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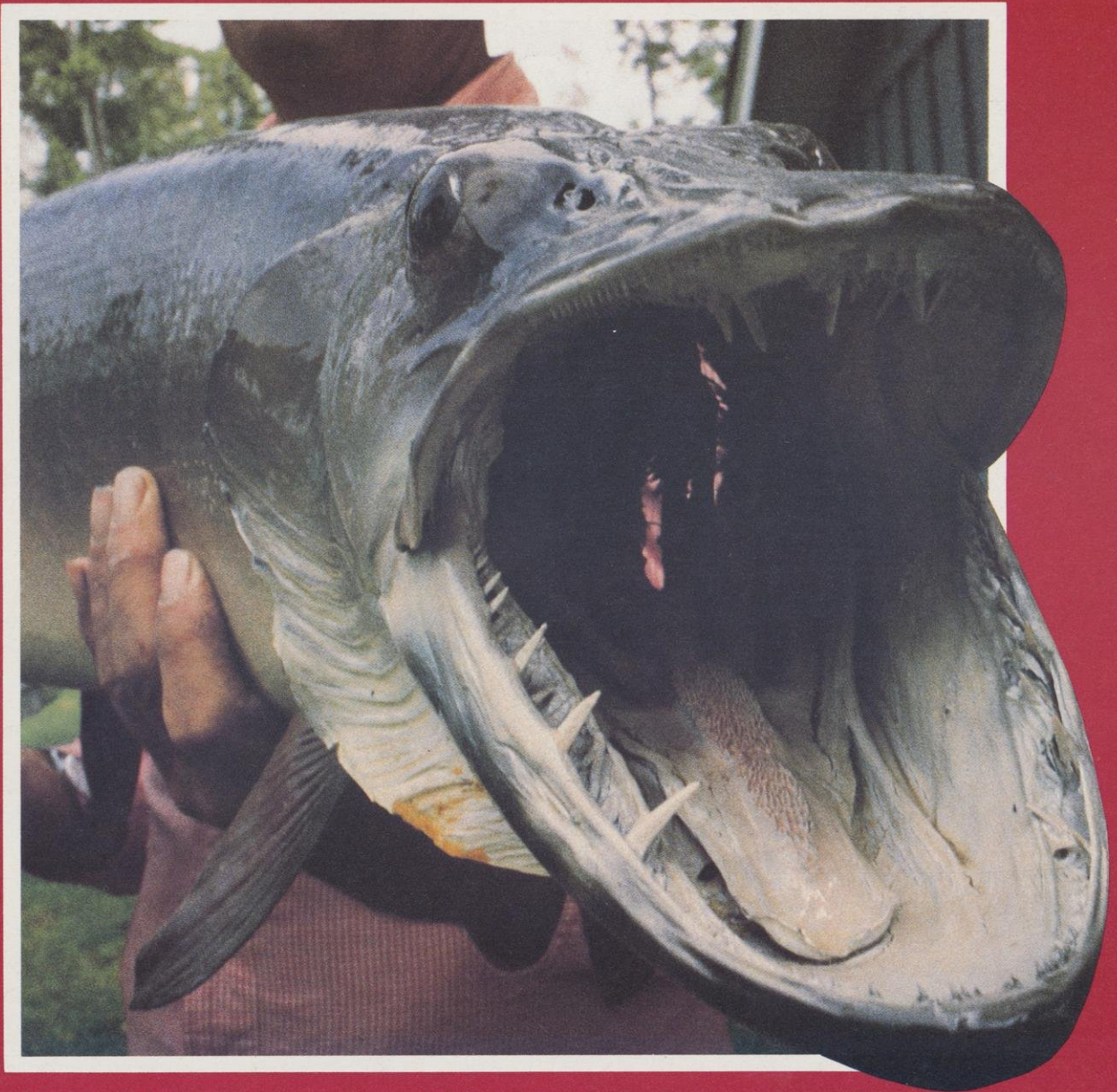
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Wisconsin

NATURAL RESOURCES

May-June 1985, Volume 9, Number 3

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**All About: muskies
walleyes
& fish managers**

Plus: Angling technology; tournaments

Return of the skipjack herring

Pam Thiel,
Assistant
Mississippi
River Biologist
Prairie du Chien



Front Cover: Looking for
Jonah: a Wisconsin
muskie.

Photo by John Beth

This story began one day in October when Don Valley, a full-time commercial fisherman, clammer and trapper on the Mississippi River, visited my Prairie du Chien office. He said he had just seined a species of fish he had never seen before in 20 years of fishing,

and it appeared to be a herring. Mentally I went through the possibilities of what species it could be. Don knows what gizzard shad, mooneye and goldeye look like, so those species were ruled out. The next species that came to mind was the skipjack herring, *Alosa chrysochloris*. I dismissed this though because it is considered extirpated in Wisconsin and has not been collected here since the 1950s. However, when I examined the specimen, it turned out to be a skipjack herring.

The skipjack herring is asilvery, slender, streamlined fish with a large terminal mouth and projecting lower jaw equipped with prominent teeth. Skipjacks are migratory and travel in schools. They are known to jump out of the water when feeding or being preyed upon, hence the name, skipjack.

The decline of this species is generally blamed on the dam at Keokuk, Iowa. The Keokuk dam was built for hydropower in 1913 and was the first one on the river. Under normal water flows, the head differential or the difference in water levels upstream and downstream from the Keokuk dam is 32 feet. The range in the head differential at other dams on the Mississippi is only from 5.5 to 16 feet. Apparently, the Keokuk dam created a physical barrier to the migratory skipjacks. In the years following its construction there was a drastic decrease in skipjacks in Lake Pepin, which is about 450 miles upstream from Keokuk, as well



Commercial fisherman
Don Valley who caught the
first Wisconsin skipjack
since 1950.

Photo by William Pflieger, Courtesy Missouri Conservation Department

as in other areas above the dam. A year after construction in 1914, a fisheries researcher collected 4,200 skipjacks from Lake Pepin. In 1915, approximately 2,300 were captured. In 1916 only 42 were found, and by 1926 only two specimens were collected.

With the decline of skipjack herring, so went the fate of two mussel species, the ebony shell and elephant ear. Mussels need fish hosts to complete their life cycles. Larval mussels or glochidium are parasitic on the gills of fish. The only known fish host for the larvae of these two mussel species is the skipjack herring. Today the ebony shell and elephant ear in the Upper Mississippi are on the verge of extinction due to the lack of their fish host and are represented only by very old individuals. The ebony shell was once one of the most abundant mussels on the river and the most highly prized for buttons.

Skipjacks were historically abundant in the Mississippi as far up as the Twin Cities and the Lower St. Croix River. Until now, they were considered extirpated in Wisconsin and are listed as threatened in Iowa.

The status of skipjack herring in Wisconsin will now be reviewed and probably classified as endangered. It is a positive sign to see the return of this native fish species to Wisconsin. Hopefully, as the environment improves even more species will come back.

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Futurists say the population is aging, but youngsters become oldsters and the pleasure of fishing persists.

Photo by Dennis Yockers

Fishing for the future

The crystal ball says the fun implicit in strategic plans is just beginning.

James T. Addis

Director, Bureau of Fish Management



James T. Addis

Futuring is in vogue these days. Everywhere you look, individuals, groups, businesses big and small alike, are trying to position themselves strategically into favorable positions for the future. They're looking for positions that will put them or their enterprise in the right place at the right time, from where they can grab a big share of the market, rise to the rank of a "Fortune 500" company or just accumulate a nice nest egg for retirement.

This phenomenon, called "strategic planning," is relatively new to my memory. I first heard the term about 15 years ago and remember it vividly only since the mid-70s. Yet almost everyone today is "strategizing" about almost everything. Cocktail parties abound with would-be strategists quoting the gurus of change. Yet if asked, most of us would freely admit that the human race as a whole has a bad record for predicting our future. Most of us change our educational objectives and our careers — often the most carefully planned

future is revised several times before we settle down. The magnetism of planning must be very strong, though, to keep us at it despite the sobering words of the poet that "the best laid plans of mice and men" often go awry.

DNR fish managers are no different than the rest of society. Although much of our time and sweat is spent trying to stay atop today, our hearts seem always to lie with our hopes and plans for the future. Dreams of extraordinary fishing, show-case management projects and what "could be, if only"—invigorate our spirit during the boring stages of hearings or the far too frequent meetings we attend. Without that spiritual underpinning, without a basic faith that we can make natural resources and fishing better for our children and our children's children, most DNR fish managers just wouldn't stick it out.

Science and scientific training also fuel our fervent desire to reach out with our mind's eye, into the future. Science, through systematic observations, hypotheses and experimentation, has improved both the workings of our civilizations and our understanding of our world. Fisheries science has given us the knowledge and skills to create a Great Lakes salmon fishery beyond imagination a generation ago, and we look for future scientific breakthroughs to open doors that now seem forever locked.

Planning for the future also brushes aside the reality of our own mortality, a most personal limitation on each of us. The need to persist beyond our mortal span perhaps accounts, in part, for a universally deep concern for future generations. Or maybe it's that long experience with a changing world builds in each of us a fear and insecurity toward change that can only be conquered by convincing ourselves and others that we can, at least to some degree, control our future and therefore our destiny.

So DNR fish managers have taken to strategic thinking with a passion. We try to detect changes in society, in technical and economic structure and in political and business systems, to predict just where and how to change programs to meet future needs and demands. Are the values and demands of today's anglers good models for those of anglers we will be serving in the next century? What programs that are losers today might be winners in the future and vice-versa? Are we building for the future or living in the past?

Bookstores overflow with predictions, some gloomy, some glowing, about our future and how to profit from it. But what are futurists saying that we in fish management should heed? What specific lessons are there for fishing and other natural resource programs?

Futurists tell us society is fragmenting into customized groups that no longer want or will accept the uniformity of a "mass produced" culture. Does this mean that uniform regulations and uniform programs aimed at the general public will be scorned by tomorrow's anglers, just



as identically platted houses are by-passed by today's home buyers? Will tomorrow's anglers demand custom fishing for walleye, bass, trout or muskie rather than the opportunity to catch a few of each?

Futurists tell us the human population is aging, and we note the same for Wisconsin's anglers. We expect a 57% increase in the number of anglers between 47 and 64 years of age and a 17% increase in those over 64 by the turn of the century. Will this affect license revenues; change the number of days the average angler fishes each year; raise interest in sedentary rather than vigorous fishing styles; or alter the likelihood that anglers comply with rules? Will older anglers be more or less adaptable to change, and more or less supportive of long-range versus short-range programs?

Futurists also tell us that changes in societal values are leading citizens to defining a new role for government. Will tomorrow's anglers demand less government involvement with their fishing or more? Will they want direct participation in decision making and much more information on the whys and wherefores of programs and regulations?

These and similar questions are pondered by the fisheries staff. In long and often disjointed discussions we have identified—at least on a preliminary basis—several critical changes that may be needed in our programs. I'd like to describe two of these, as examples of the way we attempt to confront the future.

First, Wisconsin's vast resource base far exceeds DNR's physical and financial ability to manage everything directly. Therefore, we must find new ways to exercise control indirectly and focus our attention, not only on development of fisheries, but also on extension activities. For

Demonstration projects can spark an interest that will revitalize a fishery.

Photo by James Escalante



The Great Lakes prove that new directions in fish management can produce spectacular results.

Wisconsin Division of Tourism
photo

example, we must identify specific projects where time and effort will produce dramatic results and use these results to showcase exactly what can be achieved. At the same time, we must help citizens develop a commitment to fisheries and to management and encourage them to personally practice environmental stewardship as individuals. New institutions and institutional arrangements will also be needed so that available fisheries management technology can be applied in more ways and in more places through private resources and organizations.

My second example of the way we look to the future shows that the public is already demanding and will continue to demand more diversified fishing opportunities. These lead to more "special regulations." The growth of lake-by-lake regulations complicates the rules and takes some of the fun out of fishing. This flies in the face of public demand for more freedom of choice and less interference from government. To escape this dilemma, DNR fish managers may have to put more emphasis on angler education and cultivate more thoroughly the deep personal commitment most anglers already feel toward aquatic resources. This can energize compliance because of principle rather than because of rules. In fact, most compliance is already voluntary. If our programs are well understood and accepted, local values and mores can lead to peer pressure sufficient to achieve management goals. For example, muskie tournaments have already established a 35-inch size limit which is strongly enforced by peer pressure, even though our DNR limit in the regulations is only 32 inches. Stimulating compliance of this kind, where the public goes the extra mile because they understand and support the program, has all sorts of possibilities. It could allow our management strategies to work while at the same time permitting an occasional exception for the young or novice angler who still finds a lesser quality experience extraordinary. "Guidelines" rather than rules may be the only way to give us diversity and simplicity at the same time. They could be posted and made part of local fishing practice through education, direct user involvement and the "ownership" that comes from seeing results and benefits.

With this as a starting point, we can envision many other ways to merge government and citizen interest in resources. There is no doubt that long-term benefits to fisheries will be fostered by expanding the management role of interested and activist citizens. Developing institutional arrangements that allow private citizens and organizations to contribute directly to fishery protection and development is critical.

Confidence in such new directions comes from our past experience. Success stories like trout habitat and stocking, Great Lakes fishery rehabilitation and muskie management share similar traits. First, all three programs are focused and produce visible results. Second, all three have discrete and very action-oriented public constituencies who involve themselves as sponsors. Third, the constituencies all strongly advocate sound scientific management. And fourth, they have a high degree of rapport with DNR scientists and managers, a rapport that was built slowly as they worked together to create projects with solid and highly visible results.

During our strategy discussions we concluded that DNR's other management programs, overall, are not sufficiently focused to demonstrate the kind of highly visible results achieved in our success stories. Given the predicted aging of our population, their likely tendency to fish more, and their certain demand for good fishing, DNR managers must move quickly to produce techniques that can be used to better develop warmwater and coolwater fisheries.

One way to do this is to focus more exclusively on "fisheries management." We can no longer be "jacks of all trades"—land buyers, access builders, and environmental regulators—if we are going to perpetuate our fishery in the year 2,000. While access, public land and a sound environmental policy are critical to the future of fisheries, others must carry the burden for these and allow us to go about the business of fish management.

Futuring may not predict the future exactly, but we know for sure that up ahead someplace there'll be showcase management projects to demonstrate what can be done. There'll be more intensive management on more waters where necessary and less where it's not. And more people will understand why we do what we do. Citizen knowledge, support and sponsorship of fisheries projects will increase. And these desirable events will surely mean that a full creel will be even more likely after the turn of the century than it is now. It's all in the strategic plan. Just wait.

Opening day dreams



Cliff holds up a meager opening day offering.

*Inga Brynildson,
DNR Public Information, Madison*

The lessons of opening day can influence a whole life, especially if your father is a DNR fish manager.

It must have been 1961 because I was five and the folks had loaded us kids in the Edsel for the requisite Sunday drive in the country. Dad pulled the car over just past a cement bridge girding a stream. While we wrestled to be the first out of the back seat, he went around back and slipped the army-green canvas off his fishing rod — the one with the automatic reel with a lever instead of a winder. That rod in the car was as sure a sign of spring as the first robin or crocus alongside the house.

Dad turned over a rock and unearthed a worm retracting in the sudden light. As the rod passed

from my older brother and sister and finally to me, Dad coached his young anglers. "Don't stand too close to the edge, you don't want to cast a shadow on the water. Let the line drift with the current as it would naturally. If you get a bite, let 'em have it awhile, then set the hook. I'll help you land it." Easier said than done when you're a five-year-old and you feel the flailing tug of unseen life on the line for the first time. The fish hit and I hit back. Only what I hit was the lever of the auto-reel. With a "zing," the fish rocketed out of the water and flew over my head. It wrapped itself like a winding bobbin around a tree limb and dangled six feet overhead. That was one surprised trout. Not to mention one surprised angler. I



The Brynildson brothers, Cliff (standing) and Oscar. They wrote the biography of Trout Creek.

knew that wasn't the way Dad told me, but I got the fish didn't I? I think Mom laughed all the way home recalling how Dad had to shimmy the tree and cut the line to release the fish. So much for our fishing lesson.

But the worm wasn't the only thing baited and the trout wasn't the only thing hooked on that spring day long ago. Something had gotten under my skin as well. That something manifested itself in a child's enthusiasm to go fishing. After that, I went out with my Dad every chance I got, especially on opening days.

Opening day of trout season has always been a ritual in our house. My recollection of it is much like the sensation I've had since, when canoeing whitewater. First you hear it, then you see it and suddenly you're swept up in it. Dad would start preparing for the opening, weeks ahead of time. Hours were spent untangling lines, knotting on new leaders, mending ferrules, and inventorying hooks and sinkers.

One year, probably as a vehicle of distraction, he bought me a small copper tackle box and gave me a wad of old lake fishing lures he'd found along a shore. My "tackle" was way too big and garish for stream fishing so it never saw the light of day, but I lugged the box along faithfully just the same.

A few nights before the opening, nightcrawler hunting began. With flashlights and bare hands, we'd creep around the evergreens straining our eyes in search of the shiny red strands of flesh. The name "nightcrawler" actually described us as much as it did the worm.

The night before, gear was loaded, and sandwiches and cans of "50/50" pop packed into the cooler And then we were swept up in it.

We'd be on the road westbound from Madison on the dark side of 4:30 a.m. We traveled with a variable cadre of brothers, sisters, cousins, uncles and friends. Quite a bunch of us when you got us together, but we spent most of the day strung out along the arrhythmic meanderings of a cow-pasture creek. With the first other car that passed, Dad would lean over to his drowsy-eyed anglers and chide, "They're on the move!" This would excite us kids and we'd peer through car windows at the scattered headlights marking the network of roads leaving the city. We'd imagine being part of some "trout pilgrimage" moving through the night, called by some still-echoing primal impulse that had stirred us from sleep to join in this long history of opening days.

Most years we went out to Trout Creek, a watery seam between the driftless bluffs of Iowa County. Much of my sense of place upon the earth was borne of this stream, spawned in its waters like trout growing in the shadows of the bank. My mother and her mother, and yes, even her mother lived out much of their lives on land which drains into Trout Creek, farming along the fertile shoulders of its watershed.

My Dad, Clifford, is a DNR fish manager. In the days of the old Wisconsin Conservation Department (WCD), his fishery jurisdiction took in Iowa County, and with it, Trout Creek. (Now he manages in Dane, Green and Rock Counties.) My dad's brother, Oscar, the first WCD trout researcher, used Trout Creek as a model for trout habitat management techniques. Together, the "Brynildson Brothers" wrote the biography of that stream. The last of their jointly authored technical bulletins is on press at this writing, and its subject is, (what else?) brown trout on Trout Creek.

Like opposite bluffs of a personal watershed, these influences drained into me. I wouldn't doubt that I have Trout Creek water flowing in my veins. I know back in 1980 when a fertilizer spill seeped into the creek and killed over 8,000 trout and countless other organisms, part of me felt contaminated too. Some of Dad and Oscar's research and management went belly-up with those fish.

But most memorably, Trout Creek is the water I fished with Dad on opening days. The smell of fish on a soggy mitten still drives home a memory as vivid as the red side-stripe on a stream-hatched rainbow.

By the time pink sky started filling in the cracks in the horizon, we'd arrive at Birch Lake. This little 11-acre impoundment on the upper end of Trout Creek sits just north of the now tornado-ravaged town of Barneveld. At the official hour of the opening of the season, we watched a spider's web of lines drop into the water. Cars were bumper to bumper and boats were rudder to rudder. On shore, anglers were hip boot to hip boot. Dad counted them all and logged it into his yellow-dog pocket fieldbook. This gave him a reading on fishing pressure from one year to the next. Counting the out-of-state plates was my job. Iowa and Illinois cars outnumbered Wisconsin some years. Standing on the road above the lake, Dad would gaze over the opening day onslaught and say, "Well, we stocked X-number of fingerlings in here last fall. They should be about 10 inches by now. So, I suppose these fellows should see some action today." Then he'd look my way and raise his eyebrows. I thought there wouldn't be an opening day at all, if it weren't for Dad. It was hard enough remembering "fishery biologist" when other kids asked me what my Dad did, without having to understand the scope of the large state agency for which he worked.

As I recall, Dad never did get much fishing done on opening days. His time was occupied wading in the creek to untangle snags in our lines, and seeing to it that at least most of us caught something during the day. About the time the sun began to burn the pink edges off the day, Dad left to survey fishing success on nearby streams. The "creel census" provides data on the rate at which fish are caught and what sizes and year classes. Sometimes I'd go along. Fishermen who had

something to show were always glad to reveal the contents of their creel for the census. Dad sometimes had to assure less successful fishermen that indeed, there were fish in the creek and explain how he had electro-shocked that stretch of water just the week before and found some beauties. Occasionally an angler would look down at me and ask Dad, "Is that your boy?" Dad would wink and say, "Yeah, I guess so." Blue-lipped and bundled against the cold, damp spring morning, with my shoes stuck inside each pair of my dad's old Bean packs, I suppose I did look less like someone's idea of a girl than a boy.

From here, fish stories sound pretty much the same—the ones that got away and the ones that didn't. The fish themselves aren't that memorable, except for a few. I'll never forget the 17-inch brown trout Dad hooked and then passed the rod over for me to land. I got it above the water and it dropped off. Dad got a little quiet after that. And I remember a 14-inch rainbow I pulled out of Cave Hollow Creek—literally. I hadn't had a bite all morning. Dad was just cresting the hill to head off on the annual creel census when something grabbed hold of my bait. Without a net, I couldn't bring the fish to me on the bank, so, logically, I went to the fish. I jumped in the creek and grabbed the trout with my hands. I climbed back up on the bank and hollered and waved the fish until Dad turned and waved his congratulations.

After we'd caught a few, Dad would slip open the moon-white bellies of the fish. His scissors would pierce the stomach of each one and we'd examine its contents. We really didn't need to look at the stomach to tell what the fish was made of. Smooth, coral flesh was the mark of a stream-fed or "wild" trout. Pallid, flakey flesh told of a life of pellets and hatchery tanks. But after a time, the cold swift water of a Wisconsin stream works its magic even on a stocked trout.

Most of my opening day dreams, though, are not about fish. They're about yellow warblers and brown thrashers that Dad pointed out, flitting in among the brush. They ring with the theme music of red-winged blackbirds trilling the battlecry of their marsh wars. One particular opening day was most remembered for rattlesnakes. It was just after lunch, say about 9:30 a.m. We'd left the upper part of the stream and drove downstream to fish near the old Hyde Church. At a crossroads,

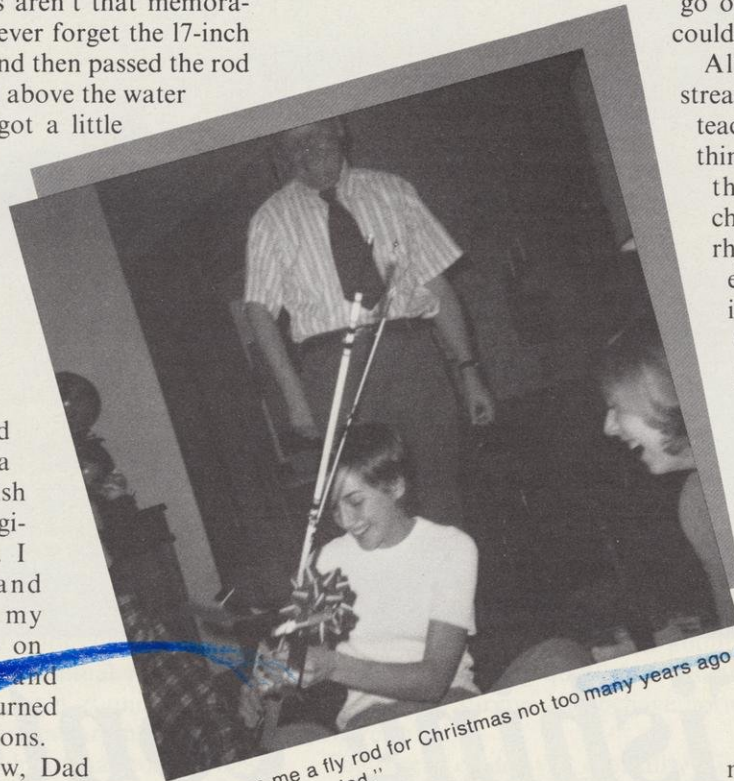
we met a pickup truck. A wiry, outdoorsy man stepped out of the cab. My dad recognized him as Woody Roberts, a renowned rattlesnake hunter in southwestern Wisconsin. Woody had a couple of Scottish women in the truck who claimed to have never seen a snake before. Woody had the cure. He pulled a white sack out of the back end of the truck. Then, using long tongs, he probed inside and came out with a large timber rattlesnake. He said he'd caught it up in the hills. The tongs gripped the snake just behind its head. Woody held the reptile within a foot of my quivering face. Then he let it go near the tires of our car. I watched it rotate its tubular body in an effort to slide into the vehicle's shadow. But Woody was quick with the tongs and snatched it up before it escaped. I think I was a little quiet after that encounter.

I still join in the tradition of opening day with Dad. I missed only one in the 20 years I've been at it. Dad gave me a fly rod for Christmas not too many years ago and I felt like I'd graduated. But it hasn't been used much. I go out on the opening now because I couldn't miss it.

All those opening days I spent stream-side with Dad, I thought he was teaching me how to fish. But now I think he was teaching me to listen to the creek. The message hasn't changed much since I was a kid. The rhythmic gurgle and plop are the earth's steady chant of water moving through a healthy vein. Trout Creek jars loose thoughts long suspended in memory, backed up in the narrows of time like a floating log once green upon its banks, now jammed up against gathering debris. Stream channels have a way of working fallen wood until it slips out of the tangle and floats free.

As an adult, I've spent most a decade trying to foster environmental concern in others through my work with DNR. I sit in environmental education meetings and

learn about activities for teaching children about living things. Hugging a pine tree to feel its life force and wallowing in a marsh to get a frog's eye view may be one way to teach an environmental ethic. But I have a notion it's a slow-growing thing. A Bible verse reads, "Speak to the earth and it shall teach thee." I know that for me Trout Creek has been a patient teacher and its lessons have ripened in me at life's pace like a thousand trout fry hatched from the eggs in a gravel redd. I guess that's why I do what I do.



"Dad gave me a fly rod for Christmas not too many years ago and I felt like I'd graduated."



Walleye tournament on Lake Winnebago. Managers worry whether intense, concentrated pressure can hurt fish populations. The Natural Resources Board wants fishing to remain a "true amateur sport" without competition.

Photo by Dean Tvedt

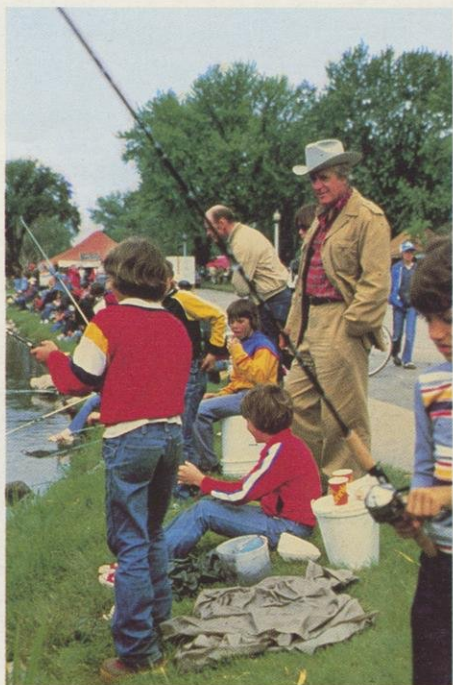
Fishing contests: here today— and here tomorrow

*Larry A. Nielsen,
Bureau of Fish Management*

Fishing tournaments have raised both biological and social issues. But one thing is certain: they won't go away.

Seldom has fishing been so newsworthy. A walleye angler wins \$100,000 in a contest near Wisconsin Rapids. Bass tournament results show up regularly next to baseball scores. This year, a lunger bass fishing contest will feature a total purse of \$845,000—with a format designed specifically for live television.

And seldom has fishing been so controversial. A tournament angler commits suicide in Texas on the eve of his appearance as a federal witness in a cheating investigation. Subsequently, four men plead guilty to illegally transporting largemouth bass from Florida to Texas. Some states outlaw "tagged-fish" contests because awarding large prizes for catching them is an illegal lottery. Other states rule that such contests are sporting events because catching any fish requires some skill.



Current interest in fishing contests is reminiscent of the uproar in the late '60s when bass tournaments were new. Fisheries managers worried then about high catch rates and the impact on fish populations. Since then, fishing contests have changed greatly, bringing new concerns. Six-figure prizes are raising the spectre of big-time cheating and the emergence of "tagged-fish" contests make fishing look like the fall guy in a get-rich-quick scheme.

Most fishing competitions in Wisconsin have a long tradition and are of great variety. The local "fisheree," for example, is usually held during the ice-fishing season as a benefit for civic or charitable groups. Or consider the annual muskie festival in Hayward; it has been running for 35 years, releasing most fish and awarding only trophies for prizes. Lake Michigan salmon derbies are Great Lakes versions of salt-water tournaments that have run for decades. John Reinke, current Vice-President of the Great Lakes Sport Fishing Council and an avid brown trout angler out of Marinette, explains the pleasures and benefits of their local salmon derby this way:

"I can't remember a derby that was won by so-called big-time fishermen. Imagine the thrill of the 12-year-old boy last year who landed a 31-pound chinook, the only fish his family caught during the derby. He checked the standings regularly for two days to see if his fish was still in first place. And he won a nice prize."

"Our club has contributed about \$6,000 to fishery projects in the last few years, including helping purchase two boat ramp sites and placing a flashing light at a third site to help boaters find the entrance."

Deciding how contests fit into the Wisconsin fishing experience is no easy task. The Natural Resources Board, policy-maker for DNR, states that "sport fishing should remain a true amateur

sport which combines the pleasures and skills of angling with wildlife and scenic enjoyment, contemplation, and other subtle pleasures, not competition." Consequently, state fishery managers have de-emphasized competition in their programs. The renewed interest in tournaments, however, among the public, lawmakers, and professionals, is forcing re-examination of the issues surrounding competitive fishing.

The first set of issues are biological: does intense fishing on one water at one time hurt fish populations? Many tournaments, especially those for bass and muskie, now return fish alive to the water, eliminating most concern about high harvest rates. A nagging question is whether or not those fish will survive and behave normally after being released.

The extent of delayed mortality (fish that die within a week after release) depends on when and where a tournament occurs. Studies in other states have shown that bass caught and released during summer months, when water temperatures are high, suffer higher delayed mortality than bass caught in cooler water. Some states, therefore, are considering restricting tournaments to spring and fall periods. Fish caught in deep water and later released at the surface may also die because of changes in water pressure, much like scuba divers suffering "the bends."

A current question is whether or not bass released at a central weigh-in point are more likely to be caught again during the next few days. Jim Holzer, state fish biologist in LaCrosse, has studied this phenomenon in association with a three-day bass tournament held recently on the Mississippi River. Jim's preliminary results show that about 20% of the bass caught and released the first day were caught again on the second or third day. Research like this is leading fisheries manag-

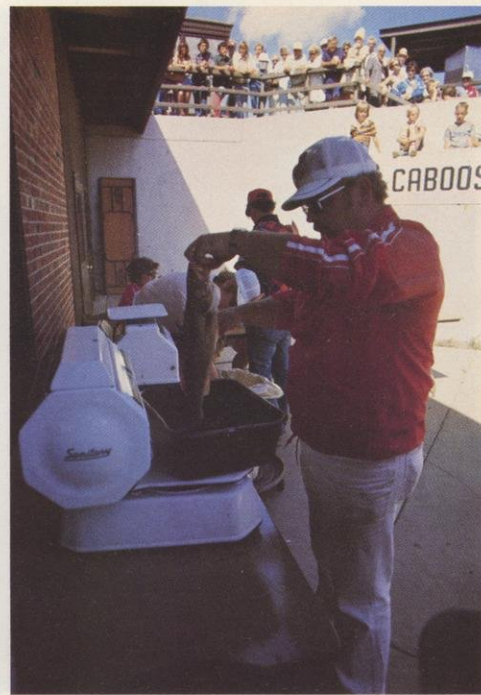
Left: Fishing contests for youngsters are often regular community events in Wisconsin.

Right: Big time contests with many participants must be policed by public agencies.
Photo by Dean Tvedt



Left: Festivals like this one at Boulder Junction are traditional in Wisconsin.

Wisconsin Division of Tourism photo



Right: The weigh-in. Should all fish caught in certain contests be returned to the water alive? If so, where and how should they be released?

Photo by Dean Tvedt

ers to recommend that released fish be re-distributed throughout the lake or river, or that each fish be measured where it is caught, then released immediately.

The other set of concerns are social. Is competition bad for the sport? Do contests interfere with the rights of other anglers? In addition to these philosophical questions, tagged-fish contests are raising more practical questions for fisheries managers. Should the manager tag fish for such contests? Is a contest held for charity different than one run for profit? Are tagged-fish contests recreational or commercial fisheries?

The nature of these concerns in Wisconsin is largely unknown, but work is progressing on many fronts to form the basis for future action. The Wisconsin Council of Sport Fishing Organizations, for example, is compiling a list of all fishing contests held during the year. Their aim is to document the extent of this activity, so anglers and the general public can judge whether this is an important and growing phenomenon, or merely one that attracts much public attention.

An economic study of fishing tournaments is underway at UW-Madison. Kim Rollins, graduate student in resource economics, will be examining how fishing competitions impact a local economy. Business people often report substantial income from the presence of a large tournament, but the community also incurs some additional costs. Kim plans to study a Lake Michigan salmon derby, a Mississippi River bass tournament, and a muskie or walleye tournament in Wisconsin's northwoods region.

A major uncertainty is how Wisconsin residents, both anglers and non-anglers, view competitive fishing. The Warmwater Study Committee of the Conservation Congress has added several questions to the spring questionnaire to explore attitudes about contests. Depend-

ing on the answers, the Congress may form a task force to suggest changes in DNR management of competitive fishing.

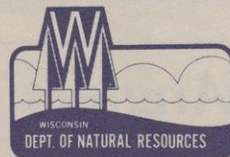
The professional fisheries community is also turning its attention to competitive fishing issues. The topic has been debated at all major meetings of American Fisheries Society groups in the last year, from New York to Oklahoma. Seventy Wisconsin fisheries professionals addressed the topic in January through a panel composed of Jim Addis, Director of DNR's Bureau of Fish Management; Jack Lorenz, Executive Director of the Izaak Walton League; John Reinke; and me.

Our panel discussion was typical of meetings I've attended across Wisconsin and across the nation. Emotions run high on both sides of the question, and the facts to support either viewpoint are meager. A few facts, however, are certain. First, fishing contests, whether good or bad, are here to stay. Although the number of bass tournaments nationwide has declined since the late '70s, tournaments for other species are becoming more common and widespread. Competition is too popular throughout American culture to imagine that its presence in fishing is a passing fad.

Second, rules for contests will continue to change in the face of biological and sociological information about their effects. The current interest in tournaments should produce many useful recommendations, perhaps even formalized guidelines from groups such as the American Fisheries Society. We can look forward to continually improving contests, ones that impact the resource and the non-contestants less in the future than they do now.

Third, we can expect to hear lots more about fishing competition in the near future. Look for latest results on the sports page, and the latest opinions on the editorial page.

Anglers' Almanac '85



Fishing Regulation Changes

The trout and salmon snagging season on portions of Lake Michigan and its tributaries now begins October 1 and ends November 15. Snagging is no longer permitted in the Manitowoc River or from the Lake Michigan shoreline bordering Manitowoc County.

The daily bag limit for perch caught from Green Bay, Sturgeon Bay, Sawyer's Harbor and the Lower Fox River from its mouth at Green Bay upstream to the dam at De Pere has been raised from 25 to 50.

Telemetry devices may not be implanted or attached to fish to aid angling or for any other purpose.

Crayfish traps placed in trout streams must be the same size as minnow traps — no more than 24 inches long, 16 inches in diameter or square with a throat opening of 1½ inches or less.

A fish refuge has been established on Yellowstone Lake, Lafayette County. Fishing on this lake will not be allowed in 1985 until June 15.

On inland waters north of

highway 10, the muskellunge season opens on the Saturday preceeding Memorial Day (in 1985 this will be May 25).

INDIAN RESERVATIONS:

Fishing regulations on Indian Reservations in Wisconsin are complex and involve federal, state and tribal law. Anglers should check in at tribal headquarters to learn current policy before entering a reservation to fish. Failure to do so may leave the angler in conflict with the law.



Snagging rules for Lake Michigan have changed.

Photo by Dean Tvedt

Urban Stocking Program

Last year's urban trout stocking program in the metropolitan Milwaukee area was such a huge success there will be a repeat performance this year.

Stocking began the first week in April on selected ponds, early enough for youngsters to begin trout fishing during the Easter school break. In addition, certain Milwaukee park lagoons will be stocked with large bullheads the first week in May. The stocking will be carried out in cooperation with Milwaukee and Waukesha

counties and the cities of Cedarburg and Racine.

The season will open as soon as lagoons are stocked. Daily bag limit is five trout per angler with a size limit of six inches. Anglers aged 16 to 65 will need a fishing license and trout stamp. Persons over 65 and certain handicapped individuals can receive a free license at county courthouses and DNR offices.

Last year urban lagoons were stocked at the rate of 300 rainbow trout per acre and according to electrofishing,

surveys, by mid-May there were virtually none left. Heavy fishing pressure, mostly by youngsters and senior citizens made sure all the trout were caught long before the possibility of any fish kill from high summer temperatures.

The early trout stocking program is designed to provide recreational fishing for youngsters under the age of 16, handicapped persons, senior citizens and others who have limited access to distant lakes and streams due to limited mobility.

Alien Lake Trout Invade Mississippi River

Dave Weitz

Wisconsin fishing regulations have been temporarily revised so that a batch of alien lake trout that escaped into the Mississippi River from a hatchery won't go to waste. **The change permits anglers on the river to take five lake trout each day, six inches or larger.** It was made after a public meeting revealed no opposition to the special rule, which expires on Sept. 30, 1986.

Anglers who catch and keep the Mississippi lake trout must have an inland trout stamp.

James Holzer, DNR biologist at La Crosse, said the fish, which are native to the Great Lakes, could not survive high summer water temperatures in the Mississippi. **It's estimated more than 15,000 fish between six and 15 inches in length escaped from a trout farm on the Root River in Minnesota.** The Root is a tributary of the Mississippi.

DNR Warden Supervisor Douglas Radke said incidental catches of the alien lake trout have been turning up all the way from Lock and Dam Seven southward to Prairie du Chien. Holzer first became aware of the fish a year ago when he caught one during an electrofishing survey for walleyes. Another 14 were discovered in October and since then several incidental catches by anglers have been reported.



The 1985 Inland Trout Stamp. You'll need one to catch those alien Mississippi River lake trout.

Painting by Artist Sam Timm,
Wautoma, WI 54982

Prepared by Sheena Carey
Layout by Jim McEvoy

Anglers' Almanac '85



Winter trout fishing controversial

Wisconsin's 10-county winter trout season, which runs from January 1 to the first Saturday in May, remains controversial among both anglers and DNR fish managers.

Winter fishing is allowed in La Crosse, Vernon, Crawford, Richland, Sauk, Columbia, Grant, Iowa, Lafayette and Green counties. **It is known to reduce crowds for the statewide opening and, in general, increases opportunities by adding more than four months to the season. But some believe it has also caused a decline in the number of large trout in certain streams.**

Fish managers agree that fewer big ones are showing up in the 10 counties, but they also see a decline in streams elsewhere. Whether winter fishing plays a role is not absolutely clear. Data for La Crosse and Vernon counties, however, suggest that it at least aggravates the problem.

A proposal popular with most southern managers would open winter trout fishing in the entire southern third of the state, but restrict it to catch-and-release and artificial lures only. This would preserve increased opportunities but also protect big fish. The idea, however, met with substantial opposition during public meetings in many of the current early season counties.

A DNR advisory question at this year's hearings on fishing regulations will offer people a choice of four alternatives regarding winter fishing. They range from no early season at all to one with catch-and-release and artificial lures only. None of the changes in these advisory proposals would be made next year. **However, for 1986 DNR is recommending that Vernon and La Crosse counties be allowed to eliminate winter fishing.** This is based on a study of the Coon Creek system which showed fewer large trout there since the early season began. Vernon County has had winter fishing since 1975 and La Crosse since 1982.

How to catch and release

Larry Claggett

More and more Wisconsin anglers recycle their fish these days by catch and release. This is a pretty sensible idea when you consider that most lakes and streams just can't produce enough big fish to provide both quality fishing and food at the same time.

Many surveys show that keeping and eating fish, especially species like muskie, bass and trout, are not a top priority for fishing enjoyment. Things like recreation, getting away from it all, scenery, catching lots of fish and catching big ones are often more important. For those who want to release all or part of their catch, here are some pointers on how to increase the chances for these fish to survive and be caught again:

Do not play the fish to exhaustion. Have fun bringing it in but don't lengthen the fight unnecessarily. Exertion builds up an imbalance in the blood which can result in stress and death.

Use a net to land the fish quickly and for ease of handling. The net allows you to grip slippery fish with a minimum of damage.

To prevent internal injuries don't squeeze the fish or put your fingers in its gills.

Turn your catch upside down when handling. Fish tend to struggle less when belly up.

Cut the leader on deeply-hooked fish. Most will quickly dissolve the hook. About two-thirds will survive as compared to almost no survival if a deep hook is removed. Using this technique on stream trout alone would save a minimum of 250,000 fish each year and reduce costs substantially by eliminating the need for hatchery trout to replace them.

If the fish is sluggish hold it upright and move it back and forth. This circulates water over the gills and gives the fish time to recover before release.

Following these tips will make your good intentions even better and result in substantial fish survival.



**Do not play fish to exhaustion
Use landing net**



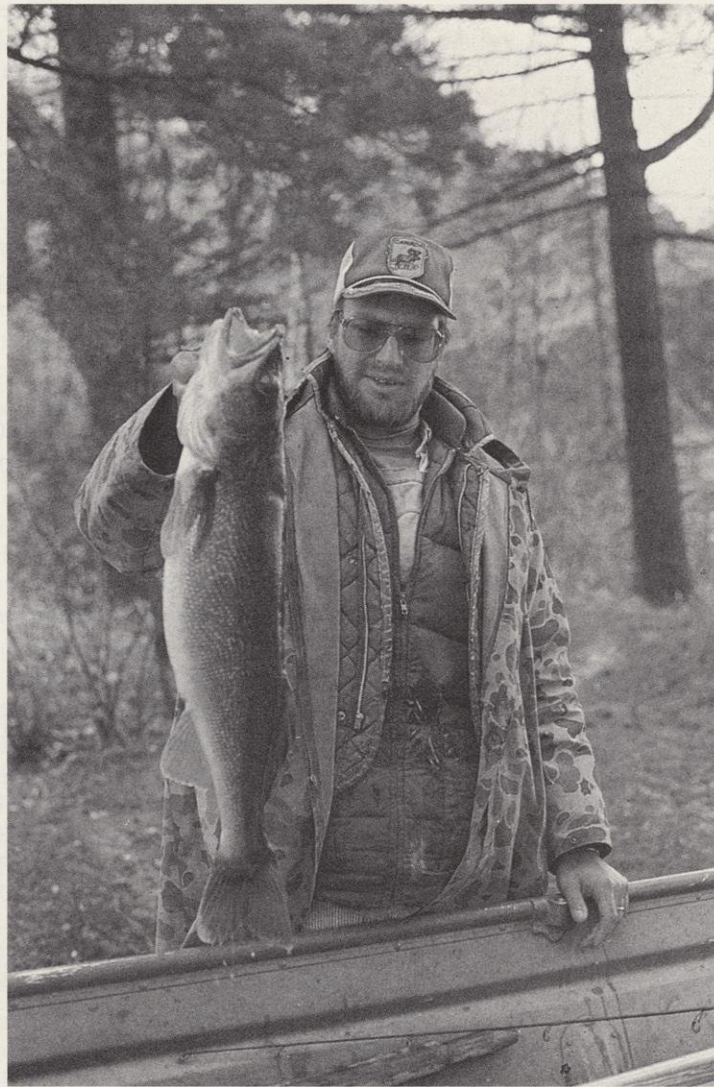
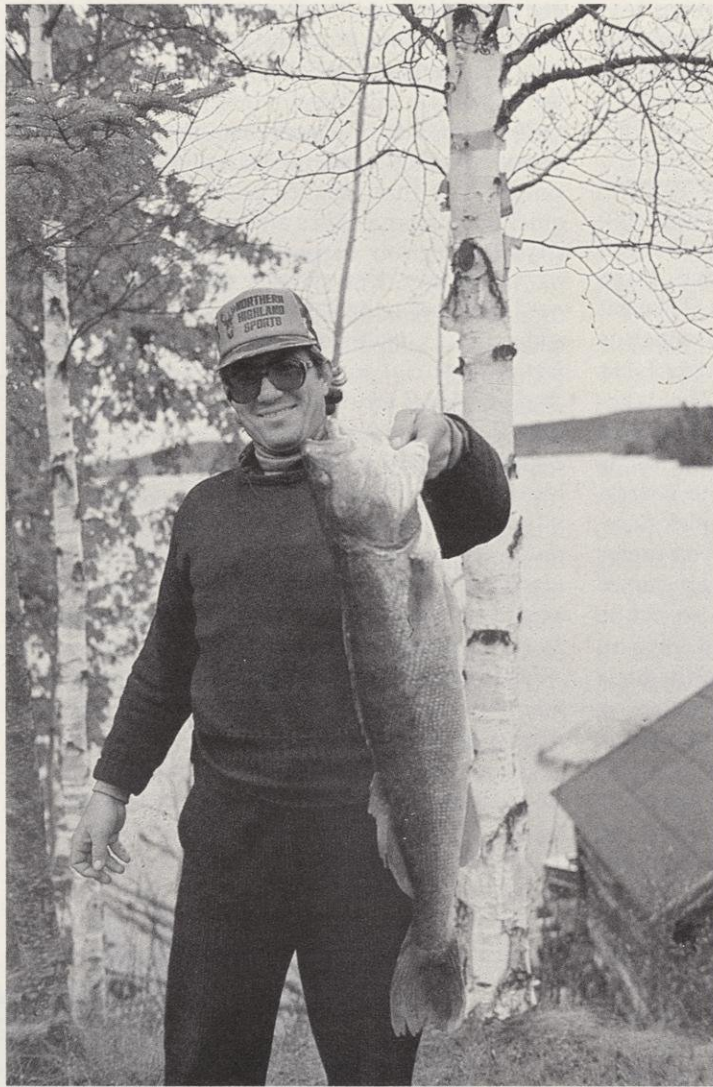
**Handle fish in net
Grasp across back and head**



**Turn fish belly-side up
while removing hook**



**Do not remove
swallowed hook ...
... cut your line!**



Tom Sheffy (left) is coordinator of the DNR acid rain research program in the Bureau of Air Management. John Sullivan (right) is a contaminant specialist in the Bureau of Water Resources. Although sport fishing is just a hobby for these two anglers, their jobs with DNR also involve monitoring the condition of the fishery resource in Wisconsin. Their acquired knowledge of lakes and fish behavior as it relates to sport fishing has enabled them to develop a four-day workshop they teach twice a year through the UW-Extension Environmental Resources Unit.

Weekend walleyes

Tom Sheffy and John Sullivan

The right lake at the right time, combined with simple technique will improve your catch.

If you're like most fishermen you probably don't have a good walleye lake in your backyard with a boat ready and waiting, tied to a dock. If you did and also had the added luxury of being able to fish anytime — the best hours and the best weather — chances are there'd be no shortage of fish on your stringer.

Unfortunately, most of us are weekend anglers and walleye fishing usually means a pretty long drive Friday night. At the local bait shop you probably learn the fishing was dynamite on your favorite lake the day before yesterday. Then, you fish hard on Saturday and Sunday, in whatever weather you're dealt. . . . If only that fish you caught were as heavy as your eyelids on the long drive home!. . . . Sound familiar?

Given this near-universal plight, is there anything you can do to improve your catch during the limited time you have to fish? The answer is, plenty! Here are a few tips:

Do your homework

Start out from the comfort of your living room chair in winter with a variety of activities that can be lumped under the heading of research. First, select an area of the state you like to fish. Then get a copy of Wisconsin Walleye Waters, which is available from DNR, and pick out a few lakes with abundant walleye populations. The lakes should be of various sizes, say 200, 400 and over 600 acres. Next, if additional information is needed, contact the fish manager at the nearest DNR field office. For example, if you pick Sawyer County, the office is in Hayward. If you prefer Oneida County it's in Woodruff. At certain times of the year fish managers are swamped, so it'd be best to send a specific written request or make an appointment for a short visit. These individuals have a wealth of information and expertise on local lakes. Their files include such things as stocking records, creel census data and population surveys. They can help you fine-tune your lake selection and possibly go over a contour map or two. However, if you want your own maps with you you'll have to buy them from a sport shop or map company. If your maps are not waterproof you may want to laminate them with clear plastic for protection against water damage. You'll probably use them frequently enough to make it worthwhile.

Once you've got the maps, the fun of plotting an opening day strategy begins. Lake walleyes mostly spawn along rocky rubble shorelines, points or bars associated with shoreline. They're usually finished spawning when the season opens in early May but tend to hang around the spawn-

ing grounds for a few days to a couple of weeks afterwards. Mark potential spawning grounds on your map, and concentrate on these areas early in the season.

Now back to the point we mentioned earlier about selecting different size walleye lakes. It's a simple fact that smaller lakes warm up more quickly than large lakes after ice out. The walleye spawning period depends to a large extent on photoperiod or time of year, plus water temperature. They generally spawn shortly after ice-out when water temperature rises to about 44 degrees Fahrenheit—and are nearly finished when it reaches about 50. While spawning, walleyes are not very aggressive feeders. But a week or so of sex uses up a lot of energy. Also, water temperature is rising, speeding up body metabolism and increasing the need for food which is scarce because minnow populations are low. All these factors combine to produce a short but intense walleye feeding binge—and you can predict it using nothing more than a thermometer.

Here's how to choose the right lake for opening day. Take the surface water temperature on several lakes the night before the opener. Try to find a lake which is close to 50°F. If a lake is 45 or less forget it. It's too cold. If a lake is 54 forget it, the feeding spree is probably over.

Obviously, spring weather will determine what size lake to fish on the opener. A late spring favors the small lakes. An early one puts medium to large lakes in the right temperature range for that first day. This simple system for finding feeding walleyes will help you eliminate a lot of unproductive water.

Tactics on the water

So far, we've discussed selecting the right lake and the spawning ritual. Now it's 4 a.m. opening morning. You're the first one at the landing and everything is going great: the coffee is hot, the bait is lively, the motor starts on the first pull and you're halfway down the lake nearing that prime gravel spawning shoal you marked on your map—except—you've made one critical mistake already. Those walleyes haven't heard the whine of an outboard since last November. Chances are your approach has just spooked a lot of them right off that chosen shoal, especially if the shoal is shallow. We find most of our fish in less than three feet of water before dawn. That's why we strongly recommend approaching a spawning area with oars or a quiet electric motor. Too much noise is one of the most common mistakes made by enthusiastic walleye anglers.

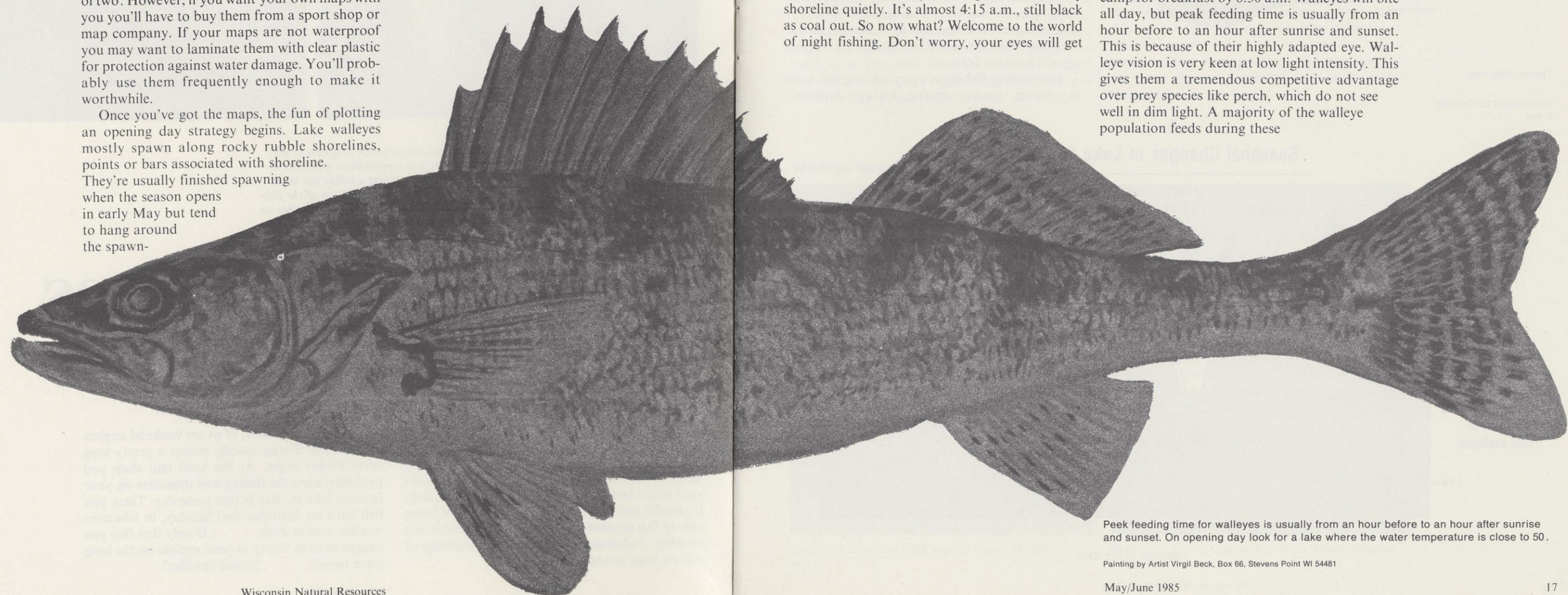
Well, let's assume you did get to that rocky shoreline quietly. It's almost 4:15 a.m., still black as coal out. So now what? Welcome to the world of night fishing. Don't worry, your eyes will get

used to it, provided you don't turn on any lights. Next, pick up that favorite spinning rod, the one with the eight pound test line and number 13 silver and black floating rapala you tied on carefully, minus the swivel, last night when the light was better. Give that bait a good heave and pull it slowly over the rock bar. Remember, the water is cold and the fish sluggish. Retrieve your bait slowly, just fast enough to make it wobble. Then, free up the landing net — you're gonna need it.

Now it's 5:30 a.m., plenty bright out and no more action on the shallow rocks. Because of their sensitive eyes the walleye have probably moved to deeper, darker haunts. Tie on a sinking rapala, back off the bar to 12 or 15 feet and have some more fun. A one-eighth ounce jig dressed with a three to four inch red tail minnow is also very effective during daylight hours near spawning grounds.

If you're catching few fish or only small ones (males), try the newly emerging weed beds in eight to ten feet of water adjacent to or near the spawning area. If the lake is warming up rapidly, the feeding binge on the spawning ground may be very short. The big females tend to leave first and head for nearby weed stubble.

If you've chosen the right lake and fished it properly, you should be ready to head back to camp for breakfast by 8:30 a.m. Walleyes will bite all day, but peak feeding time is usually from an hour before to an hour after sunrise and sunset. This is because of their highly adapted eye. Walleye vision is very keen at low light intensity. This gives them a tremendous competitive advantage over prey species like perch, which do not see well in dim light. A majority of the walleye population feeds during these



Peek feeding time for walleyes is usually from an hour before to an hour after sunrise and sunset. On opening day look for a lake where the water temperature is close to 50.

Painting by Artist Virgil Beck, Box 66, Stevens Point WI 54481

May/June 1985

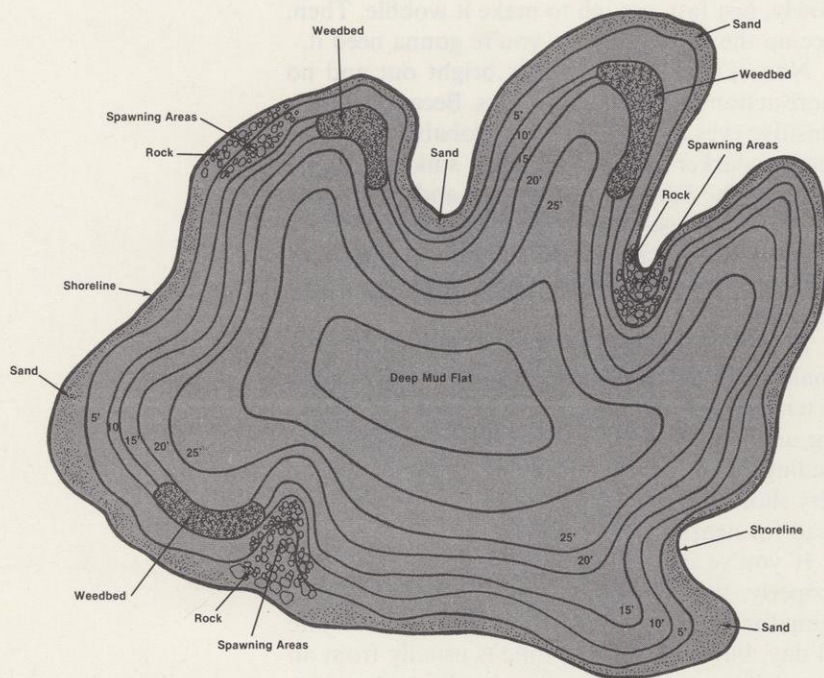
two peak periods (dawn and dusk.). Some individuals are less efficient than others and are forced to feed longer, in some cases all day.

While it's true, professional guides consistently catch walleyes during banking hours, they're fishing for fewer actively feeding fish. The skills and knowledge that come from fishing nearly every day help them beat the numbers game. For the weekend walleye angler, however, fishing the daily peak periods greatly improves success.

Walleye fishing generally slows down during summer. This can be attributed, in part, to a phenomenon called forage density—the amount of food available at any given time for predator fish to eat. Early and late in the year the amount of forage is low, therefore, walleye must actively feed for longer periods of time to satisfy their metabolic needs. In July through August, however, prey density is high and walleyes can quickly find plenty to eat. This means they do not actively feed for very long at a time. Additionally, the mosquito density curve generally parallels the forage density curve, making summer fishing less enjoyable.

A common mistake made by walleye anglers in summer is to spend too many hours fishing deep. At this time of year, we use a formula for lakes over 30 feet deep: the maximum depth of the lake divided by three. You'll find 90% of the walleye at this depth or shallower. Another common mistake during summer is to spend too much time fishing rock bars when a majority of walleye are hanging out in the weeds because that's where the groceries are. Persistent fishing in weed beds with a jig tipped with a crawler or leech, or a live bait rig will produce fish.

Fall walleye fishing is every bit as good, some say better, than in spring. Forage density is

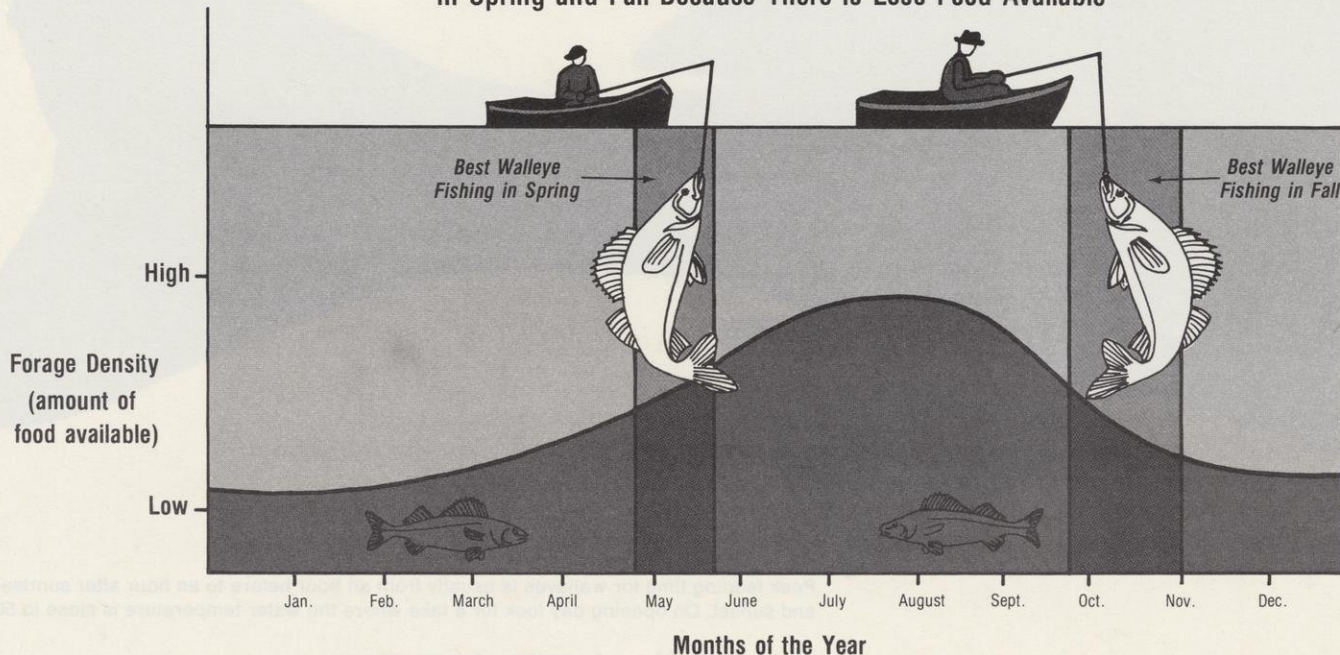


Typical lake map

Illustrations by Camilla Klyve

Seasonal Changes in Lake Forage Density

Walleye Fishing is Better
in Spring and Fall Because There is Less Food Available



declining at this time of year which means walleye are feeding longer. Also, in fall walleye have increased metabolic needs because of gonadal development. This may be another reason why fall fishing is so productive. At the end of summer, walleye generally move from weed beds to the deeper rock bars. This occurs anywhere from late August through September.

Because you're generally fishing deeper water, fall fish can be taken on a heavier jig tipped with a large minnow. Although forage density is declining, available food fish are much larger, hence the need for bigger bait. A common mistake many walleye anglers make all the time is to use too small a bait. We are convinced that small bait generally selects for small fish.

As fall advances, most walleye continue to move deeper, sometimes even onto deep mud flats. During this period the larger fish will be shallower than the smaller ones.

As ice cover approaches, walleye move from deep water back to the weed beds where you found them shortly after spawning.

Although we strongly recommend being flexible and fishing progressively larger lakes as the season wears on, we realize there are anglers who own a lake cottage and tend to fish only that lake. For the cottage angler there are a number of things that can be done to improve success. For example, if water temperature is low on opening day (less than 44°F), baits must be retrieved extremely slowly or bobber fishing should be used. If on the other hand the lake has warmed beyond the post-spawn feeding spree, deeper weed stubble would be the order of the day.

Wherever and whenever you fish remember the following basic points.

1. Fish the peak daily and seasonal periods. Dawn and dusk, spring and fall.
2. Don't worry about using too large a bait. Big bait tends to produce big fish.
3. Walleyes love weed beds. They're on the rocks only a short period during spawning and again in fall.
4. The prey density in any lake determines the length of time walleyes must feed to meet their physiological needs. Prey density varies seasonally.
5. Keep your gear simple. Most of us have three tackle boxes full of gear, nearly all of which is seldom used. In our estimation the five best all around baits for walleye are:
 - a) Jig and minnow (spring and fall).
 - b) Jig and leech or crawler (summer).
 - c) Crank baits like rapalas (night fishing).
 - d) Live bait rig consisting of hook and split shot with slip bobber (extremely cold water).
 - e) A live bait rig consisting of a hook and split shot without the bobber (anytime).

We realize that this short article barely scratches the surface when it comes to fully understanding and appreciating walleye fishing. However, we hope we've given you some basic information. And one last word—the key to consistent walleye fishing success is something that will never change. It's simply time on the water. Good luck.

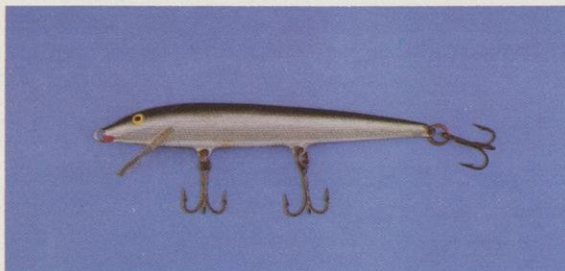
Walleye lures and baits



Jig and minnow.



Thermometer and treble-hooked minnow with split shot, rigged for still fishing. A slip bobber is best.



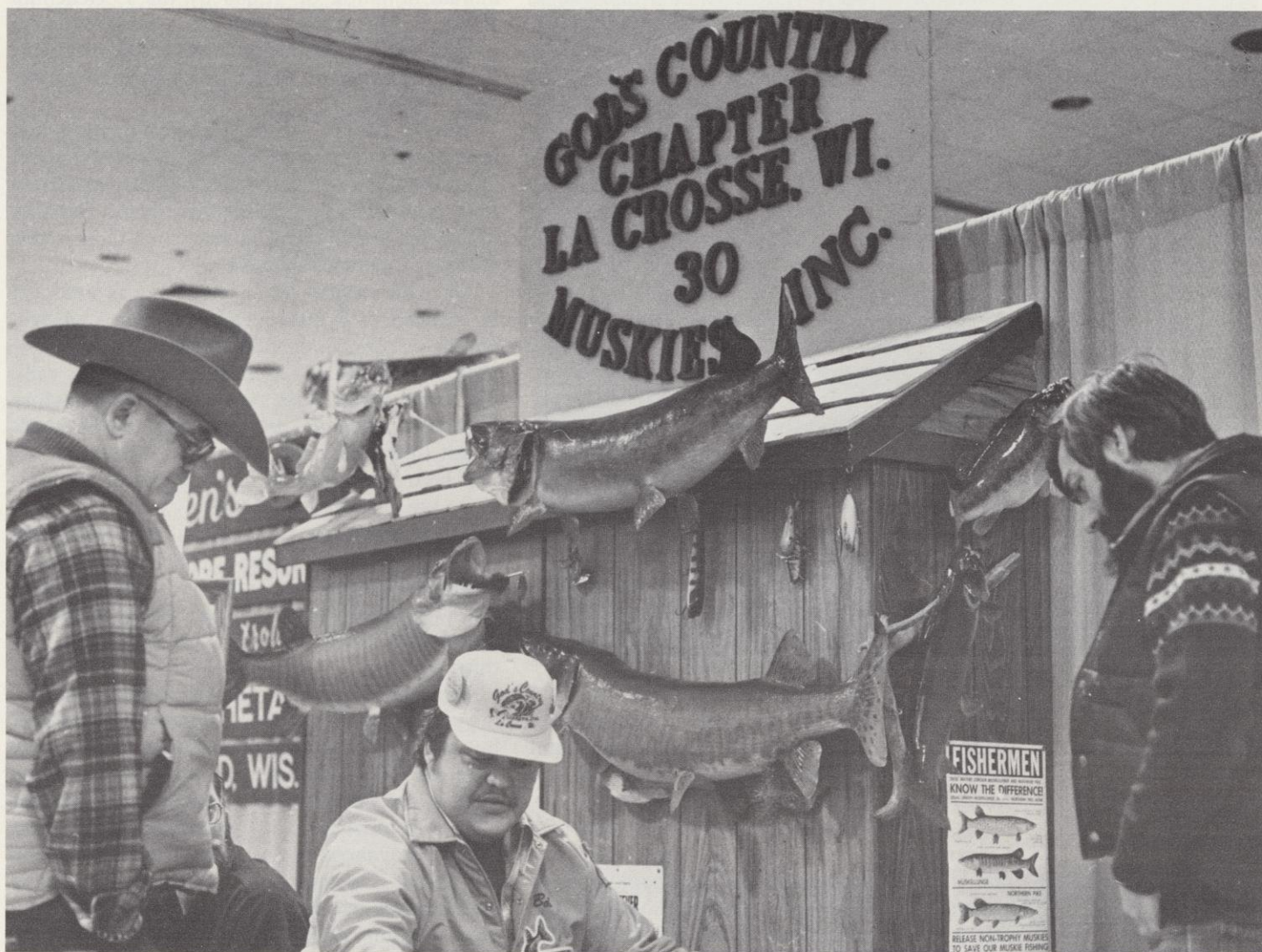
Number 13 silver and black floating Rapala for night fishing.



Number 13, jointed Countdown Rapala. This is weighted and sinks.



Inside the God's Country Country Muskie Club



It's fish, fish, fish

Muskie anglers are a little like deer hunters in intensity. Most are men and they rate persistence as their number one quality. They're also having some conflicts with other water users.

Angler involvement helps keep the muskie in its place as Wisconsin's most famous fish.

Wisconsin Division of Tourism photo

At 30 years of age, I had muskie fishing figured out. It was dumb, stupid, a waste of time and muskie anglers were probably...no, they were certainly crazy! At 31, a friend challenged me to catch "just one" legal fish before I so rashly judged him and all the other brothers in muskie bondage. Now, 24 years and some 20 or so legal muskies later, I'm still absolutely hooked. I even admit to being a little bit crazy and to wasting time, but it sure has been fun!

As a psychologist who studies human motivations, interests and behaviors, I have been driven to understand and explain, at least to myself, what makes us muskie anglers tick. So I did some

An exhibit helps recruit new members.

*Robert Jackson,
UW-La Crosse*

Muskies, Inc. Chapters in Wisconsin

Between the
Lakes Chapter
2817 Wedemeyer St.
Sheboygan, WI 53081

Capital City
4106 Derek Rd.
Madison, WI 53404

Consolidated
Muskie Club
971 Center St.
Wisconsin Rapids, WI 54494

First Wisconsin Chapter
Box 122
Chippewa Falls, WI 54729

God's Country Chapter
Box 1461
La Crosse, WI 54601

Hayward Lakes Chapter
Rt. 7
Hayward, WI 54843

Headwaters Chapter
5049 Illinois Rd.
Eagle River, WI 54521

Indianhead Chapter
Rt. 3, Box 172 Cumberland
Shell Lake, WI 54829

Lake Chapter
Box 45
Minoqua, WI 54548

Lakeland Chapter
Rt. 3, Box 79
Woodruff, WI 54568

Milwaukee Chapter
Box 28842
Greenfield, WI 53220

Packer Land
2530 Oakwood
Green Bay WI 54303

South East Wisc.
Muskie Hunters
2018 Russet St.
Racine, WI 53405

Wisconsin Muskies Ltd.
720 Lincoln St.
Waukesha, WI 53186

research on the God's Country Chapter of Muskies, Inc. at La Crosse, of which I am a member. Fifty-six out of 78 club members responded to a written questionnaire and 14 of them participated in a group interview. The results begin to tell the story.

The club was organized in 1979 and its members are 93% male with 73% married. The large majority come from rural, small town or small city environments. Only 20% grew up in a metropolitan or suburban area. Almost half (46%) have education beyond high school.

Muskie fishing is serious business to these men and women. Trying to catch one, they averaged 30 trip-days the preceding season. Some 43% were successful on one of their trips. Most members (54%) had fished muskies in another state or province the preceding year and 17% had used a guide. When asked how they would react, "If for some reason you could not go muskie fishing next year or if the season closed?" 8.9 % said they would not miss it much, 39.3% would find another interest, but 51.8% would miss it more than most or all other activities. These figures are close to responses by Wisconsin gun deer hunters, 61.5% of whom said they would miss the sport more than most other activities.

Questions also probed fishing methods and techniques. Answers showed that 91% of club members have a special rod and reel for muskies. Bait casting equipment is preferred more than eight to one over spinning gear and 45% of the group had invested more than \$100 in the rod and reel alone. In addition to the usual boat and motor, three out of four club members also owned both trolling motors and depth finders.

How do these dedicated anglers rate the relative importance of various skills associated with the sport? We asked each individual to rate eight techniques or qualities on a one to five scale (one meant not important; five, very important). Persistence ranked as the most desirable quality with a mean rating of 4.58. Others highly rated were care of equipment such as sharp hooks, sound leaders, etc. (4.57), and setting the hook (4.54). Selected as least important was choosing the right time of day (3.25).

While muskies were the main focus of attention for God's Country members, bass and walleye were the next favorites. Surprisingly, two out of three of these muskie anglers actually sought out crappie and bluegills the preceding season. In fact, half of them went ice fishing, which usually means panfish. By contrast, only 29% fished trout. You wouldn't think it possible, but their fervor for muskie fishing is expected to increase. When asked to portray their interest over the last few years, 63% said it had increased, 27% felt it had remained the same, and only 10% said it decreased.

This intensity is consistent with motivations for joining the God's Country Muskie club. One individual commented, "I came aboard because

of the dedication of other members to muskie fishing. Everyone is so concerned about the future of the fishery." Another stated, "The muskie is the number one trophy in the Middle West. It's been pushed aside by the agencies. It's up to sportsmen to change that."

Apparently members of the club are willing to put their money where their mouths are to push the cause of muskie fishing.

They started by raising \$1,000 to match an annual donation of \$1,000 by the J. Heileman Brewery. This money went for a muskie-raising project using ponds near Cadott which produced 2,500 to 3,500 ten to twelve-inch fish each year for state stocking.

But in 1982, a better opportunity presented itself at the Genoa National Fish Hatchery, about 20 miles south of La Crosse. This was closer to home and could involve more members. Starting this spring, the club will be able to use three ponds there for its muskie-rearing operation.

Once the ice goes out, a large 43-acre pond will be stocked with fathead minnows the club will purchase from commercial dealers. These will be used to feed the young muskies. If all goes well, the minnows will have two reproductions before the baby muskies are delivered, courtesy of DNR. A self-sustaining yield of muskie food is important because start-up costs to purchase minnows alone are projected at \$5,000.

Three times a week, club members will trap the minnows and carry them across a dike to a smaller holding pond containing the young muskies. The final step is to feed sucker minnows, again three times a week. These are raised in a third pond.

This kind of involvement, of course, is increasing among all sorts of people interested in wildlife, but our research suggests that the muskie angler is different. More than half of those studied were over 30 the first time they ever fished a muskie. Only a minority (19%) were started by their fathers. For most, it was either friends (36%) or self (29%). The importance of the peer group is underscored by the fact that members of the God's Country club would rather fish with a partner than anybody else. Next is a family member, and after that, alone.

What leads people who have led fairly normal lives until age 30 to suddenly shed reason to chase the muskie? Most responses cited challenge (28%), excitement (24%), and trophy (18%) as the reasons.

Comments in the group interview session helped add flavor to these statistical figures. One man who recently moved to Wisconsin said, "I want to get a big one. When I do, I'll probably quit." Another said "muskie fishing offers relaxation. I just get away from everything when I hunt a muskie." By contrast, another argued, "There's no relaxation when I fish the muskie. There is something a little special about it. It's a challenge; it's a prestige thing." The lure and beauty of the

North Country was mentioned a number of times. What a setting "to fish for the most ferocious fish in fresh water!" One of the anglers who got hooked like I did on his first fish (34 inches of action), confessed he was also hooked on muskie baits. "I buy a different one each time I go." We all agree that the price is best kept secret.

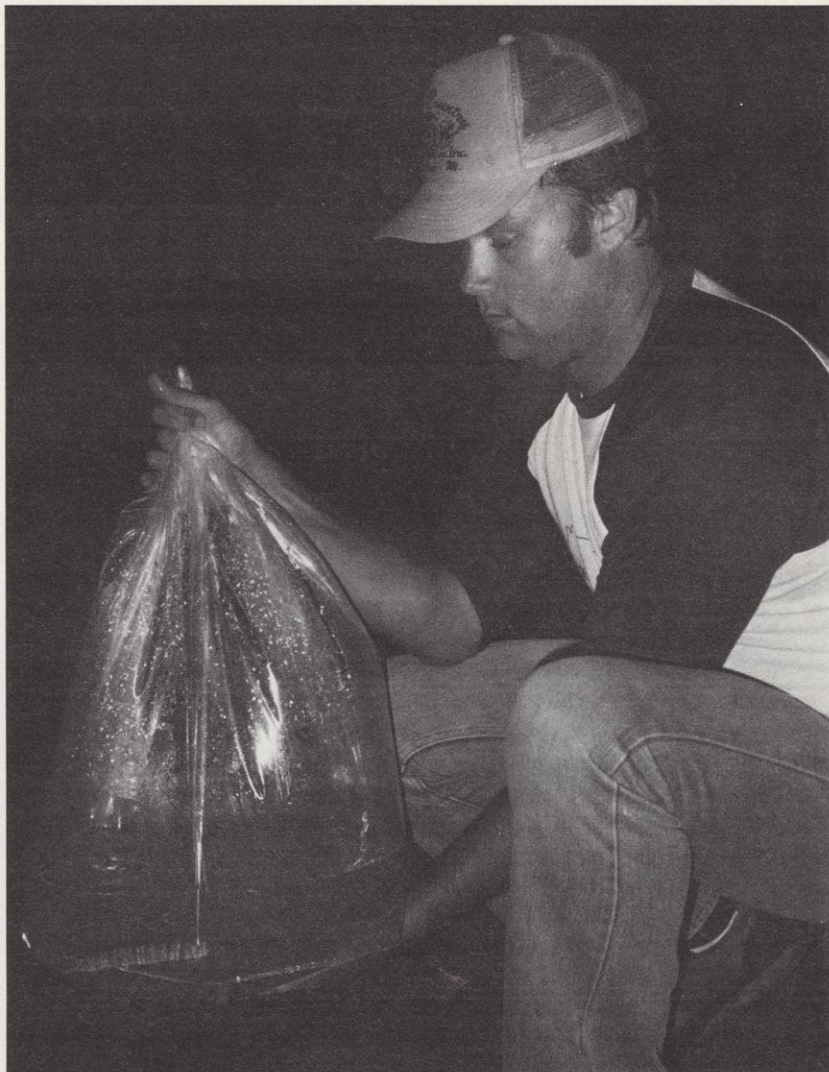
The number one, unique satisfaction that motivates a muskie angler to keep fishing is the "follow or strike." It's a real reinforcement but how do you describe it to a non-muskie angler? That moment when you look down at the end of your retrieve and see three or four feet of "log" glaring at you—or slowly but surely moving back and forth as you prayerfully make a figure eight, your gut tightening—almost afraid to watch.

Rated second for satisfaction is being in the out-of-doors. The list of great moments for most muskie anglers includes things like the call of a loon, a deer wading knee deep at the water's edge or the feel of the "wild" when casting on the Big Chip. It's also noteworthy that releasing a muskie rates higher than hooking, playing, landing or catching it. Judging by release diaries and comments of Muskies, Inc. members, these moments provide high drama and intense satisfaction. The practice is similar to the Indian rite of counting coup where touching the enemy without killing becomes the measure of a true warrior.

Lowest on the list of satisfactions, of course, was using the muskie to provide food (19th). Over half the respondents reported that it gave them no satisfaction at all. Also at the bottom of the list were showing the fish to family and friends (18th) and muskie fishing contests (17th).

If satisfactions tell us something about ourselves and our sport, so do dissatisfactions. When asked to describe their most dissatisfying experience, 38% answered by describing the behavior of other anglers. Loss of a fish (24.3%) came in a distant second. Exactly 40% checked courtesy and another 40% cited obeying the fishing laws as the single most important ethic or responsibility of a muskie angler to other anglers. When asked to rate various problems, they listed three as most serious: failure to take care when releasing and returning undersized fish to water; keeping undersized fish and overharvest. The three least important were: use of live bait (suckers), overemphasis on technology, and use of alcohol during or after fishing trips.

Personally, I know these problem areas drastically affect my own participation. I no longer time my trips to periods of predictable muskie activity. I rarely fish favorite lakes and streams (like the Big Chip or the Brule), or seek out the best hatcheries. Rather, I design my trips so I can fish in peace! And that means avoiding most other anglers. No more weekend trips to my beloved North; I go during the week or not at all. Any satisfaction ends when I have to worry about being knocked down by errant canoes on the Brule, forced off my drift over a muskie bar on the Chip, or buzzed by



Club-reared muskie ready for stocking. Members get them as fry, do all the work.



Author-researcher Jackson (left) interviews a muskie fisherman.

Muskie Clubs Alliance of Wisconsin

Bill's Musky Club
615 Humboldt
Wausau, WI 54401

Blackhawk
Musky Club
550 N. Main
Janesville, WI 53545

Lake Winter
Musky Club
Rt. 1 Box 7a
Winter, WI 54896

Dave's Musky Club
210 W. 10th St.
Kaukauna, WI 54130

Muskellunge Club
of Wisconsin
7085 Parkview Dr.
Lannon, WI 53406

Muskies Today, LTD.
P.O. Box 1292
Wisconsin Rapids, WI 54494

Northland Musky Club
Rt. 1 Box 1905
Rhinelander, WI 54501

Winnebago Land
Musky Club
619 Boyd St.
Fond du Lac, WI 54935
12 Apostles
Musky Club
1058 Martin Island Dr.
Stevens Point, WI 54481

some fool in a speeding power boat making record time to the Day Lake landing. Somehow, my own satisfactions in hunting and fishing have become dependent on the behaviors and sense of responsibility of others.

That anglers can help solve these problems and promote new values is dramatically illustrated by the growing adoption of "catch and release" fishing for muskies. It is estimated that better than 90% of the legal fish taken by muskie club members are released. It's not unusual to find a member apologizing for keeping a fish, even a trophy.

Relative importance of skills *

Persistence	4.68
Care of equipment	4.57
Setting hooks	4.54
Playing the muskie	4.29
Netting or gaffing	3.94
Fishing the right depth	3.84
Selection of lake based on time of year	3.59
Selecting the right time of day	3.25

What's important to a muskie angler. *

Seeing a muskie (follow or strike)	4.62
Being in the out-of-doors	4.46
Releasing the catch	4.31
Skillful fishing (casting, hooking, playing, landing, etc.)	4.26
Nature	4.26
Catching a muskie	4.18
Escape from routine	3.93
Solitude	3.83
Companionship	3.69
Companionship, family	3.51
Associated outdoor activities (boating, camping, etc.)	3.38
Telling fish stories	3.21
Using special equipment you own (boat, motor, etc.)	3.20
Trophy display	2.98
Having the best fishing and boating equipment	2.98
Watching fishing movies or TV	2.87
Competition (contests, etc.)	2.80
Showing caught fish to family and friends	2.57
Food	1.84

Hopefully, not just club members, but all other men and women who participate in angling and outdoor recreation will increasingly show concern and activism regarding the ethics of their sport. Leadership has to come from men and women who hunt and fish, not from public agencies alone. The result will be improved outdoor recreational quality. Somehow, I sense this is already underway and we will all be better off for it.

Muskie fishing problems *

Failure to take care in releasing under-sized fish	4.64
Keeping undersized fish	4.54
Confusing a muskie with a northern pike	3.96
Overharvest	3.91
Snagging	3.88
Crowding - poor ethics of other muskie anglers	3.62
Waterskiers	3.56
Other boaters (cutting up weed beds, etc.)	3.53
Motor trolling	3.41
Too many anglers; too much pressure	3.18
Reputation of sport for excessive mortality of hooked or released fish	3.14
Use of live bait (suckers)	3.02
Overemphasis on technology	2.87
Use of alcohol during or after fishing trips	2.43

* on a scale of one to five.

Muskies are a calculated science



Rearing ponds at DNR's Woodruff Hatchery.
Photo by author

If Wisconsin has a famous fish, it is unquestionably the muskellunge. No other has such mystique, commands such respect or inspires such determination in anglers. It is the most expensive to produce and maintain—yet the hardest to catch. And DNR's fish management programs involved with the muskie are as specialized as the thousands of anglers who tirelessly work and yearn to catch one.

Of course, it's true that sometimes this elusive trophy is caught by accident, but the fish's continued existence is a very calculated science.

I talked with Gary Lensert at the DNR hatchery at Woodruff about the management story behind these legendary fish. When a female muskie spawns in mid to late April, she might deposit eggs over a quarter mile of shallow shoreline, but sometimes only 10% are ever fertilized. At the hatchery though, ideal conditions usually result in an 80-90% fry hatch. The temperature controls both spawning and the number of days it takes to hatch eggs.

DNR fish crews at Woodruff often collect eggs from Squirrel and Minocqua lakes because these two produce spawners whose young are ready to feed about the same time food minnows raised at the hatchery become available. Fyke nets in the lakes entrap the muskie so that

John Beth,
Reedsburg

eggs and milt (sperm) can be taken with no harm to adult fish. About two-million eggs a year go to the Woodruff hatchery. There are about 50,000 eggs to a quart. A 40-inch fish produces 75,000 to 100,000 while bigger ones (50 inches) might produce 150,000 to 180,000 eggs. Milt from several males is used to insure fertilization. During the incubation period, approximately 1 1/2-gallons of water per minute "roll" the eggs in their glass incubation jars to make sure oxygen gets to them.



Perch minnows are nearly as big as the baby muskie, but it devours them anyhow—with gusto.

Photo by author

Record Muskies

The world record muskie weighed 69 pounds, 15 ounces. It was caught in the St. Lawrence River in New York State in 1957. Close behind is the Wisconsin record of 69 pounds, 11 ounces. This fish was caught on October 20, 1949 by Louis Spray on the Chippewa Flowage. The world record hybrid or tiger muskie was caught in Wisconsin in 1919 from Lac Vieux Desert in Vilas County. It weighed 51 pounds, three ounces.

Many believe another world record still lurks somewhere in a Wisconsin lake and stories of giant fish encountered in various ways continue to be murmured around campfires at day's end. But with increased fishing pressure and refined angling techniques, chances that a muskie will live long enough to grow bigger than 60 pounds are pretty slim. Nevertheless, for the intrepid angler hope springs eternal with every cast. . . .

Controlled temperatures of 54 to 56 degrees Fahrenheit hatch the eggs in from 10 days to two weeks. The newly hatched fish are called fry. They have an egg sac still attached which feeds them and is absorbed in about a week. For the next 10 days, water flowing through from Madeline Lake provides zooplankton for nourishment. Then the baby muskies start to eat live sucker fry. The predatory instinct takes hold almost as soon as they begin to feed.

The amount these hungry infants eat is astounding. Sixty-five million suckers are raised each year at Woodruff for feed. And even these are not enough. Other bait fish and perch fry are also harvested or sometimes purchased. When I saw those tiny muskies eating perch fry half their size, I knew that vicious reputation must start right in the genes.

So far, all attempts to feed true muskies artificial food have for the most part been unsuccessful. Hybrids though, which are muskies crossed with northern pike, are another story. These so-called "tiger" muskies, raised at the Wild Rose Hatchery, will eat pellets. They don't insist on live meat. The cost is less, but characteristically they are easier to catch and seldom grow as big. They are also sterile.

True muskies are generally stocked at eight to 12 inches at a cost of about \$2.00 each. It takes 15 tons of minnows to grow 10,000 pounds of muskie fingerlings. On this diet they grow about an inch a week. Once stocked, of course, they are on their own. Females take five to seven years to mature and spawn. Males usually mature in three to four years. They are 24 to 30 inches long at this time. Some muskies have been known to live for over 30 years!

A general rule is at least 10% of the fish raised from a given take of eggs will be restocked in the lake the eggs were collected from. Some muskie lakes have good natural reproduction, some have none.

John Klingbiel, DNR staff specialist in Madison explained to me what factors are considered in determining where muskies are stocked. Each fish manager collects information about the population of muskies in anywhere from one to three counties. They check fishing reports, contests, resort owners, creel censuses, registration posters and fyke net and shocking surveys to determine if stocking is necessary.

Food supply, temperature and probably even genetics affect growth rates and these vary from lake to lake. About half of the muskies caught in Wisconsin are stocked fish and DNR hatcheries produce 150,000 to 170,000 every year. Wisconsin leads the nation in hatchery production. Although the north central and northwestern counties are the main muskie strong-holds, over half the counties in Wisconsin now hold this prize fish, thanks to good management and interested anglers.

Parks' Almanac '85

Prepared by Laurie Osterndorf
Layout by Jim McEvoy



What's new?

By Ron Ellingson

Many Wisconsin state park campgrounds, picnic areas, shelter buildings, hiking trails and roads, while newly constructed, are mostly updates of what's been around for a long time. However, also blossoming in your parks today are some really new ideas that improve on the traditional.

For example, some facilities are now accessible in new ways. With the cooperation and financial support of the East Troy Lions Club, a ¼ mile asphalt hiking and interpretive trail was constructed in the Southern Unit of the Kettle Moraine State Forest. This special access trail enables visually impaired persons and those with limited mobility to enjoy the natural beauty of Paradise Springs. The trail features recorded messages, braille and printed signs that interpret the area's flora and fauna and guided hikes with the park naturalist.

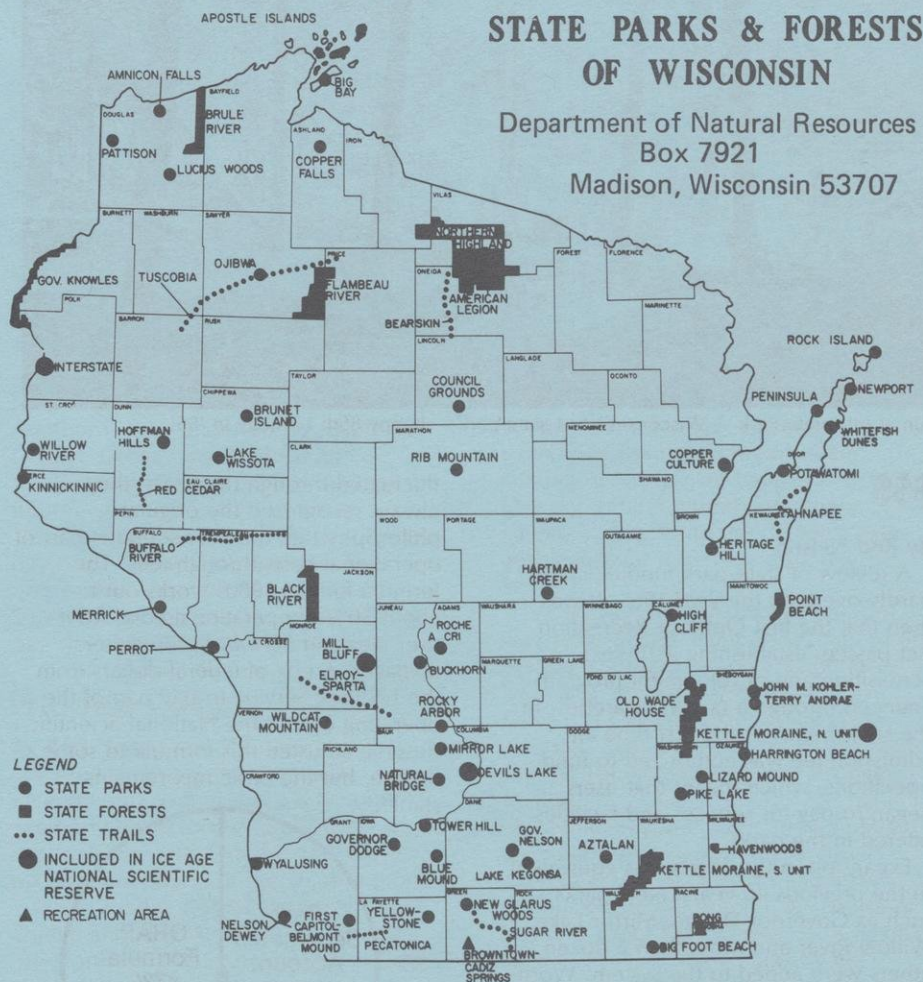
Just up the road, the park system's first reservation-only group picnic area is available for family reunions, company picnics and other group gatherings. It includes an enclosed shelter building with a massive fireplace, huge picnic grills, open play areas, a small basketball court and lots of parking. For reservations contact the Kettle Moraine State Forest Headquarters at Eagle.

Something else new is a replica of one of the last covered highway bridges in Wisconsin. The city of Brodhead and many area volunteers helped rebuild the bridge at the Sugar River Trail crossing of Norwegian Creek. The "new" historic structure adds interest and a touch of nostalgia to the bike trail.

At Amnicon Falls near Brule, on the other hand, you have the real thing — an original covered highway bridge that still spans the Amnicon River. It is now part of the park hiking trail network.

Then there's the "new" Military Ridge State Trail — one of the oldest travel routes in the state. The trail follows a path first blazed by Native Americans and later used by the US military for transport between the then-remote outposts of Green Bay and Prairie du Chien. Hiking, biking, snowmobiling and cross country skiing account for most of the modern trail's use.

Another new state trail is planned for an abandoned railroad grade between Cottage Grove and Waukesha. This will intersect with Military Ridge and other local trails to complete a trail network



all the way from the shores of Lake Michigan to within a few miles of the Mississippi River.

Something new has also been carved out of the rock and trees on a high, wooded ridge at Devil's Lake State Park. It's a 212-site family campground just north of the lake and will replace the park's old "South Shore" campground. The south shore is being totally renovated and converted to day-use.

Also new on Milwaukee's north side is the Havenwoods Forest Preserve which will feature an Environmental Awareness Center for learning about resource issues. Alternative energy is an important aspect of its design with earth berms and solar heating to be used alongside traditional energy sources.

Innovations like these, mixed with traditional state park services help keep the system both modern and familiar while at the same time able to meet constantly changing requirements of users. More can be expected in the future

as state parks move toward their 100th anniversary at the turn of the century.



State parks are your special places — yesterday, today and tomorrow . . .

Parks' Almanac '85



Fun at Interstate Park — Wisconsin's first state park — happy 85th birthday in '85!

\$\$\$

By Rod Nelson

A review of state park funding could hardly overlook the year 1961. It was then that the first Outdoor Recreation Act passed, establishing a 10-year acquisition and development program financed through a tax on cigarettes. In the same year, for the first time an admission fee was authorized to fund operations, which meant that users began to pay for services and facilities offered in the parks.

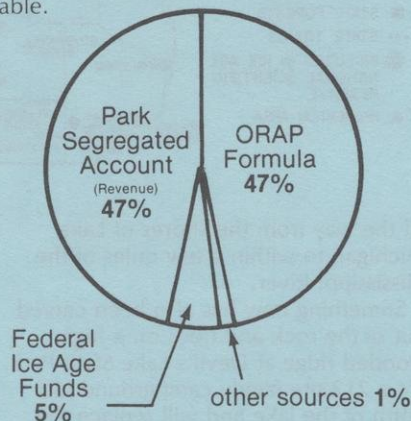
Expansion in the 1960s was equivalent to the previous 40 years. New parks such as Governor Dodge, Mirror Lake, Willow River and more than a dozen others were added to the system. Worn-out and over-used facilities in older parks were replaced or upgraded.

However, by 1968 it became obvious that funding in the original 10-year plan would not meet rapidly expanding user demands. With direction from a citizen's task force and a public referendum, a new \$200-million bonding program known as ORAP-200 was enacted. It provided \$144-million for pollution control and \$56-million for recreation.

The emphasis in both ORAP programs has been on land acquisition and development. Once properties have been purchased, basic facilities have been installed to make parks usable. In addition, many old facilities, some dating back to CCC and WPA days have been replaced. To this day, ORAP continues to pay for land acquisition and development in parks, while the southern recreational forests obtain money for these purposes from the forestry mill tax.

Although funding formulas have

fluctuated through the years, they always recognized the original philosophy that the user supports part of operational costs through fees. The formula for the 1980s works out to about 50% of operational costs from user fees and 50% from the general taxpayer. A mix of federal dollars from the US Park Service to pay part of the operating cost of the National Scientific Reserve adjusted this formula to some degree, but the basic mix remains stable.



Demand for new programs, ranging from ski trails to backpack campsites and other low revenue-producing activities are a burden to the large majority of park visitors. They don't use the programs but have to provide the money to run them. To reduce this burden and at the same time provide better service, a per person fee for these programs is under consideration. A per person fee is already in effect on bike trails.

Other plans for the future are necessarily conservative. Expansion will continue at a slower rate than in the 1960s and '70s as properties and

programs are very selectively added to meet recreational need. Efficiency will be the byword in operations. Many services will be provided at reduced cost through contracts with the private sector. Volunteers and citizen support groups will become even more important. Even though operations will be leaner financially, services will continue at a high level and growth in park visitation is expected to continue right through the 1990s.

Volunteers

By Tim Galvin

Each year hundreds of volunteers work thousands of hours in the state park and recreation program providing services to park users that would otherwise not be possible. The volunteers like the work. They say it gives them a feeling of self-satisfaction and accomplishment; that they get experiences not possible through paid employment; that they meet other people with similar interests; and that it gives more meaning and "support" to their leisure experiences.

You might like it too and no matter what your interest or skill, a volunteer experience is available. Volunteers in the state park and forest system do everything from leading nature hikes to organizing evening programs or picking up litter. Some parks such as Lucius Woods and Heritage Hill are operated entirely by volunteers. At others, volunteer organizations operate special facilities such as the concession service at Devil's Lake, the golf course at Peninsula, or the ski hill at Potawatomi.

In 1984, state parks began a campground host program patterned after programs in the US Forest Service and some other states. In this arrangement, volunteer hosts receive a free campsite in exchange for providing informational services to other campground users. Last year, hosts served at Hartman Creek State Park, the Southern Unit of the Kettle Moraine State Forest and at Black River State Forest. The program was mutually beneficial and the hosts enjoyed themselves.

A list of DNR campgrounds seeking hosts for the 1985 summer season can be obtained at any park or forest office. The only requirements are an interest in camping and a desire to meet and assist other campers.

If you're interested in the host program or any other volunteer service, stop at a state park or forest of your choice for a visit with the superintendent and find out how you can help.

Take a hike

By Laurie Osterndorf

Each year, millions of people visit Wisconsin's state parks and find more than places to play, picnic, and camp. Parks can also be places to learn, explore the unknown and be inspired. Interpretive programs offer new experiences as well as a chance to add to your appreciation and understanding of the world. A variety of them are available at 23 state parks.

Interested in "Spying on Spiders?" Becoming a "Rock Detective?" Guided hikes offer an opportunity to learn new ideas while enjoying the scenic beauty of an area. The scope of these activities ranges from plants and animals to the rocks below your feet and the sky overhead.

Several parks offer "canoe explorations," an exciting and memorable way to learn about wetlands that are otherwise difficult to reach. Or, try exploring off-trail areas with a compass in an "orienteering" activity.

When the sun goes down in the campground, campers may join the park naturalist at an evening program. Gaze at constellations on a "Star Trek," or find beautiful nocturnal insects while "Sugaring for Moths." Other programs may include an illustrated slide talk, a movie, or an informal campfire chat. Interpretation is also available at your convenience and leisure. Interesting or unusual features which might otherwise be overlooked are pointed out on the 63 self-guided nature trails throughout the state.

Check at the park office to find out what naturalist activities are available. They give you a free opportunity to rekindle a sense of wonder and curiosity about the natural world. And you'll learn a lot too.

Bike Trails

By Jim Treichel

Looking for something new to do, a different form of recreation, a new way to travel? You can get exercise or a leisurely look at the Wisconsin countryside biking the state bike trails. They run through just about every kind of Wisconsin landscape.

In the scenic west central area, the Elroy-Sparta Trail provides 32 miles of level biking across the hilled coulee country. It passes through picturesque farmland, old railroad tunnels and several small towns. Food, drink and other services are available along the route, including bike rental and shuttle service.

The same services are available in the

south on the Sugar River Trail where 23 miles of scenic biking takes you through New Glarus, Monticello, Albany and Brodhead and provides a close-up look at Wisconsin dairy farms.

For a northerly experience, try the Bearskin Trail between Minocqua and the Harshaw area. This 13-mile trail traverses northern lakes, rivers, small streams, bogs and evergreen forests. Or consider the 14.5-mile Red Cedar Trail. It begins near Menomonie and runs alongside the Red Cedar River with an almost uninterrupted view of that fast-flowing stream. At the south end is the Chippewa River.

DNR's bike trail program began in 1965 with Elroy-Sparta. Today there are 11 trails that total more than 100 miles including the new Military Ridge Trail between Dodgeville and Madison. Another is now under construction from Cottage Grove near Madison to Waukesha and more are planned for the future.

To use the trails, residents pay 75¢ per day or \$2.50 for a season pass. The nonresident fee is \$1.00 per day or \$3.50 for the season. The money helps pay costs of maintenance and patrol.

Hidden Gems

By Rod Nelson

Visited your favorite state park recently only to find that it's become everybody else's favorite too? In actual fact, half the park system's 10-million users can be found at just six properties — Devil's Lake, Peninsula, Governor Dodge and High Cliff state parks and the Northern and Southern Units of the Kettle Moraine State Forest. Where do the other half go? They use the quiet parks, the ones that require a little exploring to find. It's fun and it's easy to do. Each state park and forest is plainly marked on the Wisconsin road map. Each was established to save some unique quality — a special scenic, geologic, historic or natural area. One of

them might be just your cup of tea.

How about an outpost in Lake Michigan first used by French traders? Try Rock Island State Park. Perhaps a historic drive through farmland once owned by Wisconsin's first territorial Governor? That's Nelson Dewey State Park at Cassville. A campsite with a view? One of Wisconsin's highest points is Rib Mountain State Park near Wausau. How about a geologic expedition into the hills of southwest Wisconsin's driftless area? Try camping along the Kickapoo River at Wildcat Mountain near Ontario. Parks like these, off the beaten path, not crowded with people, are waiting everywhere to be explored.

Often these locations have lots of attractions outside the park too. Many communities across Wisconsin hold annual festivals which celebrate everything from watermelon seed-spitting to Norwegian Independence Day and other cultural and ethnic events. Call or write the different parks and forests for information on nearby festivals.

For bargain hunters, five out-of-the-way parks charge campers the full \$3.50 fee the first night but only \$2.00 for additional nights. These are Nelson Dewey at Cassville, Rib Mountain at Wausau, Roche-a-Cri at Friendship, Mill Bluff at Tomah and Copper Falls near Mellen.

Traditionally, there are a few holiday weekends when even remote places attract crowds. State parks and forests are busiest on Memorial Day, Fourth of July and Labor Day weekends. A flexible schedule helps. Many parks fill on Friday and Saturday in summer but have plenty of room for camping Sunday through Thursday.

If you're willing to strike out into new territory, the uncrowded state parks and forests may nicely meet your every need. One may even become "your place" like a favorite fishing hole — your own special secret.



Camp by mail

By Dennis Konkol

The Wisconsin State Park family campground reservation system, which began in 1973 as a response to those wishing to plan camping vacations, is very popular. About 40,000 reservations were confirmed in each of the last two years.

Reservation applications are accepted beginning on the first working day in January for the season that starts May 1st and ends on September 30th (except for Peninsula State Park, where reservations may be made through the last weekend of October). The minimum reservation period is two consecutive days (three for a holiday weekend) and the maximum is 21 consecutive days.

Mail applications must be sent directly to the park or forest and arrive at least seven days before the camping date. Reservations can be made by mail or in person, but must be made on special forms provided by the Department. Forms are available at park and forest offices, at DNR district offices, and at 101 S. Webster Street, Madison. Mail requests for forms should be sent to Bureau of Parks, Box 7921, Madison, WI

53707. You may also call the Madison office at 608-266-2181, and ask that forms be sent to you. Campsites cannot be reserved by telephone.

The camping fee and a \$3.00 reservation charge must accompany each application. The applicant must be a member of the camping party that will occupy the reserved site.

It is no longer to a camper's advantage to drive to a park or forest on the first working day in January to file a reservation request. Each day's applications are processed by random selection through January 7th. Applications are processed in the order received after January 8th. Thus, everyone has an equal opportunity. However, campers should keep in mind that not everyone will receive reservations because the number of sites available is sometimes less than demand, especially at the heavily-used parks such as Peninsula. It is not unusual to receive more than 3,000 reservation applications at Peninsula during the first week of the reservation season.

Before mailing an application, make sure the form is completely filled out. Double check all information. A check

or money order (payable to the Department of Natural Resources) for the reservation fee and camping fee must be enclosed. Don't hesitate to attach a note explaining anything concerning the application. Double check your starting and ending dates. The reservation form contains a box asking if the park may call you collect if there are questions regarding your application. You should include your phone number for this reason. Statewide, a total of 1,961 campsites located in 29 properties can be reserved. Not available for reservation are the remaining 3,227 sites which are filled only on a first come — first served basis when campers show up at the park in person.

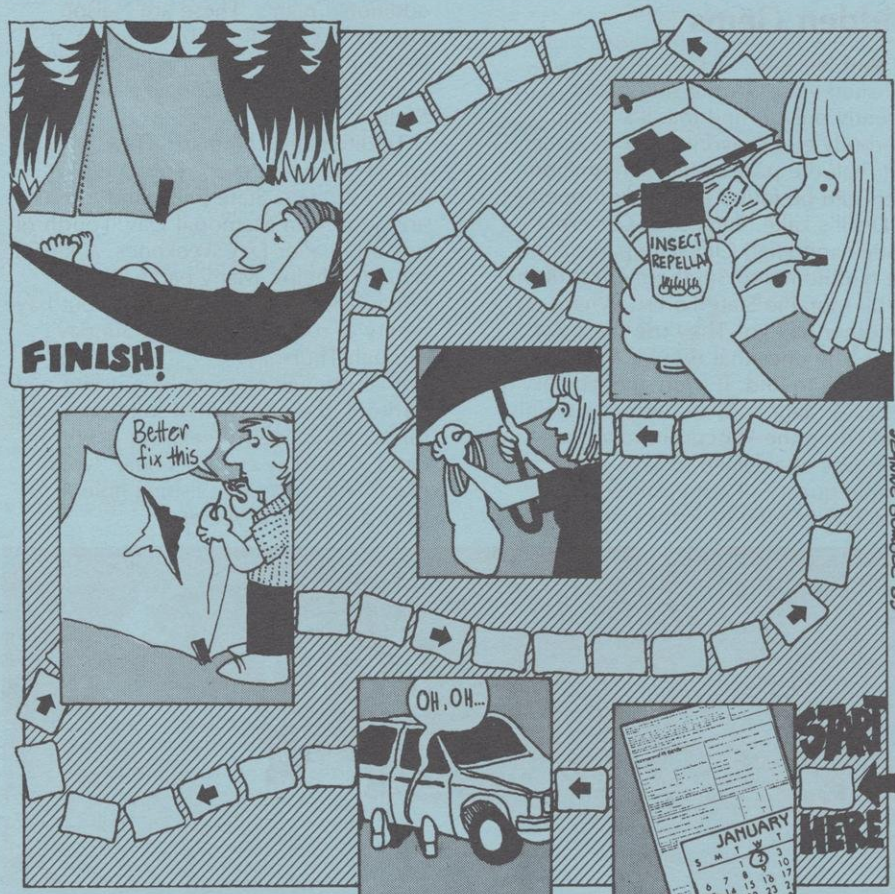
Explore & Enjoy

By Bill Moorman

DNR's official guidebook, *Wisconsin State Parks: Explore and Enjoy*, is available for sale to the public again this year. Its 100 pages make all the beautiful natural features, trails and recreation areas characteristic of outdoor Wisconsin come alive at your fingertips. The guidebook is invaluable for vacation planning.

Wisconsin's state parks stretch from Lake Superior islands in the north to bluffs and hills in the south, from Michigan's Rock Island in the east to the Mississippi River in the west. The guidebook's pictures and words capture the unique essence of each one. Maps, charts and even a free poster are included to help readers know and use every park.

Guidebooks are available at all state parks and forests, or by mail. Send a check or money order for \$6.00 (payable to Wisconsin Department of Natural Resources) to Guidebook, Bureau of Parks and Recreation, Box 7921, Madison, WI 53707. Or take advantage of the special bargain coupon printed with this story and redeemable only at a state park. The guidebook is also available in hard cover and makes an ideal gift.



THE VACATION GAME

Good for
\$1.00 Discount

on the new
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Limit \$1.00 discount per book

No limit on number of books

Redeemable only at Wis. State Parks

Not valid in combination with other guidebook discount offers.

Good through September 2, 1985

Muskie guide

John Beth, Reedsburg

Secrets learned from 35 years of muskie fishing.

A trophy muskie for many anglers is simply a legal one, 32 inches—and most of us are fortunate to catch one, or if we're lucky maybe half-a-dozen, in a lifetime. But Bob Resch, who guides out of Minocqua, has caught over 500, and he's probably hooked four times that number of sub-legals! Bob has fished the Vilas-Oneida County area for 35 years, and a body can learn something from him. I know I did. When Bob and I and Jerry Wenger slipped our boat into the north end of Flambeau Flowage, the sun was just filtering over the trees. The morning proclaimed again that muskie fishing is a combination of many magic elements. Deer drank by the shore, and loons cried in the distant fog. The full moon was still dropping, and an eagle sat in silhouette on a high dead evergreen.

"Equipment plays a big part in successful muskie fishing," said Bob, "but sheer stubborn determination makes it all work. Time on the water and persistence are the secrets."

Bob has hooked many muskies in the past five years but has kept only three. "A trophy fish like the muskie should be judged entirely on its value as a challenge, not as a food source. My opinion is that they are far too prestigious and valuable to be caught only once. There are many other eating fish that are lots easier to catch and manage. The thrill is in the chase, not the kill." Few true muskie fishermen would argue with this philosophy. But Bob thinks everyone deserves one trophy to mount.

"I use entirely artificial lures to avoid ever killing a fish by deep hooking the way live bait often does.

Too often your strike may come from a sub-legal muskie. If you let it take a long time to swallow a live bait, you greatly risk hurting or

Guide Bob Resch and Jerry Wenger discuss various muskie baits.

Photo by author



killing the fish trying to free it. Artificials hook the fish in its hard, tooth-filled mouth. A pair of long-nosed pliers can usually free a muskie right in the water as you bring it to the boat side. Although cutting the leader off will often save a deep-hooked fish, I still see no reason to take the chance."

Bob uses stiff, five-foot-nine to six-foot graphite rods to get the benefit of lightness and power. Setting the hook requires some backbone to achieve. He sharpens the hooks on his lures often and keeps 25-pound test monofilament line on all his casting rods. A good star drag is his favorite, but he always loosens the drag at the end of the day to relieve tension on the spring. Checking the line often for abrasions is critical. He changes it regularly.

"I oil the bearings in the reel daily and occasionally put a drop on the line carriage. I like around a five to one gear ratio to retrieve the lures quickly. I use only ball bearing swivels and try to keep my leaders short and light as possible to let the lure work properly," Bob explained. "In the spring, I like to use smaller bucktails and minnow imitations with a slower retrieve to accommodate the slower metabolism of the fish at that time. When the water hits 60 degrees, I switch to the

larger bucktails and crank baits with a fast retrieve. Bait can be fine-tuned and modified to get optimum action and results. If you try to swim, sweep, dodge and animate your lures to maximize their action, you'll be more effective than just 'throwing and retrieving.' I like the action of the marabou in the water."

"A large bait like a Suick can often interest a muskie enough to make it show itself in the form of a flash, follow or roll. I like to use a bait like this to stir up some aggressiveness if a fish is in the area but things have been slow.

"I fish right up until the lakes begin to freeze in late fall. Muskies will make a good final feed before they head into a very dormant stage in winter. I often use the electric motor for positioning, but when casting while the motor runs you must be sure to retrieve immediately. Motor trolling is not allowed in most waters. If a fish hits, I set the hook hard, once. If it proves to be a big fish, down deep, I'll hit it a second or third time. You must see the inside of their mouths to appreciate the difficulty of setting a hook. Razor sharp points help—a lot!"

After a long day of casting big baits, they begin to feel like barbells. Bob demonstrated how to cast straight over your shoulder and let the wrist

Painting by Artist Virgil Beck, Box 66, Stevens Point, WI 54481



“break” to avoid using the whole arm. His method saved a lot of unnecessary muscle movement.

Make sure you watch your bait when other anglers are aboard. It can be painful and dangerous to hit a passenger with one of those big hooks. Such accidents have cut short many a trip. When you change lures, let them dry in a safe place. Dangling inside the rim of a styrofoam pail is the most common — one hook in the rim, all others inside the pail. Wear your polarized glasses for safety from possible hooks that might get close to your eyes. Glasses are also invaluable for spotting fish and reducing glare and eye fatigue.

Bob and I and Jerry discussed the famed figure eight at the boat side to fool any last minute, following muskies. “I use it, but not on all baits. Some are too hard to effectively figure eight. A lot of fish are caught at the boat,” Bob agreed, “but a lot are lost at the boat, too.” So plunging your rod tip and retrieved lure into the water at boatside and swirling a figure eight is still a good bet. But if a lunker hits, hope you have a good heart and don’t mind getting wet!

“Over-playing a fish is harmful, especially if it’s going to be released. Try to bring it in in a reasonable amount of time. If a fish is very tired, make an effort to revive it until it can swim away. But by the same token, don’t try to horse it,” Bob adds. “Nets, big ones, are most common. I use a ‘tailer’. It has been effective for me and once that big tail is out of the water the fish loses its power.” Popularized by Atlantic salmon anglers, the tailer is only for those who can use it correctly.

Jerry and Bob discussed lure colors. Both agreed on the general adage — dark lures in clear water and bright ones in murky water. While sight is a primary sense in the muskie’s hunting repertoire, noise or vibration also have an influence. Still, the only undisputed hard fact about the nature of the muskie is that it is almost always unpredictable.

Our day wore on and the fishing was slow. “Is that 10,000 casts per fish?” Jerry laughed. He figured he was due for three or four in a row by then. “It’s always on the next one,” Bob grinned.

Pointing out good muskie habitat, Bob showed us weed beds, bars, islands, dropoffs and submerged logs and other structures—all places where a big predator could eat and quickly return to cover. “I prefer low light conditions like early morning and early evening, especially in the heat of summer. A muskie hitting a surface bait in those conditions is like an explosion on the water.” A soft smile raised his cheeks, “Just like an explosion! Dark days and a light chop on the water, even mist and drizzle, are all good. My personal feeling on the barometer theory is that I simply like it moving, up or down, as long as it’s moving.”

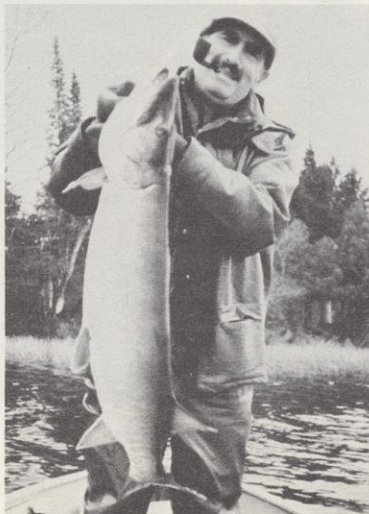
Don’t expect lots of action. No other fresh water fish is so difficult to catch that success is talked about in terms of follow-ups, Vs, turns and rolls. Just the presence of the muskie is exciting. DNR says the average time spent is 100 hours per fish and the average length 33.4 inches. That’s not exactly “hauling ’em in!” But to the angler who reaches for high challenges in life and fascination in pursuit, the muskie stands alone.

Our guide’s fishing had not been without its dry spells. “I’ll go six or seven days with action then a week or two with nothing! But I’ve also caught over a half-dozen in one day. You never know. That’s why you keep trying.”

Over the years I’ve enjoyed the “lodge talk” of many muskie anglers. It’s a colorful and important part of the total experience. Stories, legends and mysteries curl around the northland air like smoke from an evening campfire—a fish that devoured a stringer of walleyes, one that jumped into a boat, another that leaped at night rattling the lures in its 70-pound jaws. There are boat-length fish that broke tackle and arms, swallowed muskrats and ducks, and chomped a swimmer or two. The stories go on and on. I’m sure you’ve heard or even told a few. The tales remain a romantic part of the Wisconsin muskie legend.

Jerry, Bob and I spent several days on several lakes. We enjoyed the aesthetics, the stories and the solitude of the wild. But all the gold in Ft. Knox wouldn’t buy a fish on that trip. The experience of going fishless was one I’d enjoyed before. I’ve caught a few muskies in my years, and so has Jerry, but there is something about trying that never disappoints you. Our guide said it best, “You’ll come home skunked more often than not, but it’s more honorable to fish muskies and catch nothing than fish anything else and catch nothing.”

But even with nothing, the lonely lakes and moonlit bays of the loon country, the eagles, deer and solitude get in your blood and last a lifetime. Muskie fishing is a haunting challenge, far beyond simple recreation. It’s because lurking out there somewhere in the dark, cool waters of the wild is your fish—just waiting.



Guide Bob Resch and 30-pound muskie.

Photo by author

The Lower Wisconsin River: where catfish is king

Thomas D. Pellett,
DNR Warm Water Group Leader
Fitchburg

Studies have revealed that catfish nearly desert the Wisconsin River in winter and spread out over approximately 160 miles of the Mississippi. This and other information from a special study will help managers keep up the quality of a fishery that is just beginning to feel the veil of change.

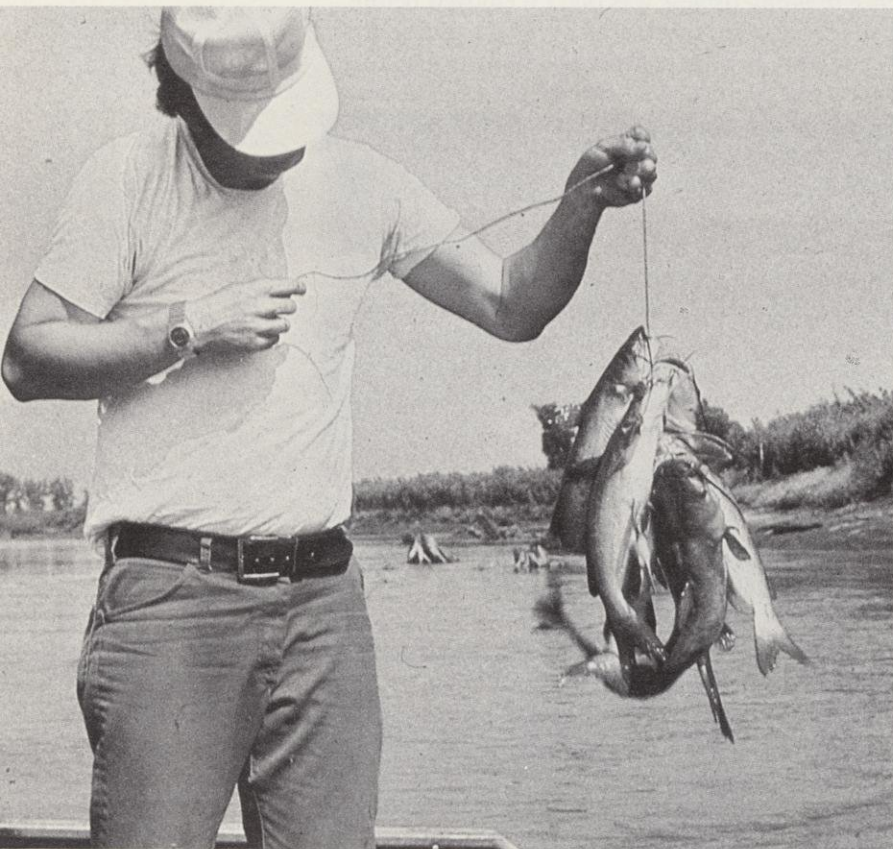
Anyone who has ever canoed or rafted the Wisconsin River between Prairie du Sac and Prairie du Chien has witnessed one of the most beautiful and unspoiled stretches of river Wisconsin has to offer. The multitude of sandbars, wood islands, swift channels and languid backwaters provide myriad recreational opportunities. Among them is sport fishing and on the lower Wisconsin, catfish is king.

In the late 1950s and early '60s, biologists Cliff Brynildson, Art Ensign and John Truog conducted the lower Wisconsin's first study on catfish and other fisheries. Prior to and since then, fishery research and management programs in the region concentrated mostly on the lakes and small streams. It was not that the value of the river was unappreciated by state fish managers. It was rather, that managers followed one of the paradigms of their trade: if the resource is healthy "let nature manage herself." And so it was with catfish, too.

But times change and increased recreational use, farmland cropping and industrial development can hurt even the most resilient of ecosystems. To prevent the degradation of any living resource and to ensure its continued health, we need to understand that resource and how human activity might harm it.

With this in mind, DNR embarked on a long-range study of the movements, biology and harvest of catfish in the lower Wisconsin River. Field work began in July 1983, and will continue through October 1985.

Crews caught catfish using baited hoop nets and wooden slat traps at eight locations: Sauk City, Lone Rock, Boscobel, Millville and Bridgeport on the lower Wisconsin; Wyalusing and Prairie du Chien on the Mississippi; and also at Lake Wisconsin. Data gathered from the last three will be used to determine the influence these waters have on the Lower Wisconsin's catfish populations.



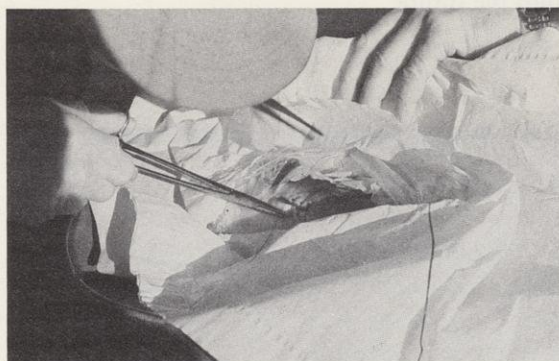
Mess of catfish caught on the Lower Wisconsin.

Once a catfish is in the boat, it is weighed and measured. The sharp spine of the left pectoral fin is removed for aging and a plastic tag inserted just under the dorsal fin to identify the fish when recaptured. Release is at the same site where the fish was taken. Some channel cats are "tagged" with small radio transmitters which allow researchers to follow individual fish using radio receivers mounted in aircraft or boats. The study will need cooperation from sport anglers and commercial fishermen so that DNR will know whenever a tagged fish is caught. Researchers are depending on this cooperation.

Findings

At this early stage no definite conclusions can be drawn from the project, however, some interesting trends have emerged from the 1983-84 field data.

Size: Fish collected in some areas are bigger than those collected in others. The trend is toward a greater proportion of larger fish as one moves upstream from the river mouth to the Prairie du Sac dam. This seemed evident after looking at data on 7,000 channel catfish and 600 flatheads collected from the eight study areas. It is not known how the Lake Wisconsin fish, which closely resemble those in the Mississippi River in size, affect the population below the Prairie du Sac dam.



Implanting radio transmitter requires delicate surgery.
Photo by Don Fago

Movement: During 1983-84, numbered tags were attached to about 4,500 channel and flathead catfish ten inches or longer. A different kind of tag was placed on 2,000 channels and 100 flatheads that were smaller than 10 inches. Data from returns by sport and commercial fishermen were used to plot the direction and distance moved by the fish. Additional detailed information on catfish movement is being obtained from fish tagged with radio transmitters. Between August 1983 and October 1984, a total of 90 channel catfish from the lower Wisconsin River and 30 from Pool 10 of the Mississippi were implanted with transmitters. As of January 1, 1985, 32 of these transmitters were still signaling their location. The remaining catfish have either been caught or their transmitters have run out of power.

The data thus far suggests that both species tend to be rather local in their movements during summer and early fall, generally traveling less than one mile and seldom more than five miles. There are exceptions, however. One Mississippi flathead was recaptured five times in the same net at the same location; conversely, a Mississippi channel cat was caught by fishermen near Grafton, Illinois, some 400 miles downstream from where it was tagged two months earlier. Both fish were tagged simultaneously after first being caught in the same net on the same day in mid-July 1983.

In autumn, when the October chill descends, channel catfish in the Wisconsin River become restless and begin a migration that lasts at least through November. The reason is, presumably, to seek out suitable winter habitat. The direction of migration seems to depend on where the fish spend the summer and also on fall water depth or river stage.

In the autumn of 1983, the vast majority of channel catfish which had spent the summer at points below Lone Rock, headed downriver to find winter refuge in the Mississippi. Those that had summered above Lone Rock spent the winter in waters near Sauk City-Prairie du Sac. The river stage that fall could be characterized as normal. Last autumn, heavy rains caused high, fluctuating water levels and an associated increase in velocity of river flow. These conditions apparently delayed fall migration for up to six weeks and resulted in an increased proportion of upstream migrators. However, while the 1984 data is more variable than that collected in 1983, the same general migration patterns seem to hold true for both years.

Once they had moved to the Mississippi, slightly more than half the Wisconsin River catfish found overwintering areas that were north of the Wisconsin-Mississippi river confluence. The same proportion of catfish that had been radio-tagged at Pool 10 on the Mississippi spent the winter in these places. Prairie du Chien's east channel was of primary importance. The rest went south for the winter, some as far as Bellvue, Iowa. The total winter habitat of these fish covers a range of at least 160 miles of the Wisconsin and Mississippi rivers.

So far, the study seems to show that, with the exception of the Sauk City-Prairie du Sac area, few, if any, catfish winter in the lower Wisconsin. Since most of the stream is generally devoid of catfish in winter, it must depend on upstream migration from the Mississippi to repopulate its waters during spring or summer. We know that catfish congregate at the mouth of the Wisconsin River in spring before their spawning run. What we don't know is whether these fish come from the "general" Mississippi River population or are unique to the Wisconsin River.

Although data are limited and still inconclusive, it appears that Wisconsin River catfish may

show "homing" tendencies. This is an exciting preliminary finding because no other river system study has ever recorded a homing instinct in catfish. Last year, a few catfish that were implanted with radio transmitters during the fall of 1983, returned the following spring or summer to the same part of the Lower Wisconsin where they were first caught. The most notable example was a fish implanted with a radio tag near Boscobel on October 3, 1983. It spent the winter in the east channel of the Mississippi River at Prairie du Chien and was recaptured on July 26, 1984 at Boscobel, within a-mile-and-a-half of where it

was originally tagged. In addition, of 44 fish number-tagged in 1983 and picked up again in 1984, 73% (32) were recaptured near the original site. Similar results were evident from returns on angler-caught fish. Of those tagged in 1983 and caught by people fishing in 1984, 67% were taken within a-mile-and-a-half of the tagging site.

Harvest: The number of tagged catfish caught and reported by sport anglers and commercial fishermen can give an approximation of the actual harvest rate when expressed as a percent of the total number tagged. During the first 18 months of the study, 192 channel catfish and 51 flatheads were caught and reported by the two groups combined. This figures out to an annual harvest rate of only about 3% for channel cats and 7% for flatheads. Rates of 20% to 25% are not considered excessive for most fisheries. It should be noted, however, that the Lower Wisconsin returns were voluntary and therefore represent a minimum estimate of harvest. To get more complete data, a creel census is scheduled for this year. Combined with tag returns, it will give researchers a more accurate harvest estimate.

These kind of findings, when applied to management will help keep the catfish king on the Lower Wisconsin. The idea is to understand the habits and maintain the habitat of this royal clan, so that the kind of quality fishing that exists now in a quality environment can continue unabated into the future.



Slat trap for catching live catfish looks like an old-fashioned orange crate.

Photo by Roger Kerr

ATTENTION CATFISH ANGLERS

Win \$100

If you catch a tagged catfish or one with a surgically implanted radio transmitter, please return the tag along with information on where and when you caught the fish to the nearest Fish Manager or DNR office. You will receive \$1.00 for any numbered plastic tag or \$25.00 for the radio transmitter. In addition, all numbered plastic tags returned during each calendar year of the Lower Wisconsin River catfish study will be pooled for a drawing to be held in January of the following year. You could win a \$100.00 grand prize or one of four \$50.00 prizes.

IF YOUR FISH HAS A RADIO TRANSMITTER, PLEASE CALL COLLECT ON THE DAY YOU CATCH THE FISH.

PHONE ONE OF THE FOLLOWING:

Don Fago (608) 275-3209
DNR Southern District Hdq.
3911 Fish Hatchery Road
Madison, WI 53711

Or

Pam Thiel (608) 326-6431 ext. 233
DNR Satter Building
111 Dunn Street
Prairie du Chien, WI 53821

Plastic tags can be sent to:

Tom Pellett (608) 275-3207
DNR Southern District Hdq.
3911 Fish Hatchery Road
Madison, WI 53711



Catfish and trailing antenna. Anglers receive \$25 for returning a transmitter.

New wave in sport fishing



The electronic revolution and space-age technology have invaded the old fishing hole. What will happen to the fish?

Cartoon by Artist Virgil Beck, Box 66, Stevens Point, WI 54481

Used to be a crafty angler caught fish using little more than hook, line and sinker—and maybe a cane pole. But fishing has changed. Today's technological angler sports depth finders, pH meters and Kevlar-wrapped boron fiber rods. And catching fish is a new kind of experience.

Nowadays, word-of-mouth favorite fishing holes can be found in a quick hurry by two-way radio, streamlined boats and fast motors. A modern angler can reach a specific location and electronically monitor the waters for favorable species as if through discriminating fisheyes. Locating where the fish are is down to a science. And even rod, reel and tackle have been altered by technology.

So what will happen to the Wisconsin fishery? To help assess the impact of the 80s "compleat"

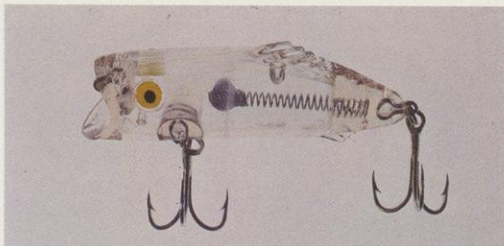
angler, DNR recently took a look at how this new generation of tools and techniques might affect the future of fishing in Wisconsin.

Portable, long-distance radios are in common use on big waters. They can communicate where the big catches are to more people faster than ever. High horsepower, reliable motors get anglers to more hotspots in less time. The boats are designed for comfort and efficient fishing.

The art of navigation is hi-tech too. Precise instruments indicate location, course heading and deviation, speed and distance of travel—and even sound an alarm when a destination is reached. Loran C, for example, uses triangulation of broadcast signals over a transmission network that covers almost two-thirds of the contiguous 48 states. It's accurate to within 50 feet.

Kendra Nelson,
Editorial Assistant

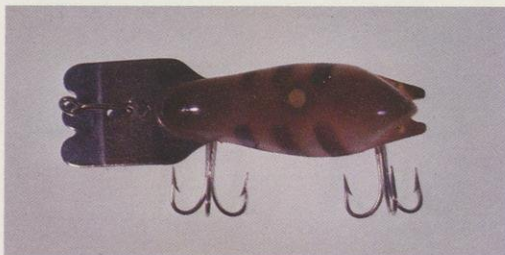
Whopper Stopper's spring-loaded, interior throbber makes it quiver like a wounded forage fish.



There are devices now that can help a smart angler think like a fish, but we would probably outlaw devices that enabled anyone to just run through the water and kill fish.

James T. Addis, Director of DNR's Bureau of Fish Management

Mud-Bug contains a sponge that can be saturated with fishing formulas or scents.



New equipment and new fishing techniques can benefit anglers in two ways—to locate fishing areas more quickly and to more effectively catch fish once at a location. Overall, they can make fishing more efficient and enable anglers to catch more fish. Therefore, anglers' values in using this new technology will strongly influence what will happen to the Wisconsin fishery.

Jeff Kampa, DNR Fish Manager Trainee and team member of sport fishing technology study.

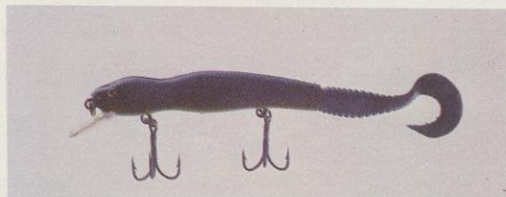
The Doctor Spoon has a colorful scent tube for fish to see and smell.



If in fact, anglers are becoming more efficient and overexploitation is occurring because of this, we then have a critical choice to make. Should we regulate increases in technology in order to reduce anglers' efficiency or should we regulate to decrease individual catches? Anglers themselves are usually the first to request controls.

Ronald J. Poff, Chief of Inland Fisheries and Investigations

Super dawg has a wide wobble and quick action.



Lures courtesy of Bass Pro Shops and Fred Arbogast, Inc.

And these gadgets team up with other sophisticated electronic gear that can just about tell what species is swimming around down there and how big each fish is.

Around 1930, technicians discovered that depth finders, which transmit sound and extract information from returning echos, could be used to detect fish. Recent developments in microprocessors and digital systems have enhanced the capability to acquire, process and display data. Better target resolution, size discrimination and visual presentation now make it possible to clearly differentiate objects as little as 1 1/2 inches apart. Therefore, anglers can not only locate fish, they can also project their relative size and abundance. Some depth finders even feature area magnification and memory.

Then there are the less sophisticated fish-finding accoutrements like temperature, oxygen and pH meters. These instruments, together with an understanding of fish habits, allow anglers to direct their efforts to areas where success is most likely.

Most fish orient themselves in certain temperature zones. There are sheltered sloughs, riprap areas, springs, feeder streams, plumes, and walls or bands of unevenly heated waters. To help the informed angler determine probable daily and seasonal fish location and activity, a basic handheld, mercury-filled thermometer can be used to spot-check surface temperatures. Electronic meters speed up the process with quick, continuous, digital readouts. Depth temperature meters, which have a sensor probe attached to a cable, can give complete temperature profiles of places where fish will likely concentrate.

Oxygen levels also indicate where to fish. In the early morning hours of late summer, some locations have periodic low oxygen due to plant respiration and decay. In winter, ice and snow reduce photosynthesis with similar effects. A meter that finds well-oxygenated water is an obvious advantage.

When temperature is suitable and oxygen adequate, fish seek an optimum pH environment. The pH scale measures acidity or alkalinity. Most fish like slightly alkaline water. A little knowledge of fish preferences combined with the use of various devices can make an angler extremely efficient at placing the bait where the fish are.

Baits have a technology of their own. They can be unusually colored, bright orange rosy-red, dark, soft, hard, plastic, metal or wood with every shape and action imaginable, topped off by attractant scents or scent eliminators. And where the fish are can be marked with buoys while boats with planing boards or electronic trolling motors work the water above them.

Overall, equipment and methods to bring in the big ones has evolved over time through slight upgrades in materials and design.

One major innovation was the backlash-free bait casting reel. It uses a magnetic dampening system to prevent overtravel with the magnets set on spokes around a central shaft. As the shaft spins faster, the magnets slide with centrifugal force away from the shaft and thereby slow its movement. The distance the magnets move on the spokes is controlled by the angler for casting accuracy.

Then there is the technology of the fishing rod which has evolved from the good, old-fashioned, cane pole to fiberglass, graphite and arimid fibers. The modern ones weigh less and have better flex-response, sensitivity and recovery time.

With all these advances, eager anglers expect to increase their catch. But how successful they'll be depends upon a sustained fishery resource. As they learn the significance of water temperature, dissolved oxygen, pH and other factors that affect fish, knowledgeable anglers have also gained more appreciation of the frailty of the resource. Fish facts that were once only the business of DNR fish managers are changing anglers' awareness, attitudes and actions.

Since about 1970, detailed technical fishing information has been readily available to just about anybody who wants it. Books, magazines, pamphlets, computer programs, video recordings and fishing seminars that feature new ideas and techniques are easy to come by. New values are on the rise too! Fishing for the sake of a meal has started to become angling for the sake of angling. Catch-and-release is becoming a bigger part of the sport as a new ethic begins to take hold, fostered by those who fish trout and muskie.

These are heartening developments, but not likely to become universal soon. Meantime, more anglers becoming more successful at catching more fish could be too much of a good thing. We need to find out:

- How many will use how much of the new technology, and how effectively?
- If anglers catch fish faster and have more successful trips, will they spend less time fishing? Will there be fewer trips overall?
- When they go after a particular species, could they overharvest it? Or as anglers learn more about their quarry, will their insights into fish ecology lead to better understanding of management needs? Will there be increased participation in activities like habitat improvement, access maintenance and cooperative fish rearing? Will there be better compliance with fishing regulations which may have to be tougher to protect the fishery resource?

The answers to these questions will in part determine how the new wave in technology will affect the Wisconsin fishery. Both anglers and managers are waiting to find out.



Computerized reel is the ultimate in technology.

Fly-fishing for trout is fun because its me against the fish. I work hard for my fish, but I don't keep them. I don't eat them. They're just fun to catch and release so there's more fishing to come back to.

Trout fishing enthusiast.



Digital depthsounders guide anglers to favorite fishing holes.



Fish prefer certain water temperature zones.

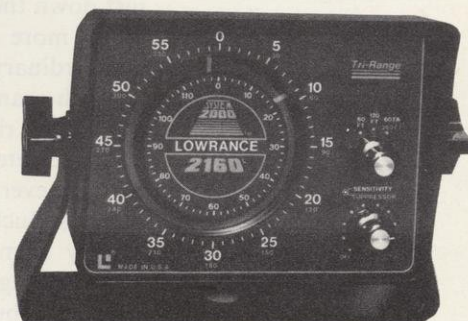
I use sonar to identify bottom structure and locate good habitat, food and cover. Then it's a matter of hard work and time on the water. It's that simple! If everyone worked as hard at it as I do and was just as successful, there could be a real dent in some fish populations. But then, I haven't kept a muskie in years. I think the more proficient one gets, the more one realizes the importance of catch and release.

Fishing technology buff.



Chart recorders print out pictures of what's beneath the surface.

Flasher units highlight an electronic screen to pinpoint depth of objects below.



Photos courtesy of Diawa Corp. and Lowrance Electronics, Inc.

Journey through

the Mind of a Fishery Manager

Larry A. Nielsen

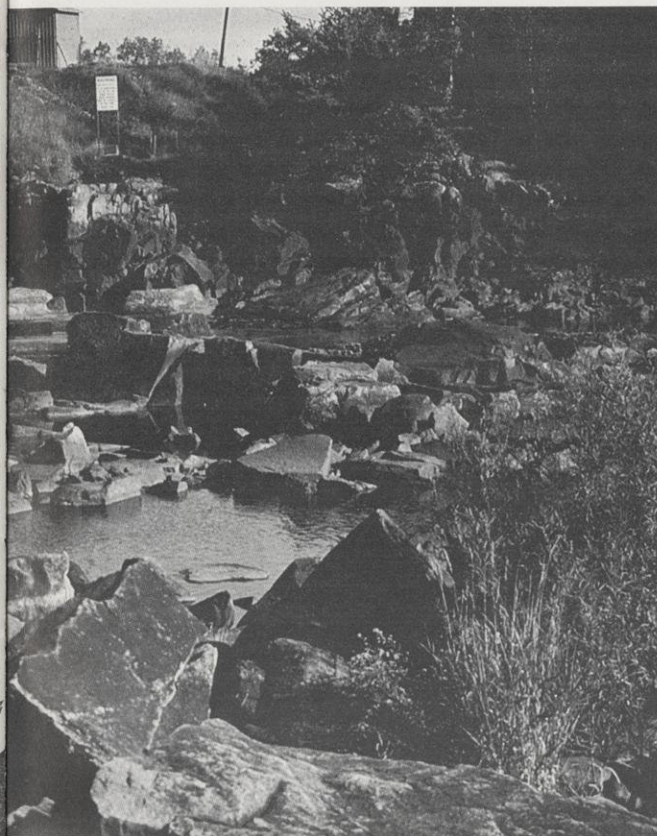
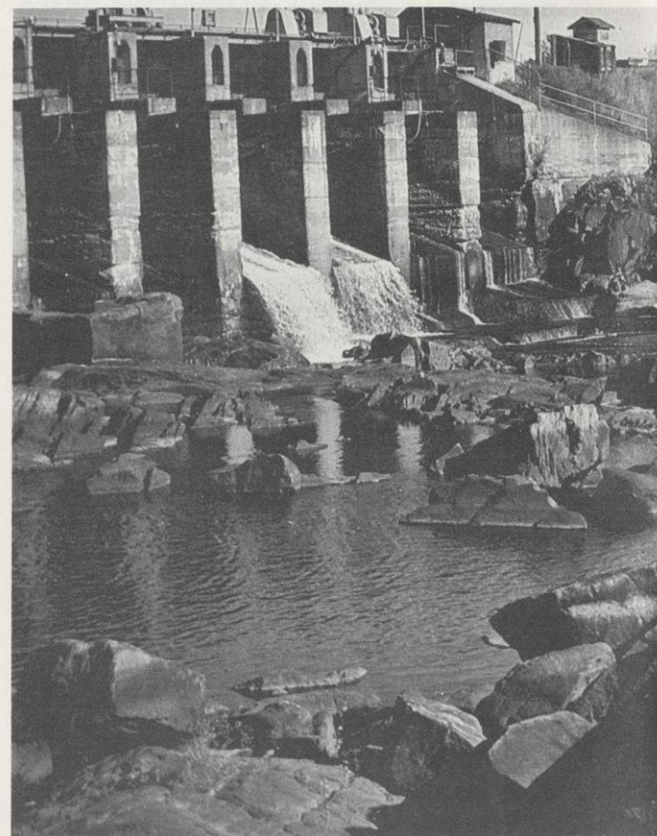
I always tell my students that they must think like a fish to understand a fish's environment. Several years ago, I realized that they must also think like a fisheries manager to understand a state fisheries agency. Helping students think like a fish is easy—after 16 years of study and research, I'm pretty well prepared—but helping them think like a manager has been a real problem.

My only "real world" experience had been as a hatchery intern back before the invention of trout. When the opportunity arose for a leave from Virginia Tech, I decided to correct this handicap by spending the year with a fisheries agency. But in which state? The agency needed to be a recognized national leader, to be managing a diversity of fisheries, and to be daffy enough to take on a wayward professor. I chose Wisconsin, of course. And I haven't been disappointed. Since arriving last June, I've harvested muskies from a hatchery pond near Eau Claire and helped eradicate carp from a flowage in Door County. I've observed tribal fishing negotiations in Couderay, and I've watched the trauma as the PCB action level for Great Lakes fish dropped from 5 to 2 parts per million. In the process, I've shot 38 rolls of film and worn out eight road maps. Fact is, I'm pretty worn out myself.

After such experiences and a long list besides, I'm confident that I can now help my students think like a fisheries manager. The editors thought readers of *Wisconsin Natural Resources* might also like the chance to get inside the head of a manager, if only to understand DNR from another perspective. So grab your anatomy books, the examination is about to begin!

The boundary of the manager's mind is, more or less, the Wisconsin state line. This was a surprise to me, since, at the university, I deal with everyplace from Arizona to New Zealand or even just down the street. The fish manager's world is much more constricted, and it produces some extraordinary results.

Each manager becomes a data bank of local knowledge rivaling any computer. Rumor has it that one veteran coldwater specialist has given a name to every trout in his stream for the past two decades. Such in-depth knowledge keeps fisheries history from repeating itself. When the experienced manager reviews an application to dredge a channel or build a pier, he evaluates the request in



The untrained eye would never know a fish manager had blasted bedrock below Jim Falls Dam to prevent sturgeon from being isolated at low water. Photo by author

terms of how such projects have worked out before and what he and others have planned for the area in the future.

Concentrating too intensely on local situations, however, often gives managers the false impression that every lake or stream is unique. One consequence is a complicated set of fishing regulations—motor trolling on this lake, but not in these; an early trout season in one county, but not in the next—that sometimes baffles anglers and managers alike.

On balance, local knowledge is a plus, and it certainly is impressive when it works. Dan Folz, area manager in Oshkosh, and I were riding the bow of the electrofishing boat, poised to net sturgeon for a survey of the Wolf River.

"Should see one right about now," Dan said, as we approached a riverbend that looked to me like each of the previous dozen. Just then, a five-foot prehistoric monster launched itself out of the water. The sturgeon and I were equally shocked.

We tagged and released the fish, and I expect Dan will be predicting its whereabouts to the astonishment of another rookie next year.

The mass of the manager's mind is devoted to "tomorrow." Realizing this was a surprise too, because the talk among researchers is that practicing managers are too busy to think about the future. But tomorrow takes many forms in Wisconsin's DNR. Strategic planning is one form that enlivened many a staff meeting I attended this year. Picture a circle of unshaven fisheries managers, wet to the knees from a soggy hike around Door County's Rock Island State Park, debating how an aging human population will affect fishing demand in the year 2000 or how DNR ought to adapt fishing rules to the society-wide trend toward de-regulation. The scene may appear incongruous, but it is repeated whenever managers get together to discuss their work.

"Mission" is another way that managers say "tomorrow." A commitment to conservation, not

a paycheck, keeps the hearts of fisheries managers beating. They are dedicated to the twin ideals of providing everyone with high quality outdoor recreation and of conserving resources as an obligation to future generations.

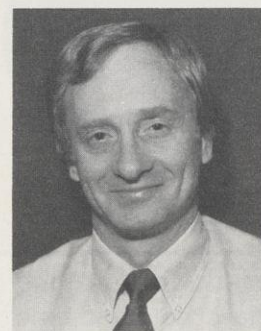
"The fact is that this is a lousy job," one manager told me, "but as a way to make the world a better place, it's great. If I didn't think I was doing something worthwhile, I'd be pretty unhappy."

At the front of the manager's mind, however, is "today," constantly pushing against tomorrow for more attention. The daily stack of phone messages is rivaled only by the pile of incoming letters, and it takes a herculean effort just to keep up. The stereotype of the state employee arriving late, leaving early, and drinking coffee to pass the time just doesn't fit. It's a lot more likely that your manager is sampling a lake at dawn, speaking to a sportsmen's group after dinner, or downing a sandwich at the desk while filling out government reports.

Seeing a manager struggle between working on today's problem or on tomorrow's opportunities still makes me apprehensive. Each assault on their time, whether for a trivial but time-consuming task or for an important additional program, shifts the balance away from commitment and toward frustration. The fisheries staff in Wisconsin appears to be stubbornly loyal, and the highest priority for the state's leadership must be to maintain that loyalty permanently in the future.

Habitat makes up the inner core of the manager's mind, and for once I wasn't surprised. Managers and professors both love to play with habitat. Our eyes glaze over at the sight of a remodeled trout stream or a string of log cribs waiting to be sunk along a lakeshore. And who can blame us when the outcomes of fisheries projects are so often indefinite? Has this regulation really made fishing better? Did any of the stocked fish actually reproduce? The temptation to alter habitat and directly evaluate the changes in fish density or angler use is more than most of us can resist.

Some habitat improvements are visible monuments to our management skill, but others appear only to the trained eye. Geoff Emerson, district fish specialist in Eau Claire, walked me down to the seemingly natural channel of the Chippewa



Larry A. Nielsen

Larry A. Nielsen is Associate Professor of Fisheries at Virginia Tech in Blacksburg, Virginia. During the past year, he has been on leave, working for the Bureau of Fish Management in Madison.

"Strengthening the link between universities and state agencies," says Nielsen, "is our best avenue for producing good ideas and good students for management." Among other duties, he has been examining the relationship between DNR's fisheries management and its environmental units where programs overlap—water regulation permits, environmental assessments, toxic fish contaminants and priority watersheds.

River below Jim Falls Dam. There his crew had blasted away part of the bedrock. "Sturgeon were getting stranded in isolated pools because of fluctuating water levels," he explained. "Now they can move freely through the new channels and return to the river."

What has surprised me about fisheries habitat work is how much of it occurs on land. Altering land use around water is perhaps more important in managers' eyes than improving the water directly. Each state-owned fishery area, for example, has a master plan that stipulates what developments are anticipated. The plans include boat launching ramps, parking lots, stream bank or lake shore fishing areas, and other facilities. These may not seem like fisheries projects, but try fishing without them.

Environmental protection is another form of land-based habitat improvement. Good fishing requires good water, and good water means controlling what runs into streams and lakes from the land. A major DNR thrust is the "priority watershed" program, a massive 25-year plan to control pollution entering streams from diffuse sources

like farms and roadways. Because improving conditions for fish is a primary objective, fisheries managers play a large role in selecting, designing, and evaluating priority watershed projects.

Attention to habitat is more than a satisfying diversion; it's another attempt to confront the future. Habitat work reminds me of the old saying, "Give a man a fish, and he eats for a day; teach a man to fish, and he eats for a lifetime." The version that could apply to Wisconsin's devotion to habitat is, "Stock the water with fish, and people enjoy it for a year; make a place for fish to live, and people enjoy it forever."

At the very top of the manager's mind lies "people." "Fisheries management," we professors like to say, "is people management," and Wisconsin's managers have been good students. If they aren't meeting with Muskies, Inc., they are attending a county board session. If they aren't advising the Conservation Congress, they are listening to a commercial fishermen's group. Between such appearances, they are answering letters from curious anglers and concerned citizens.

Jim McNelly, district fish specialist in Milwaukee, showed me an inspirational example of people management at the newly completed Paradise Springs Nature Area near Eagle. Working with several Lions clubs and a Trout Unlimited chapter, DNR has engineered a fishery and nature area especially for handicapped citizens. An asphalt trail suitable for wheel-chairs circles the area and leads onto a T-shaped pier built for handicapped fishing. A guide cable parallels the trail so visually impaired visitors can use it, stopping at indicated locations to hear messages played over portable tape recorders.

Seeing managers work so closely with and for the people has confirmed another principle I've observed whenever I've examined a successful organization: people make the difference. Good regulations, efficient hatcheries, and clean water are necessary, but not sufficient. The kind of success Wisconsin has achieved comes only when skillful and dedicated people mold those elements into a living program. If I were asked to list the natural resources of Wisconsin, the people who work in DNR would be at the top.

You may be wondering after all this where I think "fish" fit into the mind of the manager. Well, crammed among habitat, people, and the rest, there is what seems to be a kind of subliminal piece left for fish. With that piece, managers raise the fish, choose the species to be stocked, watch the condition of fish populations, and perform scores of other fishy jobs. That may be a lot to accomplish with the left-overs of the mind, but your managers handle it almost by instinct. As a teacher, I like to think it has something to do with what I mentioned at the beginning of the article: that back when they were in school, they learned to think like a fish.

Top : A guide cable at Paradise Springs helps the visually impaired and other handicapped people use a fishery and nature area.

Photo by author.

Bottom : Handling giant sturgeon is sometimes easier than handling people. But people are at the very top of the fish manager's mind.

Photo by Dan Folz



Anglers' Almanac '85



More and better fish for Lake Michigan

Wendy Weisensel

A proposed new management plan for Wisconsin's portion of Lake Michigan calls for continued excellent sport fishing plus fish less contaminated by toxic chemicals and safer for people to eat. A finely-tuned commercial fishery is also provided for.

Developed after numerous meetings with sport and commercial fishing groups along the lake, the plan sets forth management objectives for the two fisheries through 1991. It is destined for Natural Resources Board consideration in the near future before becoming final later this year.

"The sport fishery would be as diverse as ever if the plan is carried out," said Lee Kernén, chief of the Great Lakes and boundary waters section in DNR's Bureau of Fish Management.

An important benefit underlying the package, Kernén noted, would be more fish that are safer to eat. "The state will continue to issue health advisories for the lake's sport fish, but more labeled 'least risky to eat' would be available for people to catch," he explained.

Chemicals like PCBs (polychlorinated biphenyls), DDT and others have tainted Lake Michigan for years. Health experts believe consuming contaminated fish poses a long-term health risk and ever since the 1970s the public has been warned to avoid eating certain species and sizes.

The most recent warning was issued in March. Health and conservation officials in Wisconsin, Illinois, Indiana and Michigan for the first time issued a joint health advisory that applies throughout Lake Michigan. The new advisory covers brook, brown, lake and rainbow trout, coho and chinook salmon, perch and smelt.

Anglers catch about 700,000 trout and salmon from Lake Michigan each year, Kernén said. The bulk of the sport catch consists of large lake trout and chinook and coho salmon.

Of this trio, only coho and small lake trout under 20 inches currently meet health standards of the US Food and Drug Administration.

Kernén said the proposed Lake Michigan fishery plan would wean anglers away from the more contaminated species, even though that is not the plan's direct purpose. Anglers would then be able to choose from a wider array of cleaner fish, less risky to eat.

"There would be more of a mixed bag out there to take advantage of," Kernén noted.

"Choices available would consist of more fish that already meet FDA standards such as rainbow trout, coho salmon and perch."

The plan calls for cutting the lake trout harvest to 82,000 or fewer by imposing a lower bag limit and shorter season. The few large lake trout anglers would be able to catch and keep would be billed as trophy fish, not dinner, Kernén said.

"Since lake trout more than 25-inches long generally do not meet FDA standards for several contaminants, we would strongly advise people to put these trophy fish on their wall, not in their stomachs," he said.

Primary aim of the tighter regulations would be to help lake trout reproduce naturally by reducing the number caught.

A regulatory boost is needed because native lake trout have had trouble reproducing ever since decimation a few decades ago by the parasitic sea lamprey.

"Our hope is that contaminant levels will have dropped to safer levels by the time lake trout have successfully re-established themselves to again take their place as an important part of the Lake Michigan sport fishery," said Kernén.

To compensate for the proposed cut in lake trout, the state would offer some attractive alternatives that should counteract any disappointment by anglers, Kernén explained. **Coho salmon stocking, for instance, would be increased. The rainbow trout harvest would be boosted from 25,000 to 50,000 under new stocking methods.** In addition, a new strain of brook trout has been

introduced which should add to the list of fish that are unlikely to absorb contaminants beyond trace levels.

The biggest addition to the lake's fishery under the plan would be perch, Kernén said. The perch population crashed in 1965 after being outcompeted by alewives that invaded through the St. Lawrence Seaway. Perch finally began to recover in the 1980s, much to anglers' delight.

"Perch fishing has really picked up in Green Bay again and further south off Racine and Kenosha," Kernén noted. "Apparently the trout and salmon we began stocking in the mid-60s have eaten enough of the alewife to make room for perch again."

The Lake Michigan fishery plan would shoot for an annual sport harvest of two million perch that, as the plan notes, "...would provide perch anglers with hundreds of thousands of hours of enjoyment..." in many of the coastal urban areas, especially in Southeast Wisconsin. Perch contain barely detectable traces of PCBs

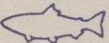


and other contaminants.

Finally, the plan calls for a trophy 50-pound chinook salmon that, like the big lake trout, would be destined for mounting or photographing rather than the dinner table. Chinook would be treated with hormones at the hatchery to sterilize them. Instead of entering tributaries to spawn and die after several years in the lake following stocking, sterilized chinooks could continue to grow, perhaps into the the 50-pound range. The biggest ones in the lake now reach only about 30 pounds.

"Anglers wouldn't care about eating these fish — they'd just want to have the chance to catch them," Kernén said. These giant salmon would top the wide variety of fish types and sizes that Lake Michigan would have to offer over the next few years if the plan is approved.

In the meantime, fish managers are hopeful about the lake's future, and, like anglers, look forward to the day contaminants won't be a factor to contend with any longer.

Which Lake Michigan fish are safest to eat?

		
Group 1	Group 2	Group 3
Yellow perch Smelt Coho salmon Lake trout under 20 inches in length	Chinook salmon 25 inches or longer* Lake trout 20 to 25 inches long	Brown trout** Lake trout 25 inches or longer Carp
Eating Group 1 fish poses the lowest health risk. Trim all skin and fat from these fish before cooking them.	Pregnant women, nursing mothers, women who wish to bear children, infants and young children should not eat Group 2 fish. All other individuals should limit their consumption of Group 2 fish, and trim all skin and fat from these fish before cooking them.	No one should eat Group 3 fish.
<p>* Not enough samples of chinook salmon smaller than 25 inches have been collected to adequately establish contaminant levels in this species.</p> <p>** Brown trout show wide, geographic variations in contaminant levels.</p> <p>NOTE: Not enough brook trout samples have been collected to adequately establish contaminant levels in this species.</p>		

This advisory issued in March 1985 by health and conservation departments in Wisconsin, Illinois, Indiana and Michigan. It applies throughout Lake Michigan. The advisory will be updated as new information becomes available.

Anglers' Almanac '85



Wisconsin's fishing future top notch

Wisconsin lakes and streams will continue to serve up some of the best fishing in the country right through the 1980s and beyond, according to James T. Addis, director of DNR's Bureau of Fish Management. In a recent interview, Addis commented on various species and some of the waters of the state plus a couple of problems that deserve special attention:

Lake Michigan — It will continue as a world class fishery with adjustments in management and stocking strategies to compensate for the toxics threat. (See More and Better Fish for Lake Michigan in Anglers' Almanac.)

Inland trout waters — Continued improvement can be expected, especially as nonpoint source pollution from farms, highways and cities is brought under control. Pressure is expected to increase, but regulations will be revised to handle it.

Commercial fishing — Sport and commercial fishermen will have to work together, agree on an acceptable commercial harvest and both pay a fair share of management and stocking costs.

Regulations — DNR and the legal system have to find a better way to let the public know

about necessary regulations. The challenge is to turn out a regulations pamphlet that can be understood by people who don't have a law degree and at the same time provide maximum fishing opportunities that protect the resource.

Native American treaty rights — The tribes are responsible people and want good management programs. DNR will continue to negotiate agreements of mutual benefit that will protect Native American rights as required by the court.

Bass — Stable fishing for the near future, but declining as pressure increases over the long run. Catch and release and slot size limits should help.

Muskies — Future looks good, especially because anglers have supported an increased size limit and because catch and release has become part of the ethic. Biggest threat is from northern pike which invade muskie waters and then dominate them.

Walleyes — Expected to stay the same.

Panfish — One of the biggest problems is that managers have not yet learned how to produce top-notch panfishing under heavy pressure situations. A decline is possible, but new technology could help by the year 2,000.



Sport and commercial fishermen need to share management costs equitably.



Inland trout fishing is expected to improve.

Conservation patron license available

Wisconsin's special Conservation Patron License begins its second year this summer. **A single plastic card that sells for \$100, it authorizes just about every outdoor activity DNR offers and covers the 12-month period from September 1st through August 31st of the next year.**

The multi-purpose license includes fishing, trapping, small game, deer and archery hunting and eliminates the need to purchase stamps for Great Lakes salmon and trout, inland trout and waterfowl. Actual stamps are not included, so patron license holders who are collectors and want stamps will have to buy them separately.

Special permits requested by the conservation patron such as those required for taking sturgeon, bobcat, fisher, otter

and pheasant are issued in their own separate carrier. Also included are applications for Hunter's Choice and goose hunting permits; registration stubs for deer gun and deer bow; all current fishing, trapping and hunting regulations; a year's subscription to *Wisconsin Natural Resources* magazine and an annual Wisconsin State Parks and Forest admission sticker. The license also provides entry to historic Heritage Hill State Park and use of the state trails.

Applications for the Conservation Patron License are available from DNR field offices, county clerks and sports shops. For more information write DNR License Section, Box 7924, Madison, WI 53707, phone 608-266-2105 or stop by room 008 at 101 S. Webster St. in Madison.

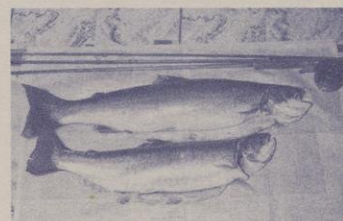
Fishing Ethics

Fishing, of course, like any sport has its rules and regulations and anglers have to follow them. But beside the legal requirements certain unwritten, ethical standards bring maximum enjoyment and set a good example:

- Don't trespass on private property without permission.
- Don't toss litter into water or on land.
- Pick up litter others carelessly leave behind.
- Know each species of fish so you can comply with the regulations.
- Don't waste what you catch — clean and cook it properly so you can enjoy eating it.
- Don't get too close to other boats and avoid conflict with

competing uses like water skiing and swimming.

- Keep your voice low — sound carries easily across water and may bother others.
- Know safe boating rules and always carry proper flotation equipment.
- Report fishing violations to DNR's poacher hotline — 1-800-TIP-WDNR (1-800-847-9367).



Clean what you catch and enjoy eating it.

So you want to be a fish manager



*Max Johnson,
Antigo Area Fish Manager*

The Wolf is one of Wisconsin's wildest rivers and managing it is no picnic.

Fish management is easy when you're only dealing with fish. But kind of tricky when you're handling people.

As a fish biologist and manager with DNR, I frequently meet people who start conversations something like this: "Wow! You've got some nice job!"

And I have. But it's not all fun time and limit catches. Take an example:

One of my assignments is project manager of the Upper Wolf River Fishery Area. Sounds "nice" enough. The Wolf is a unique river. It averages 125 feet wide, supports trout and smallmouth bass, and is very scenic. It has whitewater qualities which are unusual east of the

Rockies. Known nationally, the river attracts over 50,000 visitors annually. In 1966, it was decided that this unique resource should be preserved through an acquisition program. To date, the state has acquired over 7,500 acres along 34 miles of the Wolf River, all in Langlade County.

In very general terms, the Master Plan calls for managing this property as though it were a National Wild and Scenic River. This means limiting access points and keeping them out of sight. It also means removing buildings and other development, emphasizing aesthetics, and providing compatible multiple use opportunities.

With the above as background, let's look at some of the problems the fish manager faces. First

The management plan calls for no buildings on the Wolf. Burying this fishing shack was no problem, but getting rid of fancy residences caused domestic consternation.

Photo by author



Boy Scout property on the Wolf was the biggest single DNR fish management buy ever made. It cost more than a million dollars, comprised about 1,200 acres and included five miles of frontage. Scouts kept their camp area but sold the state an easement to allow public access.

Photo by Staber Reese



Allowing a slalom run for canoes and kayaks on the Wolf, even for Olympic try-outs, has legal ramifications that worry a fish manager.

Photo by Dave Schoff, courtesy Wisconsin Hooper Outing Club



of all, the Upper Wolf is the largest fisheries acquisition project in the state. Personally, I believe one of the best things I can do for the people of Wisconsin is to buy land. It is much better and less expensive to preserve what we have than to try improving a resource that's already been degraded. The problem is that a portion of the public, including some local officials and politicians, believe DNR land acquisition results in higher local property taxes to make up for revenue not collected on the state's tax exempt land. The fact is, though, that numerous studies have concluded this is not true. The reason it's not is that state payments in lieu of taxes—school aids, shared revenue and other state aids—are almost always increased enough to replace the local property tax loss. When public land and property tax interrelationships are not well understood, my job gets difficult. Trying to convince non-believers who won't listen isn't easy. It's downright frustrating!

Like most young biologists fresh out of four to eight years of college, I started the job all fired up and ready to tackle the fisheries world head on. To say I was naive about what could be accomplished is putting it mildly. It didn't take long to learn that pure fish management is relatively easy—but people management—that's "a whole different ballgame."

It is an absolute precept that citizens should have a voice in how properties such as the Wolf are managed. But difficulty arises because there is always such a wide divergence of ideas and angles. Sometimes it seems almost impossible to keep even a majority happy and still abide by certain biological principles.

Properties that offer a wide variety of recreational opportunities always seem to develop use conflicts. The Upper Wolf River Fisheries Area is a prime example. Major conflict on the Wolf is between fishermen and people floating the river in rafts, tubes, canoes and kayaks. At certain times (usually weekends and holidays), there may be over 1,500 watercraft on 10 miles of stream. This has disturbed many anglers to the point where they have simply quit fishing the Wolf. And that's sad, even if the angler's reasons aren't totally justified. Compromises have been negotiated which limit float trip hours in an attempt to preserve mornings and evenings for anglers. Still, many are not happy and I'm often accused of not protecting anglers' rights. On the other hand, outfitters accuse me of just the opposite. They say I favor the anglers and have not provided facilities needed for other users. There's not enough space here to discuss the pros and cons nor the related, more complex issue of how much use can be allowed before the very values that attracted the use in the first place are destroyed. However, my point is this: Who's caught in the middle?

Yep, your favorite fish manager.

Ever tried opposing Mother, God or Country? Not recommended, right? Well, I haven't really tried it, but as a fish manager, I've come close. Four years ago I got a request for permission to set up a slalom course (cables, gates, poles, etc.) to be used in qualifying runs for the US Whitewater Olympic Team. How could I oppose that? Well, I didn't. But what are the legal ramifications and where should the run be set up? No matter what decision I made, someone would be unhappy because they lost some use rights. A similar request came in for 1984. Only a minor little decision—which could affect our national Olympic standing. Next problem!

The list continues to grow. Right now there's a request in to irrigate from the Wolf River. A local potato farmer wants to divert 1,000 gallons per minute during the hottest, driest time of the year. One thousand gallons per minute! That's not much compared to the total flow but what if several farmers wanted the same thing? The cumulative effect could be devastating to fishing and floating.

Guess who has to put on the black hat and say no? I've destroyed the local economy and people may starve because there aren't enough potatoes. . . .

I just now came back into the office after spending two hours with a special interest group that wants to establish a fish for fun, "fly fishing only" area on the Wolf. If I support that, the bait and spinner anglers will be mad. What to do? I know! For a change, I'll make the decision based on biology.

Sometimes I get the feeling everyone but my wife is mad at me. And I'm not so sure about her. A few years ago, the department acquired 40 acres on the Wolf which included a house on an island in the river. My wife thought it was beautiful, which it was, and loved the house. But no matter what she thought, that house didn't fit in with the long-range plan. It had to be removed and I did it.

Don't get me wrong. Things really aren't quite as bad as I'm making them sound. But I hope you begin to get the picture. A fish manager's job isn't quite so nice and easy as it might appear.

The way it shakes out is that first we have fish management problems. Those are relatively easy and fun to work with. Then, we have people management problems. Those are difficult and usually end in some compromise which doesn't really satisfy anyone. And as if that's not enough, there's our own state bureaucracy! Which may be the most difficult problem of all! Every proposal, response or action must receive input from other functions: parks, forestry, wildlife and enforcement, plus many others; and then be approved through several layers of administration. As an example, the Bureau of Endangered Resources wants to designate part of the fishery area as a state scientific area. Such a designation, if approved, could preclude

management, or limit access and use. How will this affect forestry, wildlife, fisheries, etc.? Upshot is that the fish manager ends up serving as a moderator-mediator in the decision-making process. Again, not everyone can be satisfied.

And finally there's the real kicker! As the project has grown, more and more people, both the public and within the department, have taken an interest. After working with the river and fishing on it for 15 years, I've learned to really love the Wolf. It's become a part of me. But now, along come some administrators who say the Wolf should be a recreation area or a park, including development of campgrounds, fancy access points, project headquarters and the

works. All quite a change from the original intent and contrary to what I would like to see. So now I'm mad too. And that makes almost everyone!

Obviously, none of this is really as straightforward or black and white as I depict. It's true, a fish manager's job is "nice." But it sure aint easy! I can say that because at the same time as I'm handling my job as property manager on the Wolf, I'm also working on a batch of other properties and several hundred lakes and streams in three counties. And believe it or not, they've all got problems.

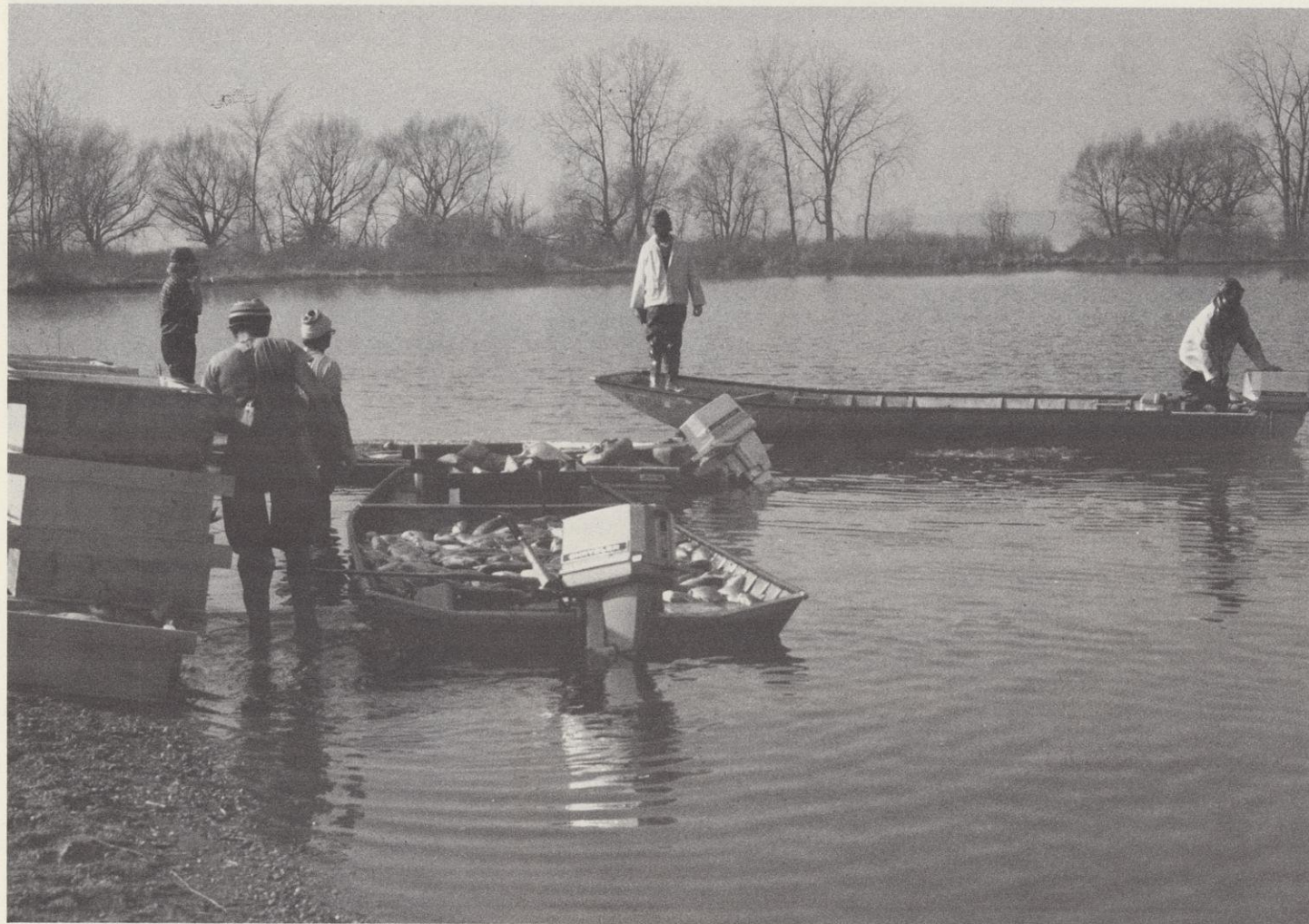
So all in all, the job can be frustrating. But the rewards are worth it. I think?



Resolving conflicts between anglers, rafters, canoeists, tubers and other river users comes with the territory.
Photo by author

Operations crews: *millions of fish pass through their* *hands every year*

Behind all the great fishing in Wisconsin are a half dozen careful, hardworking district operations crews. Their combined efforts around the state help fill your creel.



In spring, shortly after ice-out, DNR fish operations begin in earnest. State hatcheries require fertilized eggs for fingerling production. Fish have to be spawned and surveys made to determine stocking quotas.

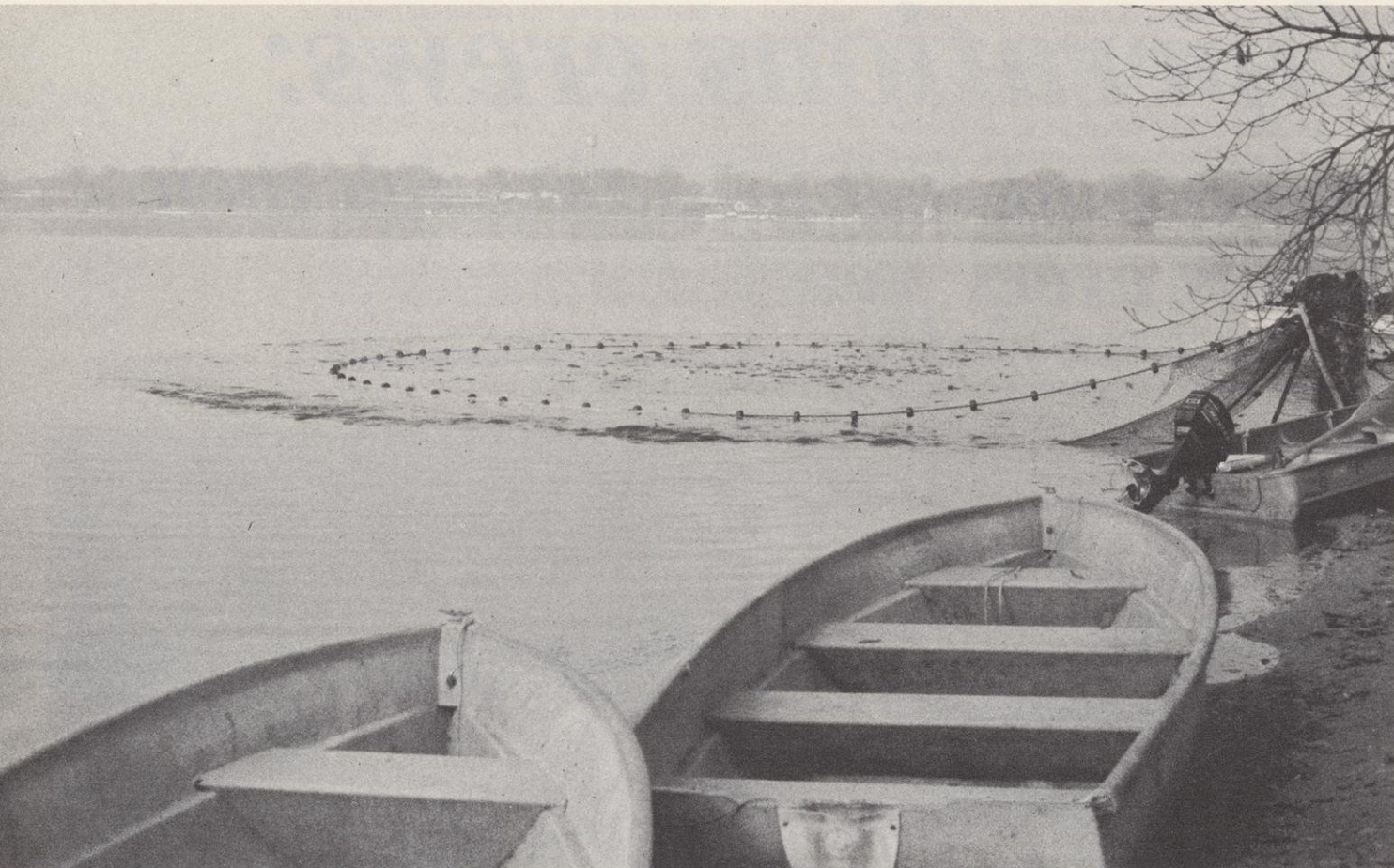
The spawning crews skillfully maneuver big flat-bottomed boats, often in cold, rough weather to catch the ripe male and female fish in fyke nets. Eggs are gently squeezed from females and sperm from males. Then the fish are returned to open water and the eggs and sperm mixed together along with a mud-clay solution. Without the clay, fertilized eggs would clump up and block out necessary oxygen. The fertilized egg-clay mixture

then goes to the hatchery in milk cans. Eventually, 10% of the eggs are returned to their home waters in the form of fry.

After the eggs arrive work at the hatchery is round-the-clock for the next seven to 10 days until the hatch. Operations crews make sure there's a constant flow of water through each hatchery jar to provide oxygen and keep the eggs from sticking together. Periodically, unhealthy and dead ones are removed. On the average, 70% hatch successfully. This compares to less than one-tenth of one percent under natural conditions. More than a million fingerlings can pass through a hatchery in a season.

Keeping state waters free of carp was a former operations crew job. Now it's done by special contractors and the crews have branched out into non-fish fields.

DNR photo



Above: A seine haul to capture fish for stocking.
DNR photo

The fry, or just-hatched fish, begin life with nourishment from their egg sacs. When that's gone, they must eat something else. First, it's the water's natural zooplankton, but that suffices for only a short while. To feed predator species like the muskie which will not eat pellets, operations crews annually mount another whole parallel spawning and fish rearing effort to produce forage fish.

A large portion of the newly hatched fry are moved to about 30 different outlying ponds around the state to grow into fingerlings for stocking. Then, from mid to late summer, operations crews recapture the fish and send them out to predetermined stocking locations. Many fry are stocked directly into lakes and streams that have potential for their growth.

The men and women in operations crews do an impressive volume of work in fish production alone, not counting all their other assignments in carrying out DNR responsibilities. Their efforts at the 14 state hatcheries each year produce 5.5-million baby trout and salmon for the Great Lakes, two-million trout for inland streams, 3.5-million warmwater fingerlings, including wall-eyes, muskies and northerns—and a whopping 50-million teeny warmwater fry for stocking in various lakes and streams around Wisconsin.

In survey work, operations crews capture, tag, fin clip, weigh, measure and take scale samples of fish. The information they gather helps determine fish populations, age structure, mortality rates



Above: An operations worker hauls in a gill net for an assessment check of lake trout.

Photo by Dean Tvedt

and other statistics needed for management of the Wisconsin fishery.

A special operations unit handles heavy equipment and materials. Their projects include access maintenance and construction, spring pond dredging, dyke construction and streambank stabilization.

And the operations crews fishery work doesn't stop at surveys, spawning, hatching, rearing and stocking fish, or making, maintaining and repairing equipment. They conduct experiments and biological studies, do chemical rehabilitation treatment, and control rough fish populations. They also build habitat improvements such as spawning reefs, streambank cover and wing deflectors.

All in all, chances are the next time you're out fishing and bring in a big lunker or even catch a stringer full of small ones, one of DNR's six district operations crews had something to do with it.

Spawner's story

Operations crews are a hardy bunch and there are stories aplenty about the hazards, hassles and near-misses that come with the territory. Bill Bennett, one of the old-time crew members from Spooner, tells this tale.

"Me and the boys were sitting early one morning looking out across one of the big northern Wisconsin lakes and seeing nothing but roll after roll of whitecaps. The troughs were so deep that near shore, in the shallows, I know you could stand on dry lake bottom as the waves would tower on either side.

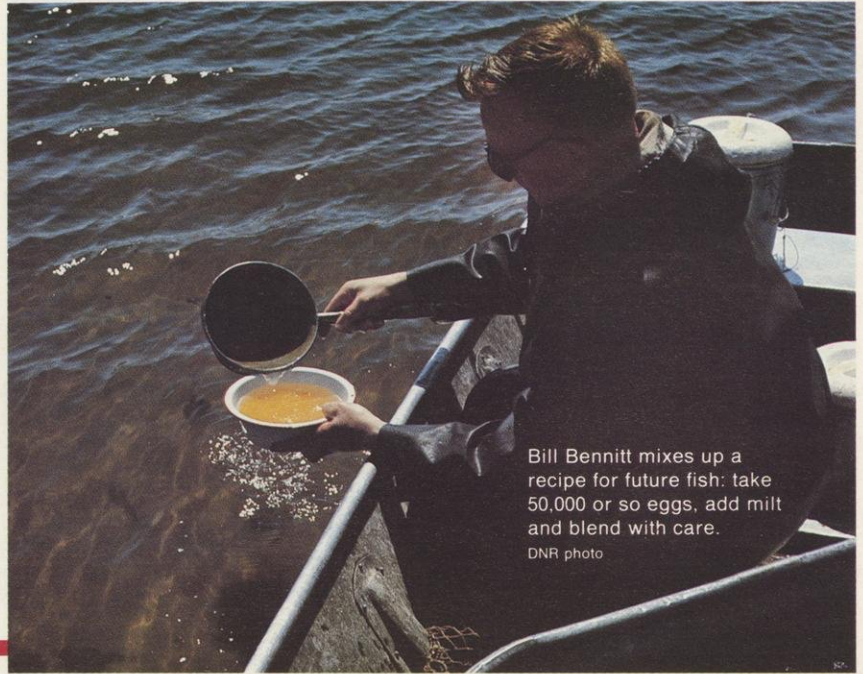
"I was a newcomer to the Division of Fisheries that spring in 1958. Even though I had cut my eyeteeth on oar handles and pulled oars when I was so small I had to reach above my head to hold them, I still looked out on that rolling mass of uncertainty with mixed emotions. Out there in that lake were 24 net sets along the shoreline.

"We were spawners, and our job was to run the nets, take spawn and release the fish. The eggs were then brought back to the hatchery, hatched, and the fry reared in ponds until fall. Then the fingerlings were distributed to various lakes, eventually to be caught by hopeful anglers.

"There were eight of us that day. As we all stood outside our trucks, us younger fellows listened with excitement as the older, more seasoned men shouted their wise counsel above the wind. 'I tell you it's too dangerous,' said one bewhiskered spawner. 'Well, the fish in those nets are our responsibility,' shouted another. 'And so are our lives,' came a quick reply. One said, 'Maybe the wind will go down. Let's wait awhile.' 'Ha,' laughed someone 'the wind blew all night, it's blowing now and I hear tell there's plenty left where it's coming from. Nobody knows when it's going to quit.' And so the talk went until finally plans were drawn, orders given, and we sprang into action.

"Four of us divided into crews of two men each, taking one boat and motor per crew. My partner hollered, 'What do you want to do?' 'I'll run the motor,' I shouted above the wind.

"So with our rain gear billowing around us in the cold wind, we grabbed ahold of our heavy wooden boat. We didn't have any of those fancy lightweight aluminum ones used today. Our boats were made of one-inch pine, and we built them ourselves. With the help of the others and a lot of pushing and shoving,



Bill Bennett mixes up a recipe for future fish: take 50,000 or so eggs, add milt and blend with care.
DNR photo

we got the boats into the water. I grabbed the five-horse motor, a reliable and highly prized piece of machinery, from the truck while the other crews held the boat in as deep of water as possible. With the boat pitching and diving, we finally got the motor clamped on the transom.

"I punched the primer a couple of times, pulled on the starter cord, and the motor roared. Using all of those five ponies, we headed into the high waves. The wind had picked up, blowing the white caps off the waves, leaving them bare-headed. The square prow of that old 14-footer sliced grudgingly through the water. It seemed like the wave troughs were far enough across to accommodate the boat from stem to stern.

"We headed down the lakeshore toward the first net, quartering the wind. Our and the other boat's job was to pull up the anchors on the nets, untie and set them free and open. The crews on shore could then pull the nets in, dumping the fish along the way. It was impossible to take spawn in that kind of weather, but if the fish weren't released they would die from wind and wave action. We'd reset the nets when the waters calmed.

"We went from net to net. I'd hold the boat stern end against the waves with that little old five-horse in 360 degree reverse while hurriedly using a spawning dipper to bail water. My partner did the net work by lying over the front end of the boat, keeping himself in by wedging his boot toes against one of the seats. In what seemed like a stretch of endless time, we finally accomplished our task and headed back to the landing with the boat full of anchors, ropes, buoys and water.

"We ran up to the landing, I cut the motor, and we shot for the beach. Cold and soaked to the skin, we thought hard about a hot cup of coffee, which was quickly offered by the shore crew.

"We later managed to get some eggs for the hatchery. There were a few nets out of the wind around the point. In the quieter waters, we pulled out and spawned the females and fertilized them with the male sperm.

"We did have better days spawning. Sometimes it just snowed, or ice froze up the nets. On warmer days, if it didn't rain, we enjoyed the spring sun. All in all, we fared pretty good."



Safer and more efficient electro-fishing—the Wisconsin way.
Photo by Gordon Priegel

The Wisconsin boat

A custom made fish shocking boat that is the prototype for fish shocking equipment all over the country was designed by Gordie Priegel, chief of DNR's Southern District Operations Section, and Donald Novotny, UW electrical engineering professor.

"Electrofishing is our bailiwick. We not only build the equipment, but are responsible for all major repairs, including adapting the Department's shockers and boats to meet any change in safety standards," noted Priegel. And that's not all—Southern District's operations crew designs and constructs all DNR shocking equipment used throughout the agency's six districts. These include boom, mini and stream shockers, backpacks and electrofishing boats.

Safety standards, or lack of them, are what precipitated Southern District's electrofishing role in the first place. That's because around 1970, the federal Occupation Safety and Health Administration (OSHA) pulled all DNR electrofishing gear off the water to meet new safety standards.

Priegel was assigned to devise safer and more efficient units. He turned to the UW for help in designing the new equipment. Then, he and Novotny, an avid angler, tackled the job of building a boat which could safely and efficiently incorporate the new shocking gear.

"Our first two designs were disasters," remembered Priegel. "Quite frankly, their maneuverability was terrible. But our third model, after minor modifications, was a success, and that basic design is still used today."

As it turned out, the US Fish and Wildlife Service was so impressed, the agency adopted Wisconsin's model and safety techniques for its own use. "The need for good, efficient equipment doesn't stop at the state line," said Priegel, "Copies of the prototypes our operations crews built are in use all over the country."



Operations crew uses space-age material to slow down Mississippi River erosion.
Photo by Gary Back

Honeycombed fiberglass

Gordon's Bay landing, heavily used by Mississippi River anglers fishing for walleye and sauger, was a problem public access site. Because of spring high water, the landing had a chronic erosion problem. Eddying waters undermined the concrete planking until it broke to expose reinforcing rods that could damage cars and boats.

Instead of rip-rapping the end of the boat access with rock, the operations crew tried a new technique using honeycombed fiberglass mats to prevent erosion—the kind used by the armed forces to build roads across beaches.

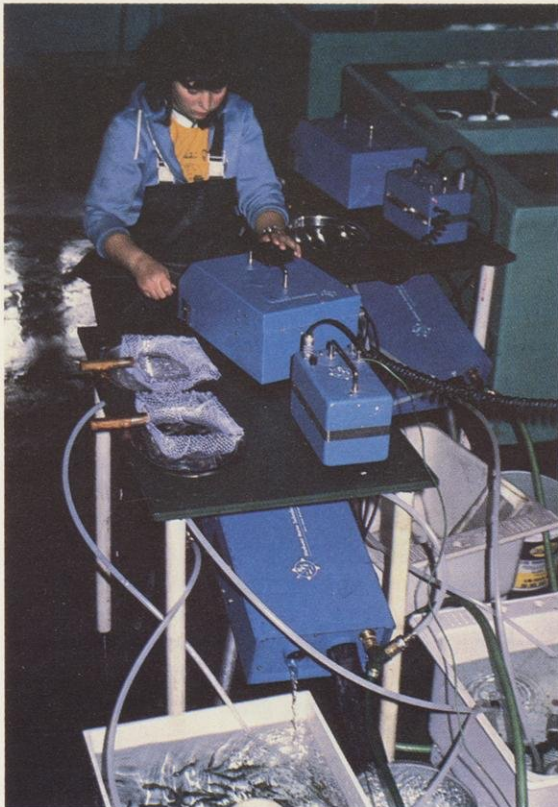
"We filled it with sand and crushed rock and ran over that with a Cat," said Elmer Simonson, district operations coordinator at Black River Falls.

Cracked and broken concrete was removed and 33 new concrete planks made by operations crews were installed to provide a surface for vehicles. The crew also resurfaced the access road and parking lot. Rip-rapping, both upstream and down completed the job. And Crawford County and the Falling Rock Walleye Club cooperated to blacktop part of the access area.

So far, high water has failed to start erosion again and crews in other parts of the state are keeping an eye on Gordon's Landing for possible use of this new technique elsewhere, if similar problems occur.

The fish manager's bag of tricks

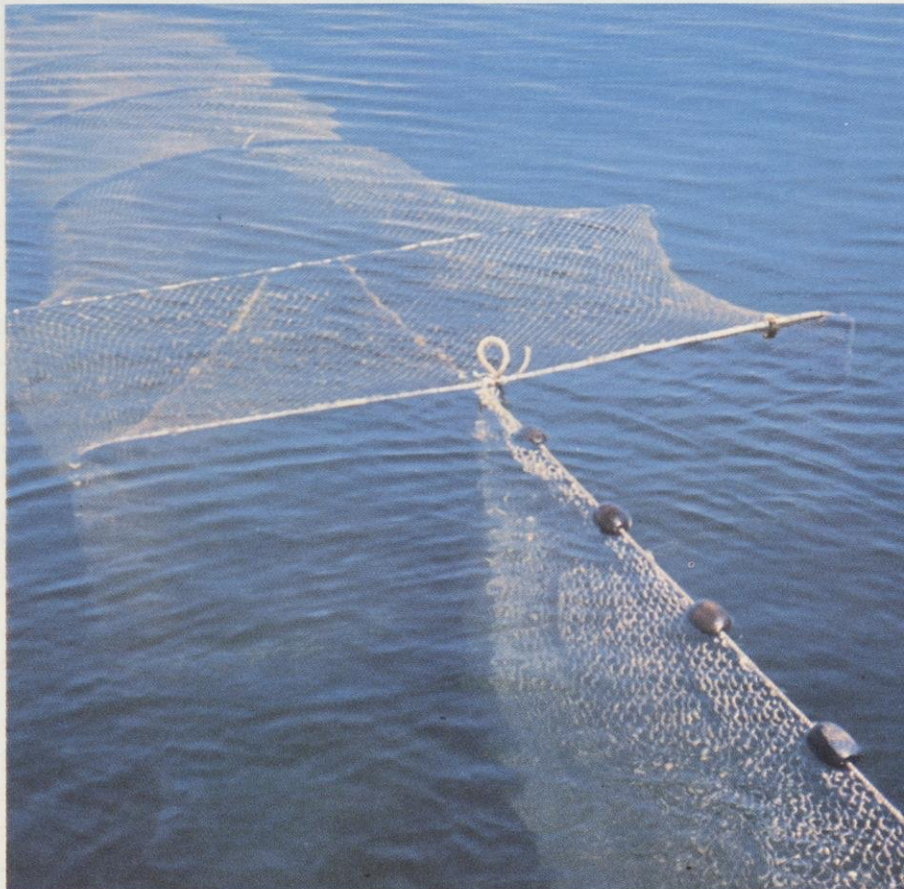
Jack F. Zimmermann,
Area Fish Manager, Wisconsin Rapids



Special equipment inserts tiny micro-tags into small fish. Later, when the fish grows up and is caught, another machine reads the tag.

Sometimes it almost seems like magic when fish managers restore angling to various waters. A variety of tools unique to the trade help them do it.

To make decisions about the future of a lake or stream, a fish manager needs certain basic information about fish populations, habitat and environmental conditions. This is obtained for whatever body of water is involved with a variety of tools which are just as symbolic of the profession as the doctor's black bag or mechanic's tool kit. Among the exotica in a fish manager's bag of tricks are boomshockers, fyke nets, flow meters, radio implanted tags, scuba gear and calculators, not to mention boats, motors and fishing rods and reels. Fishery crews often spend long, cold hours using them in all kinds of weather to gather information about things like fish growth, condition and stocking success.



Fish cruising the shore are live-trapped in fyke nets.
Photo by author

Boom, stream and backpack shockers

Shocking with electricity is a quick way to catch a lot of fish. A gasoline generator or a battery provide current which stuns fish long enough for experienced fishery workers to pick them up with dip nets. They are then placed in recovery tanks to revive, examined for management data and released unharmed. Managers are able to make population estimates, evaluate stocking programs and make stocking or habitat improvement recommendations based on shocking surveys. Boomshockers, for use on lakes and big streams, have electrodes dangling into the water from two booms mounted on the front of a boat.



Stream shocker.
Photo by author

A fishery worker nets the stunned fish as the boat moves through the water. These surveys are normally done late at night when most fish are found in shallow water and when floodlights on the boat allow better visibility.

Lightweight generators mounted in small plastic boats that can be easily pulled behind a survey crew provide power for work on small streams up to about four feet deep. Two or three workers armed with long electrodes and small dip nets use this streamshocker to probe pools and undercut banks, shocking and picking up fish as they go. Crews are insulated from electricity by rubber waders and by safety precautions built into the mechanism.

For very shallow streams or for remote areas or places where rocks, logs and brush make travel difficult, fish managers use a backpack shocker. With this device, one person wearing the proper protective clothing can walk a stream and shock fish.

Fyke nets



DNR photo

When more detailed information is sought or when shocking is not possible, the fish managers may resort to a series of fyke nets. These nets are set in four to five feet of water with 40 to 100-foot "leads" running from shore to the mouth of the net. Fish,

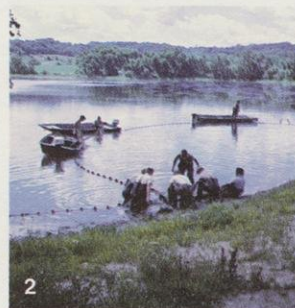
cruising the shoreline, follow the lead into the net where they are trapped but able to swim freely. Fyke nets are emptied and reset daily or more often, if necessary. The number used and the length of time they're in the water depend on the size of the lake and the type of information sought.

Dissolved oxygen meter



In many cases the difference between a successful fish population and a poor one is the amount of oxygen present in a lake or stream. Fish obtain dissolved oxygen through their gills and from there it circulates through the bloodstream. Bullheads and carp can tolerate low levels and lakes with oxygen problems often have large numbers of these species. Deep lakes which stratify into layers of water due to temperature changes often show rises or declines in oxygen at different depths. The dissolved oxygen meter measures these variations and also records temperature at various depths to give a manager needed facts about environmental conditions and fish survival.

Seines



Long, heavy-duty seines are sometimes used to survey fish populations. However, their utility is limited when a lake is deep or has excessive weed growth, submerged trees or rocks. There are also small seines which are stretched along shallow shorelines to learn more about minnow species and game fish too small to be taken with fyke nets or shockers. Small seines are often used in conjunction with other sampling gear.

Flow meter

This electronic device measures the speed of water flowing in a stream. It gives readings in feet per second and can be used for such work as measuring the flow of water below a dam to see whether the proper amount is passing through the gates. It's also used in chemical treatment to determine the exact amount needed for removal of unwanted fish.

Radio telemetry



Technology of the 80s has allowed fishery workers to follow the movements of fish by tracking radio signals. Tiny transmitters can be surgically implanted in large-bodied fish and the signals they emit picked up by special antennas and receivers mounted in boats or airplanes. A biologist can track a fish for up to 18 months with this equipment to learn about migration, spawning and habitat preference.

Scuba gear



Many fish managers have become licensed scuba divers in an effort to gain more knowledge about the species they manage. Getting directly into the fish's environment is a way to obtain information available no other way. Habitat preference, feeding habits, spawning, summer and winter

behavior and reaction to temperature and oxygen are only a few of the things that can be studied.

Toxicants

When for some reason an entire fish population requires change, fish managers sometimes treat an ailing body of water with one of two naturally-occurring compounds, rotenone or antimycin. This might be done, for example, when a lake is completely dominated by an undesirable species such as carp, or when excessive numbers of stunted panfish indicate a predator to prey imbalance. The toxicants might be sprayed onto the surface of lakes, pumped into deep waters or dripped into streams. Within a few hours of application, most fish in a target area die. Sometimes it takes a few days. Toxicants may also affect other aquatic species, but only temporarily. Usually, the resulting absence of fish predators and increase in water fertility cause their populations to explode. This helps form a food base for the new fish that are introduced after the water becomes nontoxic. Depending on temperature and other variables, this may take anywhere from a few days to a few months.

Calculators and computers

Although fish managers are necessarily outdoor types, complete with waders and wool shirts, "hands-on" management with nets, shockers and other tools is always guided by deskwork and brainwork. Behind the physical effort lies a framework of mathematics and planning.

The mathematics consists largely of population censuses and estimates, followed by analysis of trends in fish numbers and habitat quality. Obviously, there are too many fish in any body of water to count one by one. Instead, tried and true mathematical methods, often assisted by computers, are used to estimate total populations from samples taken by shocking, netting, creel censuses and other techniques. With this data in hand, sound assumptions can be made about what's really happening to the fish in a body of water. A vital part of the profession consists of mathematical analysis, followed by interpretation and sound judgement.

Planning is another important part of fish management. If direct study and mathematical estimates show management problems or opportunities in a body of water, solving the problem or improving the situation cannot be done by instinct. Instead, fish managers prepare both short and long-term plans aimed at improving state waters and showing the expected results, dollar costs and labor needs. Overall plans, sometimes called "master plans," are presented to the public for comment, and then go to the Natural Resources Board for approval.

So don't be surprised if you find your local DNR fish manager at work with calculator, pencil or computer. Numbers and plans are the real foundation of modern fish management and, combined with the rest of the tools, help keep your creel full.

1. Oxygen meter.
Photo by author

2. Seines.
Photo by John Klingbiel

3. Antenna for tracking radio tagged fish.
Photo by John Klingbiel

4. Scuba gear.
Sea Grant photo



Back Cover: Fishing on the pier at Sheboygan.
Photo by Larry A. Nielsen

Dripping toxicant into a stream is sometimes the first step in revitalizing its fishery.
Photo by author

