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# WISCONSIN NATURAL RESOURCES

October 1992 \$3.00 Volume 16, Number 5



Meet the paddlefish  
25 years of hunter  
education

The pits — non-metallic  
mining in Wisconsin



ROBERT BORTH

The colorful male Karner blue butterfly.

# L i t t l e   b l u e   f l i t

*Look closely to see the tiny Karner blue butterfly fluttering near the lupine patch.*

Lori L. Graham

*Lycaeides melissa samuelis* — two inches worth of name for a butterfly with a wingspan hardly wider than your thumb.

Better known as the Karner blue butterfly this tiny, iridescent bit of flutter is expected to appear early this fall on the federal endangered species list. It's also getting a fair amount of attention from DNR's Bureau of Endangered Resources.

Though still found in parts of Wisconsin, Michigan and New York, populations of the Karner blue — named for Karner, New York, where the butterfly was first described — have declined to the

*Continued on page 30*

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Typesetting  
WISCOMP, Department  
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Printing  
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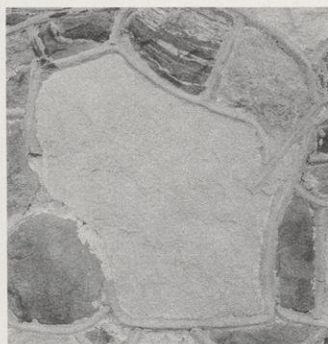


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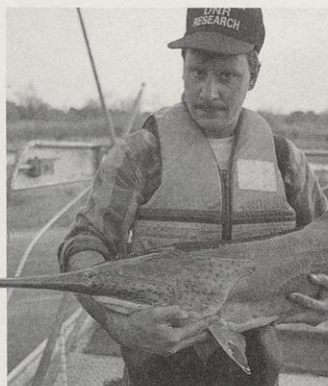
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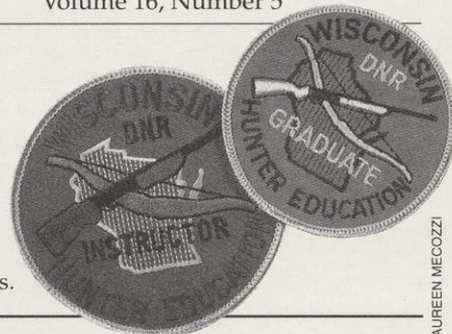
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CYNTHIA M. STILES (LEFT AND MIDDLE PHOTOS)



face carving in Mill Bluff shelter



masonry at Poynette Game Farm



shelterhouse on Brady's Bluff, Perrot State Park

EUGENE SANBORN

# THE FRUITS *of their* LABOR

A GENERATION RACKED BY ECONOMIC DESPAIR LEAPT AT THE CHANCE TO WORK WHEN TWO NEW GOVERNMENT PROGRAMS OFFERED JOBS, DIGNITY AND A WAY TO BUILD THE BETTER FUTURE. THEIR ARTFUL CONSERVATION WORK IS OURS TODAY.

*Cynthia M. Stiles*

Maybe you lived through it. Or perhaps you listened, not altogether raptly, while your parents told how *they* lived through it. Then again, it could be that your only acquaintance with this extraordinary chapter in modern American history came in an American history class. Whether you're young or old, whether you experienced it first-hand or just read about it in school, the Great Depression has made a difference in your life. Physical, cultural proof of that fact is everywhere in Wisconsin — if you know where to look.

In 1930, over a quarter of the nation's employable men and women were out of work. By 1933, 14 million people were unemployed. Local and



Paving the way for CCC. Chiseling the charge holes to blast the road leading to the White Sand CCC Camp, Crystal Lake, Vilas County, May 1934.

BURKE (ECW PHOTOGRAPHER)

state governments, unable to provide relief services to such vast numbers, appealed to the federal government for help. Washington responded with

a series of short-term emergency relief grants, which allowed city, county and state governments to provide food in exchange for labor on public building projects. This initial relief effort laid the groundwork for the Works Progress Administration and the Civilian Conservation Corps — two programs that shaped the American landscape and awakened the country to its own history and culture.

The Works Progress Administration (WPA), later known as the Works Projects Administration, provided employment for the needy and developed a labor force for small public projects. Between 1935 and 1938, WPA provided three-quarters of the employment opportunities available to the American work force.

State and local government sponsors proposed projects to the WPA, complete with engineering plans and specs. Once a project was approved, WPA retained control of the funding and labor force, but sponsors had to agree to finish the project if the WPA could not. The local community agreed to handle future operation and maintenance of the improvements resulting from the project.

during this era, especially in sewage treatment and mine sealing, eliminated a considerable percentage of water pollution, allowing streams and lakes to be reclaimed for recreational purposes.

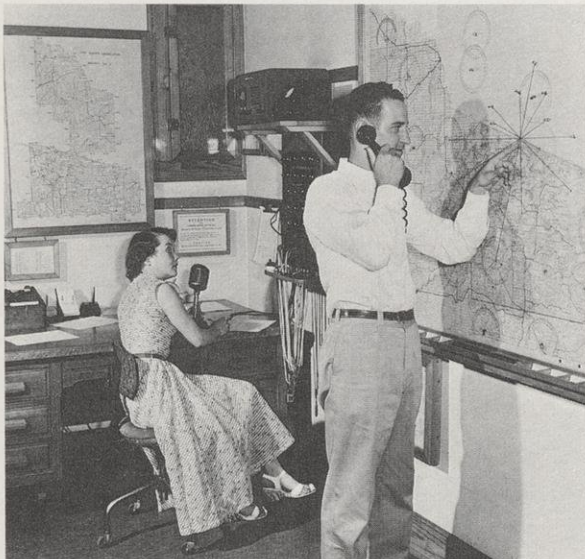
To employ office workers, WPA initiated a public records and research program which resulted in social and economic surveys, streamlined public recordkeeping, and preservation of historic archives. As part of this unique program, thousands of people were interviewed on a variety of topics, including slavery, American Indian life and culture, ethnic crafts and traditions. Priceless information that otherwise would have died with the informant was preserved for posterity on film, tape and paper. Unfortunately, some of these records were destroyed during post-World War II government housecleaning.

In contrast to the WPA, President Franklin Delano Roosevelt created the Civilian Conservation Corps in 1933 to train young men in skills and discipline. Run by the military, the CCC carried out projects cho-

sen by the National Park Service and the USDA Forest Service in the state and national parks and forests. Able-bodied young men between the ages of 18 and 25 served for six months with the option to reapply for six more. Each man was paid \$30 a month plus keep, all but \$5 of the monthly salary going directly to his family. The men lived at camps and were sent to work on projects where they were needed.

Forty CCC camps sponsored by the USDA Forest Service were established in Wisconsin. Eight additional CCC camps were established by the National Park Service at Perrot, Pattison, Devil's Lake, Rib Mountain, Interstate, Peninsula, Copper Falls and Wyalusing state parks.

An advance crew of landscape architects and engineers designed shelter buildings, concession stands, trails, stairways, retaining walls and sanitary facilities for crews to build. The structures, made of local stone, wood and other materials, blended into the natural landscape. Hand labor was favored over heavy earth-moving equipment and tractors. As they worked side-by-side with expert craftsmen, the young men of the CCC learned the skills of stonemasonry, carpentry and other trades — skills they would later take back into the workforce.



V.A. MOON

Dispatcher and plotter track a forest fire at the Mercer Ranger Station. CCC and WPA conservation workers reforested thousands of acres and fought forest fires.

Most WPA workers were heads of households providing for their families. Although WPA tried to place people in jobs appropriate to their education and skill, many highly trained and educated men and women entered the work force as "unskilled" laborers. Few balked at the prospect of physical or unfamiliar work: They needed work and took pride in contributing to the improvement of their cities and counties, no matter what form of labor was required.

Roads accounted for 75 to 80 percent of the WPA's construction projects in the early years. Later, airports and airways, government buildings, engineering surveys, municipal recreation facilities, sanitation, water and sewage systems were built with WPA funds and local labor.

Conservation construction projects consisted of dams, mine sealing and erosion control. Innovations made

Civilian Conservation Corps camp at Devil's Lake State Park. Conservation base operations were headquartered at eight camps in state parks and 40 other locations in Wisconsin.



COURTESY OF STATE HISTORICAL SOCIETY OF WISCONSIN

Conservation, rather than construction projects, made up the bulk of the CCC's work. Crews planted trees, rehabilitated lakes and streams, maintained habitat in game refuges, dug firebreaks and took steps to control erosion. All counties in Wisconsin benefitted from the CCC's effort to stem soil erosion and dampen the threat of fire.

While many of the handsome structures the CCC built in Wisconsin still stand, the true legacy of the program bears no dated cornerstone. Cleaner water and groundwater, thriving forests, improved game habitat, increased opportunities for outdoor recreation and the beginnings of a national environmental ethic came about through the work of the CCC.

By the early 1940s, the economic depression that had rocked the nation for a decade subsided. The private sector recovered, primarily due to the country's preparations for war. The WPA and the CCC were liquidated in 1943, just months before America's entry into World War II.

The two programs left in their wake new transportation and sanitary systems unprecedented in the world at that time. Conservation was elevated to a major issue, and plans for the renewal of depleted forests and polluted streams were formalized on a national scale. Recreational facilities were made available to Americans of all ages and backgrounds. Public buildings became a source of pride for many small municipalities all over the nation, and gave a sense of accomplishment to the local laborers who built them. Service projects allowed people with different backgrounds and cultures to share their heritage.

It had taken a devastating economic disaster for America to rediscover the strength of her people and the beauty of her land. To the millions who lived and worked through it, from the millions who now enjoy the fruits of that hard labor — thanks. □

*Cynthia M. Stiles is an archaeologist with the U.S. Forest Service in Rhineland, Wis.*



ROBERT ESPESETH

An elegant stairway crafted by a WPA crew at a roadside stop near Amnicon Falls State Park, Douglas County.

## THE WPA AT WORK

WPA projects provided future generations with the foundation of an enormous public works system. Over an eight-year period, these projects completely revamped the nation's transportation system and utilities, greatly enhanced outdoor recreation, and controlled pollution:

### URBAN PROJECTS

- 67,000 miles of streets
- 24,000 miles of sidewalks
- 8,000 city parks improved (including swimming pools, stadiums, athletic fields, tennis courts, ice skating rinks, ski trails, bandstands, outdoor theaters and golf courses)
- 12,800 playgrounds
- 500 water treatment plants
- 1800 pumping stations
- 19,700 miles of water mains
- 880,000 consumer connections
- 1500 sewage treatment plants
- 24,000 miles of storm and sanitary sewers
- 639,000 sewage connections
- 2,309,000 sanitary privies

### AIRPORTS

- 350 new landing strips
- 5,925,000 feet of runways
- 1,129,000 feet of taxi strips
- 1,200 airport buildings

### RURAL PROJECTS

- 572,000 miles of rural roads
- 78,000 new bridges
- 1,000 new tunnels (for highway, railroad, pedestrian and cattle)

In addition to the miles of concrete and tarmac, WPA constructed or improved thousands of public buildings. WPA simplified the architectural style

of the time to accommodate the high percentage of unskilled labor available in its work force as well as the materials available for building. Structures from this era were aesthetically pleasing, unobtrusive in appearance and needed little maintenance:

- state, county and municipal government buildings
- schools
- recreational facilities (bathhouses, concession stands)
- city and county hospitals
- penal institutions
- military and naval facilities
- firehouses
- ranger stations and fire towers
- libraries
- gymnasiums and auditoriums

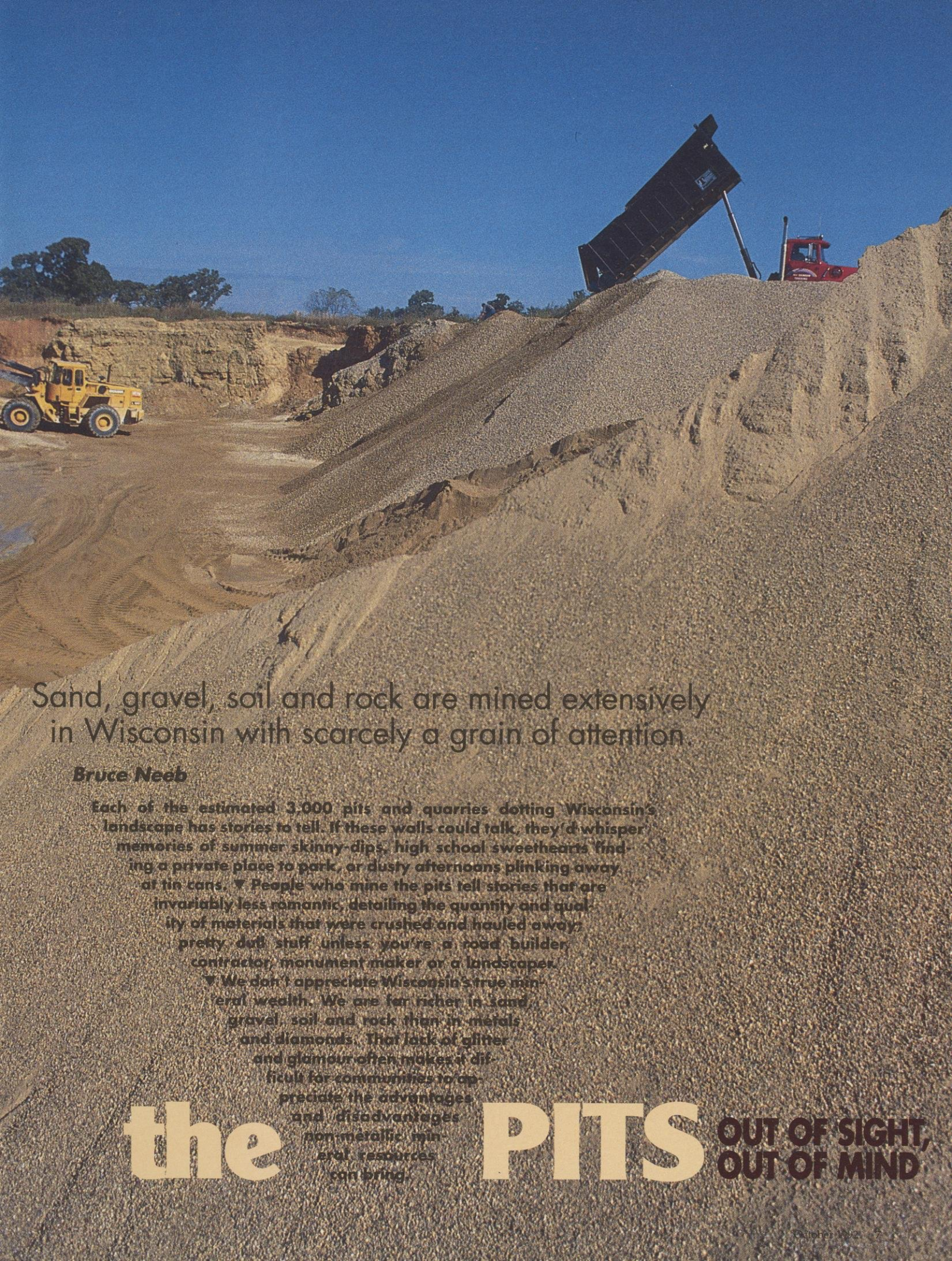
### CONSERVATION

- 177,000,000 trees planted in public areas
- 7,000 miles of fire breaks
- 300 fish hatcheries
- seeded depleted oyster beds with 8,000,000 bushels of oysters
- built shelter houses, feeding stations and sanctuaries for birds and other wildlife

(Reference: "Final report on the WPA Program: 1935-43" by George Field)

ROBERT QUEEN

Crushing and hauling non-metallic minerals like gravel is a multi-million dollar business in Wisconsin.



Sand, gravel, soil and rock are mined extensively in Wisconsin with scarcely a grain of attention.

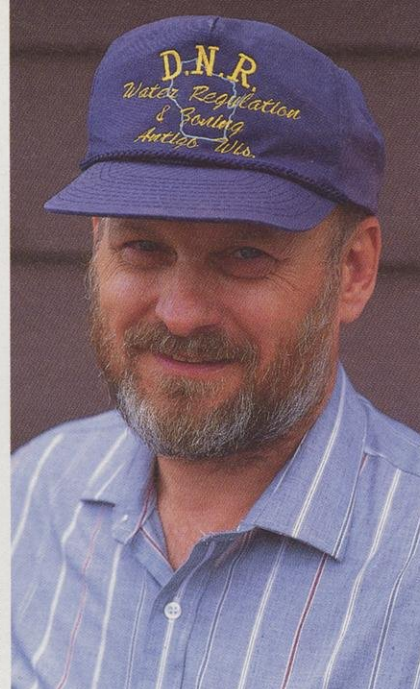
**Bruce Neeb**

Each of the estimated 3,000 pits and quarries dotting Wisconsin's landscape has stories to tell. If these walls could talk, they'd whisper memories of summer skinny-dips, high school sweethearts finding a private place to park, or dusty afternoons plinking away at tin cans. ▼ People who mine the pits tell stories that are invariably less romantic, detailing the quantity and quality of materials that were crushed and hauled away; pretty dull stuff unless you're a road builder, contractor, monument maker or a landscaper.

▼ We don't appreciate Wisconsin's true mineral wealth. We are far richer in sand, gravel, soil and rock than in metals and diamonds. That lack of glitter and glamour often makes it difficult for communities to appreciate the advantages and disadvantages non-metallic mineral resources can bring.

**the PITS** OUT OF SIGHT, OUT OF MIND





ROBERT QUEEN

ROBERT QUEEN

Crushed and colorful, rotten granite is popular for paths and landscaping. The valuable mineral is shipped statewide from pits in central Wisconsin.

The amount of non-metallic minerals excavated statewide might surprise those debating the future of metallic mining — Mitch Zmuda

## Wisconsin's major miner

With upwards of 1,000 excavation sites currently in use, Wisconsin's non-metallic mineral mines rank 12th nationwide in production of construction sand and gravel. According to Tom Evans of the Wisconsin Geological and Natural History Survey in Madison, this is a major boon for state, county and municipal governments. "The key value lies in having these materials close by and readily available for road construction," Evans says. "It would be incredibly expensive to ship road building material from elsewhere."

It's more than a local advantage. Evans says Wisconsin's non-metallic minerals are big business. We rank 19th in the production of crushed stone, including dolomite, granite and quartzite, making the Badger State one of the nation's principal producers of railroad ballast — the stable, rocky bed under railroad ties. We rank 7th in the production of industrial sands used by foundries, 12th in lime production, and 12th in granite "dimension stones" used for polished, decorative building facades, monuments and grave markers.

Evans puts a \$200 million a year value on these materials before transportation costs are added. Furthermore, the non-metallic mineral industry generates hundreds of millions of dollars more in jobs associated with manufacturing, selling and transport-

ing materials to work sites.

The lack of public interest in non-metallic mineral mining is surprising, Evans notes, especially compared with the debate over proposed copper and zinc mining projects. "In terms of mining activity, [these products] so far outweigh metallic mining in Wisconsin that it's ironic."

While mining for metals has captured the attention of environmentalists and policy makers, often-vast pits where sand, gravel, stone, rotten granite, clay, limestone, topsoil and peat are extracted remain largely ignored, despite their visibility along roadways throughout the state. Some are no longer mined. Most raised little public discussion. Historically, the few debates that emerged remained local, driven by neighbors' concerns about dust, noise, traffic, decreasing property values and private well water.

## Changing the terrain

A few dozen yards off State Highway 107 in Marathon County, you encounter a reddish-orange moonscape. Trails from huge earthmovers wind around large boulders and between pits that have refilled naturally with groundwater. A steady progression of dump trucks enters and leaves along a ramped road carved into the pit's northeast wall. They leave heaped with rotten granite, a commodity

found almost nowhere outside of Central Wisconsin.

The fine, gravel-like rotten granite is what's left when granite decomposes after centuries of natural chemical reactions. With 17 active pits in Marathon County alone, rotten granite is trucked throughout the state. In southern Wisconsin, it's used primarily for decorative paving and landscaping. In the north, due to its abundance, rotten granite is commonly used as a foundation for roadways.

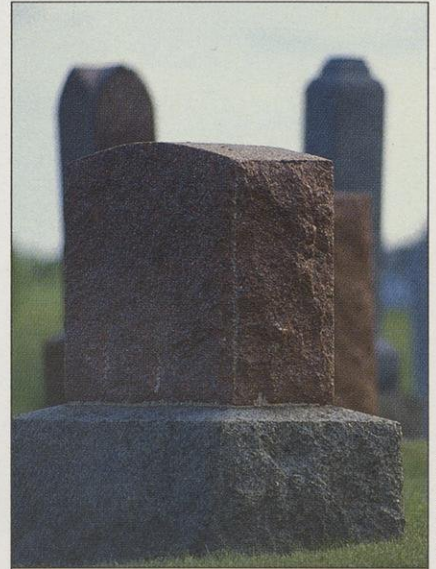
DNR water management specialist Mitchell Zmuda observes activities at hundreds of non-metallic mines in Langlade, Lincoln, and Marathon counties. Based in Antigo, Zmuda examines how this mining affects rivers and lakes — one of the few areas where state environmental law regulates non-metallic mineral mining.

## Mining for Monuments:

This granite dimension-stone quarry north of Wausau has operated for 100 years with little regulation. Even at its current depth of 290 feet, little groundwater seeps in. Environmental concerns here focus on dust from stone-crushing operations and runoff from waste-rock stockpiles.

ROBERT QUEEN





ROBERT QUEEN

## The Non-metallic Market:

Decorative stones, peat and topsoil can command hefty prices whether packaged or sold in bulk, making non-metallic minerals a profitable commodity. Prices for other non-metallics like sand, gravel, crushed stone, granite monuments and building materials can be steep or reasonable depending on how far they are transported from the mine site.

Zmuda says people debating the merits of a 32-acre open pit copper mine proposed near Ladysmith might be surprised by the scale of non-metallic mining excavations now being worked.

Less than 100 feet from the Big Rib River near Marathon City, a 20-acre pool of groundwater is growing in an active gravel pit. Cranes with submersible buckets periodically carve away at the edge of the pond as gravel is needed. Open since the 1960s, the pit is one of many similarly sized mining operations in the area. Zmuda expects it will double or triple in size before excavation is completed.

No state permits were needed for this site until about 16 years ago when

*(left)* Channels cut to drain water from active pits can carry fine sediments more than a mile downstream.

the pond's continued growth brought it within 500 feet of the river. According to Zmuda, several similar ponds throughout Marathon County wait to be reactivated by new demand for gravel.

Zmuda is more familiar than most with the changes non-metallic mining can bring. He's seen de-watering operations in rotten-granite pits lower water tables on large sections of land and dry up ponds on adjoining property. He's seen gravel pits within floodplains flooded by rivers during spring thaw. As the rivers recede within their banks, fish may be stranded and die in the pits.

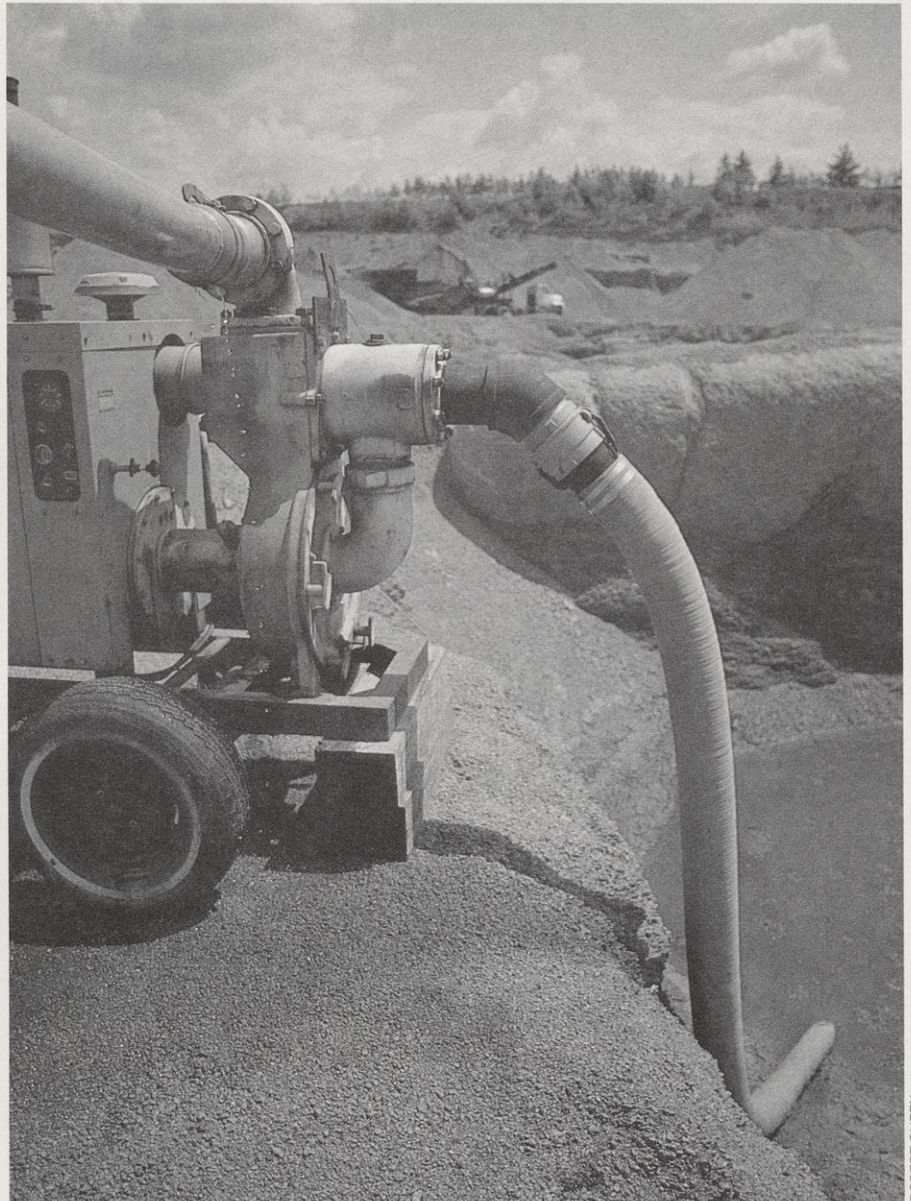
On some sites, Zmuda says, excavators cut channels into the pit walls creating streams that carry fine sediments downstream. The practice, called "day-lighting" in the industry, can cause sedimentation in streams up to a mile and a half away from the mine site. Zmuda can point out trout streams in Marathon County where runoff from non-metallic mine sites has degraded water quality. Today these streams support rough fish populations.

Growing concerns led to a recent update of state restrictions on non-metallic mining within waterways and on adjacent banks. "The state has learned the hard way," says Bob Sonntag, who coordinated the rule revision for DNR's Water Regulation section. Mining in the water and on the bank can destroy fisheries or alter the course streams and rivers take through downstream properties, Sonntag says.

Waste rock and sediments that wash into waterways will often fill in uneven, rocky riverbeds, eliminating riffles that help to aerate rivers and streams. Spawning areas and habitat for a variety of organisms may be blanketed with silt. Dredging and removing brush from river banks can increase water temperature, threatening survival of sensitive species.

## Applying the rules

Government regulation of non-metallic mineral mining is limited. Fed-



ROBERT QUEEN

(above) De-watering pits can lower the water table on surrounding property.

(below) Non-metallic minerals are mainly regulated locally. Counties and towns often oversee the quarries and pits they mine for road fill — Mike Young, Marathon County Zoning Department.



ROBERT QUEEN

## NON-METALLIC MINING

eral law restricts placing fill materials in wetlands. State law regulates dredging in waterways, and grading and pond construction along the banks. Non-wetland excavations outside of this shoreland zone are regulated solely by local county or town ordinances.

In the late 1970s, the Legislature appointed a committee to assess if non-metallic mines warranted further attention. Tom Evans was a member of the committee.

The group determined that on-site and off-site effects of non-metallic mining were very localized. "There are no tailings basins, and none of the acid leaching that you might see associated with metallic mineral mining," Evans says. "The DNR had already established [rules] covering non-metallic mining near waterways, so we felt the state's interests had been covered."

Still, overseeing sand and gravel pits typically takes a back seat to other local matters.

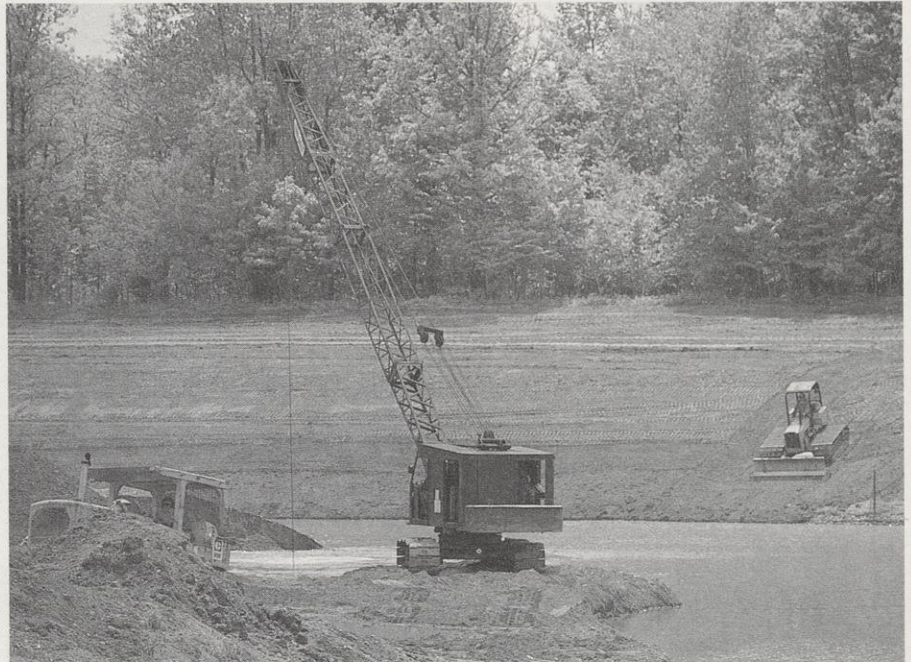
In most cases, Zmuda says, local ordinances regulate mining in wetland, shoreland and floodplain areas, and deal with nuisance issues such as noise, traffic and dust. Beyond that, their scope is limited.

A third of the towns in Marathon County have no local zoning ordinances, says Mike Young, reclamation specialist with the Marathon County Zoning Department. Other towns may have mining ordinances but don't use them because they don't have the staff to do the work involved, Young notes.

### Recent changes in law

State regulators and local communities are showing more interest in effects from non-metallic mining that may not be visible from the nearest subdivision or may not surface for many years.

State laws now require potential sand, gravel, soil or stone excavators to "convincingly demonstrate a need for excavation of the channel or immediate banks" near any waterways. In addition, excavators must file recla-

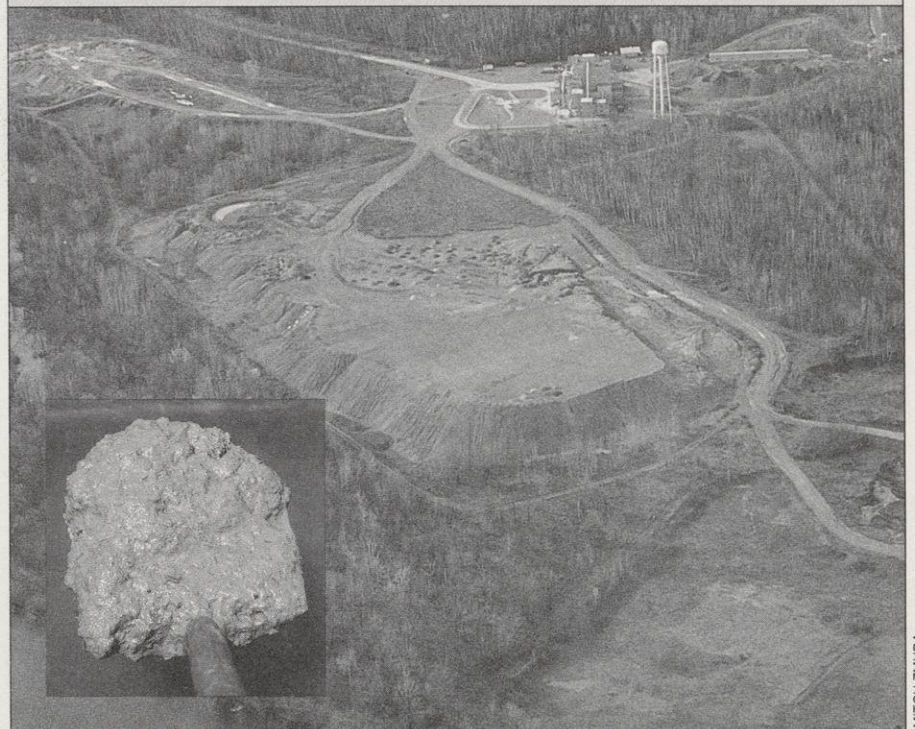


A Marathon County pit is excavated with underwater dredges while machinery slopes and regrades the pit on the far side. With planning, some pits could be reclaimed as waterfront building lots.

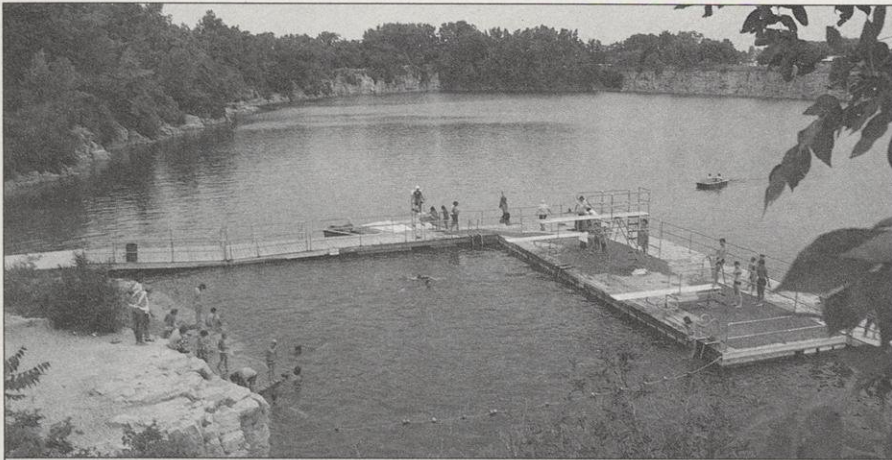
ROBERT QUEEN

### 3M's Rhyolite Hill:

Mountains of fine "flour rock" from the 3M company's rhyolite mine on the Wisconsin River between Wausau and Brokaw were observed in aerial photos taken in a 1981 fly-over. The waste material, crushed too fine to use in manufacturing of roofing shingles, had been piled on the riverbank. 3M spent over \$500,000 to reclaim the site by removing tons of the pulverized rock from the banks and river. Now the company sells some of the flour rock to contractors for road construction. (inset) Flour rock scooped from the river.



MITCH ZMUDA



RACINE COUNTY PUBLIC WORKS DIVISION

## Pits to Paradise:

Quarry Lake on the northwest edge of Racine is visited by more than 100,000 swimmers a year, including thousands of scuba divers. The clear waters reach 100-foot depths. Quarried for limestone until it was abandoned in the 1920s, the site was taken over by Racine County in the late 1960s. The 18-acre pond and its 450-foot beach now form the centerpiece of the county's 40-acre Quarry Lake Park.

mation plans that will be reviewed by department water management specialists before permits are issued. Excavators will have to present a pretty convincing case that there's no real alternative to removing materials from these sensitive areas, Sonntag said. Permittees must also show that proposed excavations will not be a detriment to public rights, access or interest in the waterway.

Recent developments in Marathon County generated interest in forming county-based mining regulations. Spurred by recommendations of a task force on mining effects, the county recently enacted an ordinance requiring non-metallic miners to develop reclamation plans.

Mike Young says the task force and county worked together to slow the loss of productive lands associated with mining and to help preserve the county's mining sites for future development. Still, Young notes, the reclamation ordinance encountered strong initial opposition.

"The non-metallic mining industry plays an important role in the economy here in Marathon County," Young says. "The towns had a strong voice in this too, and not just as regulators.

As you travel across the state, you'll find that many towns operate their own quarries to provide material for road work."

Young says officials from half a dozen other counties have expressed interest in Marathon County's experience. While some counties are encountering opposition, Young says other counties expect to propose nonmetallic mining ordinances in the months and years ahead. Environmental groups have been watching these local debates with an eye on reducing what many see as a current "hodgepodge" of regulation.

## Seeing old pits as an asset

With a little pre-planning, Zmuda says, many mines could attract developers looking for new waterfront properties. As rotten granite pits refill with groundwater, the water typically retains unusual clarity, he says. When banks are properly sloped and revegetated, former quarries can support wetland plants and healthy fish populations.

"It's not hard to imagine homes going up around some of these sites," Zmuda says. "As the ponds refill, the

water ends up kind of a clear blue-green. If the banks have been reclaimed, these properties can offer a really nice setting."

By planning ahead, Zmuda says excavators can create varied habitat for plant and animal life while the mine is excavated. Walls can be sloped to provide gradual dropoffs. Large boulders can be left to provide structure fish will use as cover. Reforestation can create a homey atmosphere and future timber production.

Zmuda says excavators in his area are discovering it's cheaper to mine a site with a reclamation plan in mind than to dig a hole and pay to slope and revegetate it afterwards.

"There are economical ways for excavators to build reclamation into their plans," Zmuda says. Admittedly, it's a long-term investment. If they can eliminate some of the environmental problems while constructing a marketable product or property, everyone stands to benefit," he adds.

Bob Sonntag notices a growing interest in reclamation as well. "I recently talked with an excavator who says a pair of bald eagles have nested in some trees next to a pond he's reclaimed. He didn't think they had eagles in the area before," Sonntag says. "A number of these folks live adjacent to the sites they're mining. I think their interest will grow as they begin to experience the benefits for themselves."

For now, it appears many pits and piles will remain unreclaimed, waiting for next time a few hundred yards of gravel are needed for some nearby project. They'll be there for kids play, target shooters and, perhaps, the occasional romantic rendezvous. Still, in time, it's possible we may see lover's leaps taking a back seat to progress as we make the best possible use of our non-metallic mining sites for the generations that follow. □

*Bruce Neeb communicates a variety of legal and environmental issues for DNR's Division of Enforcement in Madison, Wis.*

# Meet the paddlefish



JOHN LYONS

*One of Wisconsin's largest, most unusual, but least-known fish struggles to survive in the state's largest rivers.*

John Lyons

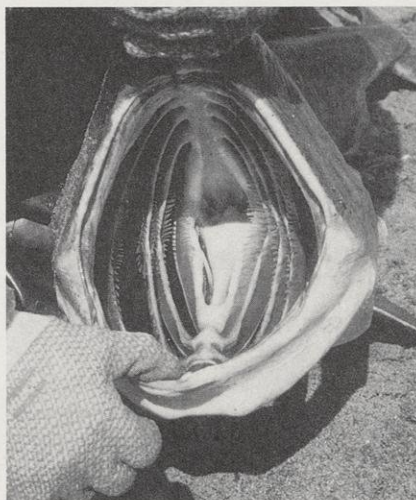
**S**urely, the paddlefish is one of the strangest-looking fish in existence. With its canoe-paddle snout, bucket-like mouth, and thick scaleless body, it looks like one of the more fanciful entries in an old book of sea monsters. But despite appearances, the paddlefish is real, and with a little bit of effort, Wisconsin residents can observe it in its native habitat.

The largest remaining paddlefish population in Wisconsin lives immediately below the Prairie du Sac dam on the Wisconsin River, about 30 miles northwest of Madison. Here, during the warmer months, the patient observer is rewarded with occasional glimpses of huge 50-pound paddlefish leaping into the air, then crashing into the water with a spectacular splash.

The paddlefish and a distantly related species living in the Yangtze River of China are the sole survivors of primitive fishes that first appeared when dinosaurs roamed the earth.

Untutored observers assume the paddlefish is a type of shark — a natural mistake given its shark-like tail, curved fleshy fins and smooth gray skin. The rounded, smooth snout earned the species a common name among anglers: spoonbill catfish. But

A gaze into the paddlefish's gaping maw reveals harmless gill rakers that filter fine food from water.



ROBERT QUEEN

the paddlefish is neither a shark nor a catfish, and is most closely related to the sturgeon.

Despite a huge mouth that can easily hold a human forearm, the paddlefish poses no threat to swimmers or to other fish. The paddlefish is a filter feeder, using comb-like gill rakers to sieve plankton from the water.

While its prey may be microscopic, the paddlefish itself reaches immense size. During my studies on the Wisconsin River, I regularly observed specimens over five feet long weighing more than 60 pounds. Paddlefish exceeding 100 pounds have been caught in other parts of the United States; a record 198-pound behemoth was caught from Okoboji Lake, Iowa. In Wisconsin, only lake sturgeon regularly reaches a larger size than the paddlefish.

## Where they dip their paddles

Two hundred years ago, paddlefish were found in most of the large rivers and a few large lakes in Wisconsin. They were common in the Mississippi River and the lower reaches of its major tributaries: the Wisconsin, the Chippewa and the St. Croix. Small numbers apparently lived in Lake Michigan, Lake Superior and their largest tributaries. Today the range and abundance of the paddlefish is much smaller, due to overfish-

ing, water pollution, siltation in spawning areas and dams constructed for commercial navigation, hydroelectric power and flood control.

Paddlefish remain in the Lower Wisconsin River, the Mississippi, and the lower 50 miles or so of the Chippewa and St. Croix rivers, but generally are rare. Large numbers congregate below the Prairie du Sac dam on the Lower Wisconsin River and between Lock and Dam 10 and 11 on the Mississippi River.

Because of its scarcity, fishing for paddlefish has been banned in Wisconsin for more than 30 years. The species has been considered "threatened" here since 1989. Fortunately, healthy paddlefish populations are found in Iowa segments of the Mississippi River; in Kentucky and Barkley

## Mystery of the spawning paddlefish

Scientists still know little about paddlefish reproduction. For many years, paddlefish spawning grounds were a mystery. In the early 1960s, biologists from the Missouri Department of Conservation discovered paddlefish spawning over flooded gravel bars. Such habitats are usually uncommon in the large rivers paddlefish occupy. In some rivers like the Osage in Missouri, the entire paddlefish population spawns over a few gravel bars within a short stretch of river. A new dam blocked passage to the spawning area, and natural reproduction stopped. Massive stocking is now required to maintain the Osage River fishery.

Paddlefish spawn irregularly, even



Dr. Phil Cochran of St. Norbert's College and DNR researchers believe paddlefish leaping from the water and crashing down may be trying to dislodge parasites.

lakes in Kentucky and Tennessee; on the Osage River in Missouri; on the Arkansas River in Arkansas; on the Missouri River in Nebraska, the Dakotas, and Montana; and in the Yellowstone River in North Dakota and Montana. Missouri has developed a successful hatchery and stocking program to help maintain its paddlefish fishery.

on adequate habitat. As a result, once paddlefish populations are reduced by overfishing, they may take many years to recover. Paddlefish spawn where water levels rapidly rise each spring. Water temperatures must be between 50 and 65 degrees during this rise. If these conditions do not occur, female paddlefish will not spawn. Drought during the last few years kept water



U.S. FISH AND WILDLIFE SERVICE

Poacher's gold: paddlefish caviar.

levels very low in the Lower Wisconsin River, and paddlefish apparently did not spawn. During the last five years, only one young paddlefish has been observed during fish surveys below the Prairie du Sac dam; the youngster was sighted in the fall of 1991.

Even if the water level and temperature conditions are right in a particular year, many paddlefish still do not spawn. Males take four to nine years to mature; females, nine to twelve. Once matured, females only spawn once every two or three years.

So how do paddlefish produce enough young to persist? The fish is long-lived and females produce a lot of eggs. Females often survive 10 or more years after they reach adulthood — about twice as long as most other fish. A single large female paddlefish may contain more than 500,000 eggs weighing over 20 pounds.

The large egg masses led to a new and ominous threat from people. Paddlefish eggs make excellent caviar that fetches high prices in the fish markets of Chicago and New York. Females with eggs cannot be reliably identified by external characteristics. Poachers slit open every paddlefish they catch. Males and females without eggs are discarded and often die from their wounds.

Illegal harvest has become a serious problem in Missouri and surrounding states. Any poaching in Wisconsin could have devastating effects, given the scarcity of paddlefish. If you see anyone snagging or attempting to snag paddlefish in Wisconsin, immediately report them to the police, or to Department of Natural Resources at 1-800-TIP-WDNR.

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(left to right) Phil Cochran, DNR fish technician Mike Kaminski and author John Lyons weigh, measure and examine paddlefish on the Wisconsin River just below the Prairie du Sac dam.

efforts to protect the natural character of the large rivers of the state, particularly the Wisconsin, Mississippi, Chippewa, and St. Croix. Paddlefish cannot survive without adequate habitat.

Next, come and see the leaping paddlefish at the Prairie du Sac dam. Just below the dam, there is a parking lot off Highway 78 north of the city. Follow the road about a quarter mile north of town. On your left, you'll pass the Milwaukee Valve Co. Take the first paved road to the right. If you cross the train tracks on Hwy. 78, you've gone too far. A sign will direct you to the dam and the parking lot. From there you

### An aquatic high-jumper

Why do paddlefish leap from the water? Possibly to dislodge parasitic silver lampreys. Dr. Phil Cochran of St. Norbert College in DePere and I have been studying this interaction. We've found that nearly all paddlefish below the Prairie du Sac dam bear silver lampreys or recent lamprey wounds. We've seen up to 11 lampreys and 28 fresh wounds on a single fish.

Unlike the notorious sea lamprey, which often kills valuable sportfish, the silver lamprey has lived together with the paddlefish for millions of years. Silver lamprey and paddlefish have a natural parasite-host relationship that apparently causes little long-term harm to paddlefish populations.

Nonetheless, a lamprey may be enough of an irritant to cause a

paddlefish to leap from the water in an effort to get rid of it. If you see leaping paddlefish at Prairie du Sac, look for a grayish, six- to 12-inch, eel-like fish affixed to its belly or back. This is the silver lamprey. If you're lucky, you may see the lamprey and paddlefish disconnect as the paddlefish hits the water.

What can you do to preserve paddlefish in Wisconsin? First, support

can walk down to the water. The best time for viewing is on mid- to late-summer afternoons. Public interest in the paddlefish can foster greater commitment to protect and enhance paddlefish populations.

Finally, work to prevent illegal poaching of paddlefish. Some anglers intentionally snag paddlefish "for fun," apparently unaware that such an action is a crime. Educate people about the harm they are doing, and report them to the authorities if they keep a paddlefish.

With your help, we can ensure that our descendants will be able to watch and enjoy the paddlefish, one of Wisconsin's most unusual wild creatures. □

Sucking disks and raspy teeth allow the parasitic chestnut lamprey and silver lamprey to hang onto paddlefish.



ROBERT QUEEN

*John Lyons is a fisheries biologist with DNR's Bureau of Research in Madison, Wis.*

# DRAWING A BEAD ON BIRDS OF CLAY

GROWING INTEREST  
IN SHOOTING SPORTS  
IS TAKING WING IN WISCONSIN.

*David L. Sperling*



Nationwide, it's growing much faster than golf or tennis, but don't expect much coverage on the evening sportscast. It's competitive, but the participants aren't looking to attract a crowd. A growing number of hunters, sportsmen and women are quietly turning to shooting sports as a way to extend their outdoor season.

Trap, skeet and sporting clays are an increasingly popular way to enjoy the thrill and skill of gun hunting year-round. More than 20 sporting clay courses have opened in Wisconsin during the last five years without any fanfare. Dozens of trap and skeet clubs are scattered throughout the countryside on the urban fringe, yet most people couldn't tell you where they are.

Shooting sports are a logical way to hone hunting skills or learn to handle shotguns safely. But they are also becoming an important means for continuing the camaraderie of the hunting party. For many, the friendships that form on the shooting range are as long-lasting as those that form on schoolyards and ball fields.

"My friends and I got into this as a group," said Kevin Haack, a 17-year-old trap shooter from Cross Plains. I met Kevin at the Badger State Games last June, where he earned a gold medal in statewide skeet competition.

"We used to come out to the club every Wednesday night to watch our folks shoot, so our families know each other and we enjoy getting together," he said.

"No doubt about it, we enjoy the social aspects of shooting even more so than the competition, said Carol McNally of Twin Lakes, Wis. Her daughter, Elizabeth, 15, also entered the Badger State competition. "It's part of our family life. In the fall, we shoot targets mid-week and hunt on the weekends."

"We usually go out for dinner after a practice or have a picnic," Liz McNally said. "I look forward to those get-togethers with our friends more than the competition."

On a trap range, disk-shaped clay targets or "birds" are randomly hurled

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(below) Shooters learn sportsmanship and safety on the range. Here, a trap competitor checks his score.

(top right) Elizabeth McNally of Twin Lakes, Wis. Her whole family shoots sporting clays mid-week to hone skills for weekend hunts.

(bottom) William A. Jansen congratulates the Badger State Games 1992 Junior Shotgun Shooters — Neil Skinner of Mazomanie, gold; Kevin Haack of Cross Plains, silver; and Ben Retzinger of Wausau, bronze. "The range seasons shooters to instinctively handle their firearms so they can concentrate without sacrificing safety," Jansen said.

(bottom right) Standard 110 mm skeet and trap target.



ARTICLE PHOTOS BY ROBERT QUEEN



to the left, straight ahead or to the right of the shooters. Gunners stand at a set distance behind the trap house at different stations as the arcing discs angle up and away. Gunners shoot a set number of targets from each of five stations.

On a skeet range, clay birds are hurled at set angles from a high tower at one side of the course and a low hut at the other. Gunners simulate different bird hunting situations by moving among the eight stations.

Sporting clay ranges are a cross between a golf course and a shooting gallery. Natural settings at each of 10-12 stands simulate the erratic flight of woodcock, bursting speed of grouse, scattered footwork of running rabbits, the angled glides of waterfowl and other field situations.

"I think of trap as a mental game, where you're trying to best yourself," said Carol McNally. "Skeet seems more like a groove game where your swing and lead time are especially important. We like sporting clay courses best because they're more spontaneous and simulate hunting experiences better. It's not just grinding targets."

### Practicing field skills and judgement

Whatever the shooting sport, gunners learn skills that can really improve their hunting, said William A. Jansen, trap shooter and commissioner of the Badger State Games shotgun competition.

"This kind of practice improves marksmanship, and that confidence results in clean kills, fewer cripples and less wasted game," Jansen said. "It adds to the ethics of sport hunting because practiced shooters can better judge what field shots they can make or not make. The way a target breaks tells you if you're getting too far ahead or behind. Repetition and practice can give the shooter a lot of experience in correcting shots." Trap teaches judgement for upland bird hunting where you have to judge the angle of flight and leading distance. Skeet simulates ducks dropping at a steep angle and

passing shots at birds flying overhead, he said.

"The range work also teaches constant attention to gun safety," Jansen stated. "Experienced hunters and experienced competitive shooters just won't tolerate unsafe gun handling. That repetition on the range seasons the shooters. They instinctively learn how to handle their firearms and can apply all of their concentration to shooting without sacrificing safety."

"It's like hunting, except you call for the targets when you want them," Haack said. "Practice gives me confidence that even helps my deer hunting. The person who only handles a gun once a year when he goes deer hunting may panic a bit or start rattling off shots when he sees a deer. I know my range. I'm used to reloading my gun a hundred times a week without shaking. You quickly learn where your gun shoots, its pattern at different distances and your limits as a shooter. Competition has gotten me used to the nervousness of anticipating a shot, and that actually calms me down in the field."

### An alternative to team sports

"We started a program through the Brown County Sportsman's Club to give kids some alternatives," said Paul J. Kane, club member and school principal at Parkview Middle School in Green Bay.

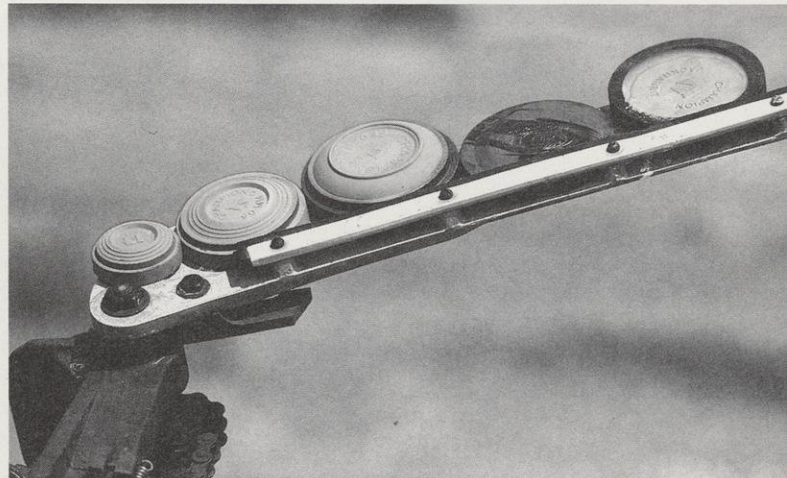
Kids like to hunt, but more than that, they like to shoot, Kane said. It's hard for youngsters to find shooting space near the city, so many of them take potshots at road signs, power line insulators and the like. "If they're that interested in shooting, we'd rather offer them a constructive situation," Kane said.

"We set up a juniors program that's

organized, stresses safety, teaches sportsmanship and gives kids the fundamentals of safe shooting through trap and skeet," he said. "Our goal is to develop each kid as a winner, and we work at it."

Up to 30 boys and girls who have completed hunter safety courses can sign up for the program each spring. The sportsman's club sponsors kids who couldn't otherwise afford to participate. Club members give instruction and encourage the kids to take part in competition. The top eight or so shooters each year earn a trip to the Badger State Games shoot in June.

"Shooting sports give these kids a chance to meet a whole new group of kids who share their interest," Kane said. "Moreover, we provide an alter-

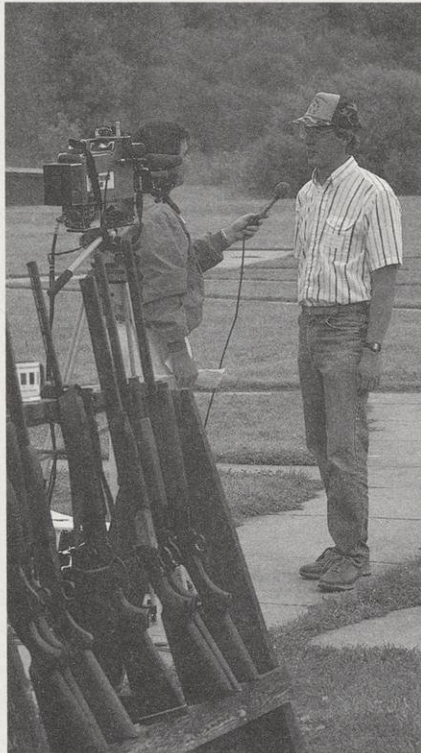


A handful of tricky birds — the 60 mm mini, the 90 mm midi, a tough-edged maxi, a battue that flies erratically and a jackrabbit clay that bounces on edge to confound the sporting clay shooter.

native to kids who aren't attracted to ball sports. And we provide another opportunity for children to learn skills on an equal footing, regardless of size, age or gender.

"These shooting sports can become a lifetime activity," Kane emphasized. "Strength has nothing to do with it; it's all skill and practice."

Shooting sports attract different people for different reasons. Kevin Haack started when he was 14 after years of watching his dad shoot trap competitively. He hunts his grandpa's farm near the family home for deer, grouse, squirrel and rabbits, but he equally enjoys his time on the trap range.



(above) Like golf, shooting sports can become a lifetime hobby that have widespread appeal.

(below) "Strength has nothing to do with success on the range. It's all skill and practice." — Paul Kane.



"I'd say the biggest challenge for me was learning the basic techniques — my stance, swing, accuracy and judgement in leading targets," Haack said. "It's like any sport. It takes a lot of practice to get good and there is a lot of variety to account for — trap machines, different backgrounds, weather and wind. I keep a journal of every shoot with my score, notes on equipment, weather conditions and how I felt. I shoot on our club team twice a week, competitively twice a month and spend about two to three hours a week reloading shells."

Hunting is family recreation for the McNallys, too. Liz and her parents shoot pistols, .22 rifles and shotguns, but Liz is the only one who shoots competitively. The McNallys started like most shooters — on a safe back lot aiming at hand-thrown or foot-released clay targets. They then joined a shooting club. Liz took a few lessons and found she really liked the sport.

"We especially enjoy sporting clays as a warm-up for weekend hunting,"

Liz said.

Sporting clays are such a new concept in America that more people are learning how to shoot them on courses. "The clubs teach safety, but they also teach shooters that the aim is to kill every target," Carol McNally noted. "That certainly isn't our attitude in the field. I think it's important for families to transfer hunting ethics as they prepare for the field. We still consider it a sensational day if we can have our dogs in the field, enjoy a spectacular sunset and never fire a shot."

### Sporting clays — the thrill without the kill

The phenomenal response to sporting clay courses nationwide attests to the recreational potential of shooting sports. The U.S. Sporting Clays Association estimated there are 18 million shotgun owners nationwide compared to 20 million golfers. The sport was imported from Great Britain in 1983. By 1985, three shooting clubs in the

United States laid out sporting clay courses; by 1987, 25 courses and today there are hundreds, including 20 or more in Wisconsin.

The appeal is easy to understand. Courses are spread out over 10-50 acres outdoors. Shooters enjoy a good walk to shooting stands that simulate woods, fields and wetlands. The course and the shots can regularly be varied at each station so each time on the course can present a new challenge.

Clay targets range in size from the 60mm mini — about the size of a soup can lid — to "rabbits" that skitter along the ground on edge. Then there's the batue, a nearly rimless disc that flutters, dips and drops off like a poorly thrown Frisbee. Shooters typically spend about an hour matching wits with 50 targets

thrown at a mix of angles, heights and velocities. An average gunner would feel good about hitting half of them; perfect scores are unknown.

Costs are reasonable by today's standards. Brian Johnson, President of the Wisconsin Sporting Clays Association, said most clubs charge \$12-\$15 for 50 targets. Inexperienced sporting clay shooters can attend shooting clinics or take lessons. Johnson said most clubs have certified instructors or will match up a newcomer with experienced shooters to learn course etiquette.

Johnson said all the clubs in Wisconsin are open to the public; some only operate during the warm months, some have open hours, but reservations are recommended at most courses.

Shooting sports are becoming so popular that it's becoming a bit like trying to get on a bowling lane before midnight, notes a friend. Given a limited number of outlets, the leagues and competition eat up most of the available time.

Perhaps a greater challenge these days for shooting clubs and ranges is staying on good terms with their neighbors. Many ranges that were built in open country years ago now have subdivisions for neighbors as communities expand. Several clubs are only open on weekends and a few afternoons during the week as required by local noise restrictions. Safety concerns also must be worked out with local zoning officials. Shooting clubs and resorts are as concerned as new property owners when developments are proposed within gunshot.

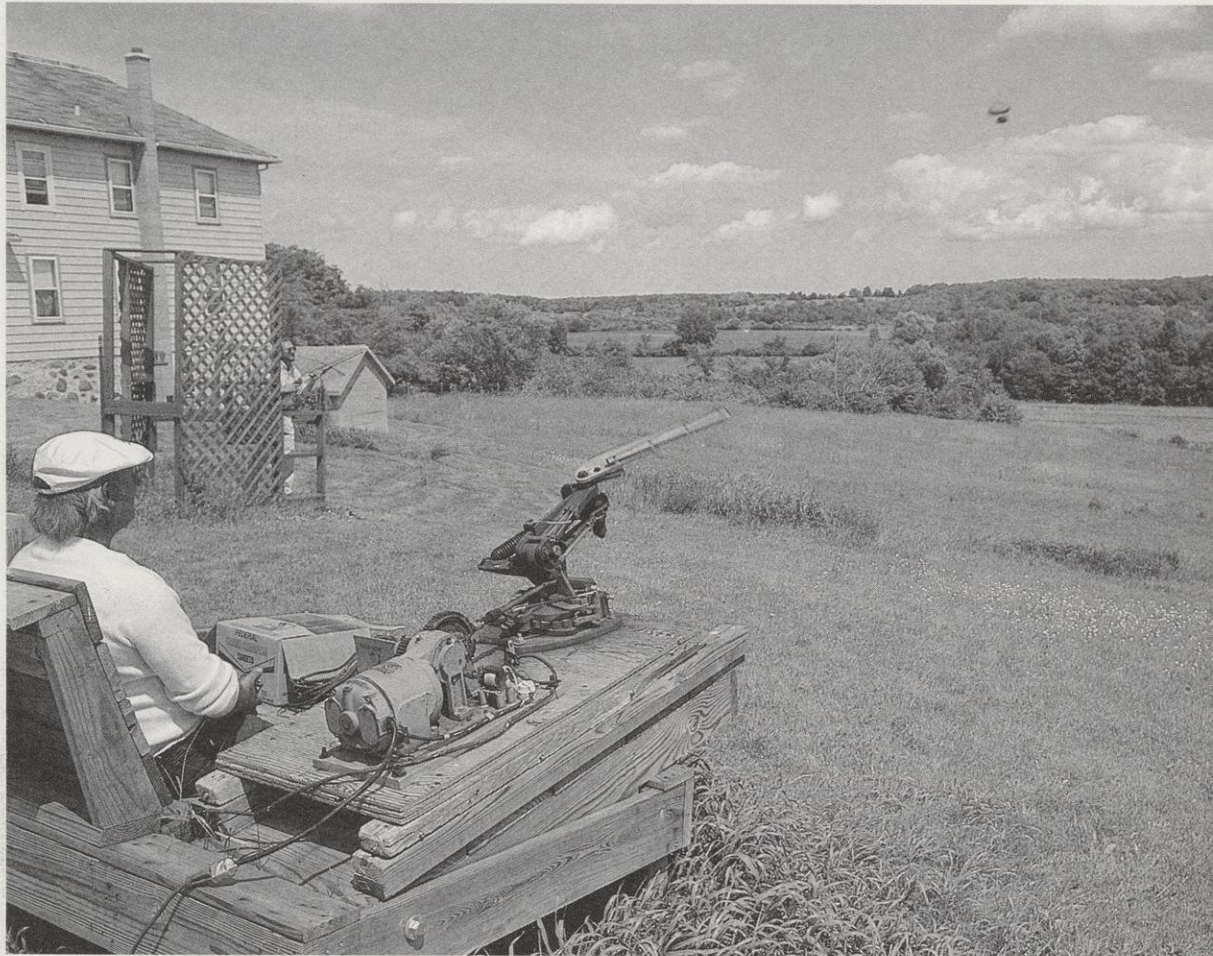
Shooting ranges raise environmental concerns as well. Spent shotgun

shells are picked up for reloading, but wadding and broken targets can litter the ground. Lead shot can be fatal if ingested by waterfowl, other birds and mammals. Some clay birds are coated with paints and chemicals that may leach PAHs — polynuclear aromatic hydrocarbons.

Some clubs have started programs to recover lead. The few clubs that

Ranges and clubs face other trade-offs — it pays to locate nearer larger population centers so you can attract customers. On the other hand, property near metropolitan areas is more expensive, insurance rates are higher near the city and surrounding parcels are more likely to be developed.

Still, as more people of all ages search for more opportunities to prac-



Seeing double. Two clay birds cross at a hilly station on a sporting clay course. Each stop and each target simulates distinct hunting situations. Twenty Wisconsin ranges now offer sporting clay courses.

shoot over wetlands and open water raise questions about spent lead and wadding that lands in shallow waters. To prevent lead contamination from birds and aquatic life, a DNR committee recommended these clubs reorient or relocate their shooting areas to avoid water. Voluntary cleanup of lead and wadding in the shoreline and shallow water would also reduce biological damage. The state will work with sporting groups to promote nontoxic ammunition, targets and biodegradable wadding.

tice their skills with firearms, the demand for trap, skeet and sporting clay ranges is expected to grow. The key to success is designing and maintaining fun, safe sport that grows with the shooting public. □

*For further information, contact the Wisconsin Sporting Clays Association c/o Brian Johnson, (414) 547-4141.*

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

# Learning at both ends of the line



ROBERT QUEEN

Given a chance to nibble at fishing, some kids and adults get hooked. You could learn to teach them this fall.



*Bet you're goin' fishin' all the time.*

*The baby's goin' fishin' too.*

*Bet your life your sweet wife, she gonna catch more fish than you.*

*Little fish bites if you've got good bait — Here's a little tip that I would like to relate.*

*Come on with my pole, baby and my line,*

*I'm a goin' fishin', mamma's goin' fishin' and the baby's goin' fishin' too.*

*— "Fishin' Blues," ©1988, Taj Mahal*

Theresa Stabo

**M**y two sons would be "goin' fishin' all the time" too if they had their way. They began exercising their birthright to fish even before they could say Mister Twister. My husband and I have made the boys part of our long-standing fishing tradition. Sure, we pass on fishing techniques and hand down secret hot spots, but we

also give the kids a sense of fishing ethics. They need to know it's important to keep waters clean and accessible for the next generation of anglers.

In 1987, the Department of Natural Resources started an Angler Education Program out of concern that other kids might not have these opportunities.

What were kids learning about fishing and who was making the time to teach them?

Changing family structures are changing fishing traditions. In many households both parents must work full-time. Also, nearly 233,000 Wisconsin kids live in single-parent homes. The challenges of juggling work life,

after-school activities and organized sports make it tougher to devote time to wetting a line with children and patiently teaching them to fish.

Some families are lucky. They can still rely on an experienced grandparent, aunt or uncle to teach children to fish. However, adults who never fished themselves can have a tough time finding and gauging competent instructors for their kids.

If we're going to preserve our fishing tradition, we have to start making fishing as convenient as the other sports we teach. We need to provide caring, competent instructors who are available after school, on weekends and in locations close to school or home. In a fast-paced, media-driven culture that relentlessly competes for children's attention, some kids may particularly enjoy the fact that fishing does not stress the intense competition that accompanies many organized sports. The pace is a bit slower, but no less rewarding.

Wisconsin's Angler Education Program helps to bridge these gaps by giving interested instructors the skills, materials and equipment to start fishing education workshops in their communities.

Fortunately, we've never had a problem in Wisconsin finding outdoor enthusiasts who are equally enthusiastic about sharing their years of experience and volunteering their time. We certainly have a long track record of introducing children and adults to new outdoor sports through hunter safety, trapper education, boating safety and snowmobile safety courses. What's more, all of these education programs are self-supporting — funded by license sales, permits and excise taxes on sporting equipment rather than general taxes.

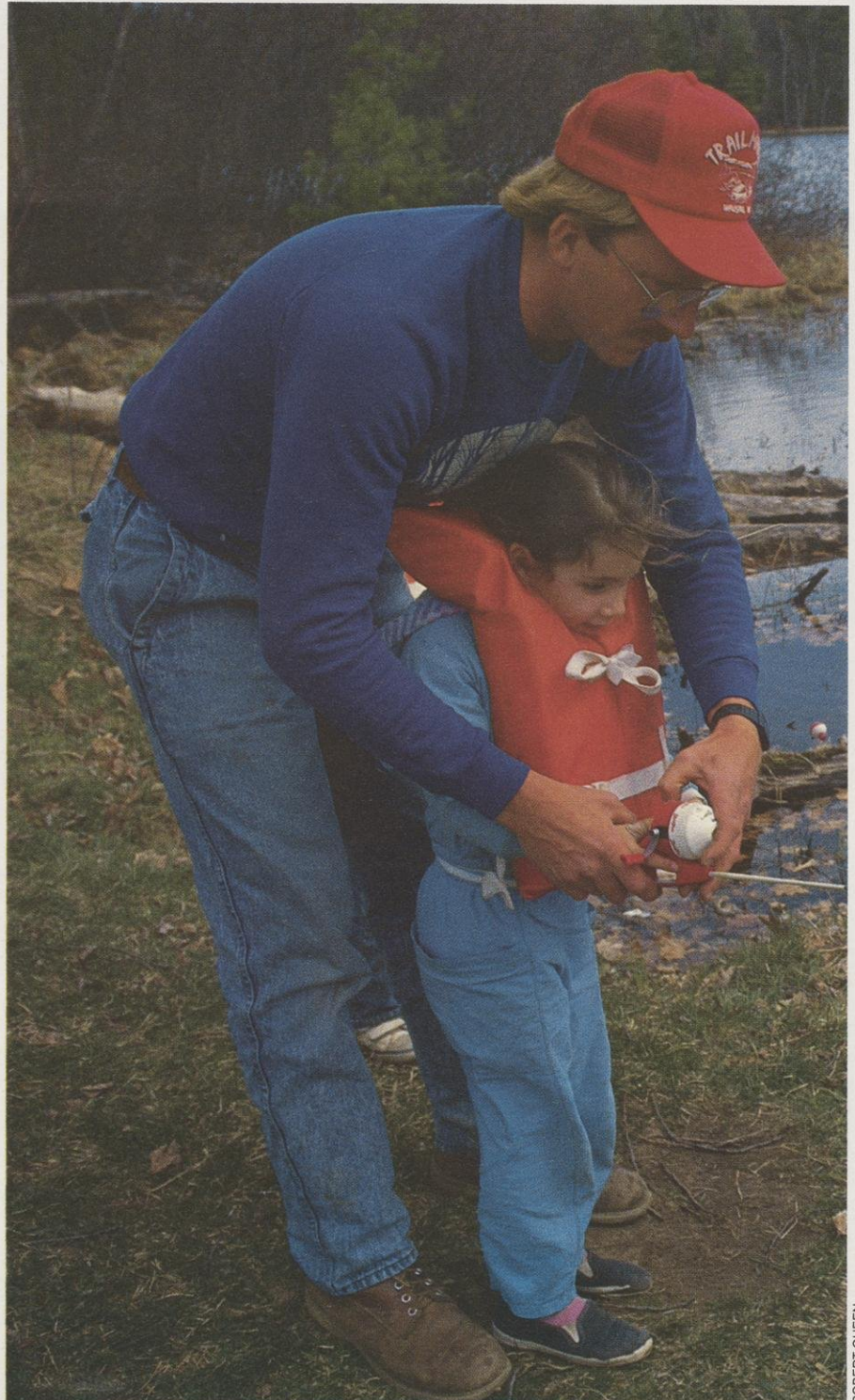
Organized fishing classes for kids are no different, they're just less well known because we have only been in business for five years. We're still the new kid on the block. Fortunately, we're a relatively well-off child. Excise taxes on fishing tackle and boat fuel are divvied out to states partly based on the number of fishing licenses sold, and Wisconsin ranks fifth nationally

in license sales.

It's also challenging for children to develop a fishing tradition if they don't realize they live near fishable waters. Even rivers and streams within walking distance of inner-city and suburban homes can hold small fish and

provide attractive places to explore for frogs, water bugs and shorebirds. But kids won't learn that clean water, plants and insects are all part of the same food web until they are encouraged to explore these areas. Angler education can open that door and en-

Teaching someone to fish builds confidence and friendships. Workshops can teach parents, relatives and friends how to pass on angling skills.



ROBERT QUEEN



## Tips to start kids fishing

*Start simple* — Short rods with small push-button reels are ideal. Cane poles or ice-fishing jig poles are also a good bet.

*Start small* — Panfish bite more frequently and are easier for little hands to land and handle.

*Minimize the gear* — Start with light line, small barbless hooks (like size 8,10 or 12), bobbers and light sinkers.

*Use simple baits* — garden worms, grasshoppers and minnows are as much fun to catch as they are to use.

*Play it safe* — Start a new angler on shore on a safe, flat shoreline or in a boat on a calm day. Wear life jackets. Bring a small first-aid kit.

*Go slow* — Make your first outings relatively brief when the action is hot. Don't force new anglers to like the sport by spending hour after hour waiting for a bite. Always let the newcomers set the pace, even if they spend more time frogging around than wetting a line. You want them to relax and enjoy fishing, and they've got to have the time to do it their way. To make it last, you have to make fishing fun.

*Review your old copies of Wisconsin Natural Resources* — We periodically print tips for new anglers, most recently in our June 1990 handbook, *These are fish. They bite ... sometimes!*



ROBERT QUEEN

tice people outside again.

While DNR's angler education programs focus on youth, adults who never learned to fish as children haven't missed the boat. The program is tailored for two age levels — Junior Angler for youngsters ages 8 - 11 years old and a Master Angler program for anyone older than 12. Both groups of participants receive instruction appropriate to their age and skill level. Students also receive booklets and colorful patches when they complete the program. Graduates can keep up-to-date with a quarterly newsletter, *Fin Clips*.

Although the fishing season kicks off each spring, the angler education year begins each fall when we start holding workshops to train adults. Volunteer instructors who enjoy working with kids are the heart of the program, and we give them plenty of support. Instructors receive a raft of

teaching materials including teaching booklets, life histories of each fish, posters and peel-off rulers to measure the catch. Trained instructors can even borrow fishing equipment from DNR to use for their programs. Rods, reels and tackle for a crowd were donated by the Sportfishing Institute through a grant from the American Fishing Tackle Manufacturers Association.

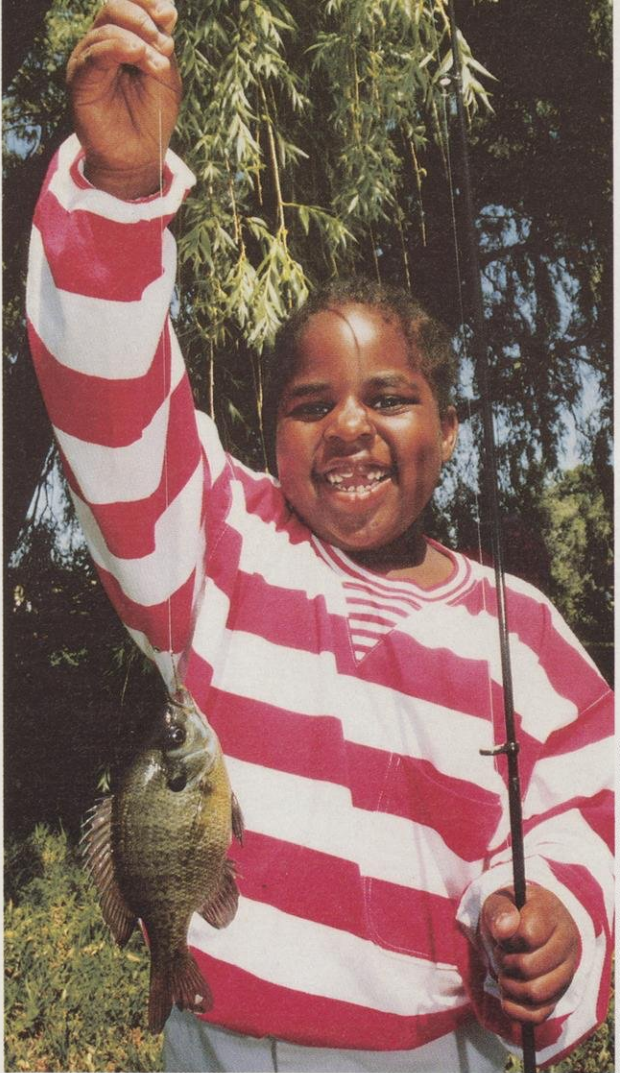
The courses blend concepts of aquatic habitat, outdoor ethics, fisheries management and angling skills. These give beginning and intermediate anglers of any age a sense of the broad ecological conditions that combine to produce good fishing.

Workshops also give instructors a chance to practice teach and get tips on handling large groups of kids in the great outdoors. To date we have trained nearly 1,000 instructors who in turn have brought the program to more than 6,000 students.

## Floating classrooms and a skiff in the schoolroom

Our cadre of instructors is as diverse as the fish in our lakes. Many are members of fishing clubs that view this program as an excellent community service project that may recruit future club members. Jim Porfilio of the Long Lake Fishing Club organized a pontoon boat flotilla to take students in the Campbellsport area to local hot spots. Scout leaders, 4-H leaders and camp directors like Terry Eichmann of Glacier Hollow Wildlife Federation Camp have latched onto the program to round out their nature study and environmental education programming.

School teachers have infused angler education in their curriculum. The program fits hand-in-glove with science and physical education classes, but there are innovative twists. Teachers have included myriad activities

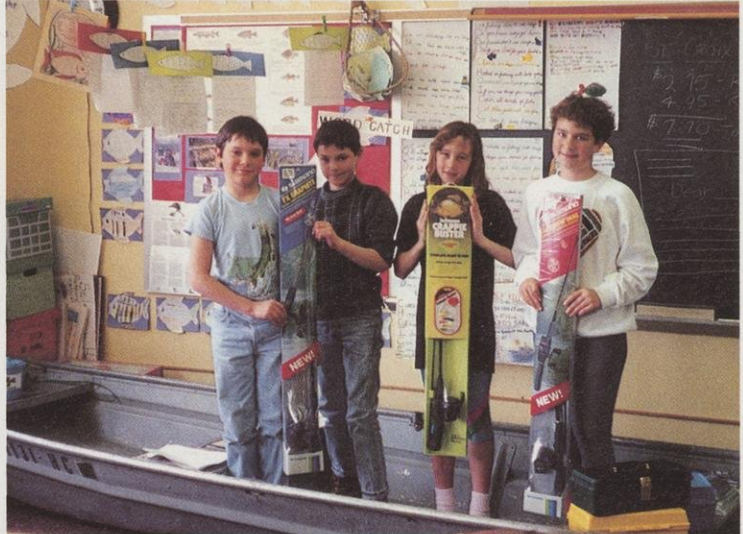


SCOTT SEID WISCONSIN STATE JOURNAL PHOTO

(left) Jennifer Jackson, 5, caught her first fish, a whopper bluegill, at the Kids Fishing Derby, part of the Madison Fishing Expo held on Free Fishing Day.

(top right) Kathleen Strobl hooked her fourth graders on angling at Keenan Elementary School, Phillips School District. She incorporated aspects of fishing into English, language skills, creative writing, art, math and science lessons.

(bottom) Something is fishy about that catch. A volunteer instructor shows Marquette Elementary students how to safely clean fish by filleting a bunch of marked bananas.



KATHLEEN STROBL



DAVID KUNELIUS



ROBERT QUEEN

The Department of Natural Resources holds workshops statewide to teach instructors who will sponsor angler education programs in their communities.

from designing lures before a fishing field trip to writing fish stories upon their return. Kathleen Strobl of Kennan Elementary, has completely immersed her class in angler education. She brought a boat into her fourth grade classroom! The students board the boat for reading lessons and keep their "catch" of vocabulary words from the Junior Angler workbook in a fish net.

### A healthy alternative to unhealthy lifestyles

Alcohol and Other Drug Abuse coordinators are coupling fishing instruction with a national program called "Hooked On Fishing, Not On Drugs". Counselors are attracted to fishing because it provides a healthy way to have fun alone, with a peer or with an adult. Many anglers especially enjoy the sport's contrasts — the quiet moments watching the water go by, the anticipation and excitement of landing a fish. Fishing can also offer kids who lack appropriate role models an opportunity to get to know responsible adults. This builds an appreciation that fishing buddies make great friends who will listen to what's important to you.

Many of our instructors work together to share expertise. The classroom teacher who doesn't have much fishing experience brings his or her training and "crowd control" skills while the fishing club member offers the practical fishing skills. What a team!

If you'd like to join the angler education team, instructor workshops are scheduled to begin this fall and run through the spring.

Call to register at least two weeks before hand. If these dates don't suit you, call (608)266-2272 to receive notices of future workshops near your home or business. We look forward to hearing from anglers and non-anglers alike who like to work with kids or adults to share the fun of fishing. □

*Theresa Stabo coordinates DNR's Aquatic Education Program in Madison, Wis.*



ROBERT QUEEN

## Angler Education Workshops

Date	Location	Contact	Phone number
November 7, 1992	Kenosha	Clayton Diskerud	(414) 551-8500
January 9, 1993	Wausau	Ray Kirschoffer	(715) 848-4241
January 23, 1993	Ashland	Clayton Russell	(715) 682-1223
February 13, 1993	Merrimac	Robert Hopp	(608) 493-2538
February 27, 1993	Seymour	Cindy Mueller	(414) 984-3700
March 13, 1993	Milwaukee	Judy Klippel	(414) 527-0232
April 3, 1993	Dodgeville	Mark Breseman	(608) 266-2272



STANLEY G. DEBOER

June 1963. Game manager Clarence Smith opens up shop.

# Setting a course for conservation

The land was cut over, ditched and abandoned. Wallace Grange's hard work shaped a sprawling game farm on these sandy soils. His vision sprouts again in a new Outdoor Skills Center on the Sandhill Wildlife Demonstration Area.

Mary K. Judd and Richard P. Thiel

**I**t's hard to imagine how many people gazed at these sprawling acres of sandy soil, marshes and scrubby trees and saw their dreams. But they did. And they do. And they will.

In the 1870s, wide-eyed immigrants came to Wood County to log these thin soils. The timber they cut became the general stores, liverys, granaries, farm houses, cow barns and mile upon mile of fence lines in central Wisconsin.

Then for 50 years pioneering families fought a losing battle with sterile soils. These cheap flat lands were a natural magnet for hundreds of would-be farmers who couldn't afford the pricey fertile prairies of Illinois, Indiana and Iowa. Working these fields was back-breaking work — ditching streams, draining soggy, peat soils, yanking stumps and plowing.

The farmers had grit; the land had even more. Weather was no help ei-



DNR PHOTO

Wallace Byron Grange in 1935. He had just finished law enforcement training with the Conservation Department.

ther. These lands were no stranger to prolonged droughts, killer summer frosts, early freezes, floods, insects and fire. Most of the rugged individuals who remained were wiped out when a massive wildfire swept through the central Wisconsin sand plains in the fall of 1930.

The tough land saw even tougher times. During the Great Depression, farm families had something to eat, but many couldn't scratch enough from these poor soils to cover their tax payments. They packed up their belongings, abandoned their farms, and returned to surrounding states for the support of friends and family. Their fields and dreams became statistics in the offices of the county treasurer and the foreclosure companies that hounded them.

From the ashes of this played-out land, another dreamer emerged. He was Wallace Byron Grange, and his vision for these failed lands was less corn and wheat, more conservation



(left) Deserted farmstead in Wood County, March 1934. Grange restored woodlands, wetlands and fields on acre upon acre of such lands.



(right) The Anderson Activity Center will house outdoor skills courses and workshops on the Sandhill property near Babcock, Wis.

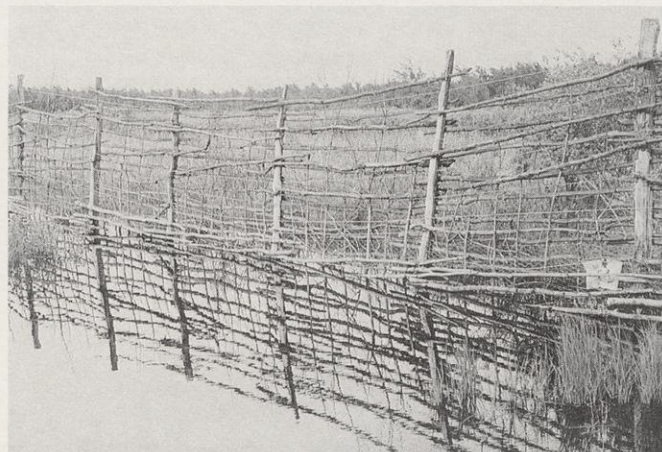
and whitetails.

Grange watched birds and reveled in wild things even before he could walk, so his mama said. His interest in wild things grew about the end of World War I when the family uprooted from Wheaton, Illinois and settled into a farmstead in the ragged cutover Northwoods outside of Ladysmith. Grange kept outdoor diaries and journals that would build both his powers of observation and his writing skills. His natural curiosity was cultivated by one of his science teachers, E.M. Dahlberg, a conservation pioneer, and his high school sweetheart, Hazel, whom he married. Wallace Grange worked in Wyoming for the Forest Service, for the U.S. Biological Survey in Florida, and studied at UW-Madison and the University of Michigan. At the tender age of 22, he was hired as Wisconsin's first superintendent of game.

Two years later, Grange was an administrator for the Biological Survey in Washington, D.C., but shortly tired of desk work. He and Hazel returned to Wisconsin in 1932, raised wild birds and mammals on a Door County farm and scraped together enough savings to purchase

more than 9,000 acres of tax-delinquent lands in southwestern Wood County by 1937. The Granges erected a deer-proof fence around the entire property and called the place Sandhill Game Farm for the cranes whose spectacular migration route passed through the region.

During the next 25 years, Wallace, Hazel and a host of helpers restored wetlands, plugged miles of drainage ditches, built dikes and flowages, and practiced the fledgling art of wildlife management. Surpluses of deer, grouse and waterfowl were sold to gourmet markets in Chicago and New



Spring 1942. Part of the seven-foot-high, deer-proof fence the Granges erected around 9,000 acres.

York. An extensive network of deer traps was maintained. Captured whitetails were shipped by rail to repopulate herds in southern states. Grouse were shipped to the northeastern states for restocking programs. The Granges carefully preserved their

breeding stock and funneled game farm profits back into their conservation programs.

To supplement their farm income, Wallace worked sporadically for his old employer, the Conservation Department. He conducted research on upland birds and waterfowl. He published his field notes and observations in both popular and professional journals. Grange also had a knack for telling good stories. For their 25th wedding anniversary, Wallace wrote a story for Hazel about two generations of snowshoe hares. She published the story as *Those of the Forest* in 1953. (See excerpts in our February 1991 issue.)

Nearing retirement in 1962, the Granges took steps to preserve the land they had restored. In selling the spread to the State of Wisconsin they stipulated that the property was to be operated as a demonstration area where wildlife management practices would be tested, proved and applied. The northern half of the land was to be maintained as a waterfowl refuge for at least 50 years, primarily to protect the sandhill cranes that congregate each fall. In the early thirties, when the Granges started buying property, only one pair of cranes was seen in the area. When they sold the game farm in 1962, about 350 cranes roosted each fall on the largest marsh. Last fall more than 2,000 cranes were counted on the marsh.

Today, the 14-square mile Sandhill Wildlife Demonstration Area still produces magnificent bucks, waterfowl

and grouse. A 300-acre enclosed oak savanna provides a home where bison roam. Research activities focus on a number of pressing wildlife management questions about the ecology of furbearers like muskrat and beaver, techniques for inventorying nongame species and the effects of hunting on game populations.

All hunts at Sandhill — whether deer, grouse, waterfowl or small game — are strictly limited, carefully regulated and monitored for research purposes.

For windshield conservationists, a two-hour, 14-mile auto tour takes visitors on a journey to dusty uplands and marshy lowlands alive with bird song and activity.

Throughout the seasons, Sandhill is enjoyable to explore on foot. The fall stage highlights sandhill cranes that form flocks before their southern

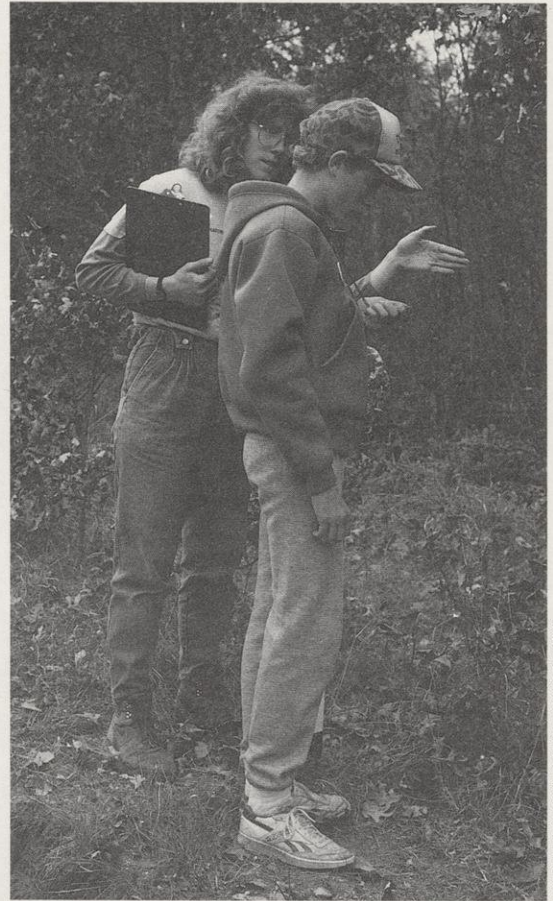
could learn skills to better appreciate the outdoors, wildlife and plantlife. A portion of the Sandhill property is a testing ground for the concept. Programs currently being developed will offer participants introductory skills to identify and track animals, watch wildlife, hunt safely, photograph wildlife, or learn skills like orienteering, camping and outdoor cooking.

The concept is to provide hands-on training in a enjoyable, safe and secure setting.

Why an Outdoor Skills Center? Society is changing. Single-parent families, a lack of country cousins and the expense of summer camp mean that more kids are growing up on manicured playgrounds than exploring woods, fields and ponds. Changing family structures means kids and adults have fewer uncles, grandparents and siblings to pass on camping, hunting and hiking traditions. The pilot wildlife program will give kids and adults the chance to learn outdoor skills that used to be learned from family and friends.

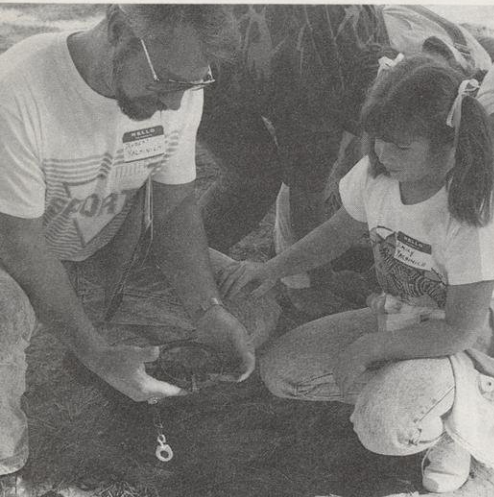
This fall, the welcome mat will be down and the doors flung open on the new Anderson Activity Center — a meeting place and classroom complete with bathrooms, kitchen and offices. Groups visiting Sandhill will come to the center for orientation, plan their day and prepare their meals.

Special workshops at the center will teach wildlife viewing and tracking. Several programs developed at Sandhill in recent years will be held in the comforts of the new center. A two-day Learn to Hunt Deer workshop for 12-15-year-olds and beginning adult hunters teaches basic hunting skills and culminates in a chaperoned deer hunt on the property. The International Crane Foundation co-sponsors a Morning on the Marsh program. Birders camp overnight on the rim of Gallegher Marsh, arise before dawn and are ushered into blinds in the



Orienteering lessons are part of the path to feeling at home in the outdoors.

DNR BUREAU OF WILDLIFE MANAGEMENT



Robert Yachinich teaches his daughter Emily a bit about trapping during a workshop.

DNR BUREAU OF WILDLIFE MANAGEMENT

migration. The deer rut, specialty hunts, wildlife tracking and winter skiing on 15 miles of trails liven up the crunchy and colder seasons. In spring, this land bustles with din of breeding songbirds and migrating waterfowl. Logging trails and dikes are fun to roam in the summer, rounding out the recreational year.

The Granges' vision for Sandhill keeps moving forward. In 1987, a small group of DNR wildlife managers saw the need for places and outreach centers where youth and adults

marsh to view the sunrise show of cranes, geese, ducks and marsh mammals.

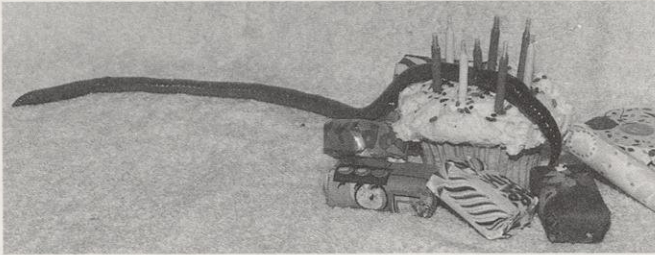
Programs this fall and winter will teach waterfowl identification, wildlife tracking, orienteering, wildlife watching, hunting and trapping skills. With significant help from conservation groups and outdoor educators, future programs aim to continue the Granges' vision — restoring lands to attract wildlife, honing skills to feel at home in the outdoors, recognizing the wild features around us, and taking actions that conserve wild resources, wherever we live. □

*Mary K. Judd is a wildlife education specialist for DNR's Bureau of Wildlife Management. Richard P. Thiel coordinates wildlife education programs at the Sandhill Outdoor Skills Center in Babcock, Wis. Contact him at (715)884-2437.*

# Readers Write

## HAPPY BIRTHDAY, HERMAN!

International Worm Czar George Sroda, featured in our June 1992 supplement "At Home," dropped us a friendly note with a few snapshots of his sidekick, Herman the Worm. Herman is no garden-variety wriggler: He's dined in the White House, engaged in sparkling TV repartee with



Aging gracefully and proud of it!

Johnny Carson, and bumped international financiers off the front page of the Wall Street Journal. Such is the life of a famous invertebrate.

Lest the weight of celebrity flatten Herman, Mr. Sroda (knowing full well that a slimy tongue depressor has absolutely no cachet) regularly returns his charge to Amherst Junction, Wis. There, away from snapping photographers and yapping reporters, Herman can savor the simple life. A birthday party, for instance.

If one counts candles, it appears Herman is celebrating his eighth birthday. Don't be so sure, says Sroda: "Herman is ageless...kind of like Elizabeth Taylor!"

Good to hear from you, George. Thanks for making us part of Herman's extended family. Belated birthday wishes, Herman — and many happy returns!

## ACID INDIGESTION

I am an avid reader of your publication and am genuinely thrilled that Wisconsin can claim to have it! But I was deeply disturbed by what I found when I was re-reading "The Green Machine" (August 1991) written by Associate

Editor Maureen Mecozzi.

There's a line on page 7 that reflects a gross misunderstanding of the chemistry of acid rain: "Acidic precipitation destroys forests and raises the pH of freshwater lakes." Acid rain does not raise pH, it lowers it.

I do not know whether this error was caused by ignorance or carelessness — both or either would be inexcusable for

an editor of an environmental publication. Change in pH is the first thing one learns about the effects of acid deposition.

*Richard Lemanski  
Watertown, Wis.*

Maureen Mecozzi replies: *Well, Mr. Lemanski, now you know why I majored in English instead of chemistry. You're right: Acid rain increases the acidity of a lake, thereby lowering the pH. Thanks for being a careful reader and catching the error.*

## FISHING SPORTSMANSHIP

Just wanted to put in my two cents on the Business or Pleasure article about competitive fishing. We fish the Mississippi River and its backwaters and have experienced every one of the complaints you raised. If sportsmanship was the theme of the day, everyone could get along better. Treat others as you want to be treated.

Maybe we need a refresher course. Maybe even more articles on safe boating and fishing would help. I think boaters need to be reminded to slow down when approaching another boat and to stay a reason-

able distance away from the other guy. No one likes to have someone so close that your lines tangle.

*Sportsmanship*, that's the solution to fishing business or pleasure. Let's start the campaign.

*Catherine L. Weber  
Lancaster, Wis.*

*A perfect way for us to remind readers to practice courteous boating, enroll in boating safety courses sponsored by the U.S. Coast Guard and the Department of Natural Resources, and enjoy a second look at our June 1991 special section, Charting a new course: Boating in the 1990's.*

*Continued from page 2*

point of extinction in many states, including Illinois and Ohio, says Cathy Bleser, DNR biologist and coordinator of the Karner Blue program. Since 1990, Bleser and coworkers have been surveying the state to determine how many of the Karner blues inhabit Wisconsin.

"Wisconsin has a number of sizable populations on public properties. These offer good opportunities for long-term care, protection and management," says Bleser. The surveys have identified approximately 79 colonies of Karner blues in Wisconsin, the majority of which are located in the central sand counties of Portage, Waushara, Adams, Juneau, Jackson and, to the northwest, in Burnett County. Many colonies manage to survive in narrow strips of remnant habitat along roadsides, railways and power line rights-of-way.

"The Karner shows the importance of preserving habitat to protect a species," explains Bleser. The Karner blue caterpillar has a taste for only one thing: wild blue lupine.

A member of the pea family, lupine has bluish purple, sweet pea-like blossoms and parasol-like leaves. It grows in light, sandy soils where the native vegetation is pine and oak savanna. Land development, agriculture and aging in the absence of periodic fires have changed these open savannas into shady woodlands making life difficult for the Karner blue.

The barrens rely on periodic fires to suppress seedlings of oak, jack pine, white pine and aspen. Yet, fire is lethal for all stages of the Karner blue's development. In order for Karner blue populations to survive, the butterflies must stay one jump behind the fires, moving from unburned sites to recently burned sites where fresh lupines thrive.

That's no mean feat for a butterfly with such a small wingspan. Karner blue adults do not migrate, nor do they stray far from their home lupine patch — usually less than a mile at best. Karner blue eggs laid on lupine stems survive

## TIMELY ISSUES

I'm enclosing a check for two more copies of the August issue.

I'm a subscriber, but am unwilling to give up my copy to others! I have relatives who will be spending time in October at the Peterson Cottage at Mirror Lake State Park. We also have friends who are avid tree growers (as in reforestation) and I want them to have the articles for their very own.

Congratulations on a fine publication, one I always look forward to receiving.

*Joan Lybarger  
La Crosse, Wis.*



ROBERT BORTH

Bob Borth, Wisconsin Gas Company and DNR's Catherine Bleser examine a lupine patch. Transmission routes and transportation routes can be planned to avoid such areas critical to species like the Karner blue butterfly.

Wisconsin's harsh winters protected by leaf litter and snow, explains Bleser.

Two generations or broods, hatch each year. The first, when the wild lupine appears in late April to mid-May; the second in late June. The caterpillars are hard to spot, Bleser says, but it's not hard to guess where they've been. They eat all but the upper layer of the lupine leaf, which leaves translucent "windows" in the leaves.

You may also track the caterpillar by looking for swarms of ants crawling up and down lupine stems. The caterpillar produces a sweet syrup that ants love to lap up. In return, the ants are believed to protect the caterpillar from predatory spiders and wasps. "I've had ants attack my finger as I've moved it toward a caterpillar," Bleser says.

The caterpillars pupate in mid- to late May and emerge as adult butterflies by early June. The butterflies venture out to collect nectar from favorite plants like butterfly weed, goldenrod and spotted horse mint. Female butterflies lay tiny, pale green eggs on lupine stems and leaves, which hatch in late July as the summer's second generation of caterpillars. These develop into butterflies by mid- to late July.

Bleser and her colleagues map and estimate the size of Karner Blue populations by walking a survey route through areas where lupines are abundant. Adult butterflies are counted as staff walk the designated paths. To estimate butterfly populations, several visits are made to each site each year, preferably during the peak flight time for the summer brood.

If Karner blue populations are deemed small and rare enough to warrant federal protection, the species would be Wisconsin's first butterfly and second insect to be listed as "endangered". The giant carrion beetle (*Nicrophorus americanus*) has been protected since 1989, but may be extirpated now in Wisconsin.

Chuck Kjos, endangered species coordinator for the regional U.S. Fish and Wildlife Service office, notes that Karner blue butterfly populations have plummeted 90 percent nationwide during the last 15 years.

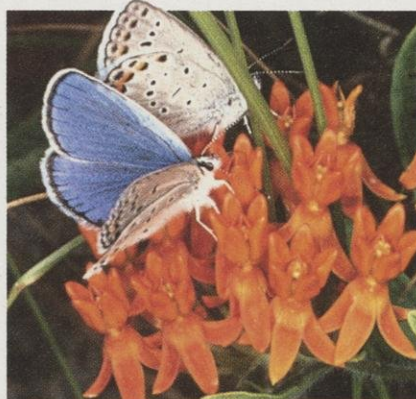
As wildfires are controlled, the dry barrens that used to grow patches of lupines naturally age into scrubby woodlots of oaks, jack pine and white pine seedlings that shade the sandy soils. Some of this land is being developed as irrigated vegetable farms and pine plantations. Still other barrens are lost to road and home development.

Listing the Karner blue as an endangered species would make it illegal to destroy or jeopardize the butterfly and the habitat that supports it, whether on public or private land. For instance, managers of two federal properties where Karner blues are plentiful — Fort McCoy and the Necedah National Wildlife Refuge — would need to protect the caterpillars by maintaining lupine patches and other habitat where adult butterflies feed, rest and reproduce. Any public projects using federal funds, like road or school construction, would also have to protect butterfly habitat.

It's not enough to merely set aside these areas. Properties need to be managed to encourage these rare butterflies. Bleser recommends avoiding broadcast herbicides and limiting mowing to late summer and early fall, a less destructive time in the butterfly's life cycle. Managers are also encouraged to plant lupine and prairie species that flower instead of bluegrass. Prescribed burns, to maintain grasslands, should be done in patches, rather than burning an entire parcel, if Karner blues use the property.

Bleser stresses that steps to protect the Karner blue help more than just one butterfly. "Karner blues are a barometer of the health and diversity of our natural world. Our commitment to protect butterflies is equally a sign of our commitment to save rare native species and imperiled communities."

*Lycaeides melissa samuelis* — a little butterfly surrounded by big concerns for our endangered natural habitats. □



Karner blue male nectaring on butterfly weed (*Asclepias tuberosa*).

CATHERINE BLESEER

Science writer Lori L. Graham lives in Madison, Wis. She works with the Wisconsin Fast Plants and Bottle Biology science education programs at the University of Wisconsin-Madison.





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