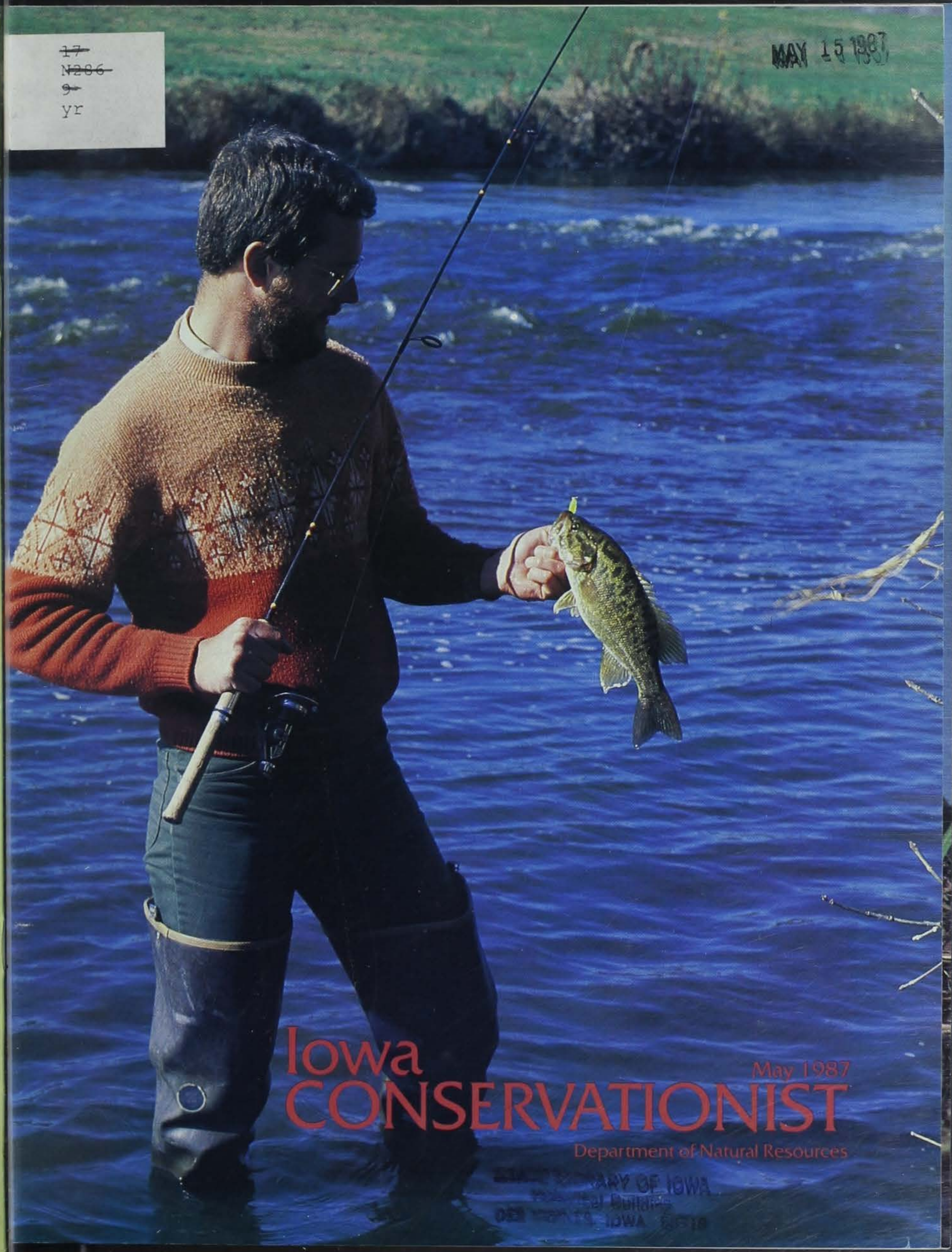

Iowa CONSERVATIONIST

May 1987

Department of Natural Resources

Iowa CONSERVATIONIST

VOLUME 46 NO. 5
MAY 1987

DEPARTMENT OF NATURAL RESOURCES

FRONT COVER: Smallmouth fishing on the Shell Rock. Photo by Lowell Washburn.

BACK COVER: Male eastern bluebird. Photo by David Menke.

SPECIAL PHONE NUMBERS
DNR Central Office
1-515/281-5145
Turn In Poachers (TIP)
1-800/532-2020
Emergency Spill Response
1-515/281-8694
Energy Hotline
1-800/532-1114 or
in Des Moines, 281-7017

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The Day the River Died

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By Lowell Washburn

In many ways, she had been unique. In fact, most folks would have been hard pressed to come up with adjectives to adequately describe her quiet grace and elegant beauty. For as long as anyone could remember, she had been held in the highest regard; and around towns like Northwood and Rock Falls, she had even enjoyed something of a celebrity status.

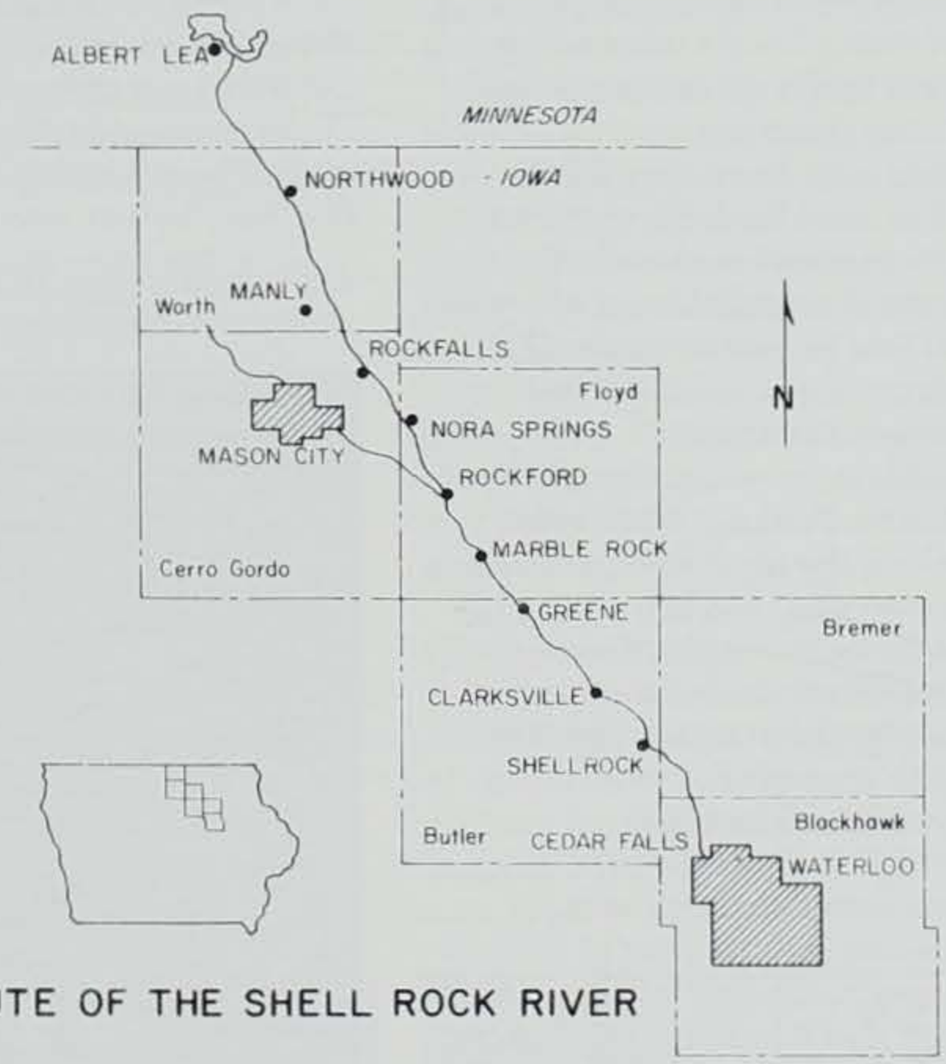
Consequently, it was no wonder that the news of her sudden illness spread like wildfire through that neck of the woods. The disease progressed rapidly and her former vitality quickly faded. At the news of her passing, entire communities mourned. Her name was the Shell Rock — a river which from her source at Lake Albert Lea, Minnesota twists southward into Iowa flowing for approximately 85 miles and touching six of the state's north-central counties before emptying into the West Fork of the Cedar River near Cedar Falls.

Lowell Washburn

Over the span of time, the Shell Rock had come to mean many things to many people. To the cluster of gray-haired gentlemen currently engrossed in a park bench checker game, she would forever be remembered as a premiere-grade fishery. As recently as the 1950s and even into the early 1960s, the stream had boasted a population of smallmouth bass to rival even those found in more famous northeastern waters.

To swimmers and canoeists, the Shell Rock was remembered for her diversity, a constantly changing stream of fast runs, noisy rushing riffles, and quiet shaded pools. To a broader element of society whose ranks included sightseers, picnickers and general rock chuckers, she was the river of fragrant evening breezes, rugged limestone outcroppings, and scenic backdrops — a place to escape and enjoy that special kind of solitude that only flowing waters can provide.

But to a younger generation, the name Shell Rock painted a far differ-



THE ROUTE OF THE SHELL ROCK RIVER

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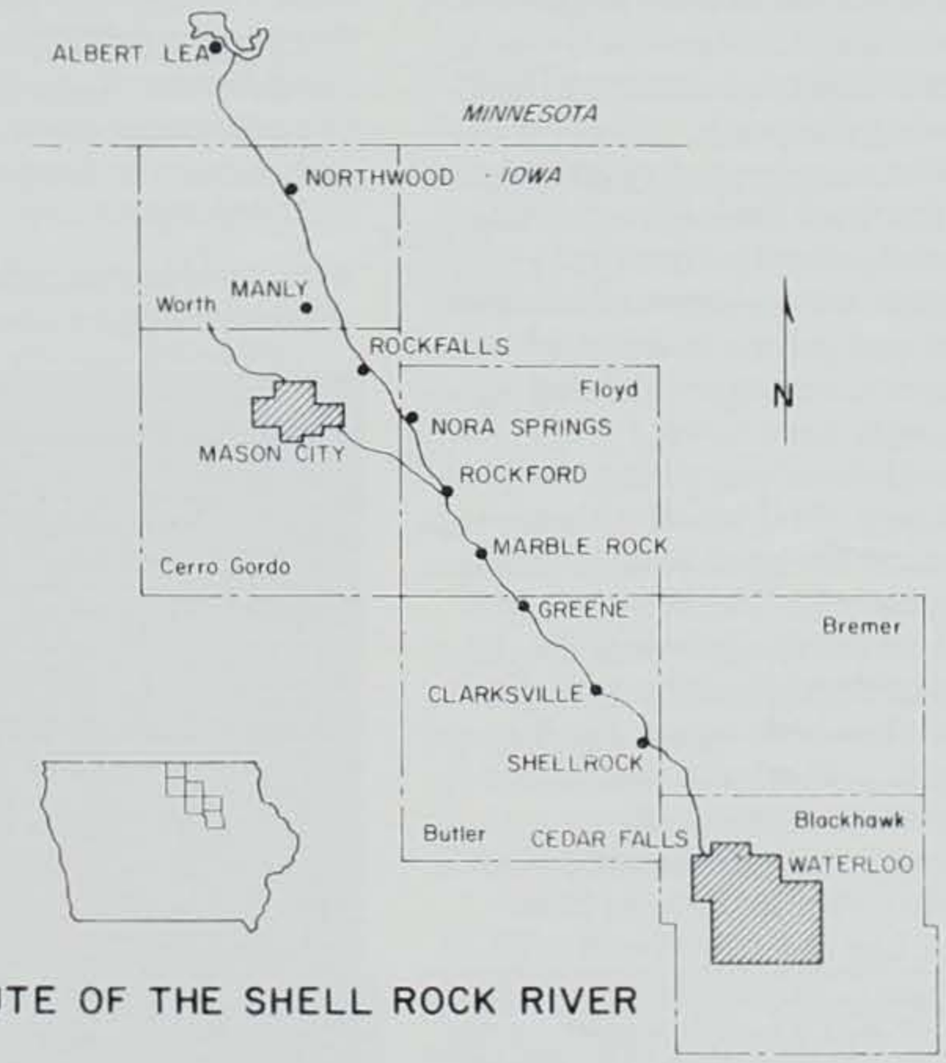


THE ROUTE OF THE SHELL ROCK RIVER

ent picture. To them, it was the river that mothers warned their children to stay clear of. A direct victim of the irresponsible disposal of municipal and industrial wastes, the Shell Rock of the 1980s had become a vile conduit whose only apparent purpose was the sluffing away of raw sewage. Her fragrance had been replaced by a stench so unbearable that at communities such as Northwood, it was said to burn the eyes.

Unlike many of the dilemmas currently encompassing the "clean water" issue, the causes leading to the Shell Rock's tragic demise were relatively clearcut and simple. The most serious contamination of the river began at her source, Lake Albert Lea. Here copious amounts of untreated or poorly treated wastes were dumped directly into the lakeby the city of Albert Lea and by the Wilson Company, a major meat packer. In effect, Lake Albert Lea had become a sewage lagoon. But although these entities were the greatest producers of contaminants entering the Shell Rock, they were by no means the only polluters. On the Iowa side, several communities including Northwood, Rock Falls, Marble Rock, Nora Springs, and Greene all made their contributions to the river's problems. The final result of these cumulative impacts was that one of Iowa's most scenic waterways had been converted into a free-flowing cesspool.

It would have been easy for the saga of the Shell Rock River to end here; a monument to mankind's short-sighted exploitation of his environment and a mute testimonial to the profound consequences that accompany such abuses.

Fortunately, however, the tale does not end here. And what has happened along the Shell Rock since the day the river died has become a positive and classic example of what can be accomplished once the ecological apple cart has been upset. But it is also a grim reminder of what those accomplishments can cost.

The initial study of the Shell Rock River was conducted by the State Hygienic Lab in the winter of 1970. In most respects, the study was so short and sweet that it barely scratched the surface. Nevertheless, it did officially document that 40 miles of the river's upper reaches, or approximately one-half of its total length, was severely polluted. Dissolved oxygen, a fundamental parameter of water quality and a base requirement for the survival of aquatic life, was below critical levels in much of the stream. In fact, at the time of the 1970 study, water samples taken from Lake Albert Lea downstream to Nora Springs averaged only 1.86 parts per million (ppm) of dissolved oxygen. Most species of sport fish cannot survive on oxygen readings below 2 ppm.

Based on these findings, it was concluded that virtually all desirable fish species such as smallmouth bass, channel catfish and northern pike had been eliminated above Nora Springs. Although the actual habitat may still have appeared suitable, it was speculated that the river could only be expected to sustain carp and other rough fish.

As degradation of the river continued to escalate, crusaders from the private sector such as the Northwood-based Committee To Clean-Up The Shell Rock began initial lobbying efforts on behalf of the improved water quality as early as 1974. It appeared, however, as if government seemed unable to respond. To place things in proper perspective, it must be realized that, at this point in time, most Iowans were probably unaware that serious water quality problems existed in our state. Although the Department of Environmental Quality had been formed in 1973, the fledgling agency was still in the elementary stages of developing a basic set of waste treatment standards.

Lowell Washburn

In July of 1977, a second and more comprehensive study was launched to examine the troubled state of the Shell Rock. This time, in addition to general water quality parameters, the expedition also searched for aquatic life forms. But by now, water quality had deteriorated to the point that the only aquatic life inventoried were those forms which were extremely tolerant to pollutants such as leaches and snails. Most insect life had perished, and even carp no longer inhabited the upper Shell Rock.

By 1978, Iowa's environmental protection mechanisms were firmly in place. A well-defined set of stan-

Dissolved oxygen is a fundamental parameter of water quality. After cleanup, dissolved oxygen levels were sufficient throughout the stream.

Lowell Washburn

Lowell Washburn

Once restocking occurred, the project was monitored by electrofishing (left). Researchers found that newly stocked smallmouth bass were doing well (far left).

dards for the treatment of municipal wastes had been adopted, and a third investigation of the river was launched. By now, the once-pristine Shell Rock had been degraded to an extent that defies comprehension. At two sampling points above Northwood, the level of dissolved oxygen was found to be 0.00 ppm. That's right, the biological demands to break down solid organic pollutants had become so great that from bank to bank, top to bottom, there was not one single life-supporting molecule of oxygen to be found. But perhaps the study's most shocking discovery was that the metropolitan discharge from Albert Lea represented a full 65 percent of the total flow of the Shell Rock River at the outfall of Lake Albert Lea. One of Iowa's most beautiful streams had now become one of her worst examples of water quality.

As public concern continued to mount, the polluted Shell Rock began to capture the attention of the media. As might be expected, no one was too eager to accept the blame for the river's sorry state of affairs, and there was a great deal of finger pointing taking place from both sides of the border.

But important hurdles were being crossed. By 1979, the city of Albert Lea was involved in the grant writing process for a new wastewater treatment facility and was soon followed in Iowa by the committees of Northwood and Rock Falls. During that same year, the Iowa DEQ (forerunner of theDNR's environmental protection bureau,) and the Minnesota Pollution Control Agency held a public meeting in Des Moines to explore the possibilities of conducting a joint effort to restore the Shell Rock River to a more desirable level of water quality. In 1983, the Albert Lea plant (which also treats water from the Wilson Company) went on line, marking the beginning of the river's restoration process.

In 1984, the DEQ joined forces with the Conservation Commission's fisheries section to begin taking a preliminary look at the "new Shell Rock." One of the main objectives of this investigation was to learn if water quality could be expected to return to levels capable of supporting fish life.

The answer was a resounding yes. The lowest level of dissolved oxygen found anywhere during the study was a reading of 5.5 ppm (less than 2.0 ppm had been recorded from the same station in the initial 1970 survey). During 1984, the river's clarity, pH levels and water temperatures were examined. The overall conclusion was that the Shell Rock had made some remarkable improvements in just one year's time. So much so, in fact, that based on these findings, fisheries personnel determined an initial project to reintroduce a population of smallmouth bass to the upper Shell Rock seemed justified.

In the fall of 1984, thirty adult bass were collected from neighboring waters and released near Rock Falls. In the spring of 1986, an additional thirty smallmouth were stocked. During the summer, the project was monitored via electrofishing techniques utilizing a backpack shocking unit. Although researchers found that smallmouth bass, including fish from the 1984 transplant, were indeed surviving in the river; other findings were even more significant. For example, northern pike were discovered to be pioneering their way up the "new Shell Rock" in concentrations great enough to constitute at least a marginal fishery. Along with the northerns appeared an excellent forage base of white sucker, shiners and other bait fish. Most amazing was the reappearance of limited numbers of channel catfish, a species quite unable to cope with poor water quality.

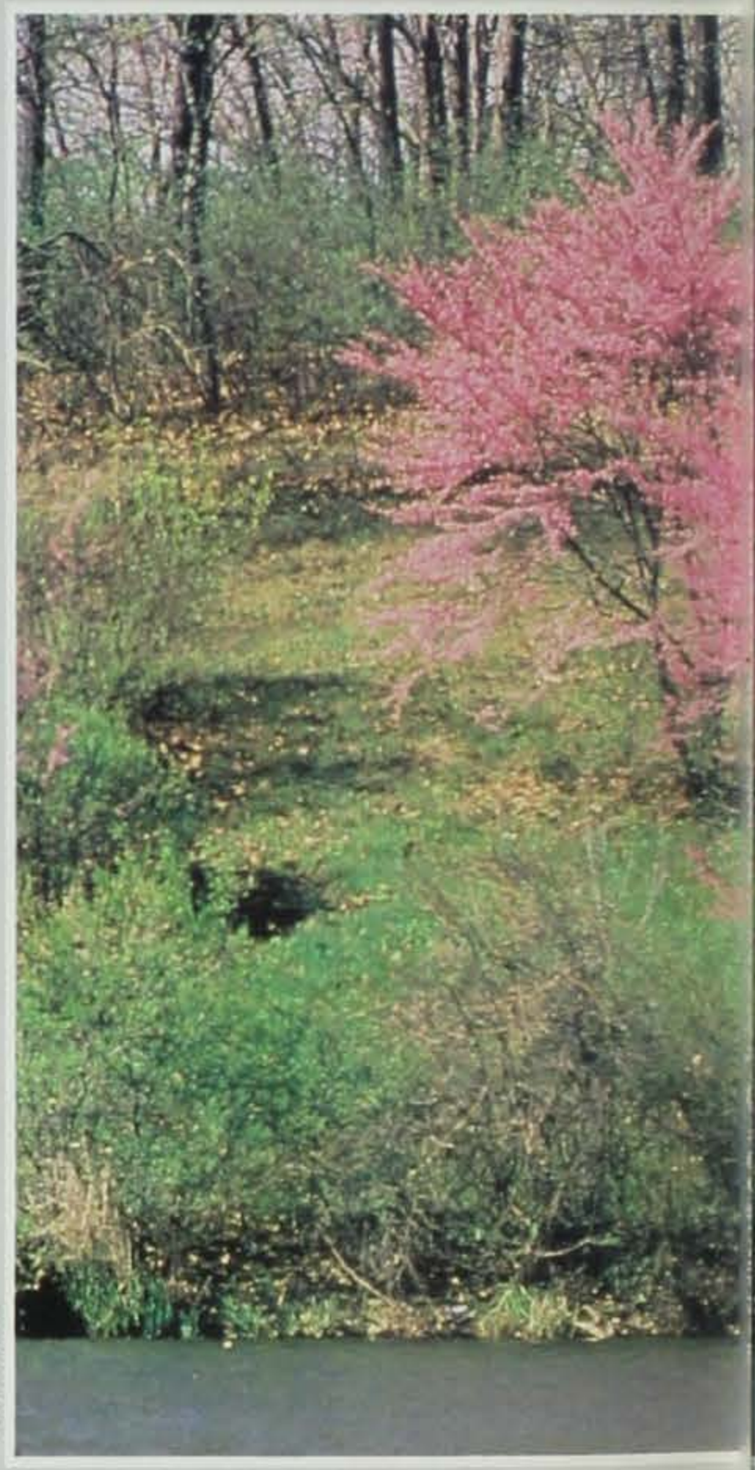
Since the clean-up of the Shell Rock River began, a total of six municipalities have dramatically upgraded or replaced their sewage treatment facilities. During 1986, there were no violations of the dissolved oxygen standard, and other water quality parameters continued to improve. During 1987, the DNR's environmental protection bureau, and fisheries bureau will continue to monitor the river's progress.

Although the river is by no means fixed, it is definitely well on the road to recovery. And as Iowans become increasingly aware of the importance of clean water, who knows, the good ol' days for the Shell Rock River may lie somewhere in the future.

Lowell Washburn is an information specialist located at Clear Lake. He has been with the department since 1984.

Wildflower of the Month

Ken Farmanek

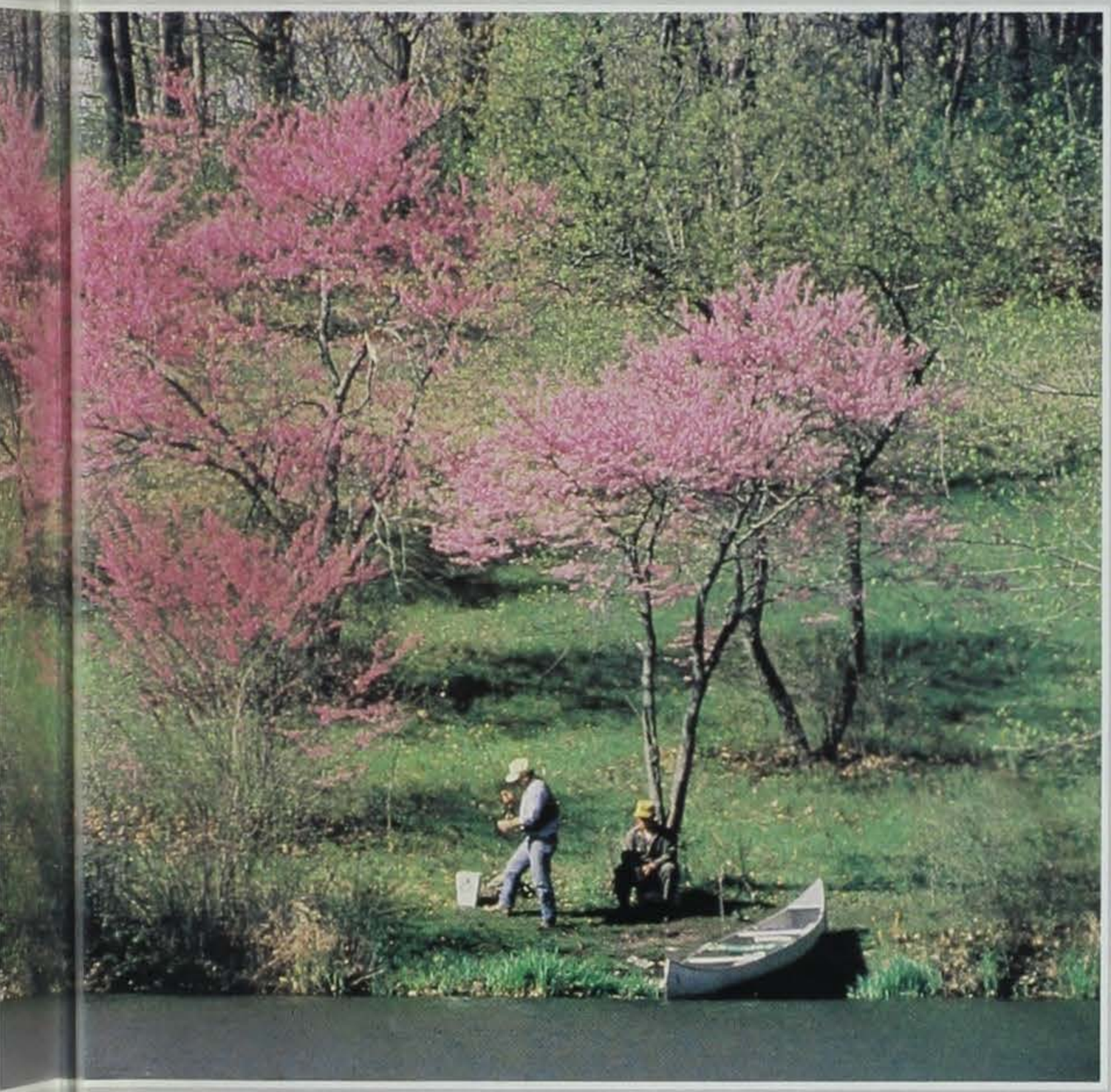


Ken Farmanek

IT'S Spring AGAIN

The raging blizzards now forgotten as one sphere warms another
Flowers burst the frozen crust with stored, primeval force

Ken Farmanek



The robin serenades
the bleak
landscape
welcoming the
gentle breezes
A woodland visitor
is touched by the
first trillium

Ken Formanek

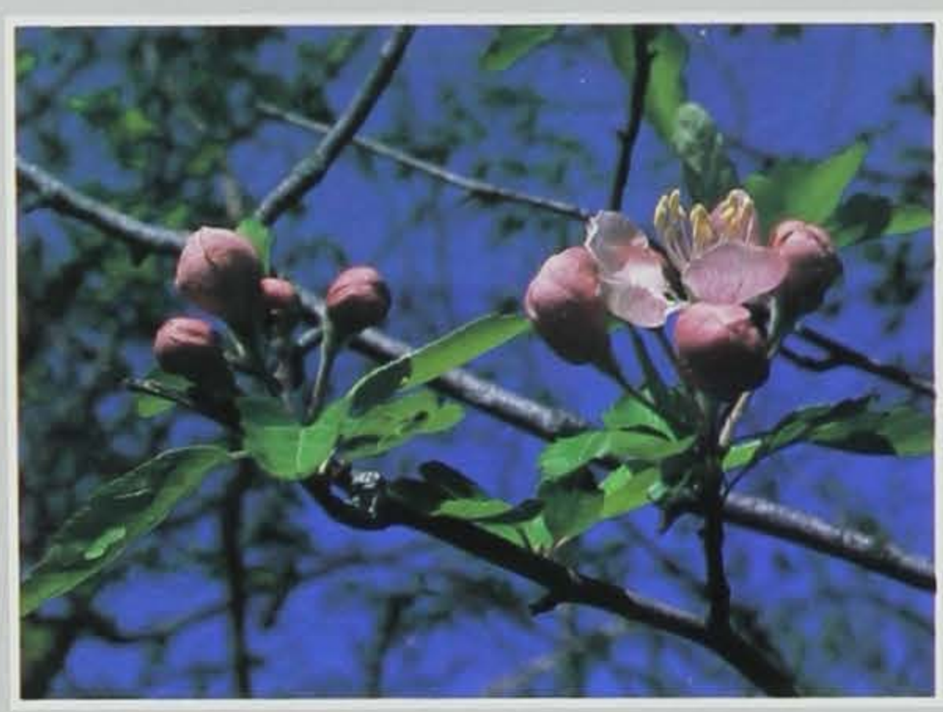
David Neuhouse

Clockwise beginning at upper left — Sweet William, redbud trees at Red Haw State Park, yellow lady's slipper, Jack-in-the-pulpit and wild geranium.

Melancholy winter has faded spring envelopes the land

Dean M. Roosa

Ken Formanek



Ken Formanek

Ken Formanek

Clockwise beginning at top — mnium moss, hepatica and wild crab.

Nature Tale For Kids

A Small Patch Of Grass

By Dean M. Roosa

Once, earlier this century, there was a vast expanse of prairie in Iowa. So much that every one who trod upon it felt there was an inexhaustible supply and, besides, it was so tough that humans could never conquer it. Later — only a few short years later — much had indeed been conquered by a brand new type of plow. At first, no one thought about saving any of this vast, inexhaustible resource. Then, a few people could see the rapid loss and raised their voice in protest — to no avail.

There lived a family on the edge of Keg Valley in central Iowa. A family that worked hard to extract a living from their small farm. In the early part of the century, there were no tractors to make life easier, no supermarket to buy the week's groceries. Instead, there were draft horses, gardens, cows to milk, fences to repair, and never ending chores. The family consisted of the father, a serious, hard-working man who had little time for anything except making a living; the mother, a reflective person who often visited the nearby prairie when the day's work was done; and two children, who often trailed after their mother when she went to the prairie to enjoy the solitude and flowers.

The prairie belonged to a neighbor who would only say "Oh, that patch of grass, I'm going to plow it one of these days." Although he had a twinkle in his eye when he spoke, it never failed to evoke a spirited response from the mother. In a hard life, this was her escape, her haven, the thing which kept her spirits up and the place where she taught her two young children the names of the prairie flowers, the grasses and the prairie birds. Often, a beautiful bouquet of prairie flowers would grace the supper table of this family. It was a big event, at least in the life of the mother, each year when the prairie lily blossoms burst forth. These, along with the lovely fringed orchid, and the long, romantic call of the upland sandpiper made the hard-working frontier life all worthwhile, or at least bearable. These were the memories the youngsters tucked away as they grew up.

The parents stayed on the land, working to maintain the way of life they loved. The children grew into young adults and moved away, seemingly forgetting all about prairie flowers and upland sandpipers. One day they got word from their father that their mother had visited her beloved "patch of grass" for the last time.

In the hustle and bustle of active lives, the prairie rarely crossed the youngsters' minds. But, the young girl, now a mother of two small boys, visited her father on the small farm by Keg Valley. She wanted to visit the prairie so her sons could see where she grew up. As she neared the grassy field, she was saddened to see most of her childhood playground had been destroyed. She found a small patch of prairie, across a small creek where the plow could not reach. As she wandered among the flowers, a flood of memories came rushing. She could see her mother stooping to admire the prairie lily, she could hear the faint call of the upland sandpiper, she could hear the owner teasingly threaten to plow the "patch of grass." She spent a pleasant afternoon there, her children playing in the tall grasses, she enjoying the sweet smell of the prairie fringed orchid and the beauty of the prairie lily. For the moment, she was again a six-year-old girl with no cares in the world.

After farewells were said to her father and the family had left for home, she could not get the prairie out of her mind. All fall and winter she felt a longing for a little spot of nature she could call her own — where she could escape the pace of life and be a little girl again.

Even then the magnificent prairie was mostly a thing of the past, and it seemed her dream would be forever unfulfilled. But she began to read about prairies, about how to reconstruct them, how to collect seeds, how to prepare the land. She did all the things the books told her to do, and soon a piece of her yard began to take the shape of a prairie. At first, the little plot of land was simply a weed patch and the neighbors scoffed, her two boys snickered and teased her about her "prairie." But with each passing year people scoffed less, teased her less because her patch of weeds was fast becoming her longed-for "patch of grass."

It became to most people's eye a prairie. It became her place of escape, a place to go when things got tough. But most of all, it became a place where she took her children to show them some prairie wildflowers, and to tell them how she could wander for hours on the Keg Valley prairie, smelling the sweet orchid, and listening to the call of the upland sandpiper. Her prairie had no orchid; her prairie had no sandpiper. It did, though, have all the other ingredients of a prairie, and she smiled as she read her children a poem by Emily Dickinson:

To make a prairie it takes a clover
and one bee,
One clover, and a bee,
And revery.
The revery alone will do
If bees are few.

Scales

IMPORTANT TO FISH AND FISHERMEN

By Bernard Schonhoff

Fish are different from people. Aside from the obvious features such as the lack of arms or legs, most fish have a covering of scales. Fishermen give little thought to a fish's scales until it is time to prepare the fish for the table, and then the scales are a nuisance which have to be removed. Can those scales be important to the fisherman as well as the fish?

Scales to a fish are a protective covering, a flexible armor that helps protect the fish from the many hazards they encounter daily in their aquatic world. Fish do not hatch with their scales on, but shortly after hatching, the scales are formed. Actually, only a small portion of the scale is exposed, the majority of the scale remains embedded in the edpidermis. In this hidden portion calcareous ridges known as circuli are layed down. These circuli are somewhat like grooves in a phonograph record. What makes the scales so interesting is that these ridges are not laid down in a random pattern, but are deposited so they actually record the pattern of growth which the fish has experienced.

Since fish have indeterminant growth or continue to grow throughout life, their scales must continue to grow or a fish would literally "bust its buttons." As the scales continue to grow, the circuli continue to be formed. If the fish is growing rapidly, the spacing between the circuli is farther apart than if the fish is growing slowly.

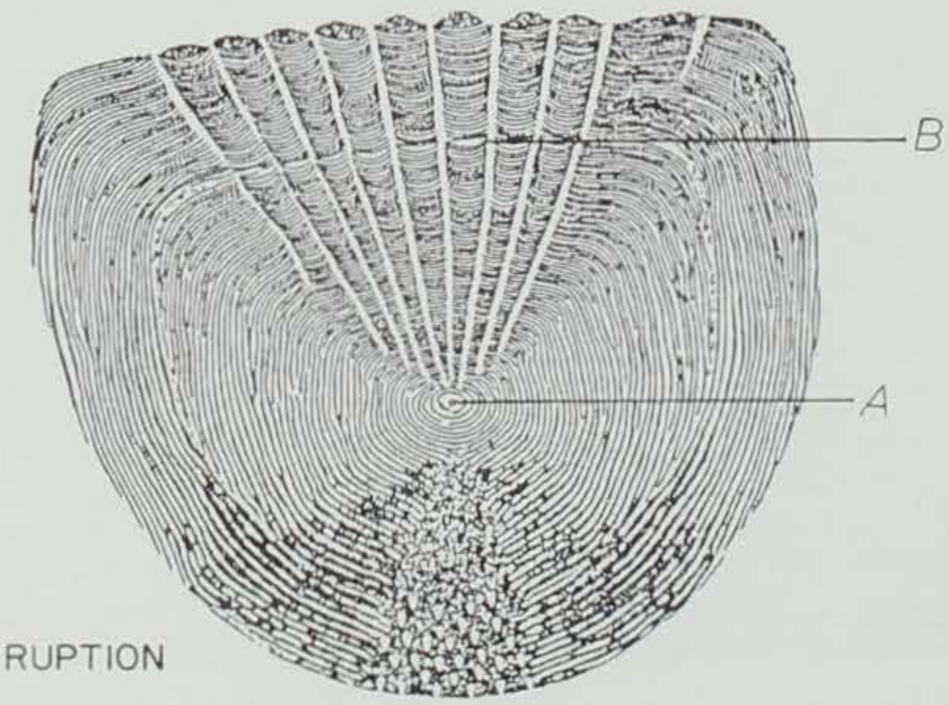
How fast a fish grows is determined by several factors such as the amount of food that is consumed or water temperature, since a fish's metabolic rate is dependent on the temperature. The warmer it is, the higher a fish's metabolic rate. Therefore, in warmer water it can grow quicker (up to a certain temperature which approaches the lethal temperature for the fish) as long as a suitable supply of food is available. Fish generally stop growing when the temperature of the water is below 50 degrees, although this varies with the species of fish. What does all this add up to? First, it means that fish do not grow in the winter when water temperatures drop too low. Second, when a fish grows slowly, as in the spring when food may be hard to come by, the distance between their circuli are small. Whenever food is abundant and temperatures acceptable, the distance between circuli are greater. Using this pattern of growth, fishery biologists are able to determine the approximate age of a fish.

Let's look at a typical scale and see what it tells us. The scale on this page is from a largemouth bass. A plastic impression of the scale was made so that the image could be magnified and projected on a screen. Start at Point A, this is the focus. This portion of the scale does not contain circuli (ridges) and is part of the scale first put down. During the months after hatching, the fish lays down several circuli. As winter approaches this slows down, and during the winter it stops. That is what the short interruption marked B is in the picture. The next spring as water temperatures rise, the fish will start to grow again. Shortly after it resumes growth it will lay down its first circuli for the growing season. This first new circuli has a special name — it is called annulus. This annulus marks the beginning of a new growing season, and the fish is now considered a one-year-old fish (or yearling), as opposed to a young-of-the-year. This same process is repeated every year as the fish becomes older.

Actually, any bony part of a fish can be used to determine age, but if scales are available they are normally used since they require little preparation and do not involve killing the fish. However, in some fish like catfish, scales are not present. In these cases, one of the spines or a piece of the vertebral column or an otolith (a bone in the inner ear) is used.

Being able to tell the age of a fish seems to be a rather significant accomplishment for a lowly scale which no one wants. But that is only the beginning of the story. By measuring the fish when the scales are taken and then measuring the distance from the focus to each of the annuli and the edge of the scale, biologists are able (through the use of statistical procedures) to determine how long the fish was when each of the annuli were formed. This enables the biologist to determine how well the fish has been growing throughout its life. Now we know not only how long a fish is when we catch it, but also how long it was when it was one, two and three years old.

The next time you are cleaning a mess of fish and mumbling under your breath about all those scales, remember how important they were to the fish for protection — and what a great story just one scale off that eight-pound trophy could tell.

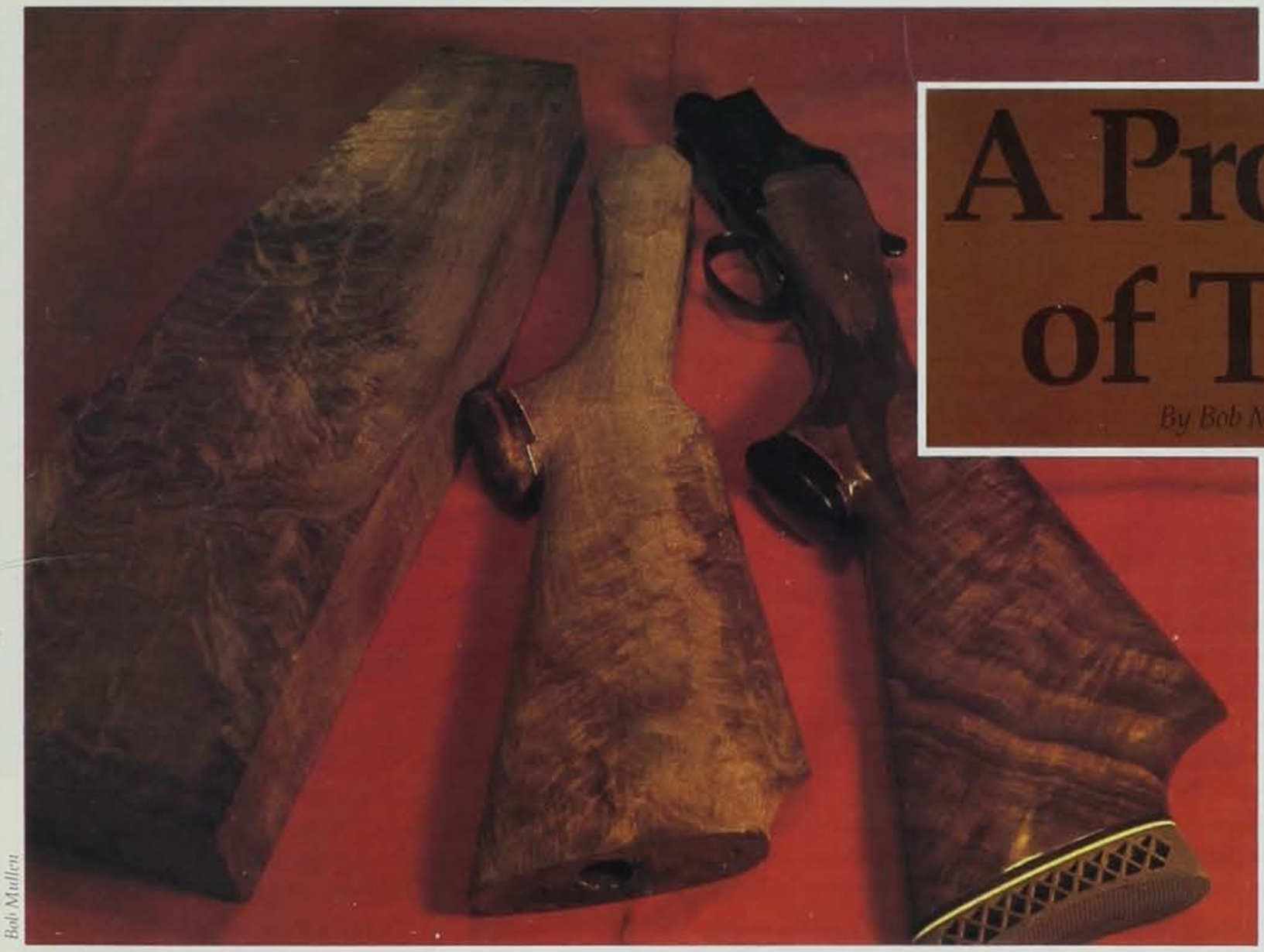


A. FOCUS
B. WINTER INTERRUPTION

Bernard Schonhoff is a fisheries biologist located on the Mississippi. He holds an M.S. degree from the University of Missouri and has been with the department since 1985.

A Product of Time

By Bob Mullen



Bob Mullen

An experienced stock-maker can look at a rough blank and see the finished product.

Most shotgunners have probably never considered the great amount of time that is wrapped up in the making of their shotgun's stock. Very few shotgunners, other than competitive trap and skeet shooters, ever give much consideration to the importance of how a proper fitting gun stock can improve their shooting. Unless the wood in a gunstock has a unique grain pattern to enhance its appearance, we never give a second thought to this part of the gun.

Most gunstocks have, until recently, been made of walnut wood. Standard production grade shotguns have had their gunstocks made from rather straight-grained American walnut. Some firearm company's skeet and trap grade guns may have a higher grade of walnut which has a more appealing grain pattern in its wood. Custom-made shotguns will have stocks made of high-grade American walnut, or such fancy grade walnut as Circassian, French or English walnut. The walnut tree that your shotgun's stock came from was probably 75 years of age before it was harvested. After cutting, the walnut wood undergoes special handling and care as it is prepared for being used as a gunstock.

Iowa-Missouri Walnut Company of St. Joseph, Missouri, a supplier of walnut gunstock blanks for several major firearm manufacturers and custom stockmakers, uses the following procedure in preparing wood for a gunstock blank.

The figure or grain pattern of a stock blank will depend on what part of the tree the blank is cut from. The crotch area of a tree produces a fine grain pattern, as does the base of the tree and limb drop locations which produce a unique grain pattern. The rougher a walnut tree is, the better the quality of the stock blanks which are cut from such a tree. A rough tree might have a twisted trunk or many areas where limbs have fallen, and then healed over. A straight trunk without limbs for a considerable height will produce a plain straight-grained blank. Walnut trees with what is referred to as burl or crotch wood, are best suited for top-quality gunstocks.

Walnut trees grown in Iowa produce some excellent wood for gunstocks. Iowa's rich soil and adequate moisture produce conditions for

Completing a custom stock takes special knowledge and many days of effort.

Bob Mullen

growing a tree of good quality by the time it is 75 years old.

The size of the blank for a gunstock will vary depending on whether it is to be used for a rifle or a shotgun stock. The thickness of the blank will be 2-½ inches or thicker. For a shotgun stock, the blank will be 16 to 20 inches long. Cutting a walnut blank to bring out the best grain pattern and to have the areas of required strength for the stock takes a knowledgeable person. Only an experienced stockmaker can look at a rough cut stock blank and see the finished product.

After a walnut tree has been harvested and cut into rough stock blanks, the next process is drying. This is done by drawing the moisture from the wood down to about six to seven percent. It may take six months under controlled temperature and humidity to properly dry a stock blank. Before the blank is dried, the ends of the blank are sealed. This helps control the drying process so internal cracking and checking of the wood is reduced.

Some try to hurry the drying process, but there is no way to get a good result by hurrying. Others claim they can dry a stock blank down in a few weeks by kiln drying, but such rapid kiln drying normally does not reduce the moisture content adequately, and such rapid drying also increases the amount of cracking and checking of the stock blanks. Still other people have tried to hurry the drying process by using salt on the blanks while they are being dried out. Experienced custom stockmakers always check their blanks with a drop of silver nitrate to make sure salt was not used. A stock blank which has been exposed to salt will cause corrosion of the metal gun parts that are in contact with the wood, and also cause problems in getting the stock finish to adhere properly. Allowing a blank to "air dry" can result in considerable external and internal cracking and checking of the blanks. Six months of drying under controlled temperature and humidity is the only way to properly dry blanks.

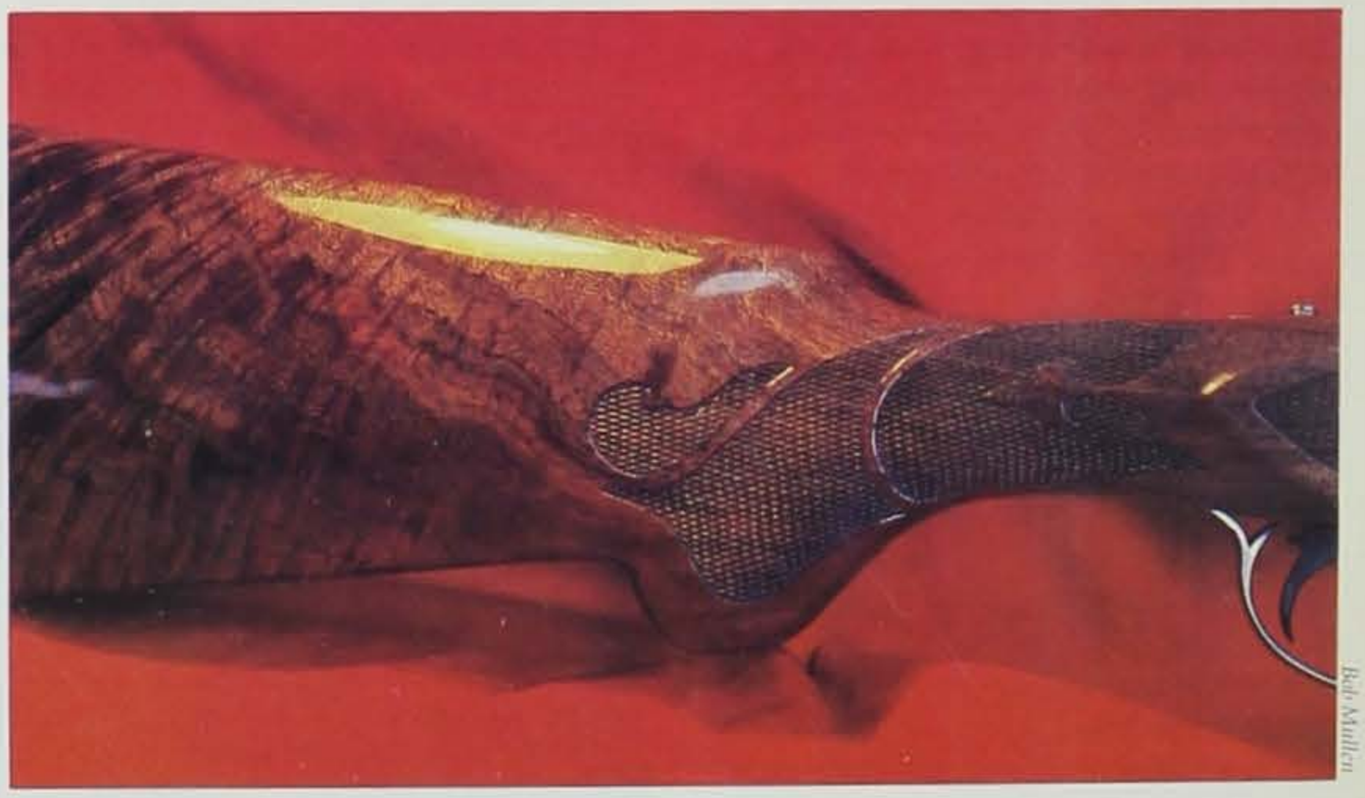
There are two basic ways to go from the rough-cut gunstock blank to the finished stock on a firearm. The first method is used in mass produced firearms made by the large firearm producers. Gunstocks on such firearms have little hand work done on them. The blanks are put on machines which turn out as many as twenty stocks at one time. Automated sanding machines prepare the stocks prior to the finish being applied. Machines are even used to apply an impressed checkering pattern on some stocks. Some manufacturers advertise hand-cut checkering on their stocks, but the quality is nowhere near that of a custom stock maker. Factory stocks are sprayed with a few coats of finish. From the rough cut blank to a finished stock may take only two days to complete. Such mass produced gunstocks cannot possibly fit every shooter. Mass production helps keep the cost of the finished project down, but the essential important fit of the gunstock to the shooter is missing. Shooters must adapt themselves to a factory-produced stock, and they may not be able to shoot consistently.

The second method by which gunstocks are made is by hand. A shooter may have a custom-fit gunstock made for their shotgun. Most shotgunners do not realize how a custom-fit gunstock can improve their shooting.

Lynn Slager of Lynn's Custom Stocks of Brandon, Iowa is a top-quality stockmaker. Each gunstock that Lynn makes is custom-fit for the individual shooter. Such a stock results in correcting shooting problems. A properly fitted stock on a shotgun acts the same as the rear sight on a rifle. When a properly fit stock is brought to the shotgunner's shoulder, his eye will look right along the top of the barrel, without the shooter having to adjust himself to the gun. A properly fitted gunstock will also reduce the effects of recoil

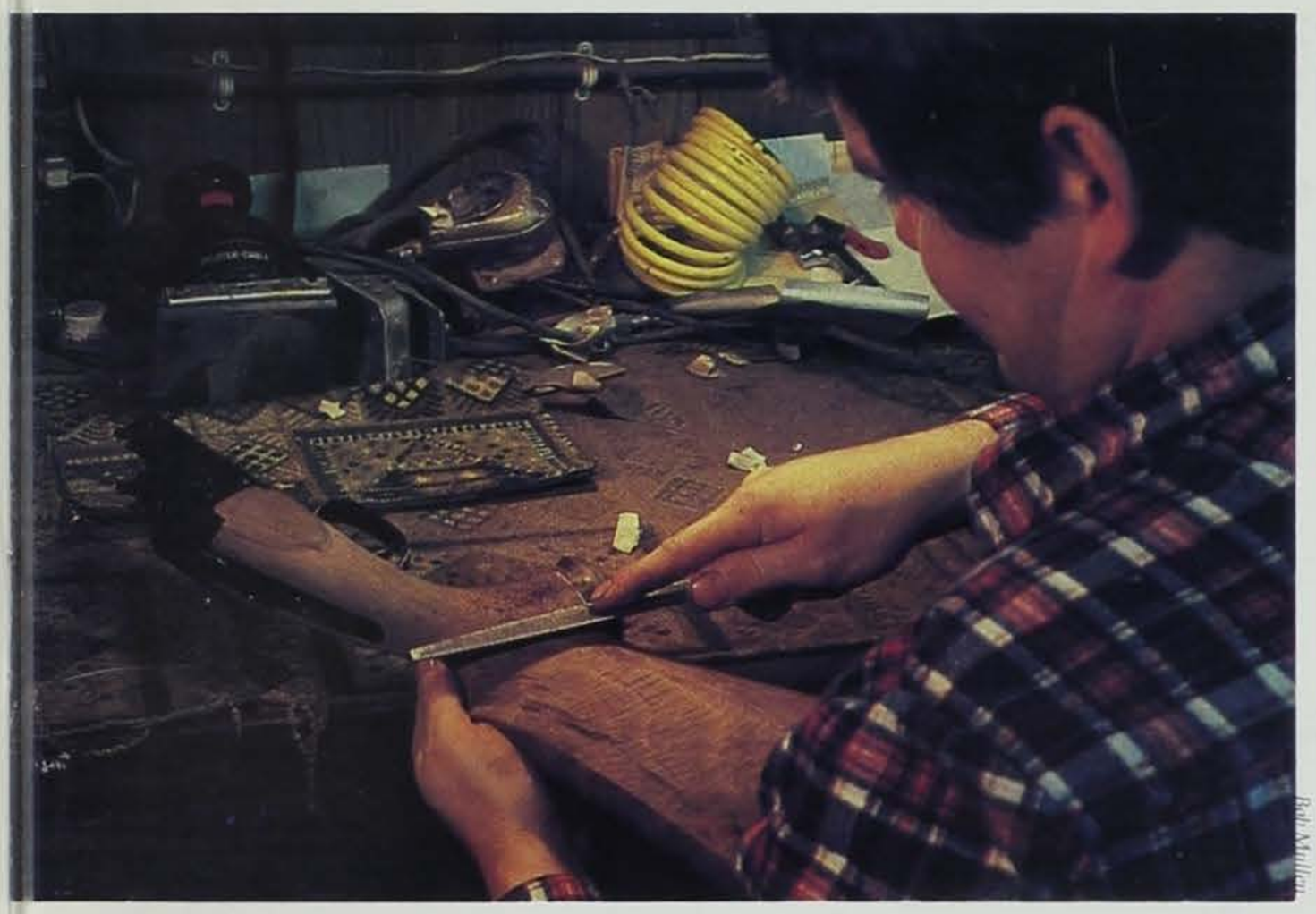
Bob Mullen

Bob Mullen



Bob Mullen

Examples of Sager's forend and pistol grip checkering — a very time-consuming process. A properly fitted custom gun stock (above) can improve shooting.



Stockmaker, Lynn Slager

Bob Mullen

felt by the shooter.

It takes Lynn many hours of handwork to turn out a completed stock from a rough stock blank. Some might think that a custom stock can be completed in a matter of a few days, but it takes much longer than that.

Let's take a look at some of the work involved in making a custom-fit stock, and hopefully clarify why so many hours are required in its production. Obtaining the quality of stock blanks that meet Lynn's standards is no easy job, and it takes time to find a source of top-quality blanks.

After a customer picks out a stock blank that appeals to him, the stockmaker gets the needed measurement for building a custom-fit gunstock that will fit the customer properly. The pattern of the gunstock to be built is layed out on the rough gunstock blank prior to any cutting. When laying out the pattern on the stock blank, the stockmaker must use the area of the blank with the straightest grain to attach the receiver, and the pistol grip area of the stock. These are two areas of stress which require a straight grain for strength. Many hours are spent inletting the shotgun receiver into the gunstock blank. It is very crucial that the metal-to-wood fit is correct. Some of the places where wood and metal contact must be very tight to prevent cracking when the gun is fired. Other areas where wood and metal meet must not bear as tightly on one another, or splitting will result.

After the inletting, the stockmaker will rough shape the stock from the stock blank. During the roughing out stage, the stock will be worked down close to its final dimensions. At this stage, the recoil pad is installed. Lynn's stocks carry a custom designed rosewood pistol grip cap which make his stocks easily recognized.

The above-mentioned steps require four to five days of work for a shotgun like a Winchester model 12 pump, and ten days for a side-by-side or over-and-under shotgun. An additional five days may be required to inlet and rough out a forend for a shotgun. Prior to the final shaping of the gunstock, the customer returns for the final fitting. Any needed adjustments for a proper fit are made at this time.

Prior to the finish being applied, the checkering is hand cut into the stock. Four to five days may be required to complete cutting a checkering pattern on the stock and forend of a shotgun. Checkering is a series of straight lines cut into the wood at the pistol grip and forend. These lines are then crossed by another series of lines cut into the wood at the correct angle to produce the properly shaped diamonds in the pattern. When properly cut, each diamond will be three times as long as wide, and sharply pointed at the top. Checkering is a very time-consuming process, as each line is cut separately and must be cut straight.

After the checkering is cut, Lynn covers the checkering with masking tape and prepares to apply the finish to the stock. Prior to applying the first coat of finish, it is very important that any oils be removed from the surface of the wood. This includes the natural oils on the stockmaker's hands. If any oils are present on the wood, they prevent the finish from adhering properly.

Ten to twelve coats of an epoxy finish are individually applied to the stock, with half of these sanded off to the wood's surface. These coats of finish were used to completely fill the pores of the wood prior to the final finish coats. The final coats are applied and polished until the desired luster is achieved. Application of the stock finish takes about six days to complete.

If you are interested in finding out more about certain aspects of the custom stockmaking field, there are two excellent books available from Brownell's at Montezuma, Iowa; Monty Kennedy's book *Checkering and Carving Gunstocks;* and A. D. Newell's *Gunstock Finishing and Care.*

You may never decide to have a custom fitted stock made for your shotgun, but even if you use a factory produced stock, it is helpful to be aware that gunstocks are a product of time.

Iowa is fortunate in being recognized as a state that produces quality walnut wood as one of its natural resources, and having a few top quality stockmakers such as Lynn Slager.

Bob Mullen has been a fish and game conservation officer since 1971. He holds a B.S. degree from Northwest Missouri State University.

WARDEN'S DIARY

By Jerry Hoilien

"WHAT IN THE WORLD HAPPENED THERE? An accident? A fire? I don't believe this!" My rider was an old friend from the middle of the state and he couldn't believe his eyes. The brown swath of dead and dying trees and leaves lined both sides of the road leading past Volney towards the beautiful Yellow River area. "Who did that?" He was staring at a thirty-foot high dead tree in the fenceline. "That's our 'weed control'," I tried to explain, "The county feels they have to do this, I guess!"

"I can't believe anyone in his right mind would do this to the most beautiful county in the state. We're *planting* trees down home to beautify the interstate and enhance areas. Here you've got it all, and they do *this* to it! Here I came clear across the state to enjoy this area and they've sprayed the heck out of it. Those trees aren't weeds!"

I'm fed up trying to make excuses lately. Almost everyday from one to a dozen people jump me about "that awful spraying." "What can you do about it? What does it do to wildlife?

Jerry Hoilien

Results of roadside spraying.

What about the drift? The run-off? Doesn't that find its way into the trout streams? The water supply? Won't that kill fish? Can I safely eat the fish after they've absorbed that stuff? What is that stuff, anyway? Agent Orange? That's what it looks like! I thought they banned all that? Just exactly what is the affect of all that junk being dumped on our land?"

They're right. It is our land, our water, our fish and wildlife, and our health — whether it's being held in trust by the county, the state, highway commission, an individual or what. In the greater sense, it's everyone's responsibility to see that it is not destroyed, but conserved for future generations. Good stewardship is required of all agencies and individuals. No one has the right to destroy our precious heritage, including our beautiful countryside. It's way past time somebody said, "STOP! FOR OUR SAKE - STOP!"

And even "private property" is not safe from the wrath of the sprayer. At Applesprings we planted our garden early this spring. All the kids came home to help that weekend. Even the grandkids helped dig and plant. The older ones ran the roto-tiller and carried the peatmoss and manure, while the little ones carried the plants and helped carefully place and water each one. Then there came the rock garden in the front of the house. After padding down around each rock, they pushed black dirt into some of the cracks and crannies and safely secured the moss roses. With time, work and patience all our expectations were reached. Everything blossomed and grew. Fresh sugar-snap peas and lettuce, green onions and green beans flourished and produced. Tomatoes hung heavy on strong vines and the cucumbers, hiding under large green leaves, began to peek out — playing hide and seek. Cucumbers and onions are one of our early summer favorites. The brilliant array of various colored flowers welcomed friends and strangers alike to our front door. The sight swelled our chest with pride...home. Joyce would have been proud.

I arrived home early the other evening, about five o'clock, parked my vehicle in the drive and retrieved the mail. "I'll get some work done in the garden, maybe," I thought, walking towards the house. "WHAT'S THAT?" I heard the roar coming up the gravel road and saw a big fog cloud coming through the huge white oak that marks the northwest boundary of Applesprings. "OH NO! It can't be, they wouldn't!" Around the bend came the county truck, carrying huge vats and pumps, spraying like a fire engine. He shut it down when he saw me standing in the road, the milk-like material still gushing from the truck. He hollered, "County weed control!"

I won't go into the conversation that followed, the case will be in the courts. We had words, but it was too late for the garden, the flowers in the front, and I fear for the white oak and some of the apple trees. Their leaves were starting to curl the next day. The garden is only 18 steps downhill from the roadway. Fall came early to Applesprings. Unfortunately 2-4-D and Garlon are not as kind as Jack-frost. It took a lot of phone calls to find anyone who could tell me anything about the effects of these chemicals. I watched the leaves and vines shrivel and die. Brown burn-like spots appeared on the peas and beans. The tall tomato vines drooped and fell, dropping the ripening fruit to the ground. Cucumber leaves turned yellow and shriveled. It was not a pretty sight and makes a proud gardener almost sick.

At the county shed, I read the labels on the 55-gallon drums scattered around. "Do not use near gardens or domestic animals, is toxic to fish." What about my golden retriever, Bum? Will he absorb this through his paws? What about the wild turkey hen that dusted almost everyday at the edge of the tomato patch? The grouse? The songbirds? Nobody seemed to have any answers. Oh, you can ask the chemical companies, but what would you expect them to say? Everything's safe! That's what they said about Agent Orange and all the rest of the chemicals that have finally been banned — always after the damage has been done. I remember years ago, talking with a doctor-chemist at Iowa City who was in charge of checking the dead and dying birds some of us were bringing in. One of the first great blue herons we brought in came from Allamakee County. I asked him what they knew about the effects of all the chemicals.

"Jerry, we know what is *in* less than ten percent of the sprays today, much less what they'll do!" This scares me. Who is doing the checking? Where are the safeguards? Isn't somebody responsible? Somebody's got to be!

After a lot of calls and inquiries, the conclusion was obvious. The garden was gone. "Don't eat any of it, not even the underground plants. That stuff goes up and down in the plants and accumulates under the bark in trees." Its accumulative effect is being studied, according to the literature from the manufacturer. All the work, and promises and the enjoyment of watching things grow ...gone. What a waste! I pulled it all and stacked it to the side, piling the vines on top so the birds couldn't find the fruits. By the time I got to the house my head began to ache and I was nauseous. I'd been careless and only worn a tee-shirt. I took several hot soapy showers and went to bed. Doc Smith thought it might have been absorbed through my skin, "we'll have to wait and see," he said. I was better in the morning, but I was still mad.

Why do we do this? All in the name of getting rid of noxious weeds? With all the spraying, we've got more noxious weeds, it seems to me, than we ever had. But then, we keep naming more things 'noxious' every year. I asked a group once, when we were discussing "pests," to define the word. I got lots of examples: something that's *costly, destructive, bothersome, distractive, troublesome, expensive,* and on and on. When they finished, I told them that they had just described my four kids, or theirs for that matter. What may appear worthless to one person at the time is priceless to another.

I got some interesting reactions from talking to various individuals. Everyone abhors roadside spraying from all directions, even those who order it done, but still it goes on. Why? Darned if I know, but on it goes! One thing I do know, I'm mad! Nobody, but nobody has that right. I'm tired of a beautiful countryside being turned into something that looks like a Vietnam war zone. It's past time we put some common sense and respect for our environment back into our lives. How do you feel?

By Robert P. Rye

Classroom Corner

Small Animals

Frequently we read or hear the statement, "Stop and observe what is going on around you." Most of us are involved in so many things that we don't observe the slow changing common happenings around us. The following questions come from direct animal observation or evidence of them over a two-day period.

Test your knowledge of these animals to answer the frequent questions asked here at the Springbrook Conservation Education Center.

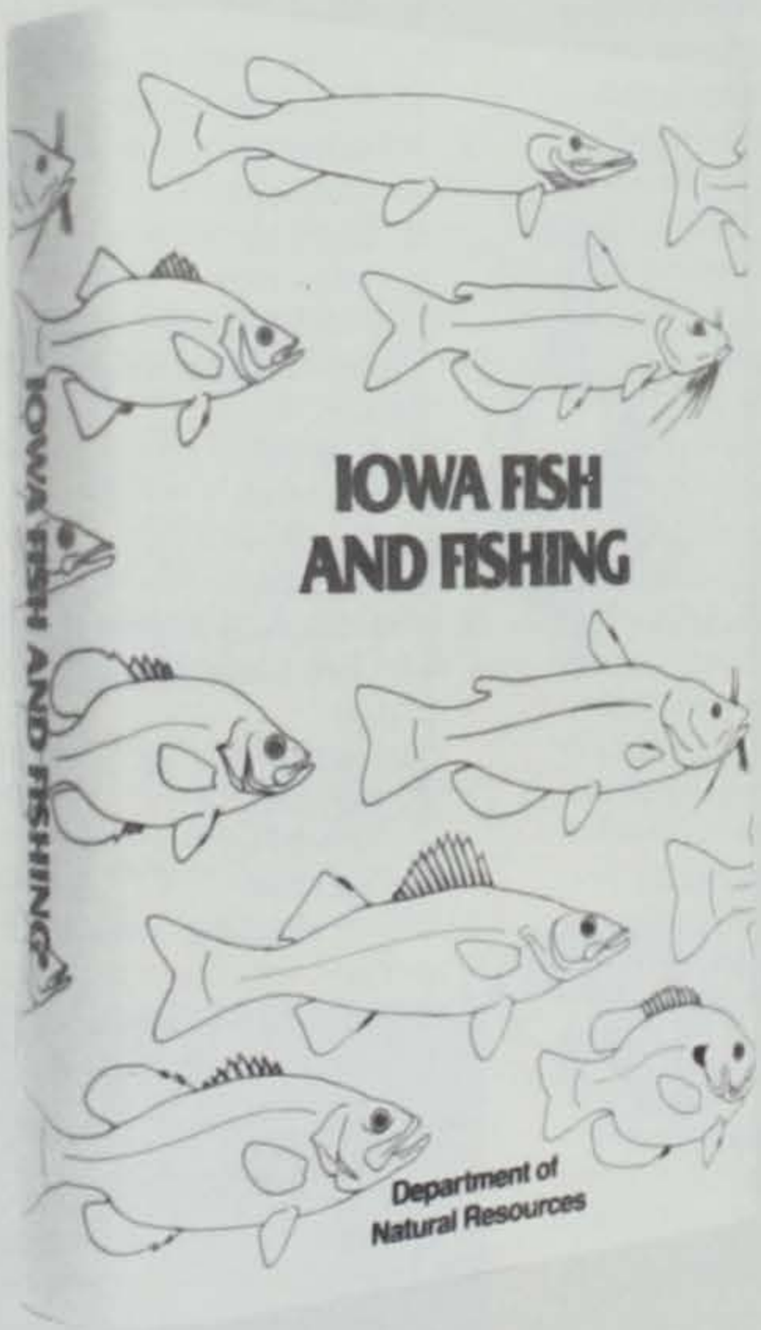
1. Which animals are most numerous?
   A. Cottontail rabbits
   B. Fox squirrels
   C. Raccoons
   D. Opossums
2. Which animals have the most teeth?
   A. Gray fox
   B. Red fox
   C. Opossums
   D. Short-tailed weasels
3. Which animals are often called ermine?
   A. Cottontail rabbits
   B. Flying squirrels
   C. Short-tailed weasels
   D. Badger

4. Which animals are subterranean?
   A. Badgers
   B. Raccoons
   C. Civet cat
   D. Bobcat
5. Which animals are credited as being unusually wily?
   A. Weasels
   B. Mink
   C. Raccoon
   D. Red fox
6. Which animals are distinctly aquatic?
   A. Beavers
   B. Gray squirrels
   C. Long-tailed weasels
   D. Striped skunks
7. Which animals are arboreal?
   A. Coyotes
   B. Red fox
   C. Muskrats
   D. Fox squirrels
8. Woodchucks belong to which family?
   A. Weasel
   B. Squirrel
   C. Rabbit
   D. Raccoon
9. This masked animal has five toes on each foot with nonretractile claws.
   A. Ermine
   B. Squirrel
   C. Bobcat
   D. Raccoon
10. This rodent has only eight teeth per jaw, a hairless flattened tail, and is found most commonly in cattail marshes.
    A. Bog lemming
    B. Muskrat
    C. Norway rat
    D. Beaver

Answers: 1-A, 2-C, 3-C, 4-A, 5-D, 6-A, 7-D, 8-B, 9-D, 10-B

Conservation Update

Iowa Fish and Fishing Republished



The popular book, *Iowa Fish and Fishing*, will be available for purchase from the Department of Natural Resources in late May or early June. First published in 1950 and revised in 1956, the new edition has been completely rewritten. The 340-page book contains 21 chapters devoted to Iowa fishing waters and all fish species found in the state along with life histories, distribution and how to catch these fish. Additional writings discuss the historical changes in Iowa's fishery during the last century, fishing tackle and equipment, bait and baiting, care of the catch, fish health and fish management. The chapter on angling techniques is illustrated with hints on where fish are found in Iowa's lakes, reservoirs and streams. One chapter depicts the best times and locations for anglers to catch trophy-sized fish.

The book contains the 18 original prints of common Iowa fish by renown wildlife artist Maynard Reece. Other important species are presented in full color photographs in natural habitat settings. Cost of the book is $15 which includes postage and handling. A limited number of these books will be printed, and will be available while supplies last.

To order a copy of *Iowa Fish and Fishing*, use the order form below. Please enclose a check or money order for the appropriate amount made payable to the Iowa Department of Natural Resources.

Please send me ____ copies of *Iowa Fish and Fishing* @ $15 each.

Amount enclosed $_____

Name: _____

Address: _____

City: _____ **State:** _____ **Zip:** _____

Mail order form and money to:
Iowa Department of Natural Resources
Wallace State Office Building
Des Moines, IA 50319-0034

Readers, Take Note!

While readers seldom review the masthead of the magazines they read, a recent change on page 2 of the *Iowa Conservationist* deserves your notice. From March, 1972 through February, 1987, Roger Sparks was editor of the *Conservationist*. At 167 issues, Roger holds the record for the longest editorship of the magazine of the 13 people who have been editor since the *Conservationist* started as a newsletter in 1938. Roger was in charge as the magazine evolved from an eight-page, black and white publication, through many intermediate stages of improvement, to its current full-color, 32-page format. Roger was in a large part responsible for those improvements and for circulation increases from the upper 30,000s to the upper 50,000s today.

Not only did Roger oversee the *Conservationist* during his period of editorship, he also coordinated much of the production of other printed materials. He probably had a hand in more than 1,000 publications in his more than 17 years with the agency.

As with any productive employee, Roger will be missed, along with his enthusiasm for and dedication to Iowa's outdoors. But we are at least grateful that in his new editorial job with Stover Publications, Inc. of Des Moines (*Gun Dog, Wing and Shot* and *Wildfowl magazines*) we see him from time to time.

In the interim before a permanent editor is selected, Robert Runge has picked up the reigns from Roger and has found a wide range of supporting staff and article providers, again due in large to the solid foundation laid by Roger.

June Is Rivers Month

June will again be celebrated across the nation as "American Rivers Month." Iowa has many beautiful rivers which can be proudly recognized during the month of June.

Governor Branstad will be signing a proclamation on May 18 proclaiming June, 1987 as "Rivers Month" in Iowa. The proclamation recognizes the many values of Iowa's quality rivers, and urges all Iowans to take advantage of their recreational opportunities.

Again this year, the Governor's office, the Department of Natural Resources and the Hamilton County Conservation Board will co-sponsor the Governor's invitational canoe trip. The trip will be held June 6 on the Boone River.

Organizations will be sponsoring events around the state to help make Iowa Rivers Month a success. Those sponsoring activities in conjunction with Rivers Month are asked to write or phone the DNR in Des Moines in care of John Stokes (515/281-8673). A calendar of Rivers Month activities will be prepared by late May.

IOWA ALL-TIME RECORD FISH

Weight	Length	County Where Caught	Date	Angler
BASS (Largemouth)				
10 lb. 12 oz.	23-1/2	Lake Fisher Davis County	5-84	Patricia Zaerr Davenport
BASS (Ocean Striped)				
9 lb. 4 oz.	29	Lake Rathbun Appanoose County	7-83	Richard Pauley Mystic
BASS (Smallmouth)				
6 lb. 8 oz.	21-3/8	Spirit Lake Dickinson County	5-79	Rick Pentland Estherville
BASS (Rock)				
1 lb. 8 oz.	10-1/2	Mississippi River Dubuque County	6-73	Jim Driscoll Dubuque
BASS (White)				
3 lb. 14 oz.	20	West Okoboji Dickinson County	5-72	Bill Born Milford
BASS (Wiper)				
8 lb. 7 oz.	25	Des Moines River Polk County	2-86	Mark Davis Des Moines
BASS (Yellow)				
1 lb. 8 oz.	13-1/2	Cedar River Black Hawk County	9-86	Timothy Dolan Waterloo
BLUEGILL				
3 lb. 2 oz.	12-7/8	Farm Pond Madison County	7-86	Phil Algreen Earlham
BOWFIN (Dogfish)				
9 lb. 12 oz.	31	Green Island Lake Jackson County	7-86	Kristin Sjobakken Dubuque
BULLHEAD				
5 lb. 8 oz.	22	Farm Pond Hamilton County	10-86	Michael Hurd Ellsworth
BUFFALO				
51 lb.	45	East Okoboji Dickinson County	4-86	Jeff Duis Sibley
CARP				
50 lb.	44	Glenwood Lake Mills County	5-69	Fred Hougland Glenwood
CATFISH (Blue)				
30 lb. 11 oz.	39-3/4	Des Moines River Lee County	7-86	Steve Proper Farmington
CATFISH (Channel)				
31 lb.	37	Gravel Pit Cedar County	6-86	Kyle Gottschalk Lowden
CATFISH (Flathead)				
62 lb.	46	Iowa River Johnson County	7-65	Roger Fairchild Coralville
CRAPPIE				
4 lb. 9 oz.	21-1/4	Green Castle Lake Marshall County	5-81	Ted Trowbridge Marshalltown
DRUM (Freshwater)				
46 lb.	38-1/2	Spirit Lake Dickinson County	10-62	R. F. Farran Clarion
MUSKELLUNGE				
38 lb. 4 oz.	48	Lake Rathbun Appanoose County	4-83	Charles L. Moen Pleasantville
TIGER MUSKY				
24 lb. 1 oz.	46-3/4	West Okoboji Dickinson County	9-83	Bryan Steven Spencer
NORTHERN PIKE				
25 lb. 5 oz.	45	West Okoboji Dickinson County	2-77	Allen Forsberg Albert City
PADDLEFISH				
107 lb.	69-1/2	Missouri River Monona County	3-81	Robert Pranschke Onawa
PERCH (Yellow)				
1 lb. 15 oz.	14-3/4	Spirit Lake Dickinson County	9-74	John Walz Estherville
SAUGER				
6 lb. 8 oz.	25	Missouri River Woodbury County	10-76	Mrs. William Buser Sloan
STURGEON (Shovelnose)				
12 lb.	33	Des Moines River Van Buren County	4-74	Randy Herrin Douds
SUCKERS (Misc.)				
15 lb. 1 oz.	32-1/4	Missouri River Monroe County	9-83	Glen E. Dittman Onawa
SUNFISH (Redear)				
1 lb. 13 oz.	10-1/4	Lake Geode Henry County	9-67	Dale Comack Burlington
TROUT (Brook)				
2 lb. 14 oz.	17	Canoe Creek Winneshiek County	3-81	Lyle Brown, Jr. Decorah
TROUT (Brown)				
15 lb. 4 oz.	31	French Creek Allamakee County	7-84	Fred Daugs Minneapolis, Mn.
TROUT (Rainbow)				
19 lb. 8 oz.	35	French Creek Allamakee County	7-84	Jack Renner Waterloo
WALLEYE				
14 lb. 8 oz.	30-1/2	Des Moines River Polk County	9-86	Gloria Eonatti Ankeny
WHITE AMUR				
41 lb.	42	Red Haw Lake Lucas County	4-81	Dick Aldridge Des Moines

CALENDAR

May 9	Birdwatch 8 a.m.	Brookside Park Story County 515/232-2516
May 9	Full Moon/Music in May 9 p.m.	McFarland Park Story County 515/232-2516
May 9	Fishing Clinic (Ages 6-14) 9:00 a.m. - Noon	Carroll Rec Center Carroll County 712/792-4614
May 9, 10	Living History Rendezvous and Natural History Display	Chichaqua Wildlife Area Polk County 515/967-2596
May 9	Birding 8:00 a.m.	Buzzard Ridge Wildlife Area Jackson County 319/652-3783
May 9	Geology Field Trip 8:30 a.m. - 2:30 p.m. $6 pre-registration	Marshall County 515/752-3150
May 9	Bird Watching Hike	Courthouse Cass County 712/243-3542
May 9, 10	Eden Valley Rendezvous and Heritage Days	Clinton County 319/847-7202
May 9	Nature Film 2:00 p.m.	Wildwood Nature Center Fayette County 319/425-3613
May 10	Spring Birding Program 2 p.m.	Swiss Valley Nature Preserve Dubuque County 319/556-6745
May 10	Bird Hike 7:00 a.m.	Echo Valley Park Fayette County 319/425-3613
May 10	Volksmarche 2-5 p.m.	Shimek Forest Lee County 319/556-6745
May 10	Mother's Day Wildflower Packet Giveaway	Lake Meyer Nature Center Winneshiek County 319/534-7145
May 10	Bluebell's, Buttercups and Brass 2:00 to 3:00 p.m.	Hartman Nature Center Black Hawk County 319/277-2187
May 11	Armchair Adventures 7:00 - 8:00 p.m.	Lime Creek Nature Center Cerro Gordo County 515/423-5309
May 12	Full Moon Hike and Campfire	Jakway Park, Aurora Buchanan County 319/636-2617
May 12	NE Iowa Groundwater — How Good, How Long? 7:00 to 8:00 p.m.	Hartman Nature Center Black Hawk County 319/277-2187
May 13	Full Moon Canoe Trip 6:00-9:00 p.m. Reservations and Fee Required	Indian Creek Nature Center Cedar Rapids 319/362-0664
May 14	House Concert Dave Para and Cathy Barton	Eagle Point Nature Center Clinton County 319/847-7202
May 15	Full Moon Walk 8:30 - 9:30 p.m.	Wilson Lake Park Lee County 319/463-7673
May 16	C.V.T. Grand Opening All Day	Chichaqua Valley Trail Jasper County 515/792-9780 Polk County 515/967-4889
May 16	Winnebago River Trail Hike 2:00 to 5:00 p.m.	Mason City Trail Head Cerro Gordo County 515/423-5309
May 16	Marvelous Migrators 8:30 to 10:30 a.m.	Hartman Nature Center Black Hawk County 319/277-2187
May 16	Birds of a Feather 8:00 a.m.	Wright County Eagle Grove Library 515/532-3185
May 16	Wildflower Wander 1:30 to 2:30 p.m.	Grammer Grove Wildlife Area Marshall County 515/752-3150
May 17	Nature Center Chicken BBQ Noon to 4:00 p.m.	Lime Creek Nature Center Cerro Gordo County 515/423-5309
May 17	Everything You Wanted To Know About Snakes Program and Hike	Swiss Valley Nature Preserve Dubuque County 319/556-6745
May 17	Birds: Films and Slides	Lake Meyer Nature Center Winneshiek County 319/534-7145
May 17	Spring Serenade 2:00 to 3:00 p.m.	Hartman Nature Center Black Hawk County 319/277-2187
May 19	Bats — Myths and Realities 7:00 p.m. to 8:00 p.m.	Hartman Nature Center Black Hawk County 319/277-2187
May 22	Evening Canoe Trip 5:30 to 9:00 p.m. Reservations and Fee Required	Indian Creek Nature Center Cedar Rapids 319/362-0664
May 22-25	Turkeyfoot Longrifles Rendezvous All Day	McFarlane Park Black Hawk County 319/342-2787
May 23	Owl Talk 8:00 p.m.	Gouldsburg Park Fayette County 319/425-3613
May 23	Monarchs and County Parks 9:00 p.m.	Jester Park Granger/Polk County 515/999-2559
May 23	Uncle Ike's Nature Club Bogs and Blossoms 10:00 a.m. to noon	Tunnel Mill Park Hamilton County 515/832-1994
May 23, 24, 25	Living Heritage Days Ongoing Demonstrations	Pioneer Village Long Grove Scott County Park 319/285-9656
May 24	Sunday Stroll 2:00 p.m. Fee For Nonmembers	Indian Creek Nature Center Cedar Rapids 319/362-0664
May 24	Campground Films (dusk)	Lake Meyer Campground Shelter Winneshiek County 319/534-7145
May 24	Campground Program — Night Tracking 8:00 p.m.	Picnic Shelter — Houston Park Palo Alto County 712/837-4866
May 24	Wild Food Foray 1:30 to 4:00 p.m.	Swan Lake State Park Carroll County 712/792-4614
May 24	Annual Buffalo Billy and His Ladies Buffalo Chip Throwing Contest 6:30 p.m.	Swan Lake State Park Carroll County 712/792-4614
May 24	Wildlife in the Park 8:00 p.m.	Gouldsburg Park Fayette County 319/425-3613
May 24-25	Memorial Day Celebration Campfire and Outdoor Events	Fontana Park Buchanan County 319/636-2617
May 25	Bird Hike 7:00 a.m.	Gouldsburg Park Fayette County 319/425-3613
May 28	Prairie Walk 7:00 p.m.	Doolittle Prairie Story County 515/232-2516
May 28-31	Iowa Ornithologists Union Meeting Pre-registration By May 15	Briar Cliff College Sioux City 712/276-3618 712/239-3954
May 29	Nature Display and Film 7:00 p.m.	Yellow Banks Park Polk County 515/266-1563
May 30	Spring Cinder Path Bike Ride Chariton to Derby	Clarke County 515/342-3960
May 30	Boone Bash River Dash 9:00 a.m. — Canoe Races Afternoon — Leisure Floats	Webster City Riverside Park Hamilton County 515/832-2564
May 30	We Care About Eagles 8:00 p.m.	Gouldsburg Park Fayette County 319/425-3613
May 30	Star Party/Animals In The Stars 8:30 p.m.	McFarland Park Story County 515/232-2517
May 30	Canoe Float Trip	Ottumwa to Eldon Wapello County 515/682-3091
May 30	Kid's Fishing Clinic 9:00 a.m.-noon	Malone Lake Clinton County 319/847-7202
May 30	Square Dance	Fontana Park Buchanan County 319/636-2617
May 31	Folk Arts In The Forest	East Lake County Park Clarke County 515/342-3960
May 31	Edible Wild Plants	Lake Meyer Nature Center Winneshiek County 319/534-7145

May

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County Conservation Board

Washington County

Take A Hike!

By Steve Anderson

Are you down in the dumps? Bored? Tired of being cooped up inside? Well then, why don't you go take a hike! We will be more than happy to tell you where to go and how to get there!

If you live in Washington County in southeast Iowa, you are in the right place. The Washington County Conservation Board currently manages almost eight miles of hiking trails in four different county areas. The trails offer something for everyone of any age group or walking ability. Therefore, grab your walking stick, and let's begin our hike.

It is May and you are enjoying the peaceful solitude of a bright spring morning. Suddenly, a loud snort just to your right makes the hair on your neck tingle. Turn slowly. Easy, now. Aim carefully ...click! You are now the proud owner of a beautiful deer, captured forever on film.

Brinton Timber is a 320-acre timber lying four miles northwest of the town of Brighton. The area is a wildlife refuge, providing habitat for a multitude of plant and animal species that are rarely seen.

Approximately five miles of hiking trails are maintained in Brinton Timber. Three different loops have been developed, ranging in length from a one-half mile trail on relatively flat terrain to a three-mile rugged trail with deep ravines and steep slopes. A set of cross-country ski tracks observed last winter going straight and ending at a large tree best defines the ruggedness of the trail, while Bent Rock cannot begin to define the park's beauty.

To continue your hike, you head to the west edge of the city of Washington to the 20 acres of woods called Hayes Timber where you lose yourself in this mini-wilderness. A small purple flower first catches your eye. It's funny how hepatica has cho-

Board Feature

Washington County Conservation Board

Hayes Timber trail in the spring.

sen to produce its flower even before expending the energy to put on leaves. More observations yields a mass of beautiful spring wildflowers as each passing day brings new varieties of blossoms to the forest floor.

Probably the most striking aspect of Hayes Timber is the sheer massiveness of the trees growing in the area. The oak trees look like giant old cottonwoods, while one walnut tree has two forks, each measuring ten feet in circumference.

It is July now, and the kids really need a day out. You take the seven-mile trip from Washington, east on Highway 92, to Marr Park. While mom and dad prepare the picnic in a nearby shelterhouse, the kids make good use of the playground equipment. After lunch, the whole family heads west for a one-mile hike. A bluebird's bright flash near the trail's beginning catches dad's eye. The trail immediately winds into a stand of pine trees. It is amazing how fresh the air smells here!

Not far down the trail, mom and dad spot an inviting bench, while the kids investigate the "mewing" in the ninebark bush nearby. Intent on rescuing the lost kitten, the kids are surprised when a little gray bird flutters to the next bush. The catbird has fooled another one!

The family heads south to the 20-acre reestablished prairie. A pheasant hen and her young brood dart across the trail up ahead, only to disappear into the tall grasses. The trail continues to wind through the prairie for awhile, eventually leading to a one-acre pond. While their parents rest, the children explore the infinite variety of life found along the pond's edge. They almost catch the biggest bullfrog ...but then muddy feet are a part of every child's summer. On the way back, along the hedgerow of osage orange, the cheery whistle of a bobwhite quail seems to say goodbye to the family and come back soon.

That first nip of fall enters the air in late September, and this morning is one of those days you always cherish. You have just made the seven-mile journey south of Washington to Sockum Ridge Park.

Just as you walk out on the pond's dike, a pair of ducks and their now adult-sized brood take to the air. The fog coming off the water almost makes them invisible, but that familiar call and the whistling of their wings has left no doubt that these are wood ducks.

Progressing north up the ridge and along the one-mile public trail, a sudden flash makes your heart race and your eyes squint for a better view.

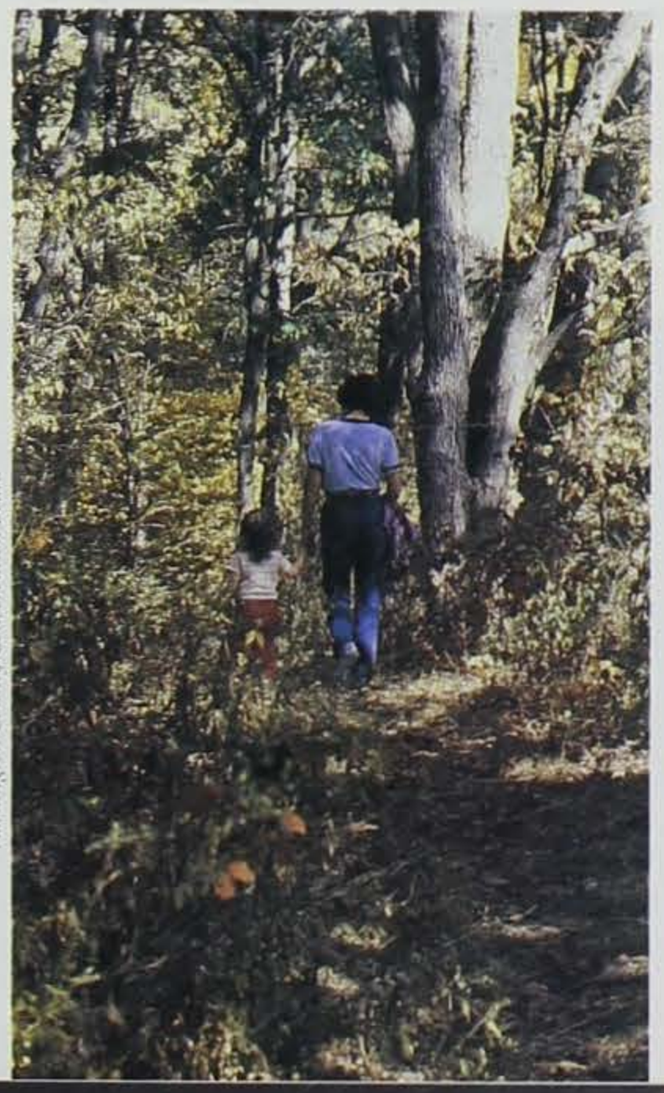
Could it be? Yes! Easy now, don't get too excited. You slowly raise the .22 caliber rifle, aim and squeeze the trigger. The rifle barks, and your first gray squirrel of the season is in the bag. You will have fine eating tonight.

Many county conservation boards in Iowa maintain extensive trail systems, providing the public with ample opportunities to enjoy the peace and solitude which only nature can provide. Check with your local county conservation board for the location of the areas and trails near you. Also, be sure to get a complete listing of the rules pertaining to the area you plan to visit. Rules regarding hunting and types of locomotion vary greatly from area to area.

Happy trails to you!

Steve Anderson is the executive director of the Washington County Board. He holds a B.S. degree in fisheries and wildlife biology from Iowa State University.

Wandering Sockum Ridge trail.



Washington County Conservation Board

BURR OAK NATURE CENTER

By Wayne Buchholtz

The interpretive program at Stone State Park started in 1981 with the development of the popular, self-guided Carolyn Benne Interpretive Trail.

In 1984, a greater emphasis was needed in the field of interpretation; therefore, a nature center was started. What came to be the Burr Oak Nature Center was a director's cabin of the former Boy Scout Camp. The cabin was remodeled and transformed into a place where children as well as grownups could come to learn and discover the wonders of wildlife, plants and all those hidden things that one generally does not notice or search out. The Center had its grand opening in August of 1984, in conjunction with the park's 50th anniversary celebration.

The Center's auditorium, complete with a screen for viewing movies and slide programs, can seat about 70 people. It can also be used for classroom activities or lectures. The exhibits in the Nature Center reflect the theme that forestry and wildlife management are essential to the quality of our lives. Bullsnakes and painted turtles can be seen in aquariums around the center showing examples of the life within the park. The grass display of several native prairie species, up to seven feet tall, and the tree display show some of the ecological items that are found in the area. Bird nests let you see what is usually at the treetops. Rocks, antlers, fungi, leaves, skulls, bones and fossils tell stories of their own and of the park.

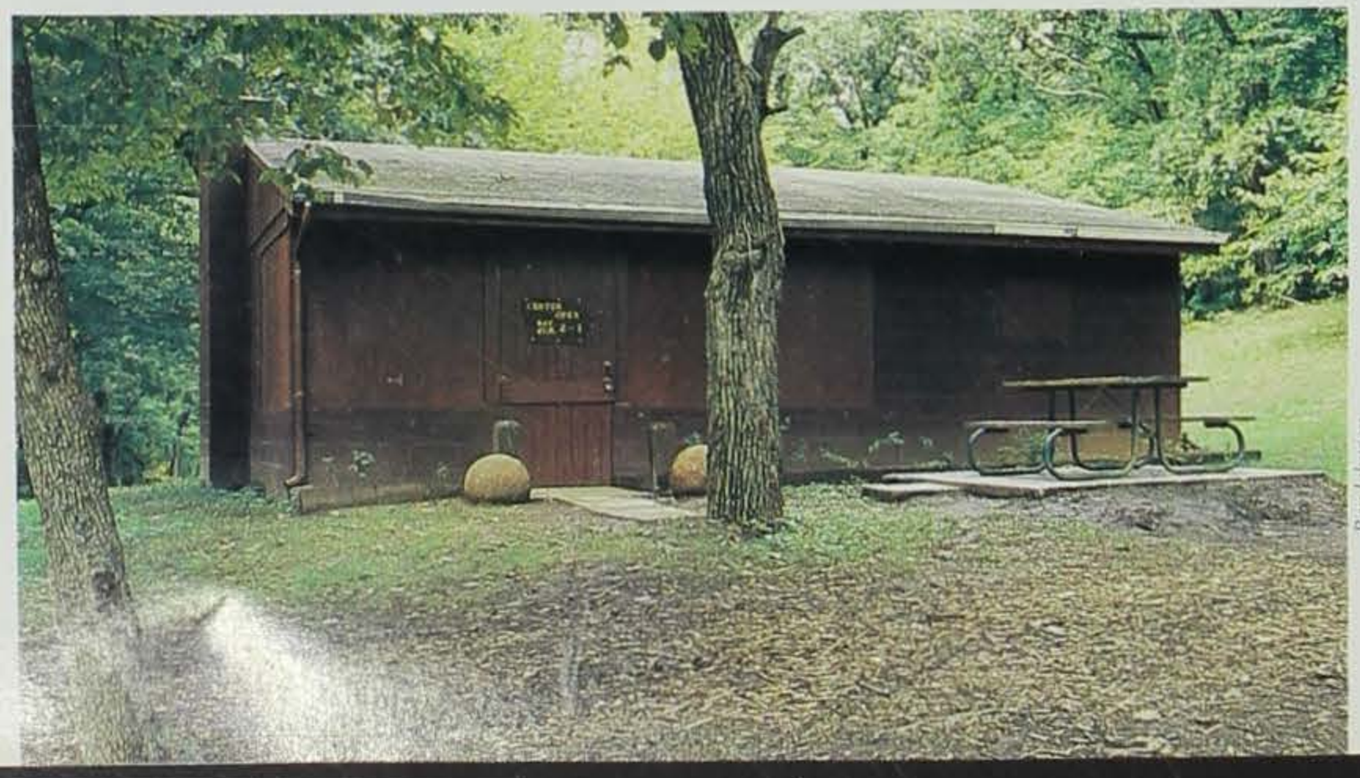
While visiting the nature center, a stroll down Buzzard Roost Nature Trail will prove rewarding. The trail starts in front of the Center and is about a quarter-mile long. It has a wood chip surface and a shelter for a rest or maybe a study area. Signs and a field brochure will explain the interesting features of the forest. You may even spot a buzzard or ten along the trail or in the air, as this is a favorite spot.

The summer part-time naturalist at the Burr Oak Nature Center assists visitors by interpreting the natural features. Trail tours and other programs can be arranged by appointment. School groups, teachers, scouts and others use the center throughout the year as a stepping ground into nature. The trees, wildflowers, lake, streams and the many different wildlife species are managed so that park visitors will enjoy them for a long time to come.

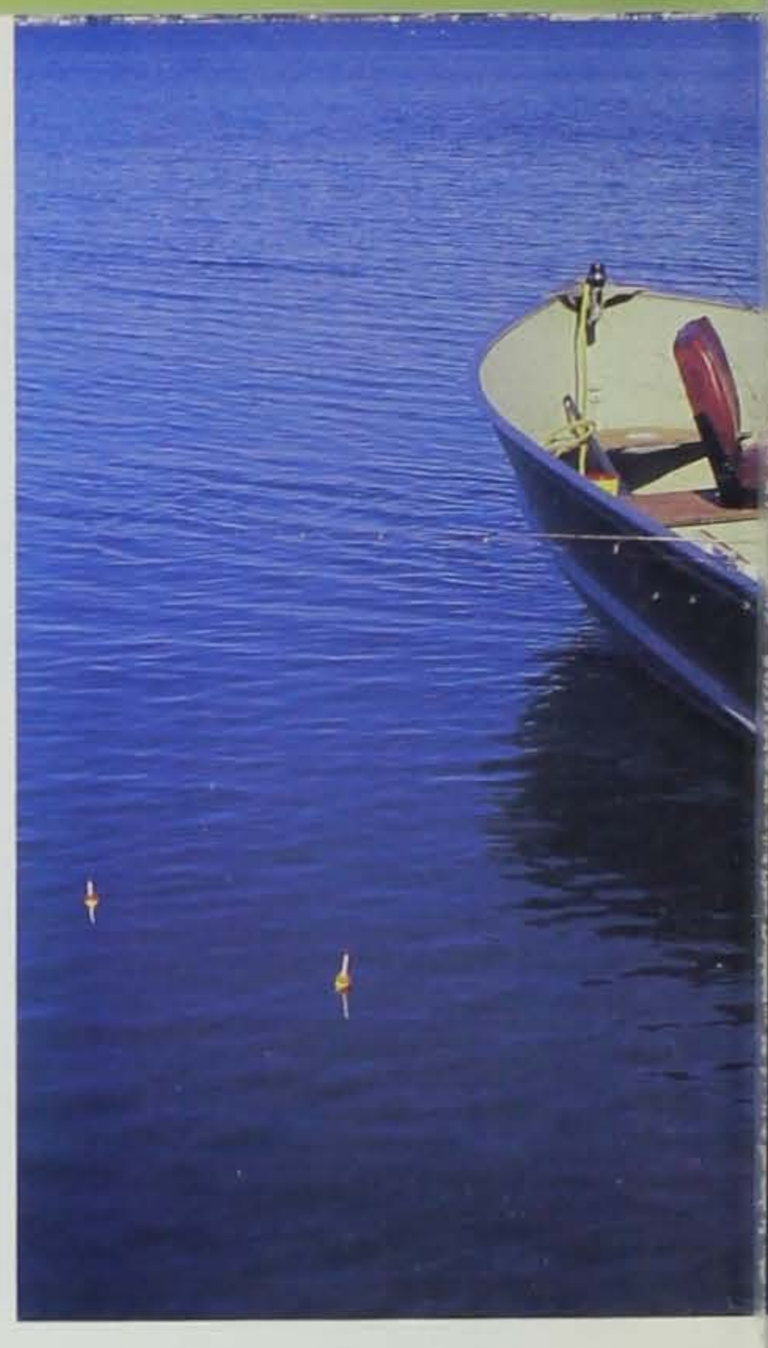
The Center is open to the public noon to 5:00 p.m. Saturdays and Sundays (Memorial Day to Labor Day) and by appointment at other times of the year. A visit to the Burr Oak Nature Center will not only help you to better understand the park, but will also give you an interest in preserving one of our natural areas — Stone State Park — the gateway to the famed Loess Hills of western Iowa. Please stop in!

Donations are not actively sought, but are welcome. The Department of Natural Resources and the staff at Stone State Park invite you to visit your nature center.

Wayne Buchholtz is a park attendant at Stone State Park. He holds a B.S. degree from Upper Iowa University. He has been with the department since 1980.



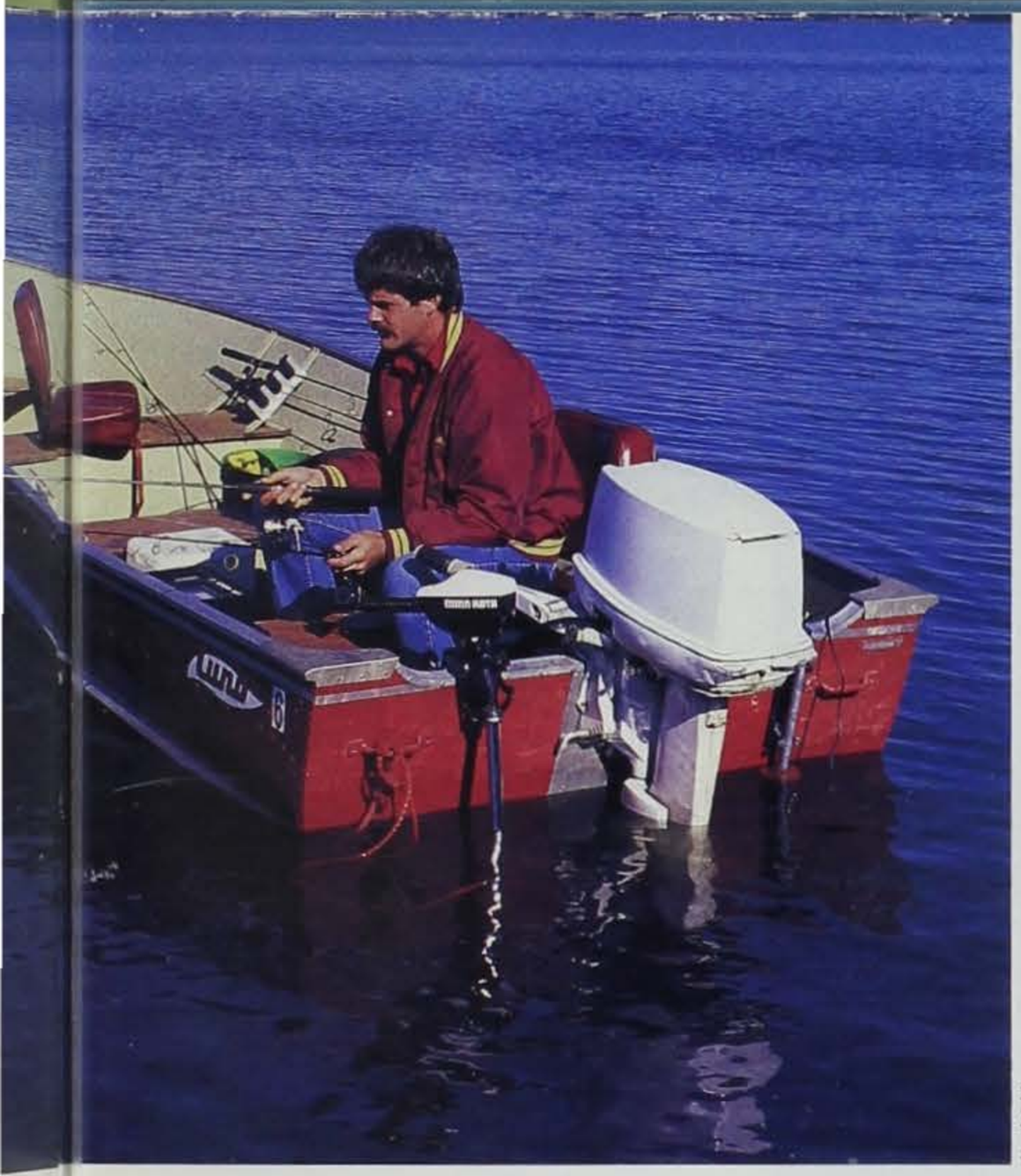
Ron Johnson



Slip-Bobber Fishing

By Jim Wahl

I was introduced to slip-bobber fishing two years ago on a trip to central Minnesota. My local guide and fishing partner informed me our quarry for the day would be walleye. I rigged one pole with a slip sinker and the other with a spinner, assuming we would be trolling or drifting. "You won't need those. We will be still-fishing with a bobber," he said. I was familiar with the area we had planned to fish and wondered if my friend had lost his marbles! How could we possibly bobber fish effectively in 15 to 20 feet of water? I soon found out. After a successful day



Slip-bobber fishing on Clear Lake (left) can result in nice catches of several species of fish. Once the line is rigged in the proper sequence, bluegills are a breeze with a slip-bobber.

Jim Wahl

with a catch consisting of walleye, yellow perch and smallmouth bass, I was hooked.

Since that initial introduction, I have fished slip-bobbers in several Iowa lakes and found the technique to be equally productive. Panfish, bass, catfish, walleye and pike have all fallen for this live bait rig.

The terminal tackle required for slip-bobber fishing is as simple as the technique. Basic equipment needed includes: bobber stops, beads, size four to six bait hooks, assorted split shot and various sized slip-bobbers. The sequence of rigging the line is most critical and should follow this order: (1) attach the bobber stop; (2) add a bead so the stop doesn't slip through the bobber; (3) thread on the bobber; (4) tie on your hook and (5) attach split shot about a foot above the hook. Once you have reached your fishing spot, slide the bobber stop up to the desired depth and you are ready to fish. I normally fish within a foot of the bottom; however, if fish are suspended you may need to fish several feet up. Slip-bobber rigs are intended to fish just above cover, therefore they seldom snag. Because of this, I recommend using four- or six-pound test monofilament line. Heavier line will not slide through the bobber as well, and makes casting more difficult.

The greatest advantage of a slip-bobber over the traditional bobber setup is the sliding bobber. Standard bobber rigs set at depths over six feet are impossible to cast because of too much dangling line. The slip bobber, however, makes it possible to cast with ease and fish at much greater depths. Landing a fish is also easier because the line can be reeled up within a few feet of the rod tip. In addition, changing depths becomes simply a matter of sliding the bobber stop up or down the line.

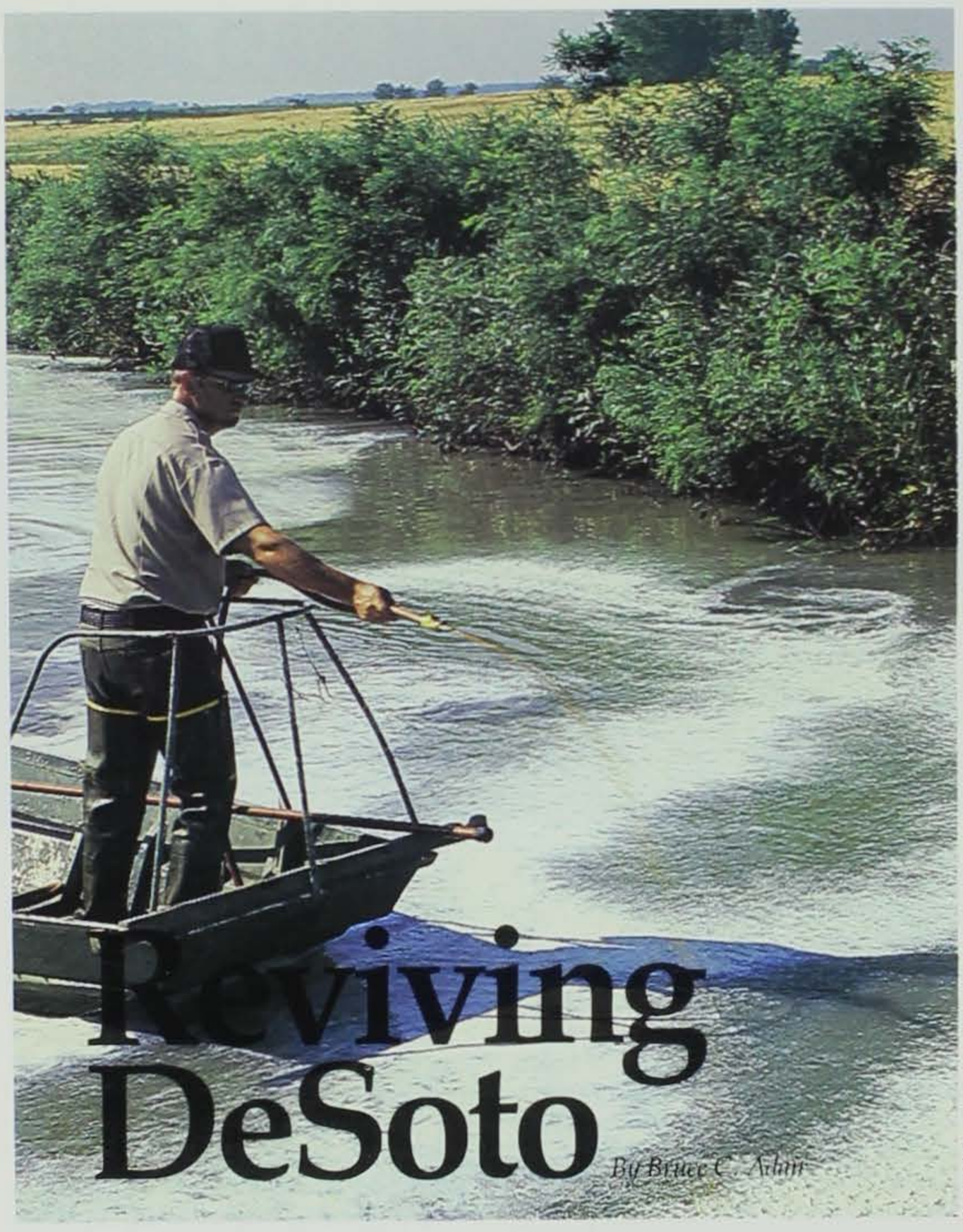
Casting a slip-bobber rig does require some practice. Snapping the wrist in an attempt to heave the bait as far as possible generally results in a tangled mess. A sidearm lob-cast allows the terminal tackle to reach the desired spot without entanglement. Pay out line after the cast until the bobber reaches the stop and sits upright. As with any bobber setup, when the float goes under wait a second or two, and then gently tighten the line before setting the hook!

Slip-bobber rigs are effective under all conditions, but are particularly productive after a cold front. Fish are normally inactive at this time and frequently refuse to chase after anything moving too fast. A bait dangling directly in front of them is often the only technique that will trigger a strike.

Slip-bobbers can also be used during the ice fishing season. Winter use is restricted to above-freezing weather or in a heated shack. In cold weather, ice build-up prevents the line from sliding through the bobber. There are advantages to a slip-bobber over a fixed bobber during the winter. Reeling fish in directly is certainly more enjoyable and effective than pulling it up hand-over-hand or backing away from the hole.

Many professional guides have gone to slip-bobber fishing almost exclusively. When questioned why, the usual response is, "anyone can catch fish with a bobber." In my mind, that is the beauty of the technique. Novices as well as accomplished anglers can have an equal degree of success fishing a slip-bobber, and in this case — simplicity brings success!

Jim Wahl is a fisheries biologist located at Clear Lake. He holds an M.S. degree from South Dakota State University and has been with the department for five years.



Reviving DeSoto

By Bruce C. Adair

Bruce Adair

DeSoto National Wildlife Refuge, established in 1959, is a 7,800-acre facility located adjacent to the Missouri River in Harrison County, approximately 20 miles north of Omaha-Council Bluffs. Within the refuge is DeSoto Lake, an 800-acre seven-mile long oxbow created in 1960 by the U. S. Army Corps of Engineers.

The main purpose of the refuge is to provide a resting and feeding area for migratory waterfowl. Up to 400,000 snow geese and 750,000 ducks may use the refuge each year.

Historically, DeSoto Lake had failed to sustain a quality sport fishery. Over the years, the lake became almost totally dominated by undesirable species of fish. Extensive stockings, numerous surveys, habitat improvements and restrictive regulations failed to improve the quality of DeSoto Lake fishing. To make matters worse, in recent years the lake became more and more susceptible to winterkill as evidenced by kills of varying severities in 1974-75, 1978-79 and 1981-82.

The summer of 1985 marked a turning point for a potential fisheries resource too long unsuccessful. DeSoto Lake became the focus of attention of the three agencies involved in its management: the U. S. Fish and Wildlife Service, the Nebraska Game and Parks Commission, and the Iowa Conservation Commission (now the Iowa Department of Natural Resources).

Over 9,000 gallons of Rotenone were applied in the DeSoto Lake renovation project *(above).* ***Approximately 99 percent of the fish killed were rough fish*** *(right).*

Bruce Adair

To these fisheries managers of DeSoto Lake, the problem was threefold: 1) eliminate the existing undesirable fish species from the lake and restock with sport species, 2) prevent the lake from contamination by undesirable fishes, 3) prevent future winterkills. These same three goals had been agreed upon many times by these same agencies since 1960. Various problems typically arose, however, to stall the project. Not the least of those problems was funding.

Funding and a total commitment from the U. S. Fish and Wildlife Service to support the multi-faceted project became a reality in 1984, only to have it put on hold once again because of high water conditions at the refuge. The inability to significantly drop the lake level had been a major stumbling block to the project in the past.

Planning continued, however, and when more reasonable water levels returned to the lake in 1985, over 60 fisheries employees from the three agencies converged on the refuge in July for the chemical renovation portion of the project. Over 9,000 gallons of the fish toxicant rotenone were applied to the lake and its three feeder streams. Boat bailers, pumps and sprayers dispersed the chemical throughout the estimated 9,500 acre-feet of water. Airboats supplied by Nebraska Game and Parks simplified the work in marshy areas. The lake and refuge were closed to the public during the week of the project. The visitor center overlooking the west end of the lake remained open, however, and attracted crowds of spectators as some 300 barrels of toxicant were applied in zig-zag fashion by the boats below. Media coverage was excellent. Newspaper and television reporters from throughout western Iowa recorded the long-awaited event.

Estimates of the kill left no doubt concerning the decision to renovate the lake. Dominated by buffalo and carp, 99 percent of the fish in the lake were nongame, offering little to the DeSoto angler.

Rotenone detoxifies rapidly in warm water, allowing restocking to begin within a few weeks of the kill-out. To date, over four million game fish have been reintroduced into the lake. Crappie, bluegill, channel catfish, walleye, largemouth bass and northern pike will provide the majority of the angling in years to come. Flathead catfish and paddlefish have also been added, plus the ever-present bullheads which survived the renovation.

Unlike many Missouri oxbows to the north which struggle to survive because of low water levels, DeSoto typically has an abundance of water during at least some portion of the year. The combination of groundwater percolation plus the runoff received from some 16,000 acres of surrounding land typically requires the removal of water to drop the lake to reasonable levels. However, since the Missouri River is frequently higher than the lake during the navigation season of April through November, any drawdown of excess water from the lake is virtually impossible except during the winter months. To prevent recontamination of the lake with fish from the Missouri River, an electrical weir was constructed within the only outlet from the lake to the river, a 54-inch diameter gated tube. The state-of-the-art system is designed to prevent any movement of fish into the lake during periods when the tube must be open to the river.

The installation of an elaborate aeration system of 16 helixor units was completed prior to the winter of 1986-87. The system is designed following the guidelines of those used with success in the "winterkill" lakes of northern Iowa. This year's extremely mile winter did not require its use, but did allow for testing the system before the severe winters sure to come.

Population surveys conducted by fisheries management personnel from all three agencies during the summer of 1986 found a rapidly developing sport fishery. Excellent growth was noted on all species and limited angling can be expected during the 1987 season, although most will require one more season of growth. Largemouth bass from ten to 13 inches and walleye up to ten inches were collected in a late summer survey. Look for many of these fish to edge into the "keeper" category by the fall of 1987. Saucer-sized bluegills should soon show up as well.

Creel limit regulations at DeSoto are the same as those on inland lakes in Iowa. A 15-inch minimum length limit on largemouth bass also duplicates the new statewide regulation in Iowa. A 24-inch minimum limit on northern pike has also been imposed.

The combination of the removal of a large rough-fish population plus the initiation of a no-wake, five-mile-per-hour speed limit on the lake has had a dramatic effect on the lake's water quality. Anglers returning to DeSoto in 1987 will be amazed at the change. Water clarity to a depth of ten feet was common in 1986.

A third boat access to the lake is currently under construction midway between the existing ramps on each end of the lake. It will be in operation for the upcoming season and will shorten the distance to the anglers' favorite fishing spots.

Several new bait and tackle shops are in the works. The refuge personnel are anxious. The fisheries' managers are optimistic. At long last, DeSoto Lake can begin to claim its place as a quality fishing area. Southwest Iowa anglers certainly have waited long enough.

Bruce Adair is a fisheries management biologist located at Lewis. He holds a B.S. degree from Iowa State University and has been with the department since 1972.

Keeper bluegills will soon show up at DeSoto Lake.

Ken Formanek

Illustration by J. N. "Ding" Darling

WETLANDS

AN ALTERNATE CROP

By Tom Neal and Clint Fraley

It has always been a truism that an Iowa farmer simply could not afford to have a wetland or marsh on his property. Ever since the first farmers settled this area, it has been considered "good business" to drain every wetland, and get it into crop production. In fact, this reasoning has been so pervasive that some 99 percent of Iowa wetlands have already been drained.

But times change! What was good business in 1910, 1940 or 1970 may not be good business today. We no longer pick corn by hand or raise hogs as fat as possible. Perhaps we should also no longer be draining wetlands.

Let's take a hard look at the drained marsh (now a wet spot) on your farm. Nearly every farm in the northwestern half of Iowa has some. Most of these wetlands have a similar history.

Over the years they have been ditched, tiled, filled in or otherwise dried up to create more cropland. They range in size from one-quarter acre to 1,000 acres or more, but they have many things in common. It was often surprisingly easy to get the surface water off these places, but much more difficult to make them good cropland.

Even after thirty to one hundred years of farming, many of these drained wetlands are still not the best cropland. Of course, they are wetter than surrounding land, no matter how much tile they have. Because they are low and wet, they are also cold in the spring and the first place to frost in the fall. In many parts of the state, these drained wetlands are too high in lime for good crop growth. They are also likely to be cloddy when worked too wet, even though the rest of the field may be in prime condition. This results in a poor seedbed and a poor stand of crops in the wetland. Herbicides often fail to work in wet spots because the amount of organic matter differs from the rest of the field. They are also subject to flooding. This results in little or no crop growth, stuck equipment or crops which cannot be harvested.

To sum it up, drained wetlands are not the best cropland. When you consider the likelihood of late planting, poor stands, stuck equipment, cloddy soils and early frost, it may be a poor investment to try to crop some of these areas.

What are the alternatives if you decide to stop farming a drained wetland? First, make sure it really is a drained wetland by looking in your soil survey book. This book will tell you which areas were formerly marshes.

Because this land has been in crop production, it may qualify as a set-aside land under government programs. If the wetland is located on CRP (ten-year set-aside) land, all the better. Restoring a wetland will not jeopardize the payments. It is surprisingly easy to restore some of these wetlands, as anyone who has had a tile line plug up knows.

Believe it or not, there may even be money to be made by restoring a wetland. Let's take a hypothetical drained wetland and see what we could expect to gain by restoring it.

Let's say a farm has a ten-acre drained marsh which can easily be restored by plugging a tile line. What

will this be worth to you? In addition to saving the time and money on the factors mentioned above, the wetland may be exempted from property taxes. This would be an immediate savings in the amount of tax levy on that piece of land.

Second, the area can still produce some income. You can plan on trapping 50 to 100 muskrats per year from a ten-acre marsh. That is $150 to $300 per year at current prices. You could also plan on catching several raccoons and mink, earning perhaps another $150 at present prices.

Furbearers can be harvested with very little expense and during a time of year when field work is not pressing. You will not even need a license to harvest them on your property. They can give you a $30 to $45 per acre profit from this "wasteland." Does your cropland do as well?

You might gain other economic benefits from your restored wetland. If you hunt, pheasants, ducks or perhaps even a deer can provide you with many a delicious meal. As you might have noticed, meat is not free. If you don't hunt, you may be able to lease the hunting rights on your marsh to a responsible person who does.

If you consider restoring a wetland, there are quite a few people ready to help. Your local county conservation board, soil conservation service or wildlife biologist can get you started. Private groups such as Ducks Unlimited, Pheasants Forever, the Izaak Walton League or Wetlands For Iowa may also be willing to help. Dollars and cents aside, a wetland is valuable in its own right. It controls flooding, purifies water, recharges underground water supplies and controls pollution.

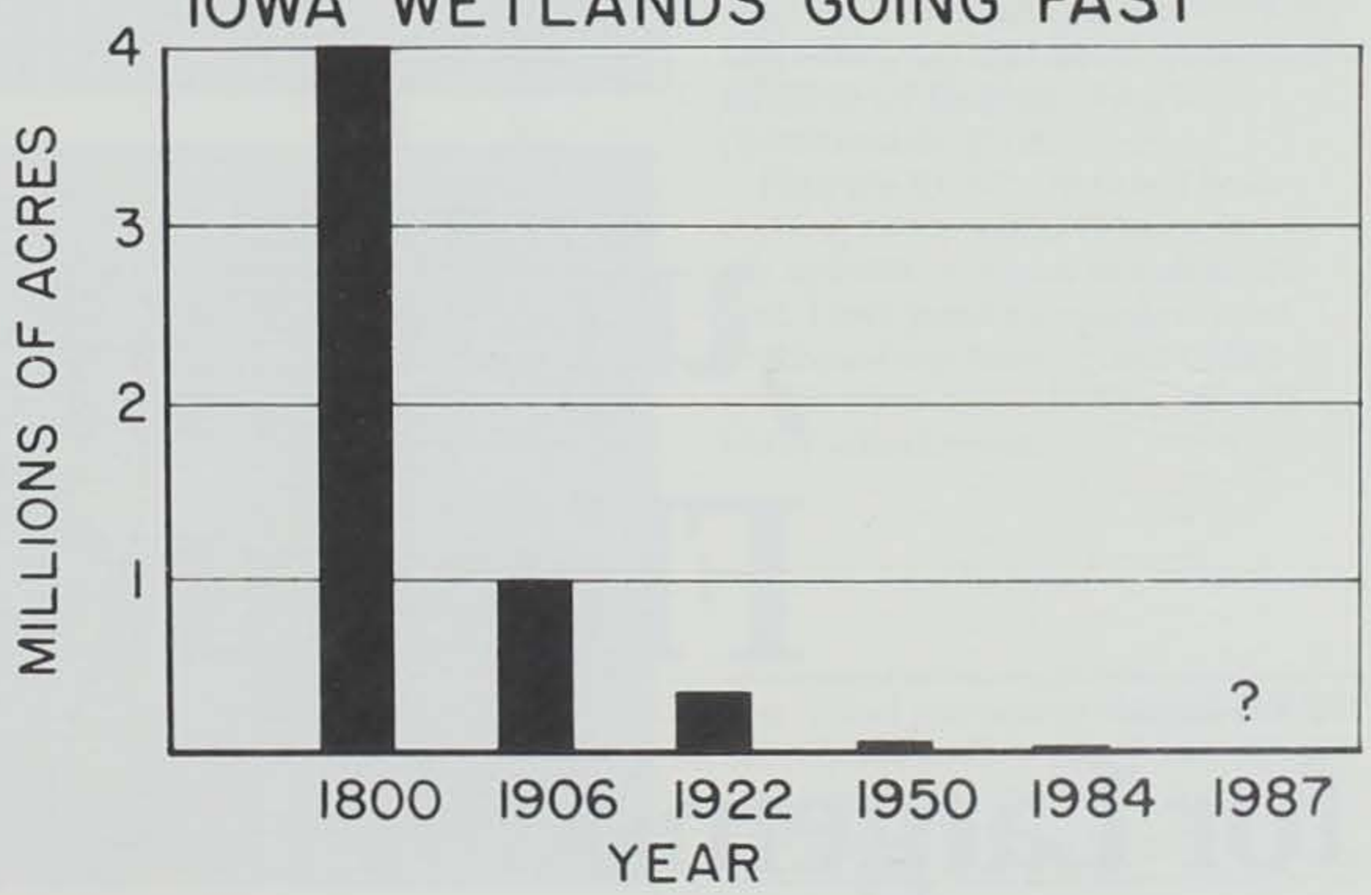
Above all, a wetland produces an astonishing variety and abundance of wild plants and animals. Many of these cannot be readily converted to cash, but they are still valuable. The sudden color of marsh marigolds, a pheasant cackling into the air, tiny ducklings following their mother, the song of a meadowlark on a June morning — these delights and many more can be yours again if you restore that wetland!

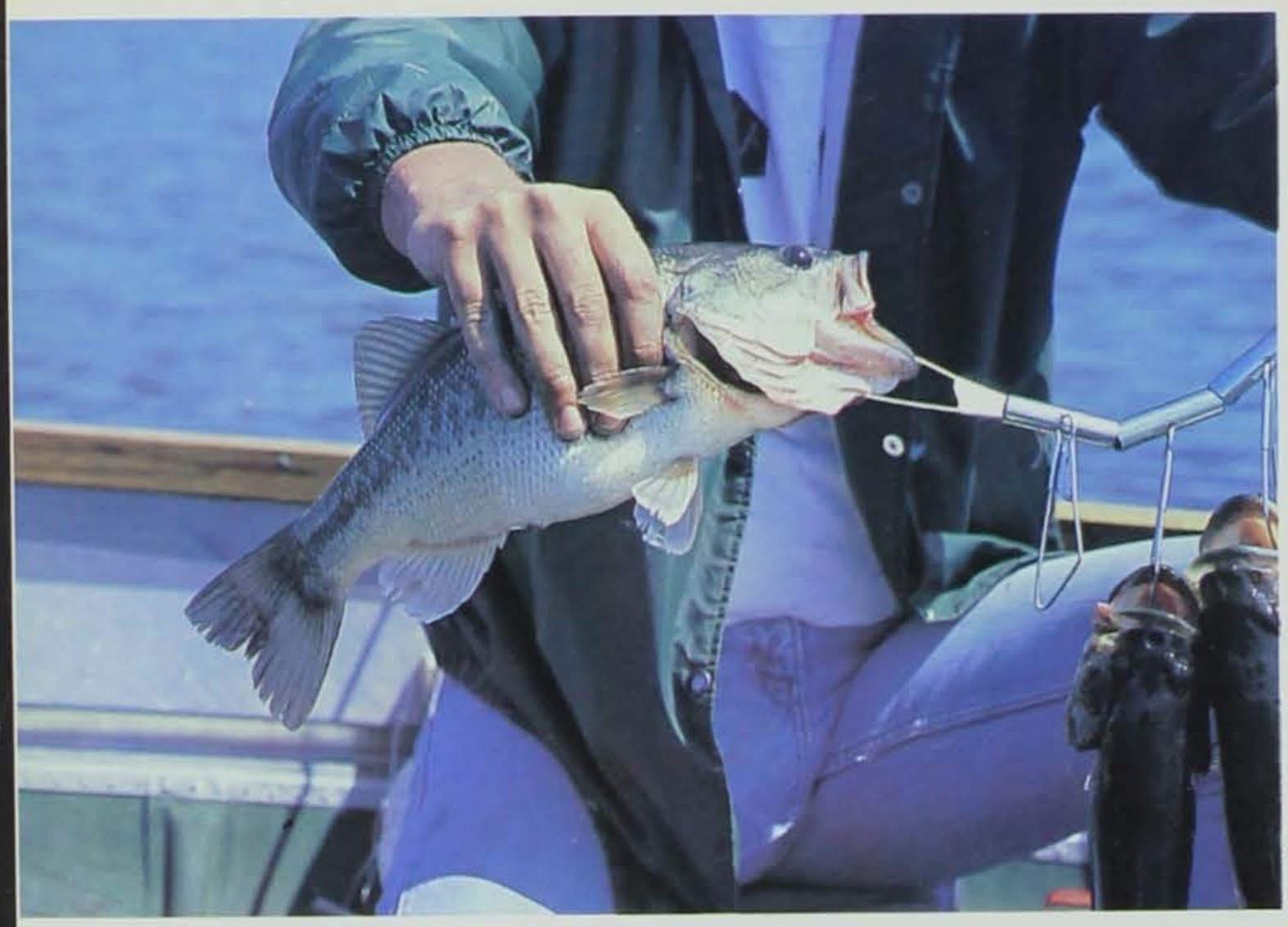
Bruce Morrison

Pied-billed grebe.

Clint Fraley is the executive director for the Clay County Conservation Board. He holds a B.S. degree in fisheries and wildlife biology from Iowa State University. He has been with the county board since 1974.

Tom Neal is a wildlife biologist located at Spencer. He holds an M.S. degree from Iowa State University and has been with the department since 1972.





Ron Johnson

Bass often are pulled out of dense cover using the popular fishing technique referred to as flipping.

The boat came to an abrupt stop when Denny turned off the motor, picked up the hand-held antenna and turned on the radio scanner. Our wake was breaking on the nearby shoreline of the narrow running slough when Denny stood up and focused his attention on one of the many fallen trees along the bank. "He was here two days ago," Denny said as the strong beep-beep came over the receiver. "And he's still here today." Once the boat quit rocking, we eased closer to the fallen tree. After listening a couple of minutes to the strength of the beeping signal, Denny determined that the radio-tagged largemouth bass was in the center of the fallen brush pile and in less than three feet of water.

Flippin'

Flippin' for Largemouth Bass

By Tom Boland

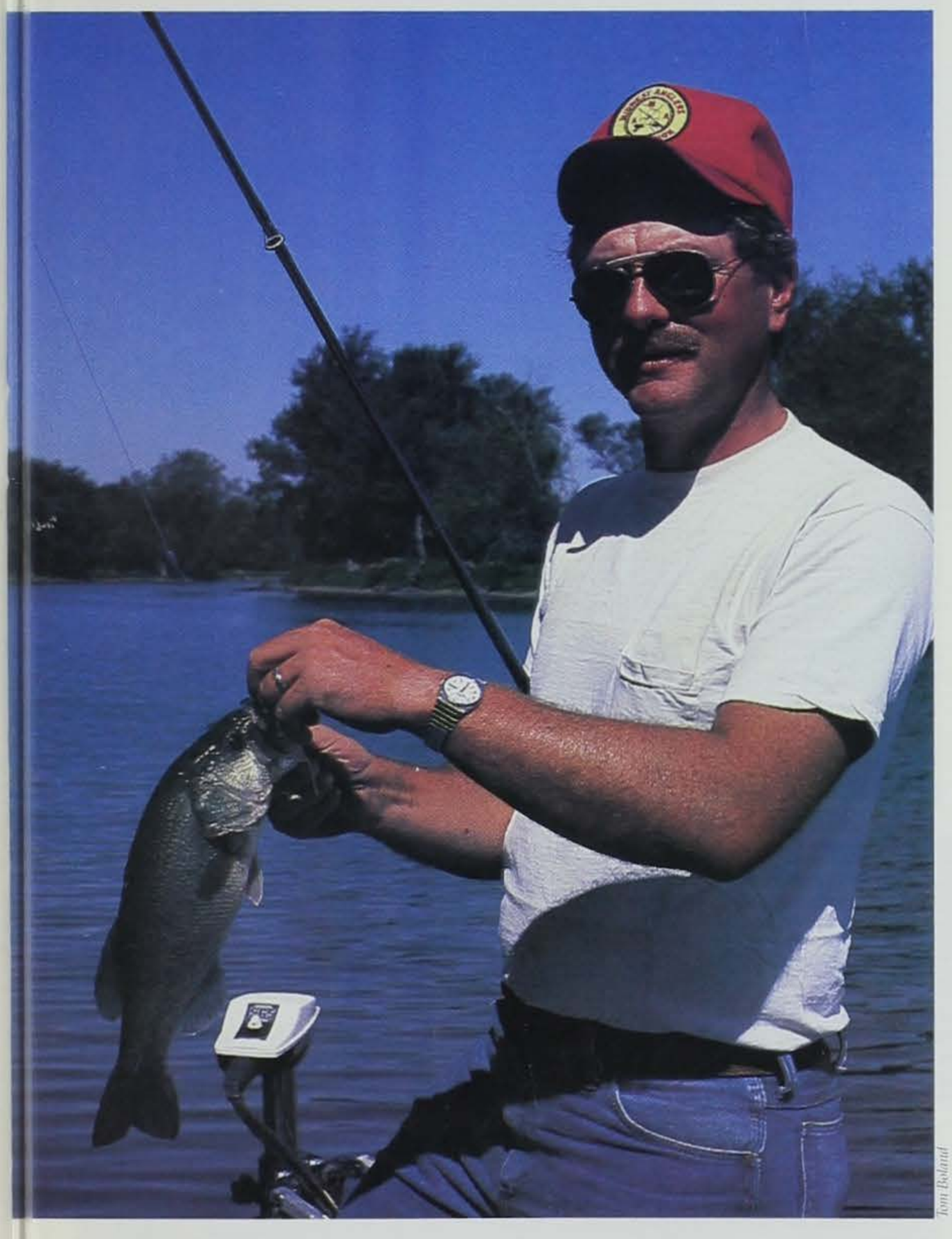
The Bellevue fish research staff is documenting behavioral patterns of largemouth bass on the Mississippi River. Data collected during this study supports a well-known behavioral trait of the species: largemouth bass generally associate with some type of structure, and often prefer the most dense structure available to them. Therefore, what type of fishing equipment and technique is best suited to pull ol' bucket mouth from his favorite heavy-cover haunt? Without a doubt, the best fishing method for this task is "flipping."

The technique of flipping has been around for years. It became popular in the 1970s when two Californians won several national bass fishing tournaments by flipping. Flipping is vertically jigging a weedless lure in heavy cover using a long stiff rod equipped with a reel and heavy monofilament line. It will at times outproduce any other method of fishing bass and is very simple to learn.

There are a number of good quality, reasonably priced flipping rods on the market today. Most are around 7½-feet long and are made of telescoping graphite material. All are heavy duty with a strong butt section and somewhat flexible tip. The flipping stick design provides for the maximum leverage and power needed to pull big bass out of heavy cover.

The reel is basically used for line storage. Most pros choose the bait caster which has some definite advantages. Bait casting reels offer a positive drag system, thumb control of the line, and no line twisting, which may be problems with other types of reels. The line should be premium quality, low stretch, abrasion resistant, monofilament which tests between 17 and 25 pounds. Lighter line can be used, but the risk of losing fish in heavy cover becomes greater.

The terminal tackle used most often are weedless lures including plastic worms, jigs dressed with pork chunks or twister tails and spinner baits. Of these three, the plastic worm is probably the most used and successful bait. An enormous variety of plastic worms are available; however, a four-inch dark colored worm (black, blue or purple) rigged Texas-style with a 1/0 to 3/0 tru-turn hook is



Tom Boland

very popular. It should be weighted down with an ⅛- to ⅜-ounce slip sinker. The slip sinker should be pinned with a toothpick to prevent the line from wrapping around cover. Some fishermen prefer gator-tailed worms to maximize action, while others prefer ringworms to help slow down the action. The key to successful flipping with any kind of lure is to work it slowly. An avid and very successful bass fisherman recently told me that if you think you are fishing the bait too slowly, then slow down. You can't work a flipping bait too slowly.

Jigs are probably the second choice in terminal tackle used by most flipping fanatics. A ¼- to ½-ounce weedless rubber-skirted jig dressed with a twister tail or a number 11 pork chunk can be deadly. Again, stick with the darker colors.

Spinner baits often work well in cover of light to medium density. A weedless ⅜-ounce or heavier lure with a short arm, single blade and ball bearing swivel is preferred. A good quality swivel is important because it gives the lure an irresistible helicopter action when dropped in water.

After you have acquired the necessary equipment for flipping, you will be able to fish bass in heavy cover that most fishermen can't handle. The trick is to ease the boat close to a brushpile, stump or heavy vegetation. Then strip off ten to 15 feet of line in one hand and by using a short swing cast, place the lure in a small opening in the heavy cover. Work the lure slowly up and down. Also, don't forget to try flipping along rocky points and drop-offs.

Flipping for bass may not be as exciting as top-water fishing, but in my opinion, it comes in a close second. Once you have yanked your first bass from heavy cover to live well in three seconds flat, you will know what I mean!

Tom Boland is a fisheries biologist at Bellevue. He holds a B.A. degree from the University of Northern Iowa and has been with the department for ten years.

Food Plots Are For The Birds

At Rathbun Lake

By Alan Gehrt

Tim, the veteran Brittany spaniel, worked deliberately across alternating rows of corn and milo intent only on remnant traces of lingering pheasant and quail scent. As the trio of hunters neared the end of the "mid-size" cropfield or food plot, Tim locked staunchly on point in a smattering of foxtail, apparently oblivious to his surroundings. At the approach of his two companions, the covey exploded and beat a hasty retreat, unscathed, into adjacent timber.

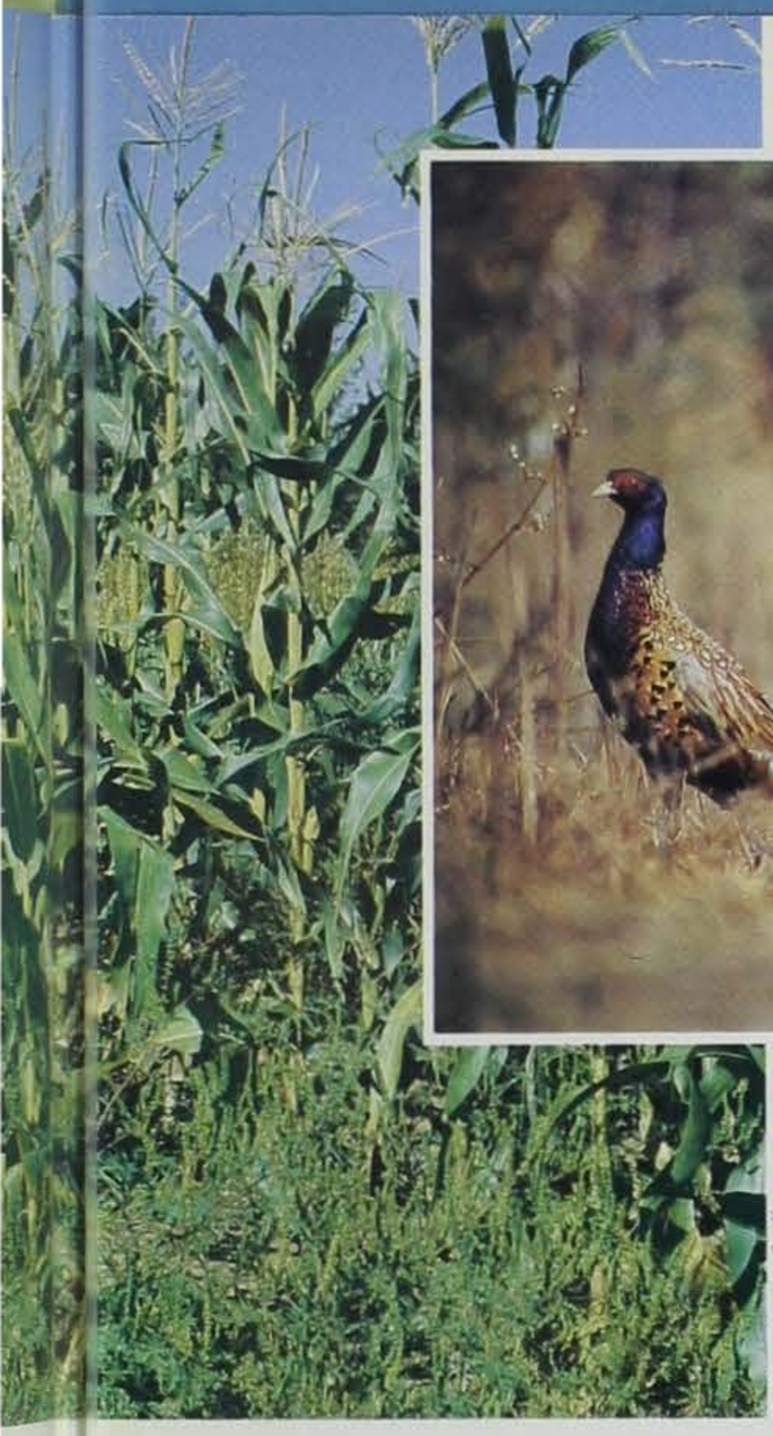
This is but one example of the multiple benefits provided by the food plot program managed by the U. S. Army, Corps of Engineers at Rathbun Lake. Begun in the mid-1970s, the program now includes more than 100 acres interspersed throughout lands managed directly by the Corps of Engineers, and the program is still growing.

Rathbun Lake is located in south-central Iowa. Boasting more than 11,000 acres of water, Rathbun is the largest recreational body of water in the state. About 23,000 acres of land surround the lake and are owned by the Corps of Engineers and managed for public recreation and wildlife. Of this 23,000 acres, the Iowa Department of Natural Resources (DNR), through a license agreement with the Corps, manages wildlife on about 16,000 acres.

Food plots provide recreational opportunities for both consumptive and nonconsumptive users of our wildlife resources. Birdwatchers, hunters and wildlife photographers all benefit from the addition of food plots to the natural resource management program at Rathbun Lake. In conjunction with prescribed burning, tree and shrub planting, shoreline

Rathbun Project Staff

The no-till planter acquired in 1982 reduces soil disturbance and therefore soil erosion.



Rathbun Project Staff

Ken Furmanek

Corn and milo have been the mainstays of the food plot program. These local residents enjoy the food plots.

seeding and restrictive hay cutting dates, food plots have significantly improved wildlife habitat surrounding Rathbun Lake.

According to Robert J. Robel, professor of environmental biology at Kansas State University, "Oftentimes food is a limiting factor for wildlife populations, especially for resident wildlife populations in the Great Plains during winter and early spring. Winter and early spring are periods when weather can become severe in the Great Plains and is a time when natural food supplies are becoming depleted. During severe weather, wildlife species often experience additional diet stress because snows cover their remaining food supply and the cold weather requires them to consume more food to maintain body heat than when the temperatures are less severe."

The benefits of food plots have been preached for many years, but it wasn't until recently that their actual benefits were demonstrated scientifically. Robel's field studies showed that food plots enable wildlife to maintain higher weights and fat reserves during winter, both of which are related to greater survival of wildlife during harsh periods of winter weather.

Since the inception of the food plot program at Rathbun Lake, planting techniques have undergone numerous refinements. In 1982, a two-row no-till planter was acquired. This eliminated the necessity of disturbing the soil through normal cultivation practices of plowing and discing, ultimately reducing soil erosion. As in most no-till planting operations, herbicides are used to control weed growth. A minimal amount of fertilizer is applied at the time of planting to start young plants on the way to producing a successful crop.

Taking a scientific approach to food plot management, soil tests are performed on food plot sites in the fall. If the results indicate that soils are low in nitrogen, phosphorus or potassium, fertilizers high in these nutrients are scheduled for application in the spring.

Corn and milo have been the mainstays of the food plot program since its beginning. However, 1987 has seen the introduction of several additional crop varieties, including a legume rotation. A mixture of alfalfa, yellow sweet clover, red clover, Korean lespedeza, rye and oil sunflowers were broadcast on about 25 percent of the plots in mid-February. The legumes in this seeding mix increase soil fertility through nitrogen fixation, a return to organic farming practices of yesteryear. Eventually, this rotation will significantly reduce the need to apply costly fertilizers to the plots, as well as increase production.

The sunflowers, rye and lespedeza in the mix provide high-energy food sources for wildlife. As a peripheral benefit, the second year of this rotation produces some outstanding nesting cover for pheasant, quail and other ground nesting birds.

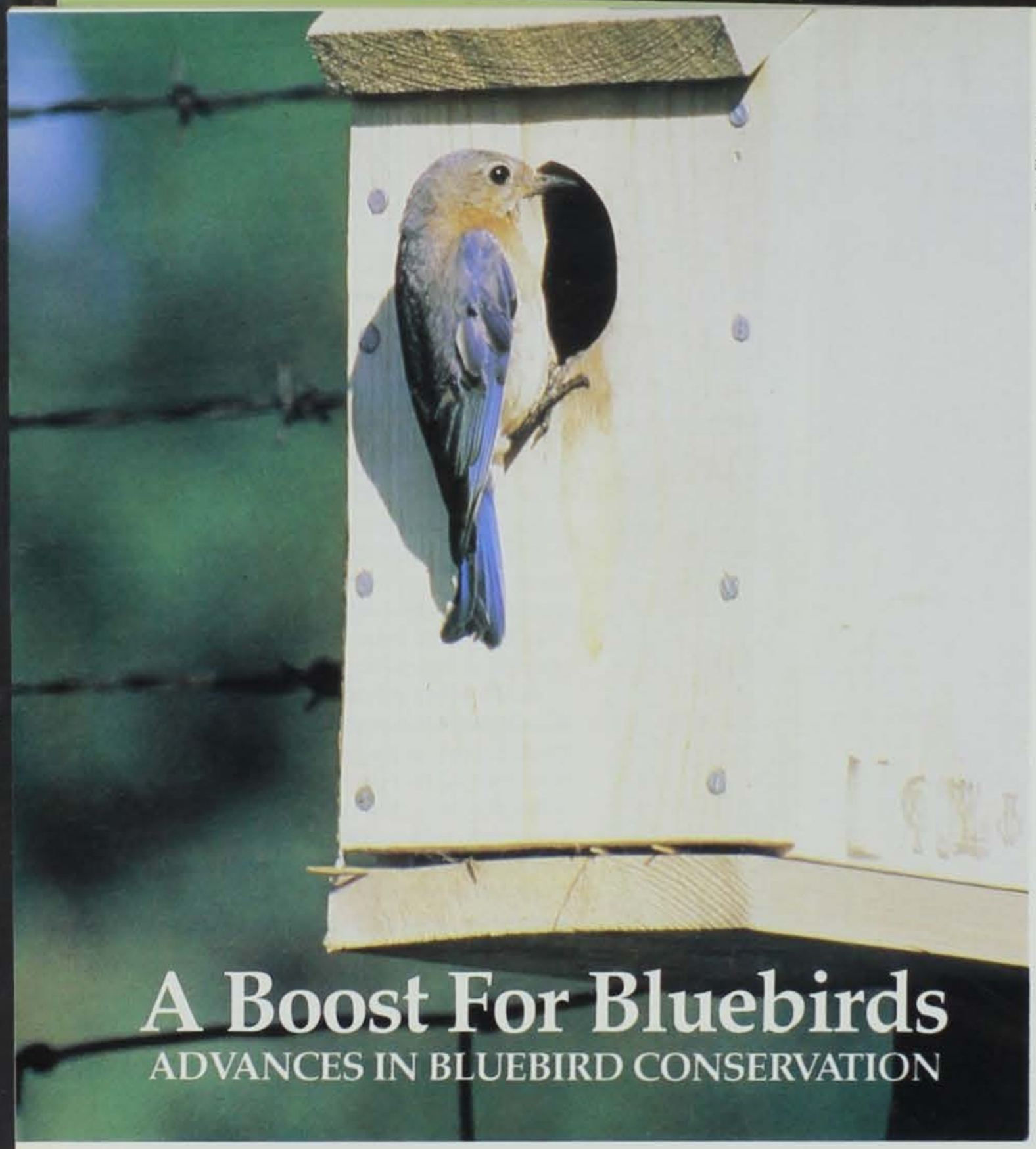
On several wetter sites, Japanese millet has been planted on a trial basis. Japanese millet is adapted to growing in wet soils and provides an excellent food source for a wide variety of bird species.

Food plots are planted to sustain various wildlife populations through peak winter stress periods. They also provide indirect benefits to those who choose to use our wildlife resources, either consumptively or nonconsumptively. The grain in many food plots is entirely consumed by wildlife before the return of spring, a testament to the necessity of the program. Efforts to further expand the food plot program will be made in these areas of greatest use.

As Aldo Leopold put it some 40 years ago, "Plants absorb energy from the sun. This energy flows through a circuit called the biota, which may be represented by a pyramid consisting of layers. The bottom layer is the soil. A plant layer rests on the soil, an insect layer on the plants, a bird and rodent layer on the insects, and so on up through the various animal groups. Land, then, is not merely soil; it is a fountain of energy flowing through a circuit of soils, plants and animals."

To the casual observer, the Corps is planting some garden-size fields of corn and milo. But to the perceptive eye, the "crop" is ultimately one of cardinals, bobwhite quail, red-winged blackbirds and a myriad of other wildlife species.

Alan Gehrt is a park manager for Rathbun Lake. He holds a B.S. degree in natural resource management from Kansas State University. He has been with the U. S. Army Corps of Engineers since 1978.



Bruce Ehresman

A Boost For Bluebirds

ADVANCES IN BLUEBIRD CONSERVATION

By Doug Reeves

In the July, 1983 issue of this magazine, Doug Harr explained the declining status of eastern bluebirds in Iowa and asked the question: "Can we save the bluebird?" While the answer to his question is still a subject of some debate, there is good reason to believe that bluebirds are making a comeback in Iowa and nearby states.

Optimism has been generated by people in Iowa, Minnesota and Wisconsin who are reporting that literally thousands of bluebirds are being produced in their nest boxes. A group known as the Midwest Bluebird Recovery Program was formed in Minnesota a few years ago. The group grew rapidly, and last year people from 22 states contributed information on nesting bluebirds. Results of the 1986 nesting season as reported by Mary Ellen Vetter, indicated that 10,430 bluebirds were fledged from boxes that were reported to the Midwest Bluebird Recovery Program. In fact, the job of coordinating and collecting information got so big that Minnesota, Wisconsin and Iowa now have more or less separate programs.

Here in Iowa, 3,614 bluebirds were reportedly produced in nest boxes during the 1986 nesting season. With interest in bluebirds growing rapidly (over 500 requests for bluebird nest box plans were received last year), I expect that a goal of 5,000 bluebirds fledged from Iowa boxes is attainable next year if weather conditions and food sources are favorable and if all Iowans who have bluebird nest boxes report their results. In addition to the development of an annual reporting network, bluebird enthusiasts have investigated several questions and problems related to bluebird conservation. The perennial problems of nest predation and competition with house sparrows and starlings have been investigated in several ways. It has been discovered that deeper nest boxes are least susceptible to predation, especially by raccoons and house cats.

Deeper boxes have the additional advantage of keeping young bluebirds in a day or two longer, thus allowing their flight feathers to develop better which may increase their likelihood of survival. In fact, many styles of houses have been developed, each reportedly having particular attributes that discourage competitors or predators and that enhance bluebird use. However, basic designs that are protected by metal predator guards are still hard to beat.

House sparrow traps that fit inside nest boxes have been developed and are now available for sale from some bluebird enthusiasts. These traps are blocking mechanisms that close the entrance hole after a bird enters the box. However, sparrow traps will also hold other birds in the boxes so they must be placed only in boxes with a demonstrated sparrow problem and even then they must be checked several times a day.

A technique that involves the placement of pairs of nest boxes to allow both bluebirds and tree swallows to nest in the same territory has recently been developed. The recommendation for pairing of boxes is to place two nest boxes 20-25 feet apart at intervals of 100 yards in good habitat. Some people have experienced problems with tree swallows taking over all of their bluebird boxes. Since tree swallows are desirable, the problem is particularly perplexing. Both tree swallows and eastern bluebirds are territorial, but they generally only defend their territory from their own kind. Pairing of nest boxes allows both species to nest in the same area which is a beneficial and desirable arrangement.

Much time and effort has also been spent investigating new designs for the nest box entrance hole. People have tried round holes of 1-⅜, 1-½ and 1-¾ inches. In addition, elongated holes 1-⅜ by 2-¼ inches have been tried. Although I prefer and recommend the 1-½ inch round hole, there are many people who use the elongated hole. The problem is

that in some areas of Iowa (Boone, Guthrie, Appanoose Counties at least) starlings have learned how to get into the boxes through the elongated holes.

A problem that has recently been identified by some Iowa bluebird enthusiasts is the potential for bluebird-vehicle collisions. In one quarter-mile stretch of blacktop road, five bluebirds were known to be killed during one nesting season. Several nest boxes were placed in the fenceline adjacent to the roadway. Although the nests were successful and many bluebirds were produced, the loss of the adult bluebirds was unfortunate.

The problem has not been observed along rural gravel roads that receive low traffic use or along major highways with constant traffic. Bluebirds will follow grasshoppers, crickets and other prey items across roadways while attempting to catch them. At such times, they seem to pay little attention to oncoming traffic. That puts them in considerable peril, especially in areas where vehicles are moving rapidly. In areas of light, slow-moving traffic, bird-vehicle encounters are infrequent and bluebirds are able to avoid being hit. On busy highways, the traffic is so constant that the birds apparently avoid the roadsides as hunting areas.

Getting Started

Becoming involved with a bluebird box project is not difficult, but does require a considerable commitment of time. Basically, it takes just three things to get started, namely: nest boxes, wire to attach the boxes to metal fenceposts, and a good area to put the boxes in. Many stores that sell bird food and feeders carry bluebird nest boxes. Most people, however, make their own. Essentially, a nest box needs to have a floor that is 4 x 4 or 4 x 5 inches, and be at least 8 inches high (10 to 12 inches is much better), with a 1-½-inch round entrance hole. The nest box should open from the front or side for easy checking and cleaning.

You can receive plans for boxes from the Iowa Department of Natural Resources by contacting your area wildlife biologist or by writing the Nongame Wildlife Program, Route #1, Boone, Iowa 50036.

Finding good habitat and getting permission to put nest boxes in the area is also quite easy throughout much of the state. Eastern bluebirds require short-to-medium height grass as well as scattered trees and shrubs in their nesting areas. Pastures and hayfields are excellent places to put nest boxes.

In addition, several innovative Iowans have discovered that other similar habitats such as golf courses, rural cemeteries and football practice fields make excellent places to put nest boxes. Where house sparrows are particularly abundant, bluebird houses should be placed as far as possible from buildings and food sources that the sparrows frequent. The earlier in the year nest boxes are put up, the more likely they are to be used. Although some bluebirds stay in Iowa throughout the winter, most arrive in nesting areas during late February and March. In central Iowa (Ames area) bluebirds return to nesting areas by about March 1.

Bluebird boxes should be checked every seven to ten days. Once a bluebird nest is discovered in a box, it is wise to keep disturbance to a minimum until the young have left the box. When they have left, the box should be cleaned immediately because bluebirds will nest two to three times each year in Iowa, and they sometimes use the same nest box.

Eastern bluebirds are not the only species that will nest in nest boxes. Black-capped chickadees, tree swallows, house wrens and tufted titmice are other desirable, legally protected, species that will use nest boxes.

Although starlings can be kept out of nest boxes by using a round 1-½-inch hole, house sparrows are a real menace to bluebirds. They not only take over nest sites, but they will also kill bluebirds and destroy their eggs. Nearly every person who monitors 20 or more bluebird boxes has had a bluebird killed by house sparrows. For that reason, every possible effort to discourage the sparrows must be made. Neither starlings nor house sparrows are legally protected, therefore their nests can and should be thrown out of bluebird boxes.

Keeping other predators and competitors out of the boxes is also a challenge. Metal posts are preferred over wooden posts for placement of nest boxes because they are more difficult for raccoons, cats, snakes and mice to climb. Placing a metal guard around a wooden post will also help keep predators away from eggs.

The enthusiasms of bluebird helpers is contagious and spreading rapidly. Perhaps someday we will be able to answer Doug Harr's question (Can we save the bluebird?) with a strong affirmative response. Meanwhile, the enthusiasm and interest that has been generated for the bluebird must be maintained. After all, increasing numbers of bluebirds produced in Iowa nest boxes is a very encouraging sign.

Doug Reeves is the nongame biologist for the department located at Boone. He holds an M.S. degree from Michigan State University and has been with the department since 1984.

Bluebird boxes should be checked every seven to ten days until a nest is found.

Doug Reeves