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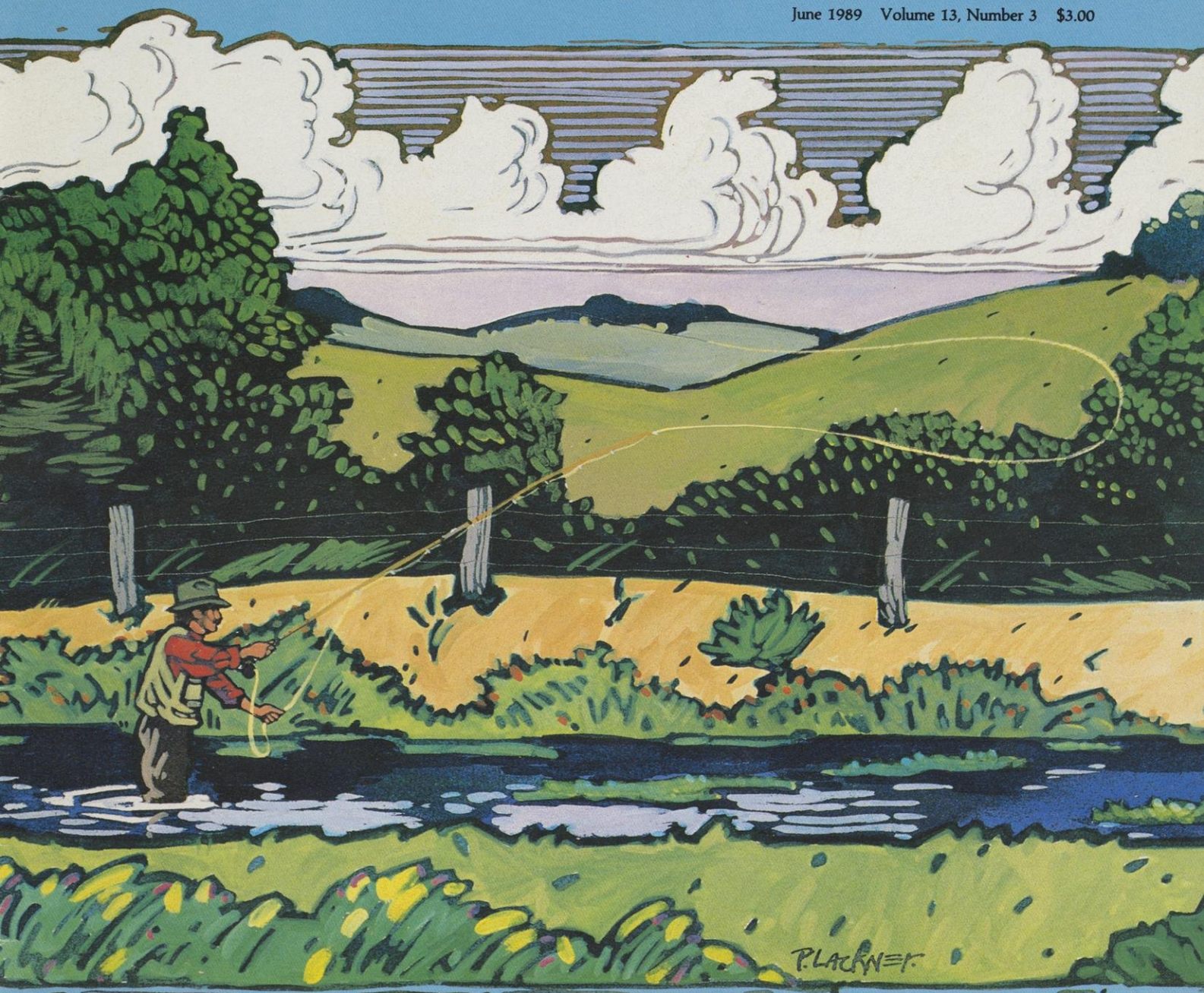
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SPECIAL SECTION: Handling yard waste in the community and at home

WISCONSIN NATURAL RESOURCES

June 1989 Volume 13, Number 3 \$3.00



Shore lunch
Weathering drought
Spring creek secrets



Gregory K. Scott Nature Photos

Illuminating a myth

Dawn Hlavka

During the Dark Ages, when superstitions and magic often carried more weight than the truth, people believed that fireflies (lightning bugs) carried messages from the dead. According to the myth, when a person died the soul would leave the body in the form of a small light. The golden-yellow or reddish-orange light emitted by the insect was thought to have been the human soul.

Modern entomology can shed a little light on the firefly myth. First things first. The firefly is not a fly, nor is the lightning bug a bug. They are beetles, members of *Coleoptera*, the largest order of living things (about 290,000 species at last count). Fireflies belong to the family

Lampyrinae, in which there are 136 species in North America.

Many female fireflies do not have wings; those that do seldom take flight. The male can fly, but has a hard time locating females hidden on the ground. In order for individual fireflies to quickly find a partner in the dusk of a warm summer night, most of the 136 ever-so-slightly different species developed an illuminating mating technique: each has a definite pattern of light flashes emitted by the males and females. The flashing signals are so distinctive that a beetle specialist can recognize most species solely by the number, duration and interval between flashes.

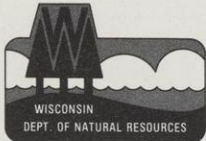
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WISCONSIN NATURAL RESOURCES

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WEATHERING DROUGHT

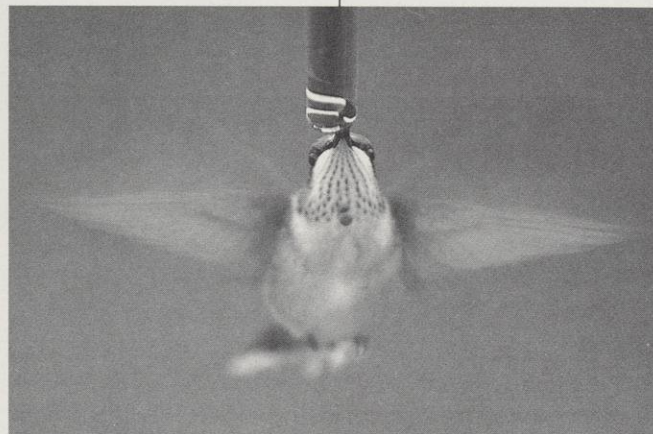
Peter B. Reich

Forests must weather the
weather whatever the weather.

11 A FISHERMAN BLESSED BY THE APOSTLES

Kate Crowley

Tread where rugged fishers
plied Lake Superior's rough
waters and rocky shores.



Stephen J. Lang

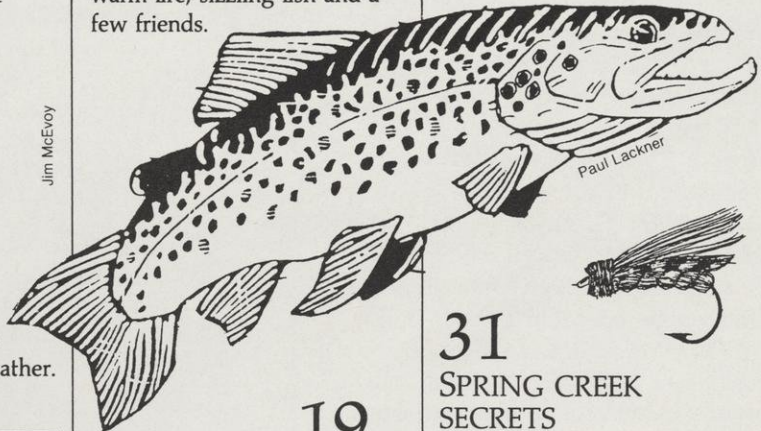
FRONT COVER/BACK COVER:

Spring creek trout fishing
scene by Paul Lackner

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Tom Hollatz

Take a relaxing siesta with a
warm fire, sizzling fish and a
few friends.



Paul Lackner

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and Kendra M. Nelson*

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Paul Lackner

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come fly-fish for trout on
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Weathering drought

If you think last summer's drought was tough on you, you should have been a tree!

Peter B. Reich

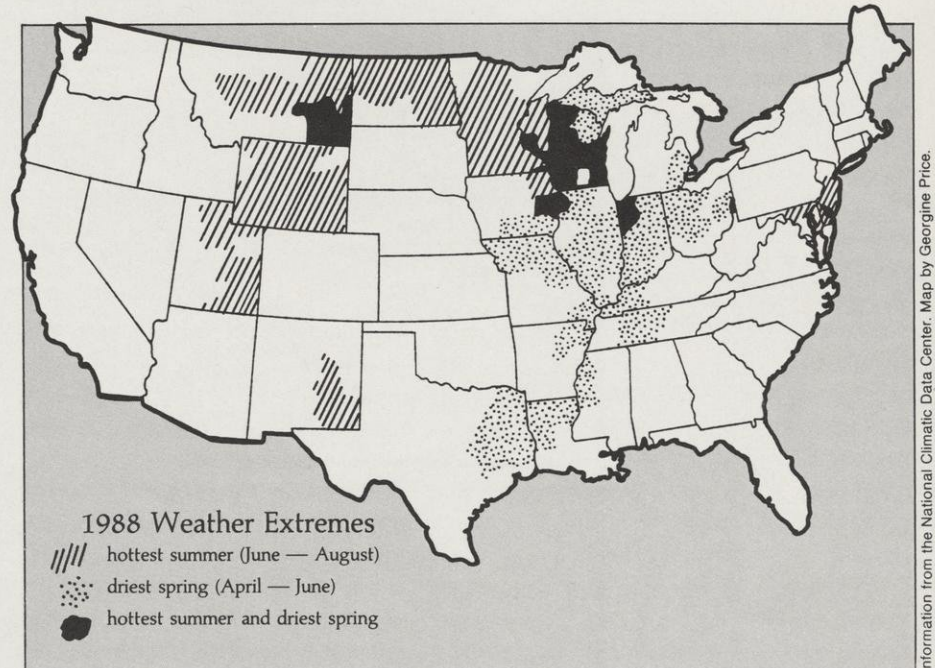
Did seedlings or saplings in your yard or fields wither and wilt last summer? Did they barely survive despite your care and watering? If so, they weren't alone: millions of Wisconsin's trees were stressed by the prolonged drought and heat.

About three-fourths of the state suffered the driest April to June period since the state weather bureau began keeping records in 1895. In much of Wisconsin no measurable rain fell from early May through mid-June: drought didn't peak until mid-to late-June. It was also the hottest summer on record in about 80 percent of the state: southern Wisconsin particularly baked in frequent 90°F heat. The combination of prolonged heat waves and drought are extremely stressful to trees and will dry out plants more rapidly than either stress alone.

Obviously, drought stresses trees by reducing the available supply of water in the soil. On hot, dry summer days, trees lose water through leaves (transpiration) faster than they can take it up out of the soil. When soils are well-watered, trees can slake their "thirst" or rehydrate at night by absorbing soil water when water loss through the leaves is minimal. When soils dry, tree roots cannot absorb enough water at night. A gradual, stressful dehydration occurs.

Furthermore, trees have different ways of reacting to drought: small trees (seedlings and saplings) face different stresses than large trees; some trees naturally grow in drier or moister sites; and some species are naturally drought-tolerant (like oaks) or drought-sensitive (like white pine).

In addition to direct weather effects, drought influences how trees fend off other stresses they must bat-



tle, regardless of weather — browsing by wildlife, insects, frost damage, air pollution and disease.

Desiccated trees have many ways of showing how they "hurt." Leaves and shoots stop expanding, trees stop producing new leaves, and photosynthesis slows down. That's especially serious because a tree that stops making foodstuffs stops growing. If drought becomes severe enough, leaves wilt, and they may dry up and fall off the tree. You may recall seeing a particular shrub or tree suffer that fate by dropping its leaves early last year.

Heat took its toll on young stock

What about young seedlings, our future generation of trees? According to Trent Marty, DNR nursery coordinator, seedlings in the state nurseries

(principally pines, but other species as well) largely survived without major problems because they were irrigated. Still, the intense dry heat stunted some hardwood seedlings.

Both seedlings in the wild and nursery stock that was moved to plantations took a beating in 1988. Researchers at the UW-Madison Forestry Department found that wild seedlings in many hardwood and conifer stands died or were severely stressed and slow growing. In plantations, 35 to 40 percent of newly-planted two-year-old and three-year-old white pine seedlings died; normally only five to 10 percent are lost. Pine mortality at different planting sites varied due to soil type, differences in rainfall and the time when seedlings were planted.

Trees planted in early April did better last year because we had a warm spring and root systems had



Al Prey

Christmas tree prices may be higher in 1989. Two of our most popular tannenbaums, Scotch pine and white pine are especially sensitive to drought. Lots of trees, like the light-colored dead white pine in this Coloma, WI stand, simply couldn't outlast the extended periods of hot, dry weather.

enough time to establish before the May drought. In a normal year, such early plantings would be risky since a cold snap in mid-spring can kill or stunt young trees.

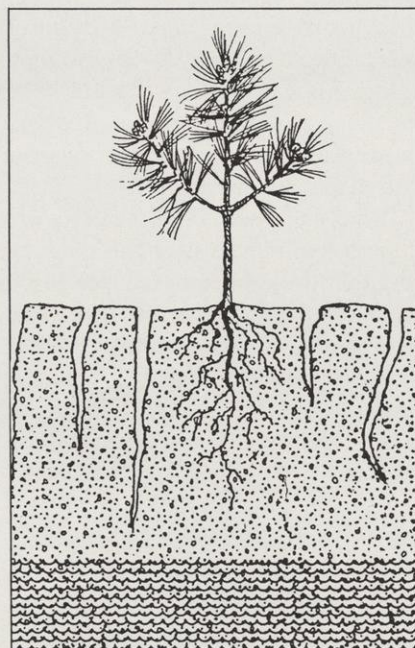
In '88, it especially paid to prepare tree planting sites well. Seedlings planted in cleared, weeded areas had less competition for light and water, so they survived when others succumbed to drought. Survival did not guarantee good growth; all surviving seedlings grew much more slowly and less vigorously than in normal, wetter years.

Nor, under these stressful conditions, did size ensure success. Two-year-old stock seemed to do better than larger three-year-old seedlings because the two-year-olds had a larger proportion of roots to shoots. Once transplanted, three-year-old seedlings with large tops and a proportionally smaller root system could not draw enough moisture from dry soil to support a larger leaf area.

By contrast, mature trees were stressed far less than seedlings (10 to 100 times more likely to survive than seedlings). Though our research found that mature conifer plantations in the Central Sands as well as pine and hardwood plantations in Wisconsin's Driftless Area in the southwest were stressed for water, healthy trees survived.

Why the stark differences between seedling and large tree survival? Big trees root deeper and store more water and food reserves.

During extended periods without rain, the soil dries from the top down, almost like a wave. For example, after a month without rain, the top 1½ feet of soil may be bone-dry while the soil below remains quite moist. The relatively shallow-rooted seedlings dehydrate as the soil surface dries out. In contrast, larger trees may have some shallow roots but also have many deeper roots. Even when soil was dry two feet down last summer, some large oaks were not water stressed in the least. Large trees also store moisture and food in their roots, stems and branches to a much greater extent than seedlings, and can draw on these reserves during emergencies.



Jim McEvoy

Backyard shade trees were hurting

Ornamental trees and shrubs in towns and cities did worse than older forest trees. Leaves, branches and entire stems of many woody species in parks, fields and yards throughout the state died back. Many of these spunky plants showed amazing resilience by sprouting back from the roots later in the summer. Only time and this spring's rainfall will tell how well these sprouts will fare.

Oh! Tannenbaum

We lost a lot of future Christmas trees last year, especially in Wisconsin's Central Sands area where sandy, well-drained soils hold little water. During drought, soil moisture declined dramatically there and mortality ran high; white pine and Scotch pine were hardest hit. Trees that survived tough Wisconsin winters for 12 years died in the heat and drought.

Some research surprises

Most of our intuitions and predictions about drought proved correct, but there were a few surprises. For instance, a landowner reported that some large, apparently healthy silver maple trees growing along the Wisconsin River near Spring Green died from drought while others growing several hundred feet uphill from the river survived. The dead trees may have had shallower root systems that tapped directly into the water table in

the sands just beneath or alongside the river. When the river level and water table dropped, even these massive tree roots were left high and dry. By contrast, the trees up the ridge probably were deep-rooted, tapping a wider area of less sandy soil that enabled them to tenaciously hold on and extract underground moisture.

Insect problems

Drought-weakened trees were more susceptible to disease and insect damage, but some bug populations also were decimated by the harsh weather. Some insect infestations got worse, some remained the same and some were less severe given the hot, dry weather.

According to Ken Raffa, forest entomologist at the University of Wisconsin-Madison, bark beetles attacked red pines and jack pines in northwest, central, and southern Wisconsin. Normally, pines defend themselves against this aggressor by flowing a lot of sticky resin where the beetles bore in. But resin flows slowed by drought gave these beetles an edge. They invaded and killed the vulnerable pines.

Two other insects "tag-teamed" hardwoods to put a death grip on oaks in Sauk, Columbia, Adams and Marquette counties. Here's how they did it. First, many white and northern red oaks were defoliated in the spring by the ill-named "fall cankerworm." Many oaks responded by leafing out a second set of leaves, using up valuable energy. Second, the intense drought and heat wave gave weakened trees no rest to recover. Third, the two-lined chestnut borer attacked the trees in July, killing many by August. This wood borer is specially adapted to seek out and attack stressed trees. The last serious outbreak of chestnut borer in Wisconsin was in 1976, the last serious drought year.

There were many signs of this insect "battle royal" in plain view. You likely saw masses of dying oaks flanking Highway 51 north of Portage in late summer.

Forest tent caterpillars covered al-



Courtesy of Peter B. Reich



Greg Lintereur

(top) Marc Abrams, forester, measures transpiration and photosynthesis rates of drought-stressed seedlings. (bottom) Larvae of the root collar weevil buried inside moist trees beat the heat last year. A strong population of these weevils are emerging as adults this summer.

most a million acres in northern Wisconsin and defoliation was heavy in many areas. The outbreak probably would have been the same in '88 regardless of the weather, and will likely be similar this year regardless of rainfall.

Various conifer needle diseases were *lighter* in 1988 due to drought! Infections can't take hold until the needles remain wet for at least 48 hours. Few two-day wet periods occurred last summer.

Root collar weevil populations are expected to remain strong despite the fact that drought knocked down the number of adult weevils last year. This weevil can overwinter as either larvae or adults. Larvae survived the drought by staying moist inside of trees. They will emerge in '89 as adults.

Will it happen again?

What's going to happen this year? Trees will grow slowly in spring because they are low on stored "fuel"

reserves. Most trees and seedlings that survived last summer are weaker and less vigorous than they should be. If we have a wet spring and summer, these trees will likely do well in 1989 and beyond. If we see another drought and/or heat wave, stressed trees will likely suffer direct injury or become more susceptible to insect attack. Further stresses could put normally vigorous trees on a slow spiral to decline and death.

Hot, dry summers like the one we experienced last year typically happen once every 40-60 years. If concerns about global climate changes due to the greenhouse effect and carbon dioxide buildup prove true, then such weather patterns might become more frequent. This would dramatically test the forests' abilities to rebound from repeated stresses of heat and drought.

Peter B. Reich is a forestry researcher and teacher with UW-Madison's Department of Forestry.



JUNE 1989

INSIDE

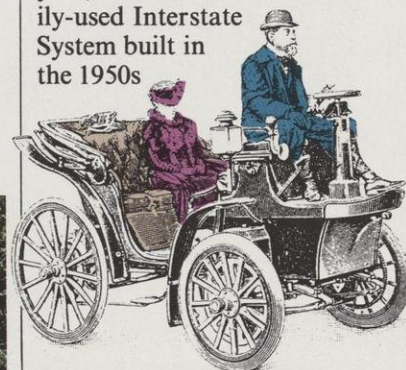
Mystery lakes
A frontier spectacle of commerce
Dinner in the diner

VOLUME 1 NO. 2



Delightful detours

You'll be seeing some road construction on Wisconsin interstate highways this summer — 85 miles worth, to be exact. Every year, sections of the heavily-used Interstate System built in the 1950s



and 1960s wear out and must be repaired.

Although interstate highways represent less than one percent of all state roads, they carry 13.5 percent of the traffic — meaning you're likely to encounter those bright-orange witch hats somewhere along the route of your wanderings.

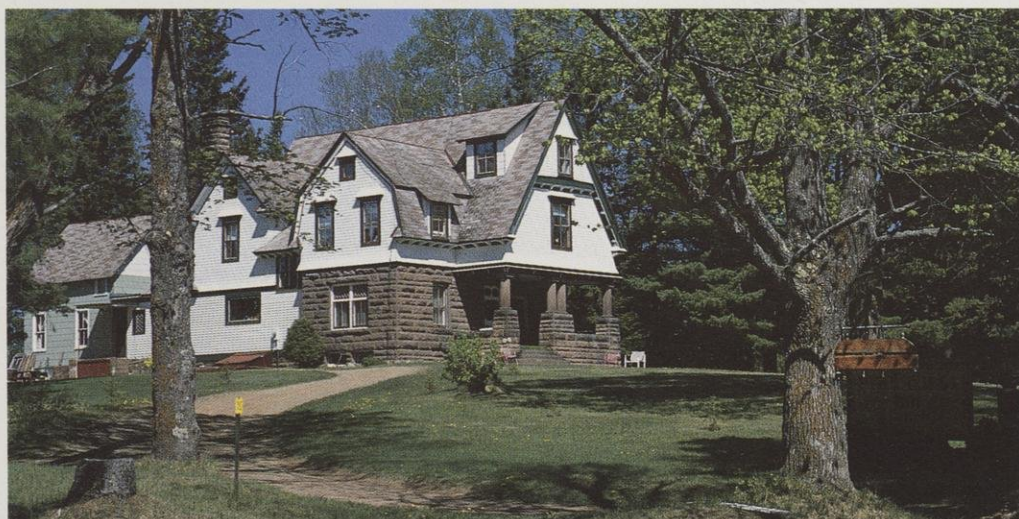
Not to worry. You'll find remote-controlled message boards with accurate reports on delays and back-ups set up miles before the construction in both directions. You can tune to special traffic reports on Wisconsin and Illinois radio stations and pick up a brochure with a map of construction zones from State Patrol and other Department of Transporta-

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A room with a view

After a long day of sightseeing and exploring, there's nothing travelers want more than to rest their weary bones on a soft, clean-sheeted featherbed and dream of the morrow's adventures. If the morrow breaks with a steaming mug of coffee, freshly-baked bread and eggs still warm from the hen, so much the better.

The people of Wisconsin — a most accommodating group — have always enjoyed putting travelers at ease. From the first frontier taverns (which supplied lodging and food; the "grocery" supplied drink) to cozy bed-and-breakfast establishments, those in need of food, friendly conversation and sleep have found places to rest and refuel in the Badger State.



The Pinehurst Inn in Bayfield: Cozy comfort in the shade of Wisconsin's Northwoods.

Wisconsin Division of Tourism Development

The earliest frontier accommodations were spartan log houses with one large room for sitting, eating and cooking with a sleeping loft above. At the finer establishments the loft was separated into cubicles; at most taverns guests slept dormitory-style.

This conviviality occasionally extended to the

animal kingdom, much to the chagrin of paying customers. Rowan's Tavern in the Columbia County town of Poynette had a reputation of bedding swine before people. Sleepy travelers were kept awake by a sonata of grunts, squeals and snorts from the hogs, kept in the same room and separated from the guests

only by a short log partition. In *The Flavor of Wisconsin*, Harva Hachten notes the porcine pets had the run of the place. One guest, upon seeing a porker rooting through a dish of potatoes on the hearth, remarked to Mrs. Rowan: "Madam, I would like to be served before the pig."

Continued on page 2

Continued from page 1

If you didn't care to share your pillow with a pig or another guest, there wasn't much you could do about it in 1835. Travelers willingly took whatever accommodations they could find. The alternative — spending the night outdoors in Wisconsin's harsh wilderness — convinced guests to endure rough-hewn hospitality.



Gone are the days when a man could get a good night's sleep and hog chow under one roof.

Matthew Witt, Cross Plains, Wis.
Iconographic Collection, State Historical Society

Wisconsin's frontier tavernkeepers would have bristled at the idea of hanging "no vacancy" signs in front of their establishments. By standing rule, no traveler was turned away, even if the tavern was full. One bed could be divvied up among three or four people and there was always room on the floor.

In the 1840s and 1850s, frontier taverns gave way to "houses" that accommodated sojourners traveling on the plank roads and railroads. Most houses offered individual rooms; many had ballrooms on upper floors where dances, parties, dinners and community meetings were held. The Wade House, built in 1850 at Greenbush, the midpoint on the Sheboygan-Fond du Lac plank road, continues to be a center of community activity today under management by the State Historical Society.

As transportation im-

proved, innkeepers could rely on a steady supply of comestibles to augment the standard fatback-and-bread menu. Wisconsinites were introduced to celery, grapefruit and artichokes at house tables. Oysters were the specialty of Hawks Inn in Delafield. You won't find the succulent mollusks for sale there today, but the historic inn is open for tours.

The Milton House, a hexagonal structure built in 1844 in Rock County, houses a museum instead of travelers. It's said the tavern was a stop on the underground railroad for slaves fleeing the South prior to the Civil War.


The tradition of hospitality established by the taverns and houses continues today in Wisconsin's country inns and bed-and-breakfasts. Over 100 inns and B & Bs around the state welcome travelers to sit back and enjoy a night or two relaxing "among friends."

Bed-and-breakfasts are owner-occupied lodgings with four or fewer guest rooms that serve only breakfast to guests. A typical B & B has shared bathrooms (some offer private baths) and access to a common living room, dining room or parlor. The rooms are comfortably appointed, often with antiques; seldom with phones or TVs.

Country inns are larger than B & Bs — some have eight or more rooms — and while they retain the personal ambiance of a B & B, the inns may offer amenities such as phones and TVs in the room and private baths. Many inns serve other meals besides breakfast.

A B & B on a farm offers an especially delightful rest from the pressures of urban life. Wisconsin's countryside entices guests to stroll for hours taking in the sights: gently rolling waves of deep-green alfalfa, a crimson-and-gold sunset outlining the far horizon of silos, and Holsteins in monochrome against a brick-red barn. If they've got a mind to, guests can pitch in and help with the chores, working up an appetite for a hearty country breakfast. Many farm B & Bs are set up to accommodate families; kids who don't know a goat from a Gobot will meet some unusual critters in the barnyard.

In 1854, a Mineral Point innkeeper stated that he would "entertain in a comfortable manner all who may favor him with a call." One hundred and thirty-five years later, it's good to know some things haven't changed in Wisconsin.


 Old Wade House, (414) 526-3271; Hawks Inn, (414) 646-2140; Milton House, (608) 868-7772. Publications about B & Bs, available in most bookstores: *A Room at the Inn, Wisconsin* by Laura Zahn; *Inns, Homes, and Little Out of the Way Places in Wisconsin* by Carol Jean Buelow; *Guide to the Recommended Country Inns of the Midwest* by Bob Puhala. For information on B & Bs and inns: Wisconsin Division of Tourism Development, 1-800-372-2737.



Fur sale

Care to trade a beaver pelt for a barrel of flour? Purchase a peck of pemmican? Market your muskrat? Travelers out for a bargain can haggle with buckskin-clad artisans from around the Midwest during the Annual Fur Trade Rendezvous, June 16-18 on St. Feriole Island, just outside Prairie du Chien in the Mississippi River.

Selling and swapping, browsing and buying are the weekend's main activities. You'll find handmade jewelry, leather goods and craft items to take home and enjoy snacks cooked over open fires at this colorful spectacle of frontier commerce. (Don't forget to stock up on bear grease and salt pork while you're there.)

 Prairie du Chien Chamber of Commerce, (608) 326-8555.



Rendezvous with a bargain.

State Historical Society

Traditional crafts have a way of becoming contemporary works of art. Consider the exquisite bead-and-quill work of the Ojibway (Chippewa) people, or the deft stitchery and design of quilts made by pioneer women over 100 years ago. Today, artisans adopt these timeless techniques to create new interpretations of beauty.

Old and new will mingle


Continued on next page

HISTORICAL SOCIETY

when Ojibway crafts are featured on June 24 and 25 at the Madeline Island Historical Museum, in the village of La Pointe on Madeline Island, largest of the Apostle Islands. Members of several mainland Chippewa bands will be at the museum to answer questions.

Antique and modern quilts from southwestern

Wisconsin collections will grace the halls of Pendarvis in Mineral Point during the 14th Annual Quilt Show, July 1-16. Special activities on quilting and the care of historic textiles will be held on weekends during the show.

 Madeline Island Historical Museum, (715) 747-2415; Pendarvis, (608) 987-2122.



What's in a name?


Everybody knows the big guys: Superior, Michigan, Winnebago. And 5,695 of Wisconsin's 14,949 lakes have been christened with racy monikers like "Mud Lake" (106 at last count) or pungent sobriquets such as "Skunk Lake" (a total of four) and "Scat Lake" (only one — whew!).

That leaves 9,254 lakes without names. Or 9,254 chances to find a lake you can call your own.

Look on a map. You'll see that most of Wisconsin's unnamed lakes are small (less than 10 acres),

shallow and a little tricky to reach. But the traveler willing to hike in will be rewarded with an afternoon of quiet companionship with water, earth and sky. (Check with nearby property owners for permission to cross private land.)

You're welcome to give your no-name lake a nickname, of course. Just keep in mind that lakes officially can't be named after anyone who's living.

 Interested in protecting small lakes? Call Carolyn Rumery, DNR lakes management program, (608) 266-8117.

Need more information?

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



DINNER TRAIN



The restaurant on rails.

Al Gartzke

Lettuce entertrain you!

Pardon me, boys — is that the Chattanooga Choochoo?

No. This is Wisconsin, remember? That colorful five-car train you've seen at the crossroads in Germantown, Richfield, Slinger and Hartford is the property of Scenic Rail Dining, Inc. It carries passengers on a 76-mile round-trip dinner excursion between Milwaukee and Horicon.

The interiors of the striking blue-and-yellow cars — vintage models from the 1950s that were once the pride of the Union Pacific fleet — have been carefully restored with

train, travelers take their ease in the glamorous River's Edge lounge car. Mountain View and Scenic View, the domed dining cars, accommodate 160 dinner guests at elegantly appointed tables on the main level, or in intimate booths seven stairs up in the domes. The menu for the four-course gourmet meal changes monthly; diners have a choice of prime rib, seafood or poultry entrees accompanied by seasonal treats such as Spring Blossom Salad and Bay Laurel Potatoes. Meals are prepared in the gleaming, stainless steel Pine River



Watching Wisconsin unfold between courses.

Al Gartzke


Honduran mahogany paneling, etched glass, brass fittings and blue cloth wall coverings and upholstery. Led by a locomotive that served the Milwaukee Road, the Alaska Railroad and Amtrak, the dinner train pulls out of the depot at 11340 W. Brown Deer Road in Milwaukee for a leisurely four-hour ride through the gently rolling countryside of southeast Wisconsin.

Once aboard the dinner

kitchen car and served with style by experienced, tuxedoed table captains.



The dinner train is on track through December 31. Prices for dinner and the four-hour trip range from \$48 to \$68 and include tax and gratuity.

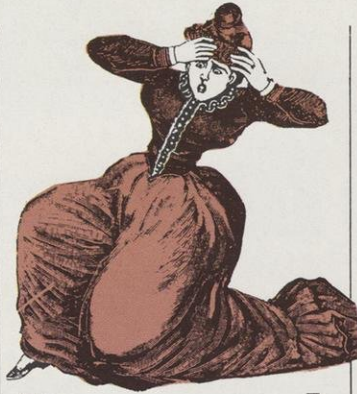
 For reservations, call Scenic Rail Dining, Inc. at (414) 354-5544.

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HISTORY will repeat itself over and over again when you purchase Passport '89 — an all-season pass to the six sites maintained by the State Historical Society of Wisconsin! The tariff: \$20 per individual, \$40 per family. Bob Granflaten at the State Historical Society, (608) 262-9606, has the details.



Be prepared

Missed the 5th annual Gut Dump Road Ski Chase in Elcho, or the 21st annual Speed Rope Jumping Contest in Bloomer? Similar grievous oversights can be avoided if you keep the state Calendar of Events handy when planning Wisconsin adventures. It's a month-by-month statewide listing of fairs, festivals, music, art, theater, sports and more. For your copy, write the Wisconsin Department of Development, Division of Tourism Development, 123 W. Washington Ave., P.O. Box 7606, Madison WI 53707, or call 1-800-372-2737.



Don't bypass the chance to explore some back roads.

D. Hartman

Continued from page 1


tion offices, Tourist Information Centers, AAA offices, truck stops and other businesses adjacent to interstate highways.

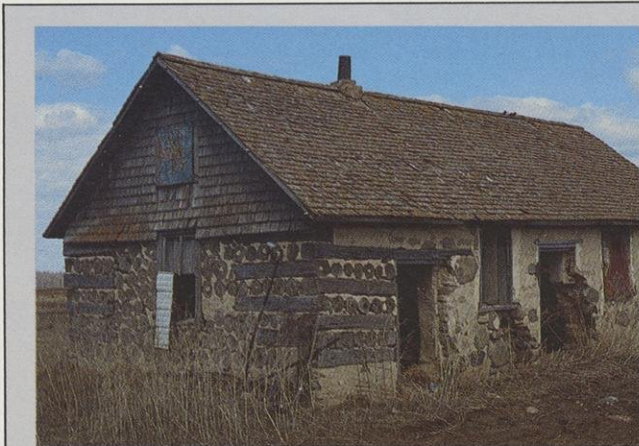


Don't forget that getting there is half the fun. Roadwork offers the intrepid traveler the chance to turn a simple inconvenience into a first-rate opportunity for adventure. Slow down a little! A detour or delay will likely prompt a self-guided tour through Wisconsin's charming countryside. This

alternate route could lead to a blue-ribbon cheese factory, a friendly encounter in a Main Street cafe, or . . . who knows? That's the delight of travel!

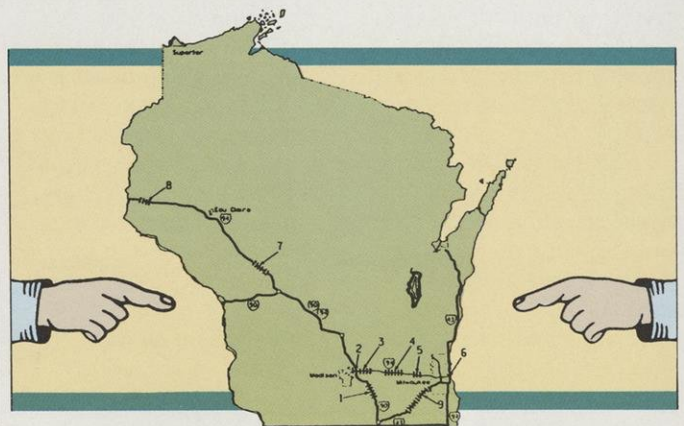
If blithe spontaneity isn't your style, it's easy to plan an alternate route to avoid interstate construction: Simply consult a state highway map or a Wisconsin Auto Tour guide before you leave home.

 Department of Transportation, (608) 266-3581. For a Wisconsin Auto Tour guide, call 1-800-432-TRIP.



The Kruza House, built in Shawano County by Polish immigrants in 1884 using the "stovewood" method of construction, will be moved piece by piece this summer to a new home — Old World Wisconsin in Eagle. Witness the groundbreaking on June 3, then take in the opening of a new photo exhibit on stovewood architecture that shows how immigrants stacked and mortared short lengths of logs — stovewood — to build durable structures. Ethnic foods will be served all weekend long in the Clausen Barn Restaurant on the grounds. (414) 594-2116.

State Historical Society



1989 Roadwork on Wisconsin Interstate Highways

1. I-90 in Dane and Rock counties: 11 miles, County B to the Rock River.
2. I-90 in Dane County: three miles, Badger Interchange to U.S. 12-18.
3. I-94 in Dane County: 11 miles, Thompson Rd. to WIS 73.
4. I-94 in Jefferson County: 12 miles, Crawfish River to County E.
5. I-94 in Waukesha County: 12 miles, WIS 67 to County E.
6. I-94 in Milwaukee County: six miles, Mitchell Interchange to Marquette Interchange.
7. I-94 in Jackson County: 12 miles, Black River Falls to Perry Creek.
8. I-94 in St. Croix County: seven miles, WIS 65 to County T.
9. I-43 in Walworth and Waukesha counties: 23 miles, U.S. 12 to WIS 20.

A fisherman blessed by the Apostles



On an island outpost
in Lake Superior,
tales of brave fishers
and rough seas are
relived.

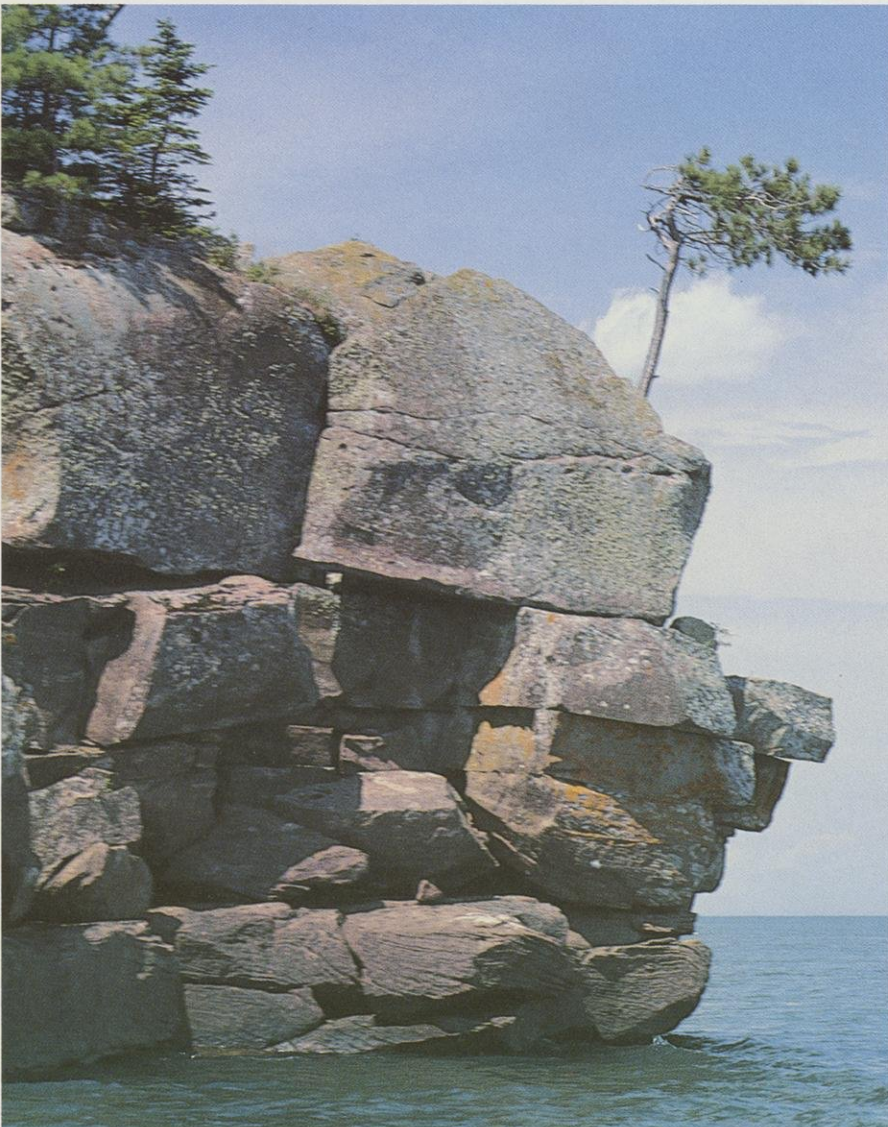
By Kate Crowley





Bodin Fisheries.

Sailors and trawlers steer clear of the craggy Apostle shores.



Wisconsin Division of Tourism Development

Wisconsin Division of Tourism Development

One of Bill Gordon's earliest memories is of watching his father make fishing line. His mother would sit at an old Singer sewing machine and slowly pump the treadle up and down, while his dad twisted and kept tension on the line they'd attached to the machine. When it was complete, the line would be treated with pine tar and beeswax.

Bill is an Ojibway Indian who grew up in Red Cliff, overlooking the great expanse of Lake Superior. His father did not fish for a living, but he enjoyed going out winter or summer and bringing home fresh fish for the table. Bill remembers visiting with his dad while he sat on the ice waiting for a bite. Although, he admits now, the chance to nibble on a frozen sandwich in his father's lunchbox was more enticing than the chance to chat.

When the rest of the kids would be out hoeing the vegetable garden, Bill would disappear through the woods with a fishing pole over his shoulder. As he got older, he spent more time in Bayfield, talking with the old Scandinavian fishermen.

"I always asked a lot of questions,"

Fishing net markers.



Wisconsin Division of Tourism Development

he says. "I worked with them a lot — I wouldn't have learned anything otherwise."

Like many young people, Gordon tried a few occupations, but he couldn't ignore the fisherman inside. "It gets in your blood. You get away from it and you gotta get back," he explained.

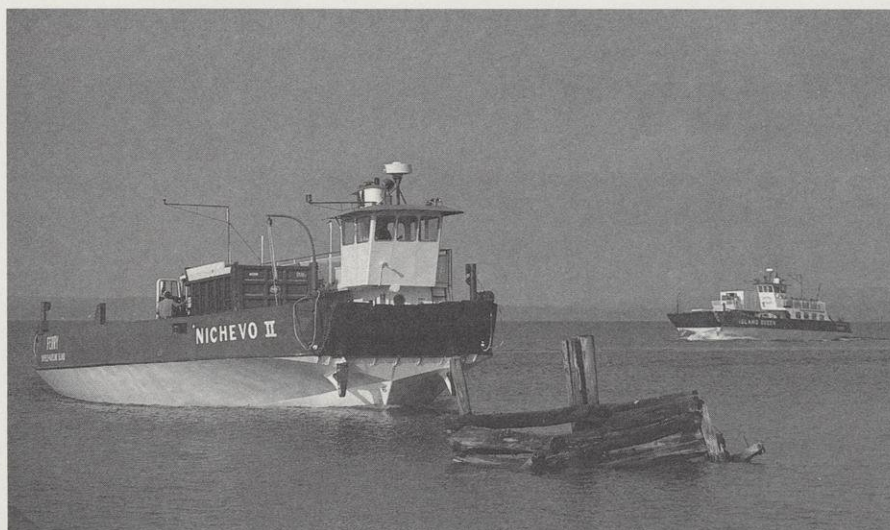
In a round-about way, his experiences as a fisherman led to a job as interpreter for the National Park Service in the Apostle Islands Lakeshore; a job he kept until retirement last fall.

As a free-lance commercial fisherman, Bill spent a lot of time on the road selling his goods. He honed his public relations skills while selling his fish.

"I peddled my fish down by Ashland, Marengo and that way. A lot of Finnish people lived around there, and they liked fresh fish a lot. I never tried to pull anything over on them. A fish that doesn't look right, you can fix it up and make it look good, but I never did that. If you give a bad fish to someone, you might as well quit."

Bill claims to have been a little shy before he became a commercial fisherman, but says "The job helped me. I learned not to have any trouble talking to crowds or anyone now."

It's a good thing. Crowds are what Bill and his successor Jim Moyer frequently have at the historic fishing camp on Manitou Island. Moyer is a working commercial fisherman part of



Two ferry companies shuttle landlubbers on Apostle Islands visits.

the year. Now he will lead visitors through this unique museum, a fascinating reminder of the traditional fishing techniques used for decades on this great water.

According to local legend, three or four Swedes came out to Manitou Island around 1900 to harvest cedar. They built the first structure — a cabin made of cedar logs. Until 1908 or 1909, the island had itinerant visitors, but about 1918 or possibly 1920, the first permanent white settler occupied the island; a rough weathered character named Gus Plud (or Plug). He had a succession of partners — John Hanson, Harold "Jingling" Johnson, "Black Pete" Lester and Albert Ditto. Actually, the island

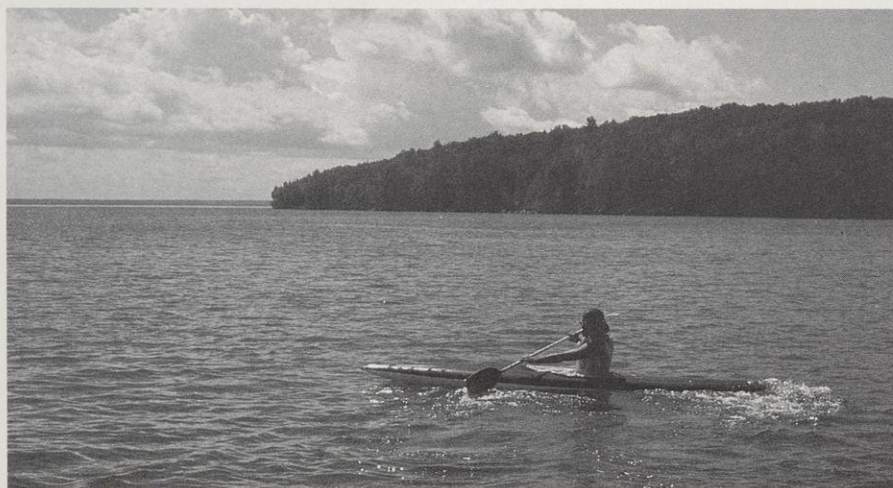
was owned by the Franzel Land Company, but these itinerant fishermen were tolerated as squatters.

Over the years, other buildings were added, including a net house, a frame cabin, a small shed covered with metal, a smokehouse and a dock.

In the late 30s, the Boutin fishing family operated out of Manitou camp. Years of wave action, storms and winter ice breakup took their toll on the dock, so the Boutins rebuilt, reinforced and extended it. Then in 1938, two brothers, Hjalmer and Ted Olson, purchased the camp from the land company. The Olsons were second generation fisherman. As a young man, Bill Gordon came to know Hjalmer, who was called "Gov'ner." The Manitou camp was a popular haven for fishermen who had little or no money. For the most part, those who fished and stayed at the camp for extended periods of time in the late 30s and early 40s were single men.

When the national lakeshore was established in 1972, Gov'ner Olson sold his portion of the island to the government. Gov'ner still lives in Bayfield and occasionally visits the camp. The park service hired an interpreter and maintenance man a few summers ago — first Gordon, and now Moyer — to teach and entertain visitors with tales and artifacts from those who worked this great, harsh inland sea.

On a calm day on "the big lake," it's fun to explore Apostle Islands shores in a solo kayak or even heftier sea kayaks. The area is considered one of the world's finest spots for sea kayaking.





Kate Crowley

Bill Gordon greets a youth camp group near the equipment shed on Manitou Island.

Power boats, sailboats and the big excursion boat, the Manitou, all make Manitou Island a destination on their journeys around the Apostles. Boats circle in a holding pattern off of Manitou until a spot opens up on the dock and they can come in.

The Apostle Islands are a water-based park. As such, one must travel by boat to enjoy their wealth of natural wonders. Sailboats, power boats, canoes and sea kayaks transport visitors to the islands and channels of the National Lakeshore Park. There is a water taxi that shuttles backpackers and campers to the islands. On a former ocean-going vessel, one can enjoy a relaxing trip and narrated island tours.

It's a little-known fact that the Apostles are considered one of the finest area for sea kayaking outside of Prince William Sound in Alaska (recently despoiled by the Exxon oil spill).

The Apostle Islands actually number 22, not 12 as the name would imply. The islands range in size from three-acre Gull Island — so named because it's a nesting place for herring gulls — to Stockton Island, which stretches eight miles long and is the most popular destination for campers

and boaters, partly because it has an interpretive center and new bathroom facilities. For those seeking more solitude, Oak, Otter, South Twin and Rocky islands offer campsites. Oak Island's "towering" 600-foot elevation has the most extensive and challenging hiking trails. After a gradual climb of three miles through maple/oak forests, hikers are rewarded with a sweeping vista of four islands and, on the hazy horizon, the

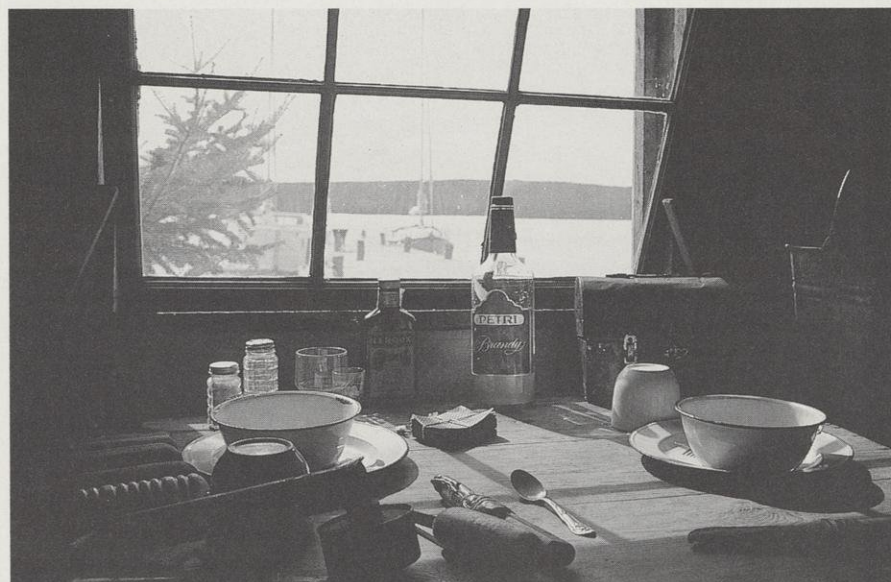
North Shore of Minnesota.

Six lighthouses still stand guard on the islands. Sand, Devil's, Outer and Michigan were the barrier islands by which vessels navigated. Raspberry and Long Islands' lights guided the ships as they threaded their way through the islands, headed for Chequamegon Bay and Ashland. The lights are all automated now and operated by the Coast Guard, but the Park Service staffs them so people can wander through and learn about the people who once lived there and performed the unending job of maintaining a beacon for the sailor on the unpredictable lake.

On Manitou, arrivals are greeted at the dock and everyone is invited up to the log cabin. Here, an old metal frame bed with a sagging mattress takes up one corner. In another, stands an old wood-burning stove. Under a small window, a table holds some old bottles, fishing tackle and tableware.

In the informal atmosphere of a visit to Manitou, the visitor can converse and reminisce. Sometimes it takes a visit from a former camp resident to set things right. Some people from Bayfield came to visit and noticed a large crock on the floor near the stove, Gordon recalls. "They said the Gov'nor used to keep sourdough starter in it, but he never left it on the

The Park Service maintains the old cabin on Manitou Island to give visitors a feel for the spartan life rugged fishermen lived.



Kate Crowley

floor. He'd put it on the board above the stove."

Outside, there is a smokehouse (about the size of an outhouse), wooden reels that hold the old nets, and the shed where the fishermen kept their equipment. The shed also once served as a small barn for a horse that was used to pull logs out of the woods and sleds loaded with fish and supplies across the ice.

Standing near a reel, visitors watch the interpreter take a needle-like tool in weather-toughened hands and with quick, easy movements, sew a net. People draw closer to watch the pattern emerge. Usually someone is invited to give it a try. It gives visitors a chance to do a little bit of the netmaking and get more of a feel for it than just listening to someone talk.

Before the tour ends, someone always asks if it gets lonely out at the island, all alone. Bill reminds them, "There are people out here all the time and besides there's always something to do. I never have a day off. If the weather's calm and I'm not working on nets, I might take my little boat and go over to my cabin on Raspberry Bay."

Now that Bill has retired, he may take it a little easier, but his life won't change drastically. "I'm not going to retire entirely, I'll still get out in my boat and do some fishing, but I'm going to get one of those little power winches for my nets."

To look at Bill's leathery hands and the creases on his face, is to know that going out day after day and hauling nets and fish out of near freezing water is harsh, physical work. Ask him whether he has any thoughts or regrets about his life on the lake and he says, "No. It takes a special type of person to be a fisherman. Gotta take the disappointment with the good, but it all averages out to a good living."

Kate Crowley and husband Mike Link live in Willow River, Minnesota. Their new book, Apostle Islands National Lakeshore, is available from Voyageur Press, 123 North Second Street, Stillwater, MN 55082.

Exploring the Apostle Islands



Wisconsin Division of Tourism Development

Bayfield Harbor, a festive spot to launch an Apostle Islands adventure.

People planning to visit the Apostles generally use the town of Bayfield as their entry. Built into the hillside and flowing right down to the water's edge, it is as close to a New England fishing village as can be found anywhere in the middle of the continent. Here, visitors can rent bicycles to tour the hilly countryside; buy tickets for the ferry that will take them and their vehicle to Madeline Island; sign-up for sea kayaking lessons; hop aboard the Manitou for its island tour; or maybe just sit on a park bench by the main pier, licking a cone of dripping ice cream and watching the graceful gulls rise and fall in a shower of white as they wait for the next feast of leftovers from a passing fishing boat.

Bayfield has seen a great upsurge of attention and tourism in the past five years. Thankfully, there has been a lot of thought given to the future development and expansion that will occur in this charming, friendly little town. Some see fast-food restaurants as a sign of progress, but enough others feel that the quality of life in Bayfield depends on

quality services, the area's natural beauty and unique blend of recreational opportunity.

The services that have succeeded and attract visitors are those which recognize the resources. There is a dive shop and dive boat; numerous marinas where people can charter sailboats; sport fishing charter boats on the main pier; and, arguably the best sea kayaking scenery in the world.

In five years of sailing in the Apostles, we have seen the town grow through these sports. We have seen the increased traffic of sport fishermen, the large "deep sea"-style fishing rigs working for trout in beautiful clear waters. It is a sign of better times, because the invasion of lamprey and the damage to the fish population during the 1950s and 1960s would not have sustained sportfishing.

Now we better understand how the health of the lake affects the economy and ultimately, our quality of life.



Shore lunch

The old-timers knew how to make fishing memories. Take a few fish, a few friends, a hot fire and rekindle this vanishing Northwoods tradition.

Tom Hollatz

If there is one magic moment here in the wilds of Wisconsin's Northwoods, it's that special time sitting around a noon campfire watching a fishing guide prepare a delicious shore lunch.

Long a tradition with the old guides, the shore lunch is on the endangered species list. Some of the younger guides would rather toss their customers a baloney sandwich and continue fishing through the lunch period.

That's not the way the famed Dean brothers did it. Porter "Barefoot" Dean and his brother "Pop"

Dean were two of the most famous guides ever to fish the some 2,300 crystal-clear lakes of the Northwoods. Although their reputations as excellent catchers of fish placed them in the ranks of the fishing legends, they were also noted for those precious moments during shore-lunch time.

It was always a time to relax after a tough morning on the water. It was a time to catch your breath, meet new friends, renew old friendships, laugh and have a beer or two while your guide prepared a feast fit for king and queen alike.

One of the better Northwoods

guides, Dave Pucci, lives on High Lake north of Boulder Junction. In the tradition of the older guides, Pucci labors over a hot fire and goes to the trouble of preparing some delicious, mouth-watering morsels of welcome food for hungry appetites.

Pucci, who is the corporate guide for McDonalds, is a master at orchestrating his shore lunch. Even the oak logs are split to equal lengths of 18 inches. I remember during one shore lunch we even moved a decaying log because "it didn't fit the atmosphere."

Pucci uses old black steel frying pans with the handle-halves of old canoe paddles bolted to them to pre-

◀ The late Porter "Barefoot" Dean was a master at cooking up fishing fables and fabulous shore lunches. The barefooted fishing guide was a colorful part of many Northwoods vacations around Boulder Junction in Vilas County.

vent burned hands. Watching him fillet some lunker largemouth bass (in the six-pound range) is also an art form. *Whiz, whiz, whiz*, it's that fast.

Once the pan is hot, he tosses in large pieces of hand-cut bacon. He does this to get some grease and the crisp bacon makes a delicious appetizer for some hungry anglers and yours truly as we huddle around the warm campfire on the shore of Lost Canoe Lake.

Once the base layer of bacon grease is smoky and fragrant, Pucci adds a cup or two of vegetable oil. Then he places in freshly cut potatoes planked as French fries (just like McDonalds). One note: Be sure the spuds are dry when dumped into the hot oil. It can flare up. Also, heat the oil until it's hot, hot, hot before placing spuds in the pans.

When done — the golden taters start to turn black — remove pans from the fire and, using a slotted spoon, spatula or big ladle with holes for draining oil, move the hot fries to a pan that is lined with paper towels. Salt the potatoes right at this moment. If you're watching your salt intake, forget it. They're still delicious.

Next the bass fillets are dredged in a rich, brown beer batter. Color it delicious. The bass fillets are so large that some of the meat oozes over the side of the black frying pan.

Imagine chomping on some delicious crispy bacon while quaffing a nondehydrating brew or two and munching crisp goodies including celery, carrots, green peppers and tomatoes while you wait for the fish to cook.

The colored leaves dancing in the warm Northwoods sun make it one special moment.

When the fillets are finished—it only takes minutes—remove and drain on paper towels.

The next step is to enjoy. For some reason, whether I'm chomping on one



Photo by the author

▲ Savor the experience. Snapping-crisp vegetables and sizzling fillets of freshly-caught bass are part of the leisurely lunch guide Dave Pucci prepares for his guests. Shore lunch is a wonderful time to stretch, relax, renew old friendships and begin new ones.

▼ A young and beautiful Elizabeth Taylor enjoyed a shore lunch on Lake Minocqua with her parents, Sara and Francis, and her brother, Howard. Mother Sara, also an actress, watched the teen-aged Elizabeth "like a hawk," according to the old fishing guide who taught the future movie idol how to fish.



Photo courtesy of Joyce Laabs from Northwoods Nostalgia.



Photo by the author

Mouth-watering bass over an open fire — the heart of a Northwoods shore lunch.

of those soggy mustard-soaked hot dogs in the bleachers at Wrigley Field or soaking up the fresh air of a Northwoods' shore lunch, food never tastes better. The atmosphere makes the moment. Shore lunches are a magic blend especially enriched by freshly-caught bass fillets.

Somehow as the years swirl like falling oak leaves, I remember the shore lunches and those truly magic moments. Most of the time, I don't even remember if we caught fish on a particular day. But I do remember the fun and good food around the campfire.

Those shore-lunch memories always ignite a warm glow whether I'm at a summer picnic or the snow is snorting outside on a bleak February day.

The next time you're fishing go all the way and have a shore lunch too.

You'll love it!



No shore lunch is complete without fresh walleye, bass, northern or whatever fillets dipped in fishing guide Tommy Newcomb's famed beer batter recipe. It makes fresh fish that much more delicious! Remember, after dipping the fillets in the batter, make sure the oil in the black frying pan is sizzling hot. Carefully toss in a small piece of potato or a walleye cheek to see if it sizzles and then turns a golden brown. Once in, the fillets only take a couple of minutes and they're done. It truly doesn't get any better than this.

Tom Hollatz writes from Vilas County's Boulder Junction. His latest book, Gangster Holidays, chronicles the Wisconsin vacations of Chicagoland mobsters.

Tom Newcomb's Famous Fish Batter

- 1 cup stale beer (try a dark beer)
- 1 cup flour (or pancake flour)
- 1 teaspoon salt
- 1 teaspoon baking powder
- 1 tablespoon paprika
- 1 egg
- 1 tablespoon oil

Mix flour, salt, baking powder and paprika in a large bowl. Stir in beer. Add one beaten egg. Add oil. Mix well, scraping the bowl to make sure all particles are moistened. Batter should be thick and a little foamy but not runny. Dry the fish fillets, dip them in the batter and carefully place them in the pan of hot oil for a few minutes per side.



A flash of silver!

AT THE END OF A RAINBOW

Halfway through an ambitious five-year plan, fisheries staff are already meeting the mark: More rainbow trout are returning as wild, wily steelhead.

Michael J. Hansen and Kendra M. Nelson

Good sport and fresh water appeal to Wisconsin anglers and non-anglers alike. Maybe that's why the Great Lakes rainbow trout, *Oncorhynchus mykiss*, enjoys such popularity here. Whether it's the lure of going fishing for this great fighting fish or just the satisfaction of knowing that in environmentally troubled times "there's as good fish in the sea as ever came

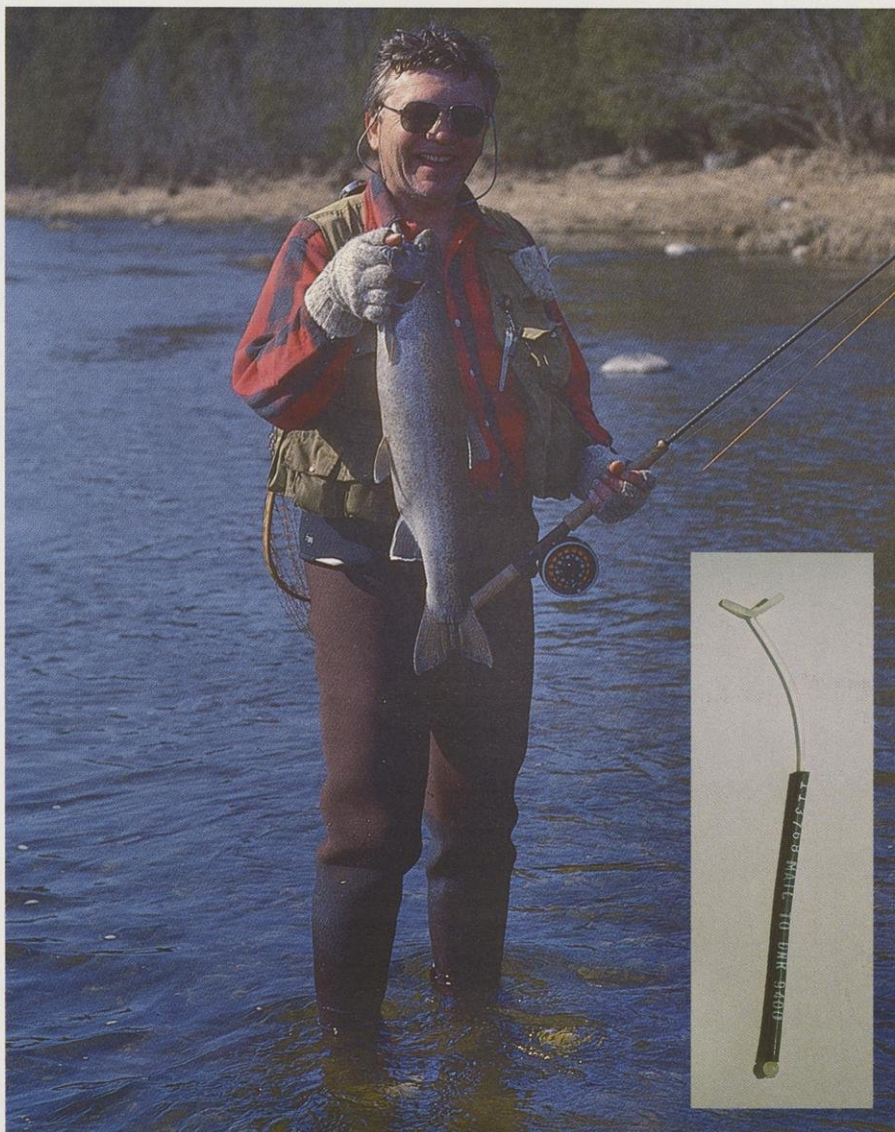
out of it" — the Lake Michigan steelhead shines. In fact, the silver trout is in BIG demand — and the Department of Natural Resources has BIG supply plans.

The steelhead is a rainbow trout that has adapted for life in saltwater, left the freshwater stream where it grew, migrated to the "sea" (either the ocean or the Great Lakes) and returned after several years to spawn in

its home stream.

John Beth, a state angler dedicated to fly-fishing the Great Lakes tributaries for trout and salmon, describes the lure of chasing steelhead:

They're sheeny, spooky and sneaky — so elusive, a flash of silver, quicksilver. They have a mystique and pose a real challenge, but an attainable one. No matter how long it takes, catching one more



John Beth

Steelheader Dan Zavadsky proudly displays a tagged fish he caught April 15th on the upper Kewaunee River. This fish, number 113768, was a Chambers Creek strain steelhead stocked in spring 1987 in the Kewaunee River. When stocked, these steelhead weighed an average of 1¼ ounces and were 6¼ inches long. On April 6, 1989, about two years later, the fish returned, was netted by a DNR survey crew, tagged and released. It weighed about six pounds and was 25.3 inches long when recaptured. Anglers can help DNR fisheries managers learn how salmon survive and thrive in the Great Lakes by returning tags and describing the fish's length, weight and location when caught. Each tag provides a mailing address.

than repays the wait. How they leap! That fight for freedom is unique. It represents all that's wild.

Steelhead arrived in Lake Michigan more than a century ago but were not stocked systematically until 1963. As part of efforts to rehabilitate the Great Lakes, fisheries managers introduced predatory fish to eat growing alewife populations. The steelhead, a flashy target for anglers, received a sustained welcome.

By 1986, DNR's Bureau of Fisher-

ies Management had stocked nearly 13 million steelhead in Lake Michigan. Anglers thrilled to a 1977 peak catch topping 94,000. Even during these "good years" anglers spent about 40 hours fishing for every steelhead they reeled in. Between 1978-81, fishing slowed down, and the average annual catch dropped to about 34,000; the 1982-85 average dropped further, to 25,000 — and catching one steelhead required about 150 hours!

The poorer catch frustrated an-

glers and fisheries managers alike. DNR fisheries staff pooled a team of field and hatchery biologists to form a plan for doubling the steelhead catch from 25,000 to 50,000 per year by 1991.

The resulting Lake Michigan Steelhead Fishery Management Plan is a blueprint for rebuilding steelhead fishing opportunities. Increasing the quality and quantity of steelhead available for anglers called for changing stocking techniques and developing better fish strains for stocking in the Great Lakes.

Fisheries managers work with strains of fish as dairy farmers work with breeds of cows — to improve the overall quality of the herd by trying different genetic strains and by measuring performance. Shasta steelhead stocked in Lake Michigan in the early 1980s returned so poorly that they were not often caught by anglers. Under the steelhead plan, at least 10 percent of stocked fish must be caught by anglers, so Shasta trout were culled from the stocking program. Wisconsin fisheries managers are evaluating three steelhead strains for Lake Michigan that have survived well elsewhere — Skamania, Chambers Creek and Ganaraska River.

Even working with nature's best, however, fisheries managers must provide careful nurturing to foster a productive fishery. For Lake Michigan steelhead, successful smoltification is the key.

Just before smolting, a steelhead gets its bearings, imprinting on a "home" stream. During its smolt, the steelhead undergoes changes that prepare it for life at sea. Then, the fish migrates into the Great Lakes, only returning to its home stream on spawning runs.

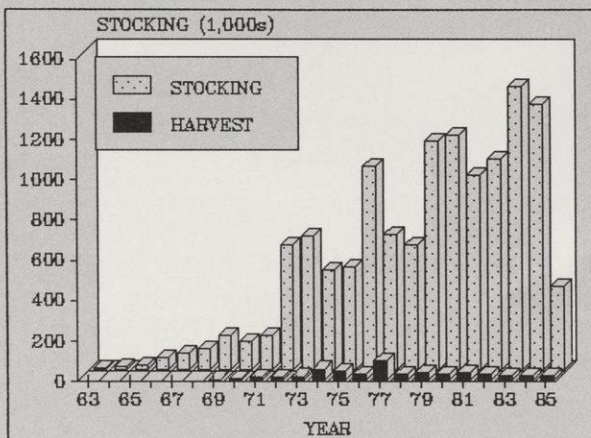
Smolting occurs when rainbows are 7.5 inches long. It's an art for hatchery workers to raise rainbows to the right size at the right time for stocking. Further, to produce an annual catch of 50,000 steelhead (assuming 10 percent are caught), 500,000 juvenile steelhead must be stocked just before smolting time in just the right places.



Jim McEvoy



DNR Fisheries Management

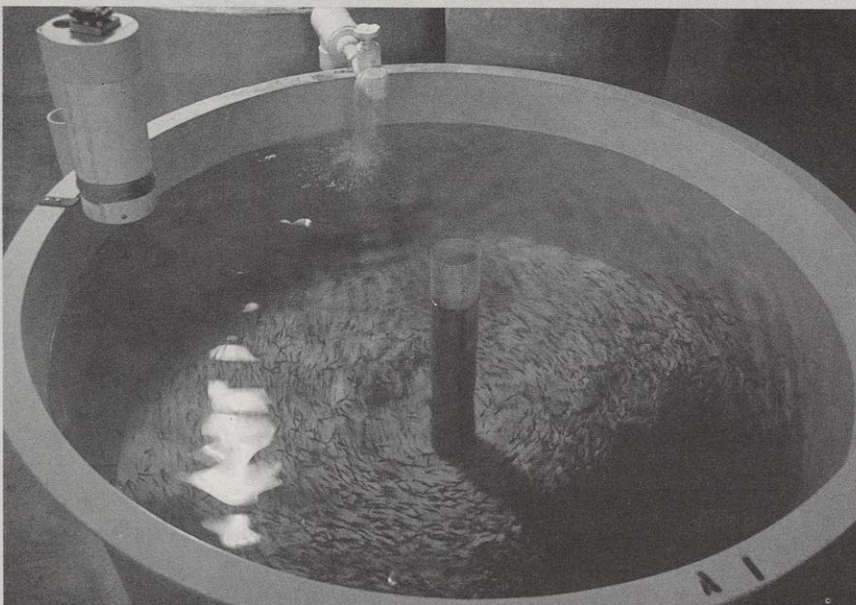


DNR Fisheries Management






Rainbow trout strains currently used in the steelhead project

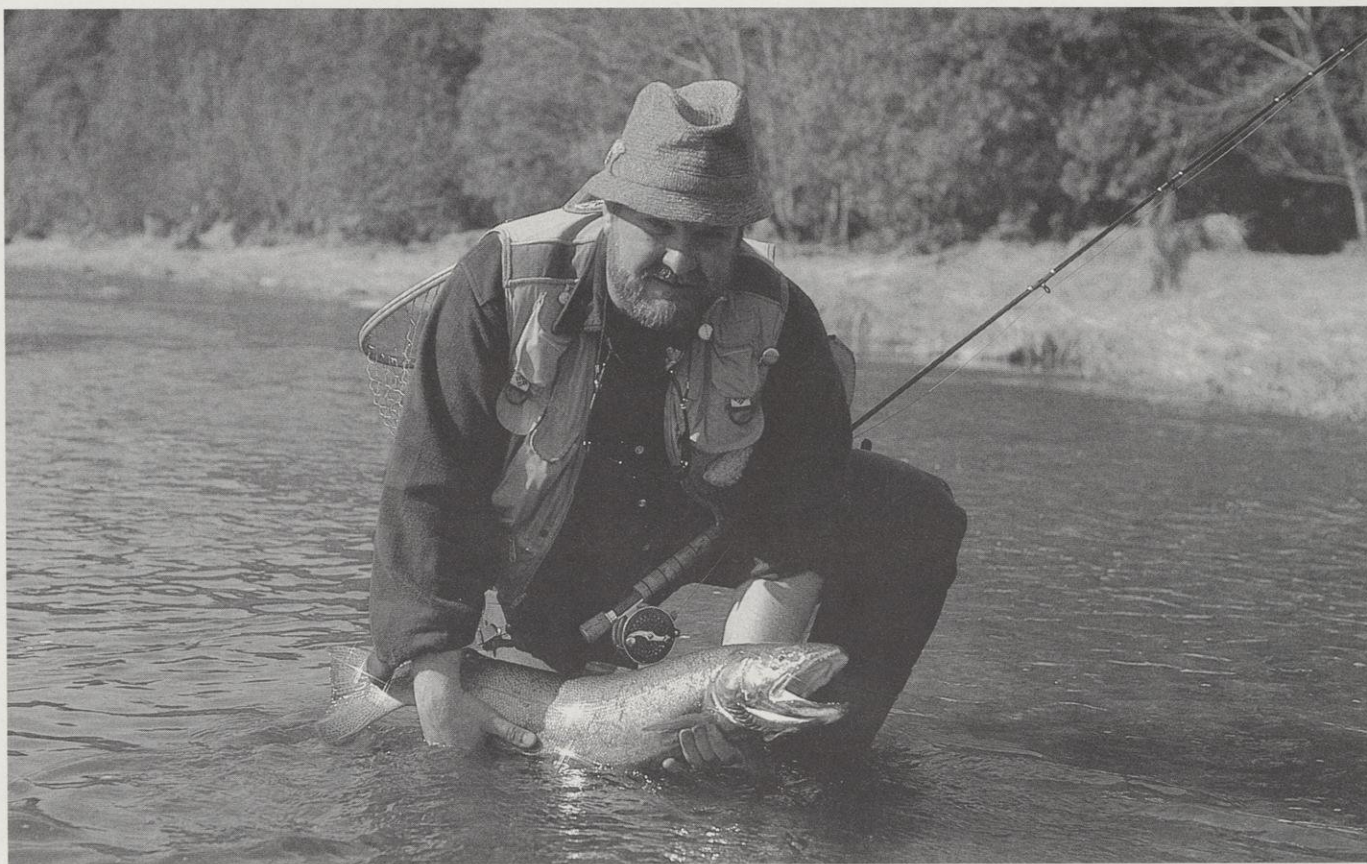
STRAIN AND POINT OF ORIGIN	SIZE	RETURN TIME	PEAK SPAWNING TIME
Skamania (Washougal River, Washington State)	28", eight pounds (four-year-old) 32", 12 pounds (five-year-old)	July through August	January through February
Chambers Creek (South Tacoma, Washington State)	26.5", six pounds (four-year-old) 30", 9.6 pounds (five-year-old)	October through mid-March	March
Ganaraska River, Ontario (West Coast origin uncertain)	21.25", 3.3 pounds (five-year-old)	late March through April	late April

DNR Fisheries Management



DNR Fisheries Management

-  Prime stocking waters identified in the steelhead plan.
-  Fisheries crews trap steelhead for transport to the Kettle Moraine State Fish Hatchery for spawning later. Strong homing instincts ensure the return of adult steelhead to urban areas like the Root River in Racine.
-  Despite the fact that DNR managers stocked millions of rainbows from 1963 through 1985, the return to anglers' creels was poor. New stocking techniques with stronger rainbow trout strains aim to produce at least a 10 percent catch.
-  Vital statistics of the trout selected to rebuild the steelhead program.
-  Hatchery workers at the Kettle Moraine State Fish Hatchery in Sheboygan County raise wilder, healthier steelhead in circular tanks equipped with automated feeders to minimize human contact.



Courtesy of John Beth

Inveterate trout angler John Beth releases a silvery steelhead to flash and fight another day.

For the fish to survive, stocking sites should match the specific requirements of each steelhead strain. For example, summer-returning Skamania and winter-returning Chambers Creek steelhead overwinter in home streams before spawning, whereas the spring-returning Ganaraska River strain overwinters in the lake.

Streams with sufficient overwintering depth, flow, and other favorable characteristics to support Skamania and Chambers Creek steelhead are, in order of stocking priority: the Kewaunee, Root, Oconto, Manitowoc, Menominee, Milwaukee, East Twin, Peshtigo, Ahnapee, and West Twin rivers — also the Sheboygan when PCB levels are reduced. Streams suitable for the Ganaraska River strain are, again in order of stocking priority: the Pigeon River; Stony, Oak, Heins, and Sauk creeks; Little River; Whitefish Bay Creek; Pike River; Fischer, Hibbards, Silver, and Riebolts creeks; and the Menominee and Kinnickinnic rivers.

Satisfactory stocking sites are available, but getting the right-sized steelhead there at the right time requires the right stuff at fish hatcheries: facilities that can hold larger fish at reduced densities for longer periods of time in warmer water and a well-trained staff. Steelhead are wild, finicky fish that do not adapt to humans; instead, fisheries managers must adapt to them.

To accommodate steelhead, the hatchery system needs to make substitutions, modifications and expansions. For instance, steelhead rather than other trout species or rainbow strains can be raised in existing facilities. To raise wilder strains of steelhead, hatchery workers are rearing fish in lower densities and are feeding the fish using automated equipment to minimize human contact. Building additional facilities, including more raceways, would also bolster steelhead propagation.

The changes do not end there. Improving anglers' catches means either getting anglers better access to loca-

tions steelhead prefer or attracting steelhead to places anglers can easily reach. In addition to providing maps, parking lots and boat ramps, DNR's Bureau of Fisheries Management encourages public cooperation to develop and maintain good habitat that will sustain stocked, imprinting, smolting, returning and even naturally reproducing steelhead.

So far, so good! Since 1986 when the plan began, the catch has been going up. Just two years into the effort, the catch had exceeded the five-year goal. Total catch figures for last year haven't been fully calculated, but fisheries managers are encouraged as the upward trend continues. Angler enthusiasm for the wilder rainbow strains is rising and the environment that sustains these fish is better for all of us.

Michael J. Hansen, DNR's Great Lakes sport fisheries specialist, coordinated the steelhead fishery plan. Kendra M. Nelson is a publications editor with DNR's fisheries management program.

Readers Write



Donald G. Coss

WILD WATCHER

I would like to commend the magazine staff for producing a fine publication. Each issue is full of information I find interesting. The "Watchable Wildlife" issue (November/December 1987) is one I've kept and refer to over and over.

Besides being an avid birder, I'm a teacher — and I've found the terrific photos in the magazine to be a great aid for teaching 3- and 4-year-olds about animals. It's especially nice to find pictures of people doing things outdoors in your pages. Thanks and keep up the great work.
*Laura Richardson-Gentry
Madison, Wis.*

"Watchable Wildlife" is a 72-page guide to the hot spots for viewing Wisconsin's wealth of wild things, complete with maps, a poster and outstanding wild-

life photos. For a copy, send \$2 to: DNR Bureau of Wildlife Management, Box 7921, Madison WI, 53707.

RAIN FOREST

I subscribe to your magazine because I love Wisconsin and enjoy viewing and learning about all of its abundant resources. So tell me where, other than in a zoo, will I find a brown-throated three-toed sloth running free in the state? The picture of this animal on the back cover of your April issue is out of place — it belongs in an international wildlife magazine, not *Wisconsin Natural Resources*! Keep your excellent magazine portraying Wisconsin, please.

I take exception to Craig Thompson's article "Trouble beyond our borders" in the same issue for the same reason. I suppose it's passable content for

your magazine, since it's about Wisconsin birds migrating to the tropical forest and destruction of said forests threatens our planet, but. . .

When Wisconsin black bears migrate to the tropics, only then will I accept photos of sloths and jungle in WNR.

*Robert F. Karper, Sr.
Palos Heights, Ill.*

My compliments on your magazine. I enjoy each issue and share much of my new knowledge with my sixth-grade class.

The article, "Trouble beyond our borders" was an excellent source of information for our unit on Central America. My students have been concerned about the loss of rain forest and your article brought the problem closer to home.

If any reader would care to donate their April 1989

issues to our school, the magazines would be used and appreciated. The address is McKinley School, c/o Linda Raasch, 2340 Mohr Ave., Racine WI 53405.

*Linda Raasch
Racine, Wis.*

RISKY BUSINESS

The April special section, "A matter of chance, a matter of choice: Living with environmental risk in Wisconsin" was excellent. It brought together the many and varied aspects of this pervasive problem.

One small correction is in order, however. While chlorofluorocarbon molecules do indeed "filter upward . . . into the stratosphere," it is not because they are "lighter than air" as stated in the article. In fact, all chlorofluorocarbons are heavier than either oxygen or nitrogen on a per molecule basis. Upward motion results from the inexorable but slow process of diffusion (motion toward the region of lowest concentration), superimposed on large-scale motion of air masses in response to density difference caused ultimately by solar heating.

*Thomas C. Ehlert
Wauwatosa, Wis.*

Thank you for clarifying this point for our readers.

FENCEROWS

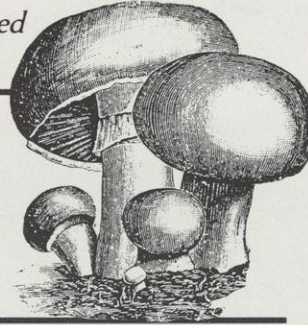
The farmer who cannot spare just a few feet of his many acres for a fencerow is poor indeed. As your story "Secrets of the fencerow" (April 1989) ex-

Readers Write

continued

NEXT ISSUE:

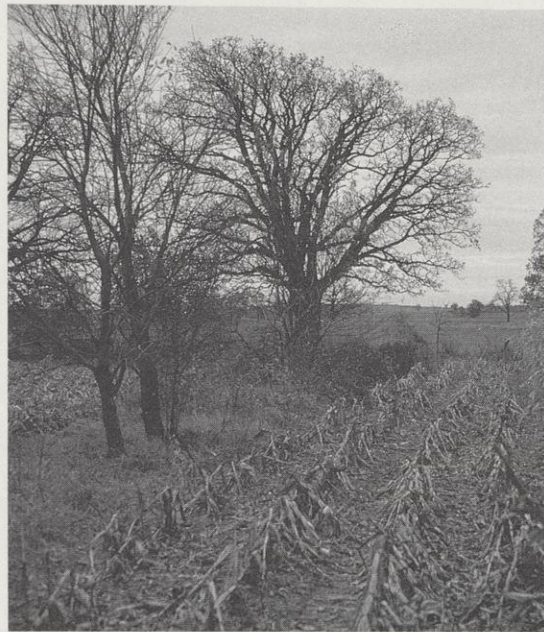
A close look at feathers
Mushroom hunting
Special shorelines, special places
Groundwater update



plained, these strips of trees and bushes alongside farm fields provide food and shelter for many birds and small creatures.

A farmer who does not see a thrasher's nest in a gooseberry bush or a finely-woven oriole nest hanging from the branch of an oak tree because his fields lack fencerows has missed one of the great pleasures of farming. The space given over to cultivation may mean a few more bushels of corn in his bin at year's end, and his bank account may contain a few more dollars when it's time to retire, but he will have lost a special opportunity to observe, enjoy and preserve the wonders of nature.

Francis Long
Stoughton, Wis.



Francis Long

MINOCQUA?

I want to say how much I enjoy *Wisconsin Natural Resources*. I read it cover to cover.

I noticed on page three of February's special section called "The cleanup game" a photo of a bird's-eye view of Minocqua, the Island City. However, I don't think the city pictured is Minocqua. Enclosed are two slides of an aerial view of Minocqua, winter and summer.

Archie J. Nicolette
Woodruff, Wis.



Minocqua from the air.

Archie J. Nicolette

Your eagle eyes have served you well, Archie. The city in our photo was not Minocqua. Next time, we'll wipe the ink off our eyeglasses before choosing photos.

(continued from page 2)

A male firefly of the commonest species, *Photinus pyralis*, beams a single half-second flash during a forward, then rising flight movement — a skywritten letter "J". After a precise two-second interval, a female responds with a single flash, and the male flies down to meet her. Males of the species *Photinus consimilis* make a rapid succession of flashes; the female replies with two beams. Females of certain firefly species can be attracted by a flashlight mimicking the males' flashes.

Generally, the males will not fly down to a female who sends the wrong signal. But surely you have heard of mixed signals? With 136 species, a few are bound to have similar response flashes. A male spies a flashing response and flies down to meet his female friend, only to find she belongs to a different species. The female devours him. A fatal attraction, indeed.

Fireflies don't come equipped with a set of AA batteries to power their abdominal flashlights, as some children of the Nintendo era may erroneously believe. The light they shine, as well as that shed by certain species of bacteria, fungi, fish and insects, is called bioluminescence — the product of a biochemical reaction involving a few basic substances. Oxygen combines with an organic compound (luciferin) in the presence of an enzyme (luciferase) to create this natural phenomenon. For fireflies to flash, a sufficient amount of ATP (adenosine triphosphate) molecules must be present as well. Even the eggs and larvae of some firefly species glow, hence the name "glowworm."

Bioluminescence is almost 100% efficient — little energy is given off as heat, nearly all as light. But energy conservation is of no concern to the fireflies, who are intent only on beam-ing a message of life to others of their species. What myths we wrap around their actions are ours to unravel. ■

Dawn Hlavka is a student in the College of Natural Resources at UW-Stevens Point and a former intern with DNR's Bureau of Information and Education.



Hovering a on breeze

*It just isn't summer
without a hummer.*

By Mary Mercier Wicklund

Spring brings us an abundance of gifts. Once again, robins sing reveille, wrens chatter at our door, swallows dissect the sky with sweeping maneuvers, and bluebirds color the meadow. But some of us are looking for a brighter, more fleeting jewel, and for this we must wait for more “tropical” weather.

In May, when the sun at last is bright and the leaves start unfurling their greenness, a special envoy arrived on warm winds. A veteran of nonstop flights across the Caribbean and dressed in flashy green and scarlet, it's the smallest, fastest and farthest thing to come this way. For it, we roll out the “red” carpet—columbine, bleeding hearts, coral-bells, fuchsia, salvia and cannas. Spring is irrevocably here when ruby-throated hummingbirds come back for a summer visit.

Ruby-throats (*Archilochus colubris*) are named for the male's courtship plumage. Females and juveniles have white throats. All ruby-throated hummingbirds have white bellies with iridescent green backs, wings and tail. Worldwide, there are 320 species of hummingbirds of which about 25 range into North America, but the ruby-throat is the only hummer east of the Rocky Mountains (except in southern Texas).

As the name implies, hummingbirds are usually heard before they are seen. Following a loud buzzing, I find a pair of silvered wings suspending a tiny bird in midair for a moment. Then it's gone. In a blink, it meshes with the background of a million treetop leaves rustling in the background.

Perhaps the hummingbird is special because it is so mysterious. In spite of its frequent public appearances, much of its life is a well-kept secret. Where does it go when it streaks off into the sky, leaving my garden behind? Does it head cross-country or just beyond the next tree?

Certainly, its unique flying abilities make it so remarkable and elusive. Hummingbirds compete with bees and some moths for flower nectar. To eat like a bee, one must fly like a bee:



Stephen J. Lang

A hummingbird's heart can race up to 1,200 beats per minute to power 70 wingbeats per second. Small wonder it occasionally rests.

maneuvering up, down, to the side, forward and back to extract nectar from trumpet-shaped flowers that can point in any direction. The hummer's 70-stroke-per-second, figure-eight wingbeat provides lift on both the downstroke and the upstroke. It's heart is an avian power pack pound-

its dogfights with awe. Male hummers are very territorial and rather quarrelsome. Like many scrappy battlers, when the fight is over, one wonders who was involved, what sparked the skirmish and who won. Usually I can assume the winner is the one returning to the feeder. Actually, the hummingbird is one of few birds that protects its food sources as well as its nest site. The defender sweeps side-to-side, back-and-forth in front of nectar sources. It will chase off intruders with a staccato, raspy chatter. Occasionally, one finds a dead or dazed hummingbird that has lost a battle with a plate-glass window while fighting off a reflected “intruder.”

It's not hard to attract hummingbirds to a feeder. Hummingbirds set up a “milk run” of food flowers often following the same feeding route each day. By planting flowers that attract the birds and placing a nectar feeder nearby, you can keep them in view.

About feeders, almost any clean bottle with a drip tube can be con-



Stephen J. Lang

Keep feeders clean and only fill them with true sugar solutions or nectar mix from a store — never use honey or sugar substitutes.

ing up to 1,200 beats per minute. It can dive up to 60 mph. Besides its helicopter hovering, this champion aerial acrobat and escape artist swoops, rolls and tumbles. No other creature can fly like that.

The hummingbird is so fast that even its showcase flights are difficult to observe. I have watched many of

verted to a feeder and many inexpensive, sturdy feeders can be purchased. Since insects are also attracted to the sugary syrup solutions, most commercial feeders have insect guards.

Homemade feeders can attract hummingbirds to your yard, porch or window. Feeders placed near nectar flowers are a big draw for these colorful fliers. ▶



You can mix a simple homemade hummingbird nectar of four parts water to one part sugar. Don't use honey-water or sugar substitutes — hummingbirds feed on true simple sugars such as sucrose, glucose and fructose, not saccharin or aspartame. Also, don't mix a big batch of nectar. It simply doesn't store well and bacteria harmful to birds can grow in old nectar. Drain, clean and refill hummingbird feeders at least weekly. Commercial nectar mixes contain artificial red coloring and preservatives to kill bacteria. Food coloring isn't needed as most feeders have a red tip or artificial red flower which attract hummingbirds. If you maintain your feeder weekly, bacterial growth shouldn't be a problem either.

Once you start feeding hummingbirds, don't stop until the fall migration starts. Hummers can become dependent on your feeder.

A hummingbird feeder will attract these aerial wonders, but their best antics have occurred in my garden beyond. One of the most startling displays I witnessed began one morning above a border of day lilies. Two hummingbirds were together, and one of them appeared to dive-bomb the other. What looked like an attack was probably the male's courting flight in which he repeatedly swoops down and then back up again to dazzle a prospective female. It was both a graceful and intricate maneuver, and if it was designed to impress, I would say it certainly succeeded.

What would impress me even more, though, would be to discover a nest of those hummingbirds. Usually built by the female, it's described as a tiny, one-inch, cup-like structure, covered with lichens, lined with only the most delicate materials — downy seeds and silken cobwebs — the perfect shelter for a fragile family of two white eggs as small as raisins.

Although I haven't been around for their birthdays, I have had a front-row seat to see the adults' day-to-day antics. These speedy, agile fliers seem to know they can escape dangerous adventures, so hummingbirds indulge their curiosity. They investigate



Pat Vosburgh

Close up, the delicate red throat patch of the male hummingbird reveals lacy patterns.

everything. The instant I hang up a fresh bottle of nectar, they may fly in for a taste test. I have seen a hummingbird fly up to a robin's nest to look in on a pair of spotted nestlings about to take wing.

Hummers are especially interested in the sight and sound of running water. One morning I refilled the birdbath with a sprinkling can. A hummingbird zoomed down and flew around me as the water fell in a tinkling cascade within the bowl. I repeated this task many times, but it

never came again. Apparently, one look was enough.

Several weeks later I dismantled the birdbath to clean it. I left it in sections on the lawn until I noticed a hummingbird flying from one piece to the other, hovering above each one. Was it bewildered by the parts? I went out and put the birdbath together again, even filling it with water, but the hummingbird did not return. I think it found the mystery more intriguing than the solution.

When autumn brings an end to these performances, I will certainly miss this inquisitive aviator. But just as it arrived with the first nectar-filled flowers, it will be going when the last one withers. The hummer is a tropical bird, part of everything that is warm and bright and vibrant. And with summer's retreat, it too, will disappear to the south, across the Gulf and into the warmth of Central America, there to investigate still more intriguing possibilities. Curiosity may have killed the cat, but it won't get that hummingbird — it's just too fast. ■

Mary Mercier Wicklund lives at Swallow Hill on the banks of the Clam River in northwest Wisconsin. She's an avid writer, birder, gardener and a budding aviatrix.

Hummingbird nests are tiny, fragile cups spun of cobwebs and downy seeds.



Wild columbine ►

Flowers for fliers

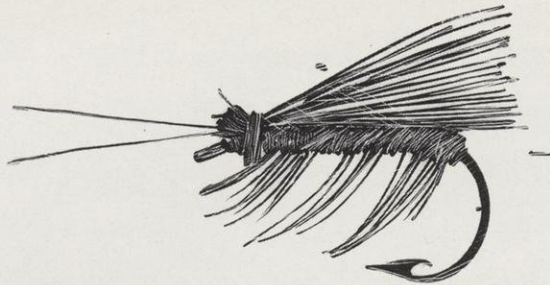
Hummingbirds prefer wide-mouthed, trumpet-shaped flowers with a short to medium tube. They are attracted to pinkish-red flowers which produce a steady supply of thin nectar. By maintaining a variety of shrubs and flowers which reach peak bloom on a staggered schedule from early summer through fall, hummers will find nectar throughout the flower season. May bloomers like ornamental and true fruit trees (flowering crabs, cherries and quince) pro-

vide early food. Middle and late season summer-hummer flowers that do well in Wisconsin are:

beebalm	coral-bells	lilies
bleeding hearts	fuchsia	morning glories
buddleia	gladiola	nasturtium
butterfly weed	hibiscus	petunia
cannas	hollyhock	phlox
cardinal flower	honeysuckle	salvia
columbine	impatiens	snapdragon
	jewel weed	tiger lily
		trumpet vine
		verbena
		weigela







HK Hair Caddis

Spring creek secrets

Fly-fishing Wisconsin's enchanted valleys.

*Text and illustrations
by Paul Lackner*

The light and weather are both soft and trance-like this June evening. The sounds, too: an occasional blackbird, light breezes rustling young leaves, a gurgle from the spring creek. It's quiet enough to hear water slurped through the gills of a trout as it sucks in a hatching dun fly. I'm here for the trout, but I savor the whole experience. Small fragments of early evening light illuminate the beads of water that spray from my line on my backcast. Delicately, the line rolls over. The gentle, waving line curls a long leader and the frail tippet carefully tied with a feathered concoction of my own design.

The fly drifts for what seems like minutes and lands in front of a trout holding along a weedy patch. The fish rises and nonchalantly inhales the aquatic morsel. I gently lift the rod tip, sense slight resistance and wait. For several seconds, the large fish remains motionless and then the line starts screaming from my reel; the sweetest music known to fly angler. The trout bores into an island of watercress and is gone.

"Boy, that looks like fun," exclaims another fisher as he breaks through the thick canary grass on shore, ultralight spinning rig in hand. "I just don't seem to have any luck when they're surface feeding like this."

I know exactly of what he speaks. I too once plodded these banks with a similar rig before I discovered the magic of wading and fly-fishing Wisconsin's spring creeks.

These creeks are fragile and fruitful. Fragile, because the steep-sided slopes are easily eroded if trampled or overgrazed by cattle. Siltation and agricultural runoff can cut fishing habitat dramatically. Fruitful, because the spring creeks of southwestern Wisconsin are true trout factories, when properly managed.

By comparison, trout anglers wax poetically about Pennsylvania's Letort Spring Run near Carlisle. It's a beautiful water, revered by legendary writers and trout anglers like Vince Marinaro, Charlie Fox and Ernest Schwiebert. One of its most productive stretches is hallowed for producing 993 trout per mile and 111 pounds of fish per acre. My favorite stream in Vernon County is five times as productive — holding 5,192 trout per mile and 398 pounds of fish per acre! The Letort has larger fish because the most productive stretches are limited to catch-and-release angling with barbless hooks. On the Vernon County stream, Wisconsin law allows a liberal catch and the water is still prolific. Proposed changes approved by anglers statewide at Spring Hearings in April would further enhance this water.

Much of the credit for improving my favorite waters goes to DNR's fisheries management crew in La Crosse. These creeks provided marginal fishing until fisheries managers, landowners and enthusiastic volunteers working together fenced out cattle, protected fragile slopes and created artificial bank cover. Aside

from my favorite stream, five to six others are equally productive and another 20 streams have the potential to become first-rate trout waters if trout anglers keep funding their rehabilitation.

One type of artificial cover invented by DNR fisheries staff on these waters is a LUNKER. The device simulates an undercut bank and many anglers haven't figured out how to fish them. It's easy, and I'm happy to share the technique that works for me.



No Hackle Dun

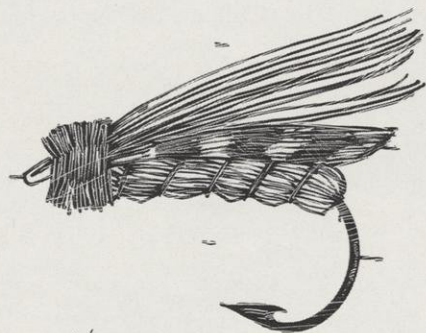
A LUNKER looks a little like a pallet installed on the water's edge. Some food washes under the structure, but trout primarily use them for shelter, dodging into the main current to intercept food. Actively feeding trout move out from the cover and face upstream to watch for food sweeping downstream. Anglers who cautiously, quietly move upstream behind these structures can cast a few



Learn to fish the LUNKERS built to supplement natural cover for wary trout.

feet in front of a LUNKER and catch fish. Presenting your fly well is very important, but it's not the only factor to consider.

The most common mistake I see anglers making is they are too easily seen. The trout sees a wide angle within a short distance. (Ever wonder why an extremely wide-angle camera lens is called a "fisheye?") If you can



Hopper

stay low to the water and shield yourself near a dark background, fewer fish will see you. There are three reasons why streambank anglers catch fewer fish than wading fishers: they are much higher off the water; footsteps make more noise rustling on land then quietly moving in water; and trout see them contrasted against a bright sky background.

Special techniques for special waters

Our southwestern spring creeks are a different breed of trout water.

They produce so many kinds of insects in such abundance that trout can afford to get picky with their chow.

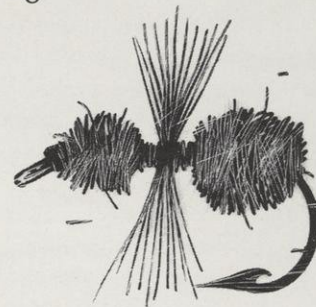
Wild trout are expert at letting their groceries float to them. It takes a lot of energy to chase down a minnow, but just a few calories to hold still in a quiet current sipping in nutritious mayflies, shrimp and larvae drifting by in abundance. When most insect life dies in winter, trout will chase minnows and crayfish, but springtime in a spring creek is another story.

These creeks are loaded with aquatic vegetation. Some of the greenery harbors delectable foods like mayfly nymphs, freshwater shrimp, caddisfly larvae and other foods. In the right amounts, plants also oxygenate the cold water. Excessive weed growth, especially excessive pondweeds, can rob stream oxygen levels at night, stressing the fish. This was prevalent during last summer's drought.

Stream weeds also provide lots of cover for fish. Trout tend to move into weedy channels to feed, to rest in shallow channels or to hold so close to the surface in deeper channels that their back fins and tails stick out of the water. The wading angler who stalks carefully can see these trout but exposed fish are easily spooked.

To set your fishing strategies for Wisconsin's spring creeks, consider the three distinct fishing seasons the area offers throughout the year. The

early season, from January 1 through early April, is a quiet time — reflective, starkly beautiful and COLD. Throughout the snowy hills run small ribbons of icy blue and green waters. Even during the sub-zero cool snaps, spring creeks remain a relatively constant temperature and fish still must feed. Fewer types of food are available and you can lighten your fly box considerably. I use fur and maribou flies that imitate leeches, sculpins, shrimp nymphs and larval insects. The early season can produce big fish. That bothers many fly-fishing purists who believe trout are too vulnerable in the spring. I caught (and released) a 26-inch brown trout in the middle of February using a streamer, but I also caught six fish larger than 20 inches in the same stream in August on a #22 midge.



Black fur Ant

The mid-season from late April through the first week in July is a favorite for ardent fly anglers. Aquatic insect hatches are profuse, fish are

hungry and matching the hatch can be critical to catching fish. For the beginner, I recommend an Adams and a Light Cahill in sizes ranging from #12 to #22. You'll still catch fish without having to exactly match the hatch. As you gain more experience, you'll get hooked like the rest of us as you consider high-riding versus low-riding flies, floating nymphs, emergers, stillborn duns and fluttering flies with names like blue wing olives, Hendricksons, blue quills, sulphurs, little



Pheasant Tail Nymph

black caddis, olive sedges and giant Hexagenia. You'll also enjoy finding waters that test your skill in making some fancy casts like the S-cast, parachute, right and left curve casts and pile casts. You get the idea. I still say you'll have a great time catching the "village idiots" on simple Adams and Cahill flies.

From June through September, the spring hatches are over and many anglers pack away their rods. That's their loss. Some of the best fishing days are about to come. Soft, summer days still produce big hatches. On windy days, trout fin along the banks for errant grasshoppers and crickets. Trout greedily take ant and beetle imitations all day long. Moist August mornings, I let a little Trico spinner drop to the surface. In September, I catch the grand finale Baetis hatch, my favorite bug hatch of the year.

Basic equipment? I recommend good waders, polarized glasses, a 7½- to 8½- foot rod good for two- to five-weight double taper line. Fifteen to 30-foot casts are the rule on these waters. Tie on 10-15 feet of leader. Get the best line and reel you can afford. The single-action reel should have a smooth drag.

Picking a stream? The DNR field offices can put you onto good waters,

Match the hatch

The most important factor in selecting a fly is identifying what trout are feeding on and trying to match the natural food source. You don't need to be an entomologist, just become a keen observer of activities on the trout stream and learn from your experiences. Talk with other fly-fishers and read about trout feeding habits.

There are thousands of artificial fly patterns. Rather than recommend ones, let me suggest some typical designs. You can vary the size and color to match the hatch throughout the seasons.

Most fly-fishers are preoccupied with mayflies. When trout are feeding just underneath the surface, I use either floating nymph or emerger patterns.

When trout are clearly feeding off the top of the water I use thorax, parachute, no-hackle or comparadun designs; all are low-riding and preferred by spring creek trout.

When trout make splashy rises clear out of the water, they may be snapping at caddis flies that are about to take off. An elk-hair caddis or fluttering caddis twitched in front

of a trout can produce dramatic catches.

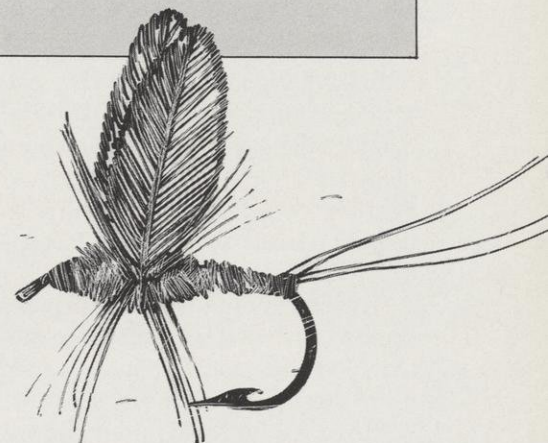
When trout don't seem to be rising, throw searching patterns. Deep-sinking nymphs, leach, sculpin and fresh shrimp imitations are all effective.

A few dry fly patterns are indispensable. In years when we have an early spring, a #16 or #18 ant may be the single best dry fly for these waters. On windy days, grasshopper and cricket patterns are especially effective.

Midge fishing can be very complicated, but it's my passion. Small fur balls on size 22 to 28 hooks are the ticket for trout that are "smutting" on these nearly invisible creatures.

Keep these designs in mind, then visit a local fly shop to fill in the gaps for the waters you intend to fish. Remember, an Adams or light Cahill in the right size can fill in, in a pinch.

I think you'll get hooked on fly-fishing and you'll equally enjoy learning to tie your own flies that fish readily take.



Original Thorax Dun

but it's best if you have a basic idea of a few streams you'd like to try. Talk to members of Trout Unlimited, talk to proprietors who sell fly-fishing equipment and get in your car to explore regions before your fishing trip. Remember to get permission from private landowners before parking on or crossing private property to get to the fishing hole.

When I combine all the opportunities these streams offer with the beautiful scenery, feisty fish and technical challenges, I wouldn't trade it for anything. It's my favorite recreation, and it's especially great that here in Wisconsin I can choose among more than 400 spring creeks in the prettiest valleys in the nation.

Paul Lackner is an artist and an avid angler who hits the trout streams several times a week. He catches trout on dry flies every month of the fishing season.

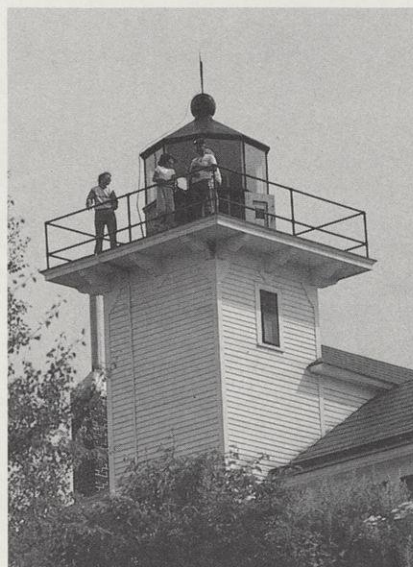
TWO HUNDRED YEARS OF SAFE HARBORS —&— BRIGHT BEACONS

For more than 200 years, stalwart families "manned" the nation's lighthouses to provide nautical reference points and keep ships, frigates, trawlers and barges from becoming flotsam on menacing rocks.

This August, the community of Bayfield, the Apostle Islands National Lakeshore and the National Park Service celebrate the 200th anniversary of the U.S. Lighthouse Establishment, America's first public works act. The mandate directed the federal government to "operate and maintain all lighthouses, beacons, buoys and public piers erected for rendering navigation thereof easy and safe."

The six Apostle Island lighthouse stations on Long, Raspberry, Sand, Devil's, Michigan and Outer islands form the tightest concentration of lighthouses in the United States. Moreover, they are remnants of lifestyles and architecture fast fading into maritime history; all Apostle Island lighthouses were automated by the early 1970s.

Consider a trip to Bayfield in early August to join in the celebration of light:



Wisconsin Division of Tourism Development

Friday, August 4

4-7 p.m. — Reception featuring a 200 candle cake!

6:30 - 10 p.m. — Sunset cruise to four islands.

Saturday, August 5

Opening ceremonies at the Bayfield park headquarters featuring an address by Francis Ross Holland, noted lighthouse expert and author of *America's Lighthouses*.

11:30 a.m. - 1 p.m. — Lighthouse keepers' lunch sponsored by the Bayfield Heritage Association. They will serve the same luncheon menu originally shared with President Calvin Coolidge on Devil's Island in 1928. Kids can take part in a sack race

and croquet match, games often played by lighthouse keepers' children.

1:30 p.m. — Cruise to Raspberry Island to see a Coast Guard color guard.

Dinnertime — A community fish boil followed by a special 8:15 p.m. performance of the play *Keeper of the Light* at the Chautauqua tent, three miles south of Bayfield off Highway 13.

6:30 p.m. — Evening cruises to two islands.

Sunday, August 6

6 a.m. — Sunrise cruise around three islands with live music and continental breakfast.

For special cruise information, contact the Apostle Island Cruise Service, (715) 779-3925. For information about food, entertainment and lodging, contact the Bayfield Chamber of Commerce, (715) 779-3335. For information about the special celebration, contact the National Park Service's Apostle Islands National Lakeshore office in Bayfield, (715) 779-3397.

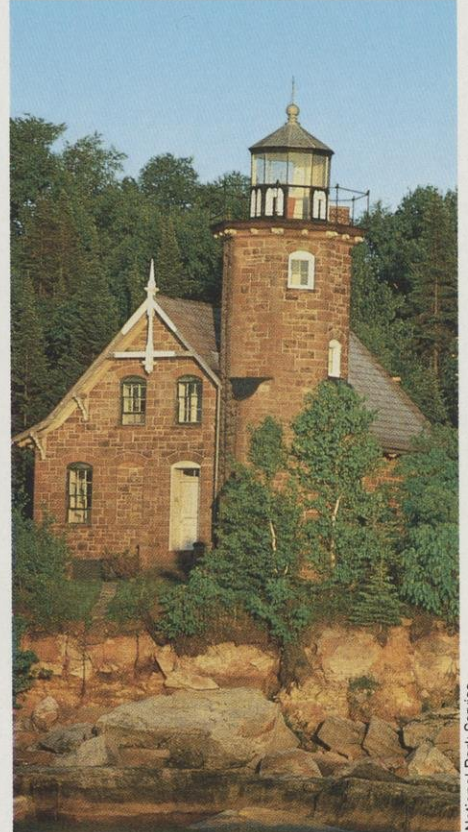


Raspberry Island lighthouse.

Devil's Island lighthouse.

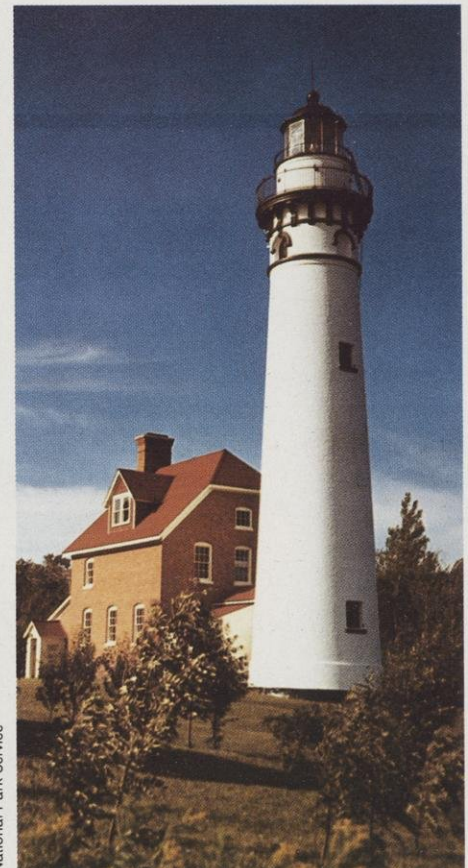


Wisconsin Division of Tourism Development



Sand Island lighthouse.

Outer Island lighthouse.



National Park Service

National Park Service

