 7:**
Kettle Moraine State Forest - Northern Unit, Campbellsport, (920) 533-8322

Nature Storytime: Chick-a-dee-dee-dee. Always bright-eyed and full of energy, chickadees add a cheery note to any winter day. You'll be amazed by the lives these tiny birds lead. This hour of nature fun awaits 3- to 6-year-olds with accompanying adults. Ice Age Visitor Center. 9:30-10:30 a.m.

- **SATURDAY, DECEMBER 15:**
Havenwoods State Forest, Milwaukee, (414) 527-0232

One Wild Saturday Morning: Winter Birds. Drop in and make some bird feeders, learn how birds stay warm in winter, do a little bird identification, and much more. Environmental Awareness Center. 9 a.m. - noon.

- **FRIDAY, DECEMBER 21:**
Kettle Moraine State Forest - Northern Unit, Campbellsport, (920) 533-8322

Winter Solstice Night Hike. Gather around the fire to share some traditions of the longest night of the year. Then travel through the dark woods to discover what animals are awake and braving the cold of a winter night. This program is best for families/groups with children over the age of six years. Zillmer Trailhead. 7-8:30 p.m.

Coneucopia

continued from page 2

My curiosity about cones was piqued by the question: why do spruce tree cones hang down, while fir tree cones stick up? I was aware of these cone differences but the intriguing part of the question was "why." Realizing that the easiest reply for many of nature's questions is "because that's the way it is," I'll offer some observations nonetheless.

Ten groups of conifers grow in the United States: pines, spruces, firs, larches, yews, hemlocks, Douglas firs, junipers, arborvitae and false-cypress. Each group and even individual species within each group have their own characteristic ecology and "lifestyle" including needle structure (shape and length), number of needles per bundle, cones (size, shape and location on tree), pollination strategy, maturation time, seed dispersal, fire dependence and habitat requirements.

Firs differ from the other groups in that their cones sit permanently upright on the upper branches. However, if we look carefully, we find that early in the year, young unpollinated female seed cones of pines and some spruces also sit upright on the upper branches. Is there an advantage to this upright position? Perhaps the cones are more accessible to wind-carried pollen. It would be easier for pollen to settle down on open, upright cones than to somehow find its way up into down-hanging cones. After the pollen has settled in, the cone scales close up and seal, protecting the developing seeds from outside influences. The young cones, which up to this time have been red and small, about the size of red grapes, quickly turn green, begin to elongate and tip over. Do they tip over because of the weight of the cones or the flexibility of the supporting branches or from some other factor? I don't know, but they then hang down and ripen.

Fast forward to the cool of autumn and seed release time. Most cones ripen in the same year they sprouted, but pine cones require two years to mature. It seems as if almost overnight, the cones dry out, turn brown and harden. Recall how conifers seem to be green all summer even though they are heavy with cones because the green cones blend in with the green foliage.


Then suddenly the tree tops are noticeably brown. In some years the cone crop is so huge that at first glance you might think something is damaging the trees. A closer look reveals it is just cones turning brown.

Downward-facing cones of spruces and pines can either drop to the ground with seeds inside or can open up while still on the tree and let the seeds fall out. Many species do both, but most cones open while still on the parent tree. Perhaps their seeds carried by winds disperse over a larger area. Sometimes fire is required to open cones. On these species, like jack pines, closed cones may remain on the trees for years.

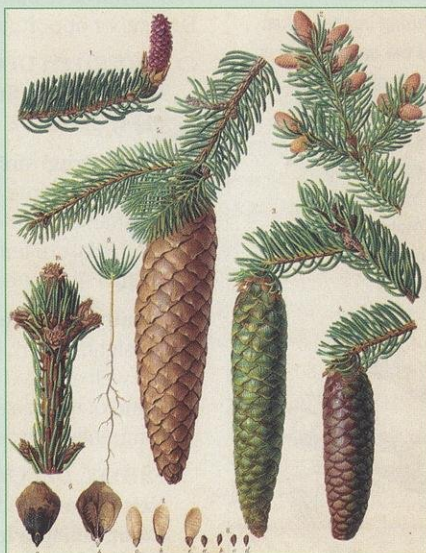
So how do fir cones that mature in the upright position release their seeds? They could drop their cones but rarely do. Instead, in autumn, scales fall or flake off the mature cones starting at the cone top. As they do, seeds are released and drift to the ground. These disintegrating upright cones are absolute beacons to nut-hatches and crossbills that dine on the easily-accessed seeds. When all the cone scales and seeds have fallen off, all that remain on the tree are the center stalks of the once seed-rich cones.

In my Norway spruce,

the female seed cones appear in May as tiny red spheres on the tips of the uppermost branches. Male pollen cones are clusters of inch-long, spiral pasta-like strands. Wind disseminates the yellow pollen. Within days of pollination, female cones turn green, begin to elongate and tip over. Eventually they grow to become five-inch long cylindrical cones, hanging heavy on the branches. The cones turn brown in September and almost immediately begin to open, starting at the tip. A few seeds fall from these cones. Most are dispersed when gusty winds tug and shake the tough cones that hold fast to the tree until spring. Examining these fallen cones, I still find seeds tucked inside.

Cone-watching is something everyone can do. It doesn't require a great expenditure of energy but it does require patience. Perhaps from your observations you'll definitely answer the "why" question. 

Anita Carpenter notices when the cones tip on walks near her Oshkosh home.



Phases of Norway spruce cone development and seed dispersal.

Readers Write

COMMENT ON A STORY?

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

PUFFBALLS AND BATS

A couple of items from the October issue prompt me to write. First, Anita Carpenter ("Smoke from a bald giant") seeded a giant puffball in her yard in Oshkosh in the hope it would reproduce. I can say that I did the same thing several years ago with positive results. I purposely spread the spores widely. The last two or three years have yielded many puffballs scattered over the same area.

Second, Dave Redell (Readers Write, "Were the bats migrating?") asks for information on bats roosting in trees. Almost one year ago, near the end of September or early October, my wife reached to pick a pear from our tree about six feet off the ground and discovered a red bat hiding in the leaves. It had found an excellent hiding spot among leaves that curled all around it. It was definitely a red bat. I have two bat houses in the back yard and almost every night we have a mix of red, big brown, and little brown bats flying over. Hoary bats are also here often, but I have never knowingly seen one, just identified them from computer analysis of recorded calls.

I have one other comment. In the caving article ("The world down under"), I'd have been happier if you had more strongly emphasized the need to completely avoid caving in the winter if bats MIGHT be present. If bats are unnecessarily aroused from hibernation they will burn fat while warming up. They must have this fat to survive six months without eating a thing. By arousing them through cav-



ing, they may not survive their long winter.

Peder E. Halverson
Neenah

WHISKEY THE CROW

I enjoyed your "Cunning corvids" story in the October edition. I thought you might enjoy a short story about one of our "pet" crows.

In the 1960s a nestling crow only five to six days old was brought into our nature center /rehab center, The Little Red Schoolhouse near Willow Springs, Ill. Crows are among the easiest birds to raise. They have a voracious appetite and don't seem to be too upset with people. When Whiskey, as we named it, was about a month to six weeks old, we determined it was too tame to release and we brought it into the nature center as an exhibit animal.

We kept Whiskey until the center closed in late October and then one of the naturalists took it home to "over-winter." The following spring Whiskey was returned to the nature center and again placed on exhibit. It did great, a favorite of the thousands of visitors, until about mid-June when one of the summer aides left the cage door open and Whiskey was out the door.

It seemed to enjoy people so much that it stayed nearby. Visitors could offer it bits of food and it was much photographed to the delight of children. Then a problem arose: Whiskey, it seemed, had a propensity for shiny objects and it would swipe them and carry them away. Things like coins, bits of foil, pop-top can tabs and car keys.

The big problem was the car keys. The usual progression of events went something like this: usually a mom would approach her car with her child, open the door and place the keys on top of the car while she arranged the

child in the seat. Whiskey would swoop down, grab the keys and fly away, leaving the poor mom stranded with no keys. For some reason the nature center staff did not hear about this for a week or two. The stranded motorists would typically call home and someone would have to come out with more keys. Finally a mom came to us with the problem and left us with a dilemma. Where was Whiskey putting the keys?

After due consideration we formed a plan of action. With staff stationed all around the center, I took some old keys and had a visitor go to a car and place the keys on the roof. Sure enough Whiskey came down and grabbed them. The theft was communicated to the staff and we watched that old crow fly up to the roof and deposit the keys in the rain gutter.

We brought out a ladder and climbed up to where Whiskey had put the keys and the cache was interesting, to say the least. We recovered nine sets of keys, almost four dollars in change — no pennies because apparently they aren't shiny enough — and a large collection of miscellaneous shiny objects.

We put an announcement up in the nature center about the stolen car keys and finally returned all the keys, though it took about two months. I thought it best to apprehend the thieving crow, so I set a trap, caught the villain and back in the cage it went. That bird lived, happily (I hope) for another 14 years. We posted a tale similar to this narrative on its cage and for years we would occasionally have a

visitor stop by and tell us of their own experience with our feathered thief, "Whiskey the Crow."

Peter Dring, Retired Director
Red Schoolhouse Nature Center,
Cook County, Ill.
(now living in Land O'Lakes)

I found the "Cunning corvids" article very interesting but I was surprised by the statement, "One occasionally sees ravens in northern Wisconsin." "Occasionally" is hardly the right word. Fact is, they are always seen and heard around Three Lakes during the dead of winter. In warmer seasons, they migrate back north, mainly to Canada. Their low guttural croaks, clearly different than the sound of crows, are always a sign that winter has really come.

Elmer A. Goetsch
Three Lakes

I just finished the October issue and just had to tell you how much I enjoyed two of the articles. I have really liked several of Dave Crehore's stories and "The century run" was another great one. Also, the article on crows ("Cunning corvids") was sure interesting and well written. I've never especially loved crows but I have a friend who does. She feeds them on her back porch! We've all kidded her about it for years. So I shall have to share the article with her. I worked for DNR for 31 plus years prior to retirement. It's always fun to read articles by someone I worked with. Keep up the good work.

Alice Ellis Lundeen
Madison

Your article on "Cunning corvids" brought to mind an experience when I was a boy of 10 in Superior. I found a young crow alone in a nest one day and nursed and fed it until it began to develop into a full-sized crow. We immediately developed a close relationship. When "Pete," my pet

crow, attained flying status he would follow me everywhere, flying from rooftop to rooftop monitoring my whereabouts on a daily basis. If I went to a movie theater, Pete would wait for me outside on a rooftop and follow me home. Pete would fly down to me and sit on my shoulder and eat out of my hand. When I attended Lincoln Elementary School in the 5th grade, Pete would perch on the outside sill of the classroom window and watch me in class all day long until school was out and then he would follow me home. Early one morning in the fall when Pete was about a year old, I went outside to look for Pete on his perch, which was a post near my home in the neighbor's chicken yard. You can imagine my chagrin when I found Pete at the bottom of the post, nothing but a mass of black feathers. A weasel had climbed the post and Pete, unaware, was attacked, killed and eaten by this weasel. I was a sad boy for many days. I have never forgotten my times with Pete, even though I am now 72! Indeed, crows are sensitive, intelligent, playful and most of all true to those who get to know them.

Roger G. Lowney
San Diego, Calif.

CROWS HAVE A DARK SIDE

I read your article, "Cunning corvids." They are truly a very intelligent bird but they are also very highly skilled killers. If they find a nest of songbirds or squirrels, they will not leave

Readers Write

it until they have taken every little one out of the nest. I have also seen them do the same with baby rabbits.

Pat McQuillan
Eau Claire

Kathryn Kahler wrote a fine story but left out a most important part: crows are detrimental to farmers. During the depression, I put shoes on my feet and clothes on my back by shooting crows, gophers and rats. Many townships had a bounty on them (25 cents for crows) paid in cash by the town clerk. Twenty-two short shells were 15 cents per box of 50. You needed long rifle shells for crows. They are unbelievably smart!

And now we have a crow "season" where you must recover shot birds or risk a citation! Retrieving dogs of any kind will not pick up crows. You really have to yell at them and they may bring the birds a short way, but crows are a no-no for dogs.

"Birders" should be outraged at this protection of crows. Used to be one could enjoy ground sparrows, killdeer, meadowlarks, bluebirds, even robins, but protection of this #1 predator (crows) is causing all these species, and a lot more, like nighthawks, to disappear while crows multiply. Further, their young hatch at the same times as many other bird species.

Watch in the spring — a crow will sit in a tree listening for adult birds of any species to feed their young. When food is brought to the nest, the young clamor loudly to get their share. Just what the crows want to hear! They zero-in on the nest and rob it until there is no food left to feed their chicks! This predator must be controlled, NOT protected!

B.C. Roemer
Manitowish Waters and
Overton, Nev.

I enjoyed the article "Cunning corvids." While I admire crows for their intelligence, social nature and playful aerial acrobatics, there is a downside to crows in the city environment. Springtime is when these marauders quietly make their way through suburban trees looking for and robbing songbird nests of their eggs and young. What is the impact of this activity on our urban songbird populations?

Gordon E. Holcomb
Baton Rouge, La.

After reading your crow article, it is apparent that the author has done considerable research but also set out to show what a wonderful bunch of helpful, bright and fun-loving fellas our friends the crows are.

However, the piece neglects an important portion of the crow's diet. The trees and shrubbery around my house are inviting to songbirds and every spring contain nests of cardinals, mourning doves and robins. As the eggs hatch and the parents fly in and out to feed the young, they draw the attention of the local crows who immediately fly in and rob the nests of the baby birds. There's nothing endearing about watching a crow pin a baby bird to the ground with their foot while they tear them apart with their beak. Crows are notorious nest robbers. Perhaps this behavior was omitted intentionally?

Roland Hettinga
Schofield

Author Kathryn Kahler responds: *You're right. It was my intent to point out the more positive traits of "this much maligned bird." My research did shed light on their impact on farm crops and urban songbird populations. Crop damage caused in spring when crows pull sprouts from the*

ground is similar to damage caused by other birds (pheasants, starlings and blackbirds) and rodents (mice and ground squirrels). About a quarter of their diet comes from animal food, mostly insects like beetles, grubs, grasshoppers, locusts and crickets, as well as spiders, millipedes, crustaceans, snails, salamanders, lizards, small mammals, birds and carrion. Crows are predators of songbird eggs and nestlings, as are cats, dogs, squirrels, raccoons, opossums, snakes, house sparrows, starlings, and even house wrens which can interfere with the nesting success of other birds by puncturing their eggs. Check out these websites for more information about crows and their eating habits: www.extension.org/pages/Crow_Damage_Assessment; www.hsus.org/wildlife/a_closer_look_at_wildlife/crows.html; www.birding.com/predators.asp.

WHERE PUFFBALLS GROW

We were pleased to see the giant puffball get attention in October's edition ("Smoke from a bald giant"). Our family has been fascinated by the giants for years. I was surprised that Anita Carpenter has never seen one for herself and want to invite her to visit Outagamie County's Plamann Park north of Appleton next August where she will find them along the hiking and skiing trails. They have miles of trails full of dozens of different fungi in the summer, and many kinds of wildflowers including trilliums in the spring.

Diane Esselman
Town of Center,
Outagamie County

I have always enjoyed your magazine. Great job! I especially enjoyed Anita Carpenter's article on giant puffballs. You can relay to her that next August if she would like to find some in the woods to

come to my place. I've got a lot of them in my woods.

Neil Bishop
Lodi

WERE BATS DISPLACED?

I was reading the October letter about bats. I have about one-third acre of woods that's mostly ash and underbrush in southeastern Walworth County. We are in a small area of houses, so deer do not come near. I have only seen tracks one time in 15 years. I have three to four resident bats (wingspans of about four inches) that live in this patch of trees about 40 feet tall. One morning this past summer, shortly after they sprayed for insects around nearby Fox Lake, Ill., I stepped out of the house at 5 a.m. and almost ran into a bat that was catching mosquitoes at my front door. I looked up and there were so many bats I could not count them. I tried keeping track but lost count around 10. Would the mosquito spraying in Illinois have driven all these bats across the border into Wisconsin? I thought it was truly an amazing sight.

Marie Lemke
Genoa City

BAITING PHOTO QUESTIONED

I was thumbing the October issue when I noticed a photograph on page 20. The caption says it describes deer "yarding" and concentrations. Well, that's not what the picture shows. There is a pile of corn for every deer you see in the picture. This was either baiting or feeding. The caption should have stated "The popularity of baiting and feeding has added to deer herd growth." Food plots DO contribute to deer herd by alleviating the amount of browse damage caused by the deer. But not feeding corn.

This brings to mind another question: What would happen IF (and I hope it's soon) the state

bans all baiting and feeding? With the state's large deer numbers and milder winters, how much more will habitat suffer before the deer population is brought back into check?

David Allen
Kewaunee

On page 20 you refer to deer yarding up near unoccupied shelters but you show a picture of 50 or more deer eating piles of food. Who put the food out if it's unoccupied? This picture makes your magazine look bad.

Mel Sonnentag
Laona

This clearly is a shot of feeding, not just yarded deer. We failed to notice the corn piles. Feeding clearly adds to habitat stress and disease potential as deer concentrations put additional pressure on nearby vegetation as deer search for adequate nutrition in their winter food supply.

THANKS FOR THE MEMORIES

I just finished reading Dave Crehore's article "The century run" (October 2007). I have enjoyed every one of Dave's articles over the last few years. Because I have lived in Manitowoc 74 of my 76 years, they bring back many memories. This particular story

brought back more memories than most. Each person and place was a pleasant remembrance. I will make sure Merle Pickett gets my copy of the magazine. She is 104 years old and lives at St. Mary's nursing home. Thank you again.

Kay McLaughlin Markvart
Manitowoc

A HALF CENTURY LATER

Thank you for a wonderful article ("The century run," October 2007). My aunt Ethel, an avid bird watcher, also participated in the century run. Fifty-plus years later, I now learn what she was up to on those

early morning jaunts. The real prize of this story was the reference to master birder, Lillian Marsh — Miss Marsh to me. She taught music to legions of elementary school students. Apparently, an intrepid soul both inside and outside the classroom. The article was fun to read and brought back warm memories of life in Manitowoc.

Lou Ann (Hessel) Norsetter
Green Bay

UPDATES

GREAT LAKES COMPACT

Approval of the Great Lakes Compact in Wisconsin ("A firm hand on the spigot," June 2007) met another barrier when the legislative committee working on its ratification disbanded in mid-September because they could not reach consensus. The Department of Natural Resources continues negotiations on critical issues with key stakeholders, the Governor's office, other Great Lakes states and Canadian provinces. It's anticipated that new state legislation will be introduced later this year.

CLIMATE CHANGE

The Wisconsin Initiative on Climate Change Science Council met for the first time in late September. The group represents collaboration between the University of Wisconsin and the Department of Natural Resources. They will assess potential impacts of climate change on natural resources and recommend adaptive strategies. DNR Deputy Lands Administrator Sarah Shapiro Hurley, Office of Forest Services Director Darrell Zastrow and Research Scientist Richard C. Lathrop represent the Department of Natural Resources on the Council.

CONSERVATION WARDEN COOKBOOK

On behalf of the Wisconsin Conservation Warden Association, I would like to let readers know about a cookbook we are publishing to raise funds for scholarships and educational programs. "Favorites from the Field" is a compilation of 200 recipes emphasizing wild foods, including such delicacies as pickled fish; main dishes made with duck, grouse and fish; desserts made with wild berries; and special seasonings, marinades and brines. Anyone interested in purchasing the book can order copies for \$12 apiece. Forward a check payable to WCWA along with your name and address to WCWA, 6051 Redpine Drive, Rhinelander, WI 54501. Here's a sampling of the recipes to whet your appetites.

Jessica Jung, Rhinelander

Pheasant Soup

1 large pheasant (3 lbs.)
2 Tbsp. olive oil
Salt and pepper to taste
1/4 lb. chopped bacon
3 cups sliced leeks
1/2 cup diced celery
1 1/4 cup diced carrots
1 cup diced tomato
1 cup red wine
5 cups chicken stock
3 bay leaves
1 Tbsp. fresh savory
2/3 cup barley
1 Tbsp. balsamic vinegar
Chopped fresh basil or parsley for garnish

Sauté bacon, remove from pan. Chop pheasant and brown in stockpot. Remove from pan. Sauté leeks, carrots and celery. Add tomatoes, stock, wine, bay leaves, savory, pheasant and bacon. Cover and simmer 30 minutes. Add barley and simmer 30 minutes. Bone meat before serving.

Roy Kanis' Shore Lunch Potatoes

1/3 lb. bacon, cut in 3/4-inch pieces
1 medium onion, chopped
1 medium green pepper, chopped
4 cups sliced, boiled potatoes (may substitute canned)
1 6-ounce can mushroom pieces, drained

Put bacon, onion, pepper and mushrooms in a large skillet. Cook until the bacon is nearly done. Remove excess grease. Add sliced potatoes, salt and pepper to taste. Cook until potatoes are hot and browned. Best served with walleye fillets beside a Canadian lake. Also good with ring bologna for lunch on opening day of deer season.

Fish on the Floor

1/4 cup chopped onion
4 Tbsp. butter
1 3-ounce can mushrooms, drained (save the liquid)
1/2 cup crushed soda crackers
2 Tbsp. parsley
1 cup crab or shrimp
1/4 cup chopped celery
dash of pepper
3 Tbsp. butter
3 Tbsp. flour
1 1/2 cup milk/mushroom liquid
1/3 cup dry white wine
Fish fillets (firm and white, not soft and oily)
1 cup shredded Swiss cheese

Sauté the onion, drained mushrooms, cracker crumbs, parsley, crab/shrimp, celery and pepper in 1 Tbsp. butter. Place half the fish fillets in a casserole and spread with sautéed mixture. Place second layer of fillets on top. Melt the 3 Tbsp. butter and whisk in 3 Tbsp. flour, then whisk in milk/mushroom liquid and wine, cooking until thick and bubbling. Pour over fish and bake at 400 degrees for 25 minutes. Sprinkle with cheese. Bake 10 minutes longer.

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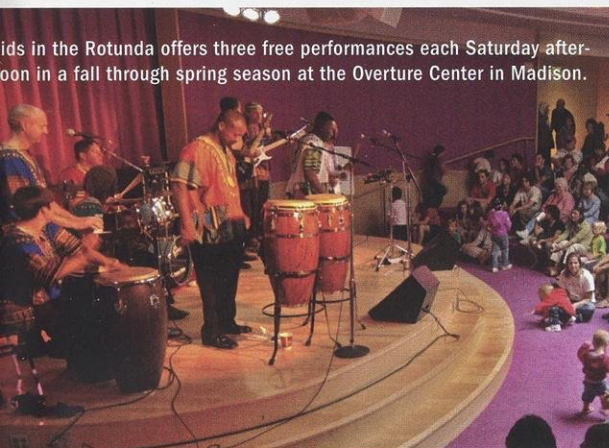
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Take the kids

Forget trawling the malls and warehouse stores for those elusive non-toxic toys. This holiday season, take the kids to a live performance or museum event. They're bound to remember a fun family outing long after those toys are forgotten, broken or recalled.

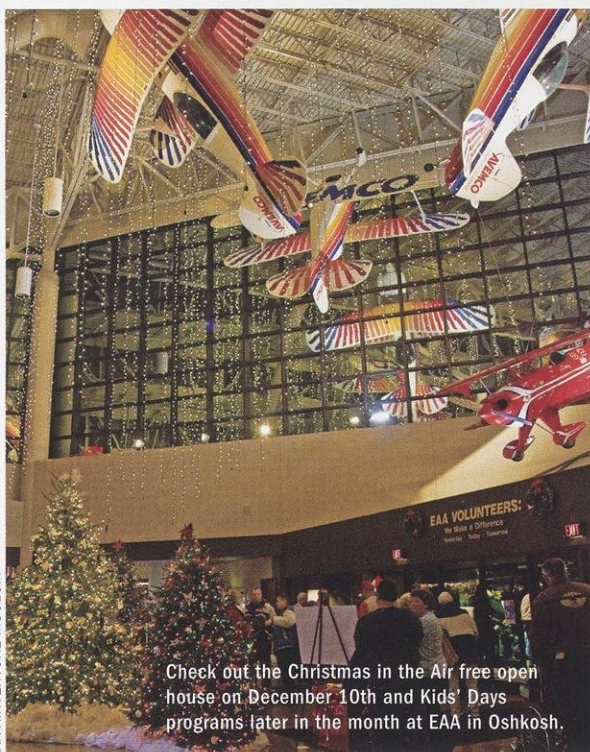


Kids in the Rotunda offers three free performances each Saturday afternoon in a fall through spring season at the Overture Center in Madison.

Madison's Overture Center welcomes kids and their significant elders to the Rotunda Stage for free performances every Saturday through the school year. **The Kids in the Rotunda** series presents storytellers, musicians, jugglers, theater troupes, magicians and dancers in a relaxed,

comfortable setting. It's a great way to introduce your children to the excitement of the performing arts. See the Madison Ballet on December 8, enjoy traditional Ghanaian music and dance troupe Atimevu on December 15, and reserve December 22 for a special holiday event. Shows at 9:30 a.m., 11 a.m. and 1 p.m. 201 State St. Visit www.overturecenter.com/rotunda.htm or call (608) 258-4177.

Plan a visit to Oshkosh's EAA (Experimental Aircraft Association). On December 10 the whole family can enjoy **Christmas in the Air**, a free holiday event featuring madrigal and choral groups (good acoustics in the hangar), refreshments, the "Just Plane Chocolate" competition, and Santa eschewing a reindeer-drawn sleigh for an arrival by helicopter. 2-8 p.m. EAA also hosts its annual program of special aeronautical activities and presentations for families during **Kids' Days**, December 26-31, with discounted admission prices for children. EAA AirVenture Museum, 3000 Poberezny Rd. Visit www.airventuremuseum.org or call (920) 426-4800.



Check out the Christmas in the Air free open house on December 10th and Kids' Days programs later in the month at EAA in Oshkosh.



SAMSON PHOTO COURTESY OF MILWAUKEE PUBLIC MUSEUM

Twenty-five years ago the Milwaukee County Zoo's celebrity gorilla, Samson, passed away. But kids born after the big fella died can still get acquainted with him. This year, the Milwaukee Public Museum is gradually bringing Samson back to life at the hands of taxidermist/artist Wendy Christensen-Senk, who has been crafting a full-size, scientifically accurate re-creation of the great ape. It's Christensen-Senk who's really on display in the **Samson Remembered**

exhibit; visitors can watch her at work building the skeletal structure, shaping the body, and adding hair. Sam La Malfa, Samson's longtime keeper, gives talks about their days together. The exhibit runs through January 1, 2008. 800 W. Wells St. See www.mpm.edu or call (888) 700-9069. (Check out the "Samcam" at www.mpm.edu/exhibitions/special/samson/ to check on Samson's progress.)

Created by author and artist James Gurney, **Dinotopia** is a fictional island where dinosaurs and humans live in peace. The closest you and yours will get to this magical place is Oshkosh, where the city's Public Museum has been selected as the only U.S. venue to host the exhibit "Return to Dinotopia" before it moves to Europe in 2008. Featuring more than 40 of Gurney's stunning, otherworldly paintings from his latest book, *Dinotopia: Journey to Chandara*, the exhibit promises to entrance young and old alike. Marvel at the four life-size dinosaur skulls on display. Through January 27.

Tues.-Sat. 10 a.m.-5 p.m., Sun. 1-4:30 p.m., 1331 Algoma Blvd. See www.oshkoshmuseum.org or call (920) 236-5799.



Wisconsin, naturally

FOX MAPLE WOODS STATE NATURAL AREA



Notable: Though small, at about 41 acres, Fox Maple Woods is surrounded on three sides by the Whisker Lake Wilderness Area. Old-growth patches of large sugar maple, basswood, hemlock and yellow birch dominate the canopy, while the understory in spring has a striking display of ephemerals including spring beauty, trout lily and Dutchman's breeches. Large snags and downed wood add to the site's complexity and provide habitat for a variety of animals, including the pileated woodpecker.

How to get there:
From the intersection of Highways 2/141 and 70 in



Florence, go west on 70 10.5 miles to a parking area north of the road. (This is 1.1 miles west of the point where 70 crosses Wakefield Creek). Visit dnr.wi.gov/org/land/er/sna/sna282.htm for a detailed map and more information.



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