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YOUR WOODLANDS...

A Natural Resource In Trouble

By Gene Hertel, State Forester

THE first settlers in Iowa found a land of prairie and deciduous forest, pleasing to the eye and unspoiled. The changes since that time have been remarkable. The prairies have disappeared except for a few remnants on private lands and under the State Preserves System. Forest cover has dropped to 2.3 million acres from an original 7 million—a 67 percent reduction.

The prairies fell prey to the plow far easier than the woodlands and soon were almost gone but the forest held on in scattered areas. A closer look, however, reveals only 1.5 million acres in a healthy condition, in any way comparable to the timber of 1850. It has taken longer, but woodland is gradually being eliminated as we lose sight of the benefits it offers.

The prairie plant communities were destroyed because they did not fit into the farmer's cropping system. Woodlands are being lost (by clearing for other uses and by grazing to the point of destruction) because they, too, fail to fit into the cropping system on the farm.

There have been public efforts through the years to encourage woodlands, recognizing their value to the state and nation. In 1868, the legislature approved an act: "For every acre planted and cared for, \$100 to be exempt from taxes for ten years". Similar laws have been in effect at various times since. In existence yet today is the Fruit Tree and Forest Reservation Law, enacted in 1906. Under this act, owners may apply to the county assessor for forest reservation status, usually resulting in lower taxes. There are about 100,000 acres now under this law.

Incentive payments for tree planting and woodland improvement have been available for over 25 years. Up to 80 percent of the cost is paid by the federal government to stimulate the necessary long term investments. Field shelterbelt plantings are also eligible under this cost-sharing program.

Low cost nursery stock is sold to farm owners by the State Conservation Commission to encourage planting on rough, eroding land. This incentive has been a part of the Iowa scene since the 1930's. Free professional forestry service has been available in much of Iowa since the 1940's and in all counties at the present time. This cooperative service between the U. S. Forest Service and the Conservation Commission is an effort to encourage forest management on lands best suited to this use.

Woodlands have always added some qualities to Iowa's lives—the presence of a "grove" known for several generations in a community, the source of timber products for the farm or simply a place to hunt squirrels. Those who live in cities and towns see the beauty of autumn colors as they drive the byways or boat on the lakes and streams. We all benefit from the quieting of the wind and the clearness of the water from wooded hillsides. These values, most difficult to measure in dollars and cents, are real nevertheless. If these intangible values would be measured, along with the sale of timber by the owners and the jobs created in the wood-using industry, the worth of forest cover in relation to other landscapes could be more accurately determined.

One might ask "With so many good things coming from our woodlands, why have we lost them and who is responsible?" Our system of land ownership, based upon an owner's right to manage the land as he wishes, has contributed to such changes in woodland acreages. Historically, the "social" good to be gained from keeping tree cover on the land has not been fully considered. It is being studied more seriously today as natural plant communities disappear and the nation's need for wood products increases.

Perhaps we should begin by figuring exactly how many acres of forest land Iowa should have. What is the figure? The 7 million acres we once had, the 2 million of today, or the 1 million which we may have in the next generation. Even if we as the people of Iowa decide on a figure, the legal barrier must be broken. Clearing of woodland and the slower, less spectacular clearing by grazing animals are continuing under our present laws and incentives. Some more effective way must be found to encourage trees and woodlands if we are to benefit from them in the future. Since 1906, Iowa has had a land use policy to favor woodland. The plan to implement this policy is the Forest Reservation Law which forgives a part of the tax burden to woodland owners. An extension of the benefit to all timberlands, particularly on steep land and floodplain land, rather than just those areas declared by the owner, is a possible consideration.

The solution to timber loss is, to some extent, one of education in the values of woodland. Mainly, however, the solution lies in the financial gain or loss to the landowners. The scales must be tipped in favor of our forests if the resource is to continue as a significant part of our lives. Through the educational and legislative process, the choice is ours. □

Land Use Program for Iowa - By Law or By Coordination

By G. F. Schnepf
Planning Administrator

This is the choice Iowans have in developing a land use program for the State. No one can logically be against the wise and balanced use of our lands, waters, and the resources they support. On that point there is agreement. The question is how it is done. We must manage the lands in a manner that will conserve them for future Iowans.

The method of how it is done traditionally has been the legal approach with its implication of "control", "direction", or implied loss of landowner rights. A non-traditional idea that has not been seriously considered is land use by coordination.

Land use decisions by the private individual and the public are being made on the basis of poor quality resource data, if any is used at all. Poor quality decisions occur and bitter conflicts develop resulting in a loss of time and money to the individual and to the public.

Resource information is available but currently tends to be used by government agencies and private individuals at different scales, different levels of detail, and in different formats. This results in people using or interpreting the same data differently to argue both for and against a project or program.

The approach needed is the development of a unified resource data/information system for the state. This can be accomplished without legislation and initially requires only the coordination of state agencies to achieve it. Once the system is agreed upon, each agency can proceed according to a schedule to provide the data it is already capable of providing and generally is responsible for by law. The full development of the system may require additional funding but generally it can be programmed into existing agency budgets which may be supplemented by federal assistance.

The important element to this approach is timing. It is essential that the first effort be completed as rapidly as possible. New and revised resource information can continually be added into the basic system in order to improve the quality of the data.

With full agency effort, the first output of such a data/information system can be achieved in 2-3 years. Using this system, the specific land use problems and "critical" areas of Iowa can be carefully defined. Specific policy decisions or legislative action can be initiated to correct specific problems such as the protection of "critical areas" or programs.

This data/information system, in conjunction with a "growth policy" for the state, would provide not only a protective program for "critical areas" but also a positive program in delineating where growth can occur with a minimal impact on Iowa's resources. Many states have found that existing laws strictly enforced and with coordination can effectively provide a significant degree of land use protection.

In conjunction with the need for haste in developing a data/information system, is the need to put the information into a format that is readily understandable by the lay person. It is the city council member, the county supervisor, the board member, and the committee member that will make land use decisions and they will only use the data if it can be understood and is readily available.

There may be a need, once the problem areas have been delineated, to require by legislative mandate, the use of the resource data/information system by all decision makers. In any case, the decision level would not be changed, but everyone would

Continued on Page 15

Flathead: King of the Deep

By Tom Boland
Fisheries Research Technician

IT WAS MEMORIAL DAY - a beautiful evening, serenely pleasant considering the windy but sunny afternoon. Fishermen were still gathered shoulder to shoulder on the banks of the Iowa River near the tailrace of Coralville Reservoir. Most had stringers of crappie and small channel cat with an occasional bluegill or carp.

Near the outlet structure, a lone fisherman was sitting relaxed on the tailgate of his pickup. Before him were two sturdy glass poles firmly wedged in the fence with thick monofilament line disappearing into the swells of the churning tailwaters. The rod tips were swaying with the tug of strong current. Suddenly, one dips. A hit! The man, outwardly calm, steps up to the pole and cautiously picks it up with both hands. A moment later the pole dips again. With a deliberate jerk, the hook is set and all hell breaks loose. Flathead catfish, one of our piscatorial trophies, is fighting for his freedom. Hugging bottom, the fish runs upstream, then with the current at its tail it surges downstream and line is stripped from the reel. Thirty-five minutes later, a 44 pound king of the deep is landed nearly 100 yards downstream.

Such an event is not a common site in Iowa. Few fishermen have the patience or equipment necessary for landing such trophy fish. But for a flathead fisherman, that 10 hour wait between bites is forgotten when the lunker is landed.

The flathead is a large square-tailed catfish, with a wide, distinctly flattened head and protruding lower jaw. They differ from channel catfish in color, which is brown mottled with darker brown and in physical appearance by having a short anal fin with 14-17 fin rays, compared to the 24-29 rays in the anal fin of his sleeker cousin. The upper and lower edges of the caudal fin may be white or lighter than the rest of the fin. Continental distribution ranges from the Mississippi River valley south into Mexico. In Iowa, flatheads are found in the Mississippi and Missouri Rivers and all large interior streams including the Cedar, Iowa, Des Moines and Skunk Rivers. He prefers long, deep, sluggish pools and is often found around large snags and in regions with highly oxygenated water, especially below damsites.



Photo by Ken Formanek

Flathead catfish prefer a fish diet, but being carnivorous, may feed on crayfish, worms, insect larvae or any small terrestrial beastly that washes in. Like most of its family, the flathead is an excellent food fish because of its delicious flavor and large size.

Reproduction usually occurs during June when water temperature reaches 65-70°F. The parental fish build nests in cavities along river banks, then protect eggs and young for quite a lengthy period of time. First year's growth may be from two-six inches in length with sexual maturity reached after three to four years of life. Average growth of an Iowa flathead is one to two pounds per year. So, by rule of thumb, a 60 pound fish may be 20-30 years old. Although three to four pound fish are considered average, he may attain weights up to 100 pounds. The current state record for pole and line flathead was caught in the Iowa River at the Coralville city dam by Roger Fairchild in 1965. This lunker was a respectable 62 pounds.

A typical pole and line rig for flathead consists of a stiff glass rod, heavy duty casting reel and strong monofilament line from 50-75 pound test. Sinker weight varies depending on river current and type of habitat fished. Always, enough weight should be used to keep the bait on the river bottom. A favorite bait is a 3-5 inch sunfish or a large gob of worms on a number 4/0 hook held down by a 1-ounce slip sinker. The slip sinker is usually egg shaped with a hole in the center which allows the fish to run with the bait without feeling resistance. Once a flathead starts running with your bait, the hook should be set with both feet firmly planted. Then hang on! You're in for a real battle. The mere size of the fish may be enough for a good tussle, but add strong, swirling currents and big, twisted snags — well, you may have the challenge of a lifetime. Little wonder veteran flathead fishermen willingly spend seemingly endless hours waiting for action.

Trotlines, bank and limb lines are also successful for catching flatheads. Worms, crayfish or whole or cut fish may be used as bait. Limb lines are usually fished by dangling a short length of line to the surface of the water from an overhanging branch baited with a small sunfish. The limb will bend and give the action

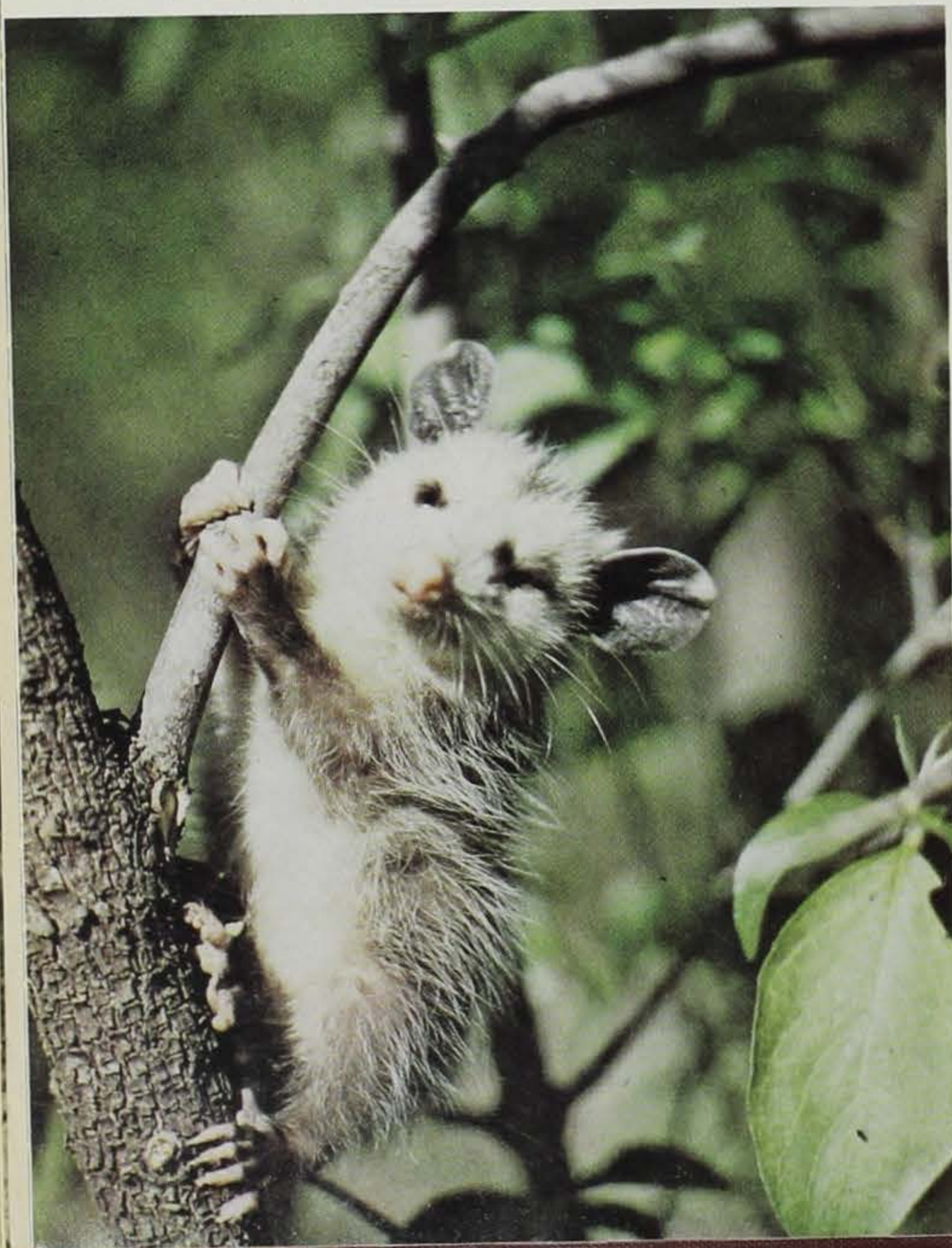
needed for playing the fish. In the absence of overhanging limbs, bank poles or "ditty poles" are often used. Trotline regulations apply for these types of gear. Flatheads are also caught by jugging or bottle fishing which is simply a plastic jug floating on the surface to which a short length of line and bait are attached. This type of fishing is legal in Iowa, when no more than two jugs are used with two hooks per jug, and the fisherman is in constant attendance.

Flathead catfish are fairly abundant in most of the large rivers in Iowa. The main item to remember is it takes a mighty amount of patience and know-how to catch them. But, when you feel the sheer power of this trophy on the other end of your line, it becomes a battle of strength and well worth the wait between bites. □





Rockney Bridges photographed the opossum (below). The brown thrasher (above) appears to be posing for Ken Formanek's camera.



Capturing Wildlife with a Camera

By Douglas Harr
Wildlife Management Biologist

THERE ARE MANY AND VARIED WAYS of enjoying nature and the moods of the outdoors. Hunters, trappers, birdwatchers, hikers and canoeists are well aware of different means of observing wildlife in its natural environment, so as to yield the most enjoyment from their recreational pursuits.

Of all the methods for enjoying nature, perhaps one of the most rewarding is through photography. Not only does the outdoor camera bug have the thrill of experiencing nature first-hand, but the pictures he or she takes help relive memorable moments time and time again.

Capturing a bird, animal or even a wildflower on film can be educational as well. Unlike the human eye, which often concentrates on a particular feature of whatever subject it might be focused upon, the camera records, in detail, every physical aspect of the subject. When the picture is developed the photographer often sees things that his eye never saw in looking through the viewfinder—the texture of a tree's bark, the eye color of a bird, or a beetle scurrying across the petals of a wild iris. And, if the photographer has the patience to sit behind a blind, he will

probably see many things about wildlife he had never before realized.

You may think that good wildlife photos are the result of expensive cameras with close-up or telephoto lens in the hands of a professional or advanced amateur photographer. Not necessarily! Even the simplest "instamatic" can reward its owner with excellent wildlife photos. Granted, the fancy equipment can enable the photographer to take great pictures, but only if he knows how to use it. The patient outdoorsman with a familiar old box camera often turns out better pictures than the new owner of a \$500 single-lens reflex.

How does one go about getting good photos with an everyday camera? The methods could (and do) fill several volumes. But for a starter in your new hobby as a wildlife photographer, try some of the simple hints listed below.

First, take your camera with you whenever you spend any amount of time outdoors. The best pictures are often missed when the camera is at home or left in the car (this author learned from experience). Canoeing and worried that your camera will be ruined if you should capsize? Put the camera inside two plastic bags, closing each with a rubber band, then tie it loosely to a thwart or seat. If an opportunity arises to snap a muskrat swimming by, or whatever creature you meet, it only takes a few seconds to remove your camera from its watertight container.

Try using your car as a blind. It is not always necessary to be on foot (though perhaps more healthful) to get a very good picture. Wildlife is often seen along roadsides in wooded areas or in marsh and lake country. Bring your car slowly to a stop and shut off the engine. The animal or bird will become attentive (good for an interesting photo) but sometimes will not flee as long as he doesn't recognize the outline of the human form. They seldom associate a car with its occupants.

Get up a little early and go on your picture-taking excursion at dawn. Wildlife is most active at this time. Some night creatures may still be up and about, and many others will be waking up and looking for food. At this time of day you may see creatures you never knew were found locally. Dusk is another good time to see many animals. A word of caution here: because of the low angle of the sun at these times of day, shoot in the opposite direction of the sun. You'll be less likely to overexpose your photos or get glare in your lens and eyes.

See a ground squirrel dash down a hole? Seat yourself quietly near the hole with your camera aimed and ready. These curious little ground-dwellers will usually poke their heads out in a minute or so to see what's up, and "click", you've got him on film. This same technique works well with a bird feeder placed near a window of your house. The birds soon become accustomed to the human sitting quietly near them, and you are free to snap away. It's a good pastime for snowy winter weekends at home.

Finally, you might want to try your skill at building and using a simple blind in a place you know to be frequented by different birds and animals. The blind can be made of sticks or other natural material, or it could be just a piece of lightweight canvas, in a color to blend with surroundings, draped over a four post frame, with a hole cut for the camera and viewing. You might throw some corn or birdseed in front of your blind as an attractant. Again, for best results, enter the blind early in the morning and wait quietly. In a short while you should have a variety of creatures to photograph.

No matter how inexpensive or fancy your equipment, wildlife photography can be a rewarding and educational pastime. The main criteria are knowing your own camera, having patience and applying some of the simple tricks mentioned here. It can add a whole new dimension to your outdoor experience. □

Below, left - fox squirrel photographed by Jerry Leonard; right - mourning dove nestlings by author Douglas Harr; Bottom, left - black tern and bottom, right - painted turtles are also the work of photographer Formanek.





BOATING VIOLATIONS

By James E. Horan and Nancy Exline

More and more boaters are being cited for violating Iowa's boating laws. One of the major reasons for the increase is a growth in the number of boats, and more efficient enforcement procedures. But does there have to be an increase in violations? Why shouldn't boaters be able to expect a decline in unsafe boating habits? Surely it must be obvious that with so

many people boating in Iowa, observance of the safety laws protects us all.

A citation is probably a result of a boater being unaware of a law, lacking understanding of the law, or his complete disregard for the provisions of the law and the safety of himself and others.

A review of the major violation areas may help to clarify some of the boating regulations. Required equipment violations are the most extensive. Remember, unlike a car, a boat does not come completely equipped. You must purchase the necessary personal

All PFD's and equipment must be serviceable - Fire extinguisher on left needs recharging.

Photos by Jerry Leonard



flotation devices (PFDs), a fire extinguisher, and in some cases, lights and horn.

An easy way to remember which equipment is required for your boat is to realize that usually the length of the boat or the method of propulsion determines what must be aboard. For example, all Class I (less than 16') vessels must have one "Coast Guard Approved" PFD on board for each person.

If the boat is powered by a motor of more than 10 hp, a fire extinguisher is required. This extinguisher must be Coast Guard Approved or Underwriters Laboratories (UL) listed for marine use.

The only difference between the requirements for a Class I and Class II (16' to less than 26') motorboat is that the PFD for each person on board must be a wearable Type I, II, or III (life preserver, buoyant vest, or special purpose device such as used for water skiing) and the craft is required to have one Type IV PFD throwable such as a ring buoy or buoyant cushion on the boat in addition to the wearables.

If your craft is a canoe, rowboat, or sailboat the regulations are simpler. Since there is no motor, a fire extinguisher is not required. Lights and PFDs are required, again, the type depends on the length of the boat (see illustration).

Another important area of navigation violations relates to speed and distance regulations. These are simple, there are only four, and they're truly basic, common sense rules. The rules are:

1. On all waters don't exceed 5 mph within 250 feet of another craft going 5 mph or less, or any sailboat at any time.
2. Keep a distance of at least 50 feet when your boat and the other are going over 5 mph.

In addition, the following apply to federal impoundments and natural lakes:

3. Don't exceed 10 mph within 300 feet of shore (except in special zoned area).
4. Don't exceed 5 mph when vision is not clear 300 feet ahead.

People must realize that although we all have the right to boat on Iowa's waters, none of us has the right to create a hazard. The guy who pulls his skier too close to other boats is not just violating

the law—he's a hazard to everybody near his boat.

Too often in this situation the boat operator felt he couldn't slow down (remember speed and distance rule #1) because the skier would then drop. Of course the skier would drop, but is that so bad? Any boaters behind the skier should anticipate the skier in front of them could drop at any time anyway, so they always have to be careful. Most important, though, is not to jeopardize anybody's boating safety—you don't have that right.

In narrow areas, it's easier to operate a boat much like you drive a car. Stay on the right side. This way everybody goes in the same direction on their own side further reducing the possibility of an accident. But remember, if a boat in front of you stops, you must stop or slow down to 5 mph at least 250 feet before reaching that craft.

Two small decals depicting boating regulations are available from your local waters officer. These can easily be attached to the dash of your boat giving you a quick reference to boating safety rules.

A good way of remembering to have the required equipment is to obtain a Courtesy Motorboat Examination from the Coast Guard Auxiliary. These volunteers, dedicated to safe boating, will check your boat for safety equipment. Their examination, although more stringent than Iowa law, includes all Iowa equipment requirements. The examination and accompanying decal is given annually and is a good spring reminder to check your boats equipment.

Remember your equipment is of no value to you if it's not used. PFDs must be readily accessible—in serviceable condition and lights must be on at sunset. Check your fire extinguisher according to the directions on the container. A fire extinguisher with no pressure (it can leak out) is no fire extinguisher at all.

An easy to read synopsis of the Iowa Boating Regulations can be obtained from your marine dealer, county recorder, waters officer, fish and game officer, park ranger, or by writing to Iowa Conservation Commission, 300 Fourth Street, Des Moines, Iowa 50319. □

IOWA SPEED AND DISTANCE REGULATIONS

1. Don't exceed 5 mph within 250 feet of craft going 5 mph or less or any sailboat at anytime.
2. Keep a distance of 50 feet when both are going over 5 mph.

(The following apply to federal impoundments and natural lakes)

3. Don't exceed 10 mph within 300 feet of shore (except in special zoned area).
4. Don't exceed 5 mph when vision is not clear 300 feet ahead.

IOWA CONSERVATION COMMISSION

DANGER ZONE
YIELD RIGHT OF WAY TO BOATS IN THIS AREA

112 1/2

PORT LEFT STARBOARD RIGHT

RIGHT OF WAY RULES

- 1 MEETING HEAD ON - Pass port to port
- 2 OVERTAKING - Pass to port of privileged boat
- 3 CROSSING - See "DANGER ZONE" above

| | | | | |
|---------------------------|----------------|----------------|----------------|-------------|
| | | | | |
| BOATS KEEP OUT | CAUTION | INFORMATION | DANGER | |
| | | | | |
| | | | | |
| ANCHOR BUOY HAS BLUE BAND | CHANNEL MARKER | CENTER CHANNEL | CHANNEL MARKER | OBSTRUCTION |

REQUIRED EQUIPMENT - CHECK IOWA BOAT REGULATIONS

| | | |
|--|--|---|
| <p>PERSONAL FLOTATION DEVICES ---</p> <p>MUST BE COAST GUARD APPROVED</p> <p>ONE FOR EACH PERSON ON BOARD</p> <p>THROWABLE DEVICE ---</p> <p>RING BUOY OR CUSHION</p> <p>BOATS 16' OR LONGER</p> <p>FIRE EXTINGUISHER ---</p> <p>BOATS OVER 10' H.P. C.G. Approved</p> | <p>LIGHTS ---</p> <p>MOTORBOATS</p> <p>WHITE LIGHT - STERN - 360</p> <p>RED & GREEN LIGHT - BOW</p> <p>SAILBOATS</p> <p>WHITE LIGHT - ILLUMINATE SAIL</p> <p>SEPARATE RED & GREEN ON BOW</p> <p>NON-POWERED (CANOES, ETC.)</p> <p>WHITE LIGHT 360</p> | <p>WHISTLE</p> <p>CLASS II III IV MOTORBOATS</p> <p>BELL</p> <p>CLASS III IV MOTORBOATS</p> <p>BAILING DEVICE</p> <p>(RECOMMENDED)</p> <p>EXTRA MEANS OF PROPULSION</p> <p>(RECOMMENDED)</p> |
|--|--|---|

IOWA CONSERVATION COMMISSION

H-1978



Salmon Fishing in Northern Iowa

By R. Runge

One hundred years ago the fish culturists of this state set off on a bold plan to introduce new and exciting game fish to Iowa waters. The black bass, striped bass, yellow bass, crappies, catfish and others which dominated the streams and lakes at that time were fine, but should we not also have salmon, lake trout, whitefish and grayling? Why, of course!

Return with us now to those thrilling days of yesteryear when nearly every lake and creek in northern Iowa was envisioned a possible salmon fishery. Mr. B. F. Shaw, Fish Commissioner for the State of Iowa, made this report to Governor Carpenter in 1877.

Atlantic Salmon

"Dear Sir,

Our commission received 90,000 of this variety of salmon eggs, March 24, 1876, through the kindness of the U. S. fish commissioner, from Bucksport, Maine, where they were collected by Deputy U. S. Commissioner Hon. C. G. Atkins. They were successfully hatched with but a small loss, and finally distributed in the northwestern part of the state, principally in the lakes of that section. As stated in our former report, we hardly think this fish will succeed in our rivers as a migratory one, on account of its inability to endure a great amount of heat; but some very fine ones have already been caught in some of our lakes, where they have been unable to get out, probably of the lot distributed two years ago. That they will thrive wonderfully in cool water, even in confinement, is proven by the fact that Mr. H. Ruble, of North McGregor has about seven hundred in a small pond only two and a half years old that will weigh from two and a half to seven pounds each. In view of this successful domestication of them, and their unparalleled growth, it is we think a fair presumption that they would be valuable fish in any of our lakes from which they could not migrate."

Distribution of Penobscot Salmon

| DATE | BY WHOM DISTRIBUTED | IN WHAT WATER | NO. DISTRIBUTED |
|------------------------|----------------------|---|-----------------|
| 1875 | | | |
| Dec. 9 | B. Van Steinberg | Deep creek and other waters | 15,000 |
| Dec. 11 | E. R. Shaw | Wapsie | 12,000 |
| Dec. 21 | Ferren | Upper Iowa and other waters | 30,000 |
| 1876 | | | |
| Feb. 4 | G. F. Slocum | Buffalo | 10,000 |
| Feb. 4 | Rutherford | Big and Little Cedar | 15,000 |
| Feb. 17 | T. V. West | Nishnabotana | 10,000 |
| Feb. 21 | Irwin Peet | Clear creek | 1,000 |
| Feb. 21 | B. F. Shaw | Cedar, Iowa, Des Moines, Skunk, etc. | 25,000 |
| Feb. 21 | Ruggles | Walnut creek | 10,000 |
| Feb. 23 | M. Remley | Iowa river | 15,000 |
| Jan. 14 | Faler & Stapleton | Turkey and Volga | 10,000 |
| Jan. 15 | J. Hall | White Breast, Grand river, Twelve Mile and Platte | 25,000 |
| Jan. 20 | B. F. Shaw | Waters in vicinity of Council Bluffs | 70,000 |
| Jan. 21 | E. R. Shaw | Silver creek | 5,000 |
| March 1 | B. F. Shaw | Des Moines river | 15,000 |
| March 2 | B. F. Shaw | Boyer river, and lakes in vicinity of Missouri Valley | 40,000 |
| March 6 | B. F. Shaw | Big creek, Skunk river | |
| | B. F. Shaw | Fox river and Cedar | |
| | B. F. Shaw | Chairton, White Breast, Nodaway, Nishnabotana, Walnut, Silver and Keg creeks | 70,000 |
| March 7 | Kennedy & Poindexter | Cedar river | 5,000 |
| March 14 | Senator Bailey | Wapsie | 15,000 |
| March 20 | B. F. Shaw | Iowa, Boone, Des Moines, Sioux and Floyd rivers; Twin, Storm, Spirit, Okoboji and Crystal lakes | 60,000 |
| March 27 | B. F. Shaw | Shell Rock and Beaver creeks, and West fork Cedar | 15,000 |
| March 29 | B. F. Shaw | Lyman and Cedar creeks, Iowa and Des Moines rivers, Clear, Eagle, Crystal and Twin lakes | 40,000 |
| April 3 | E. R. Shaw | Cedar river | 10,000 |
| Total amount deposited | | | 533,000 |

California Salmon

"Since our report was made the California salmon, then on hand, have been distributed and an account of where and when will be found in this report.

During the season of 1876, so much of our time was devoted to other fish that nothing was done towards increasing our supply of these fish, except that the commissioner, through the kindness of the United States fish commissioner, procured twenty-five thousand of Mr. Frank Clark, of Northville, Michigan, who was employed by the United States commissioner to hatch them. A portion of these were given to private parties, they paying a proportionate share of the expense of getting them from Michigan and one dollar per thousand for hatching them; those for public use were furnished by the commissioner free. Those heretofore distributed seem to be doing well in our waters, many reports of their capture in different parts of the state coming to our notice."

Lake Trout

"We have now in the hatching-house about 800,000 lake trout eggs, far enough developed so that their eyes are perceptible. We design to place the greater portion to a few of our fish culturists, who desire them for the purpose of testing their value as a fish to raise in private ponds. Not over 5,000 will be given to any one person for this purpose.

Those raised last season at our hatching-house were mixed with the California salmon and distributed with them and no separate account of their distribution was made. They are, when caught in good, clear, cold water, an excellent table-fish, and are very game; as their spawn is easily obtained in large quantities, they are probably the best and most available fish with which to stock our lakes. Several parties applied for eggs this season, but we were so late that it was with difficulty we procured enough for our own use. If those who desire eggs next fall will notify us in season, we will try to furnish them all they wish. Expense of packing and express charges on them will be the only expense."

California Salmon and Lake Trout Distribution

| DATE | BY WHOM DISTRIBUTED | IN WHAT WATER | NO. DISTRIBUTED |
|--------------------------|---------------------|--------------------------|-----------------|
| 1877 | | | |
| Jan. 12 | Col. Lubbers | Clinton county | 5,000 |
| Jan. 12 | Col. Lubbers | Deep creek | 5,000 |
| Jan. 25 | Mr. Dobson | Geneva Fr. Co. | 5,000 |
| Jan. 25 | Mr. Millar | Muscatine slough | 5,000 |
| Feb. 12 | Mr. Shaw | Little Maquoketa | 5,000 |
| Feb. 12 | Mr. Shaw | North fork | 5,000 |
| Feb. 12 | Mr. Shaw | St. Joseph's | 5,000 |
| Feb. 12 | Mr. Shaw | Catfish creek | 5,000 |
| Feb. 19 | Mr. Shaw | Volga river | 5,000 |
| Feb. 19 | Mr. Shaw | Rock creek | 5,000 |
| Feb. 19 | Mr. Shaw | Stevenson's lake | 20,000 |
| March 3 | Mr. Shaw | Clear lake | 5,000 |
| March 7 | Mr. Shaw | Hinde creek | 5,000 |
| March 13 | Mr. Shaw | Cedar river | 5,000 |
| March 13 | Mr. Shaw | Parkersburg | 7,500 |
| March 13 | Mr. Shaw | Twin lakes | 7,500 |
| March 13 | Mr. Shaw | Lake at Fonda | 7,500 |
| March 13 | Mr. Shaw | Spirit and Okoboji lakes | 15,000 |
| March 13 | Mr. Shaw | Silver lake | 10,000 |
| March 13 | Mr. Shaw | Storm lake | 25,000 |
| March 13 | Mr. Shaw | Boone river | 7,500 |
| March 13 | Mr. Shaw | Iowa river | 7,500 |
| March 20 | Mr. Shaw | New Hampton | 7,500 |
| March 20 | Mr. Shaw | Clear lake | 15,000 |
| March 20 | Mr. Shaw | Little Wall lake | |
| March 20 | Mr. Shaw | Elm lake | |
| March 20 | Mr. Shaw | Ida lake | |
| March 20 | Mr. Shaw | Twin Sister's lake | 25,000 |
| March 20 | Mr. Shaw | Medium and other | |
| March 20 | Mr. Shaw | Lakes near Emmetsburg | 15,000 |
| March 20 | B. F. Shaw | Lost Island lake | 7,500 |
| March 20 | B. F. Shaw | Eagle lake | 7,500 |
| March 20 | B. F. Shaw | Deep creek | 3,500 |
| March 20 | B. F. Shaw | Boone county lakes | 7,500 |
| March 20 | B. F. Shaw | Wall lake | 7,500 |
| March 20 | B. F. Shaw | Council Bluffs | 6,000 |
| March 20 | B. F. Shaw | Avoca | 2,000 |
| March 20 | B. F. Shaw | Greene county | 6,000 |
| March 20 | B. F. Shaw | Onawa | 3,000 |
| April 20 | B. F. Shaw | Indian creek | 3,000 |
| April 20 | B. F. Shaw | Nishnabotnas | 10,000 |
| Total number distributed | | | 303,500 |

Land Locked Salmon

"A few thousand spawn of this highly valued fish were obtained from the United States commissioner in 1876. They came from Mr. C. F. Atkins, deputy United States commissioner, Maine. They were hatched at the State hatching house in due time; but as the number was too small to be likely to produce any valuable results by general distribution, it was thought best to keep them where their spawn would be available when they become matured fish. Arrangements were accordingly made with Mr. Henry Ruble, of North McGregor, to keep them, and they are now in one of his ponds, doing well.

I am in correspondence with the United States commissioner upon the subject, and hope to be able to procure a large supply of spawn this season.

Ten thousand of this variety were also received in the spring of 1877,—were duly hatched and disposed of in same manner as in 1876."



Iowa's Preserves System

By Dean Roosa, Preserves Board Ecologist

Photography by Ken Formanek

In 1965, the Iowa State Preserves System was established by the 61st General Assembly. The enabling legislation, now Chapter 111(B) of the Iowa Code, made possible dedication as preserves certain areas which contain unique features of the Iowa landscape. Five major classes of preserves are recognized: nature preserves, which contain natural flora and fauna that have undergone little or no disturbance by modern man; archeological preserves, which contain deposits of archeological importance; historical preserves, which contain structures which are of significance in studying the tenure of man in Iowa; geological preserves, which contain rare or distinctive geological deposits or features; scenic preserves, which contain scenic features or scientific or educational value. Because of the special nature of the preserves, camping, picnicking, vehicular traffic, horseback riding, etc. are prohibited.

After being in existence for ten years, Iowa's Preserve System contains 30 preserves (fig. 1) with several more in the process of being dedicated and some areas being investigated to determine if they would qualify for preserve status. Within the preserves are

some of the most distinctive features in Iowa, including six native prairies, a native White Pine stand, the state's only Sphagnum bog, a Balsam Fir stand, some of the oldest exposed rock outcrops in the world, an ancient fort, a fen, several Indian mound groups and a historical cemetery.

The legislation also authorized the establishment of an advisory board, appointed by the governor, to oversee the management of the preserves. The original board consisted of Dr. Margaret Black, Drake University Biology Department, Dr. Edward Cawley, Loras College Biology Department, Dr. George Knudson, Luther College Chemistry Department, Dr. Marshall McKusick, University of Iowa Archeology Department, Dr. William Peterson, State Historical Society and Robert Russell, executive secretary, Iowa Izaak Walton league. Everett Speaker, as Conservation Commission Director, served as *ex officio* member. Dr. Black, Dr. Peterson, Robert Russell and Everett Speaker have been replaced by Dr. John Dodd, Iowa State University Botany Department, Sylvan Runkel, Soil Conservation Service Biologist and Director Fred Prievert. New appointments are Dorothy M. Baringer, Des Moines, Peter J. Harstad, Ph.D., Iowa City, Duane C. Anderson, Ph.D., Iowa City and M. Gene Ulrich, Ph.D., Le Mars. Persons serving on the

Left: Turkey River Mounds Area - Clayton County. Below, Fir Stand Near Bluffton On Upper Iowa.



advisory board do so without pay, except for expenses incurred attending board meetings. Some of the functions of the board are to approve areas as preserves, recommend acquisition of areas for dedication as preserves, make surveys and maintain registries of preserves and other areas of educational and scientific value, make surveys and maintain registries of rare and endangered species, promote research and investigations on preserves and foster and aid in the preservation of natural conditions elsewhere than in preserves.

Since enactment of the Preserves System, the following ecologists have served; Jean Rose, Paul Kline, Ken Madden and, in July, 1975, the writer assumed duties.

Since one function of the board is to maintain a file on potential preserves, cooperation is urged in locating unique features in the state. You are encouraged to send information on such areas to the board ecologist. State agencies, including counties, municipalities, public corporations, boards, commissions and universities are urged to dedicate areas as preserves. Areas thus dedicated are given maximum protection from destruction as it requires the consent of the governor, preserves board, conservation commission and the legislature before an area can be condemned for other uses.

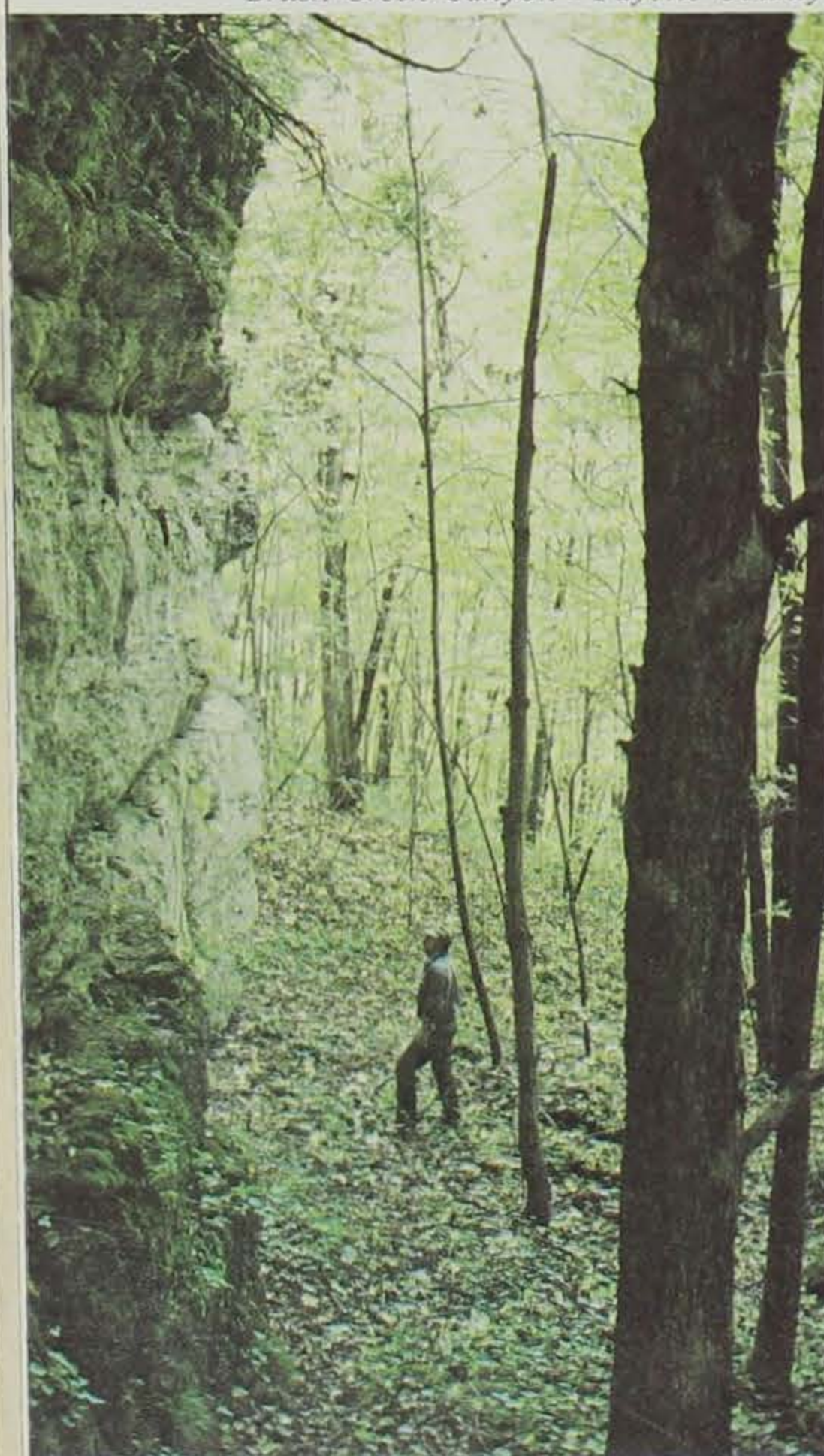
A series of articles describing the state's preserves will soon be started in *The Conservationist*. □

State Preserves System



Silver Lake Fen - Dickinson County

Brush Creek Canyon - Fayette County



| Name of Area | Location | Description of Area |
|---------------------------------|--|---|
| Bluffton Fir Stand | Across Upper Ia. River from | Forested area containing rare stand of balsam fir and scenic view. |
| Brush Creek Canyon | 2 Mi. N. Arlington | Forested steep wooded terrain with diversity of habitats, flora and fauna. Canyon cuts through 100 ft. of bedrock and provides cold water source for Brush Creek. |
| Cayler Prairie | 4 Mi. W. Wahpeton | At least 219 species of plants occur on this virgin prairie. Offers a commanding view of the Sioux River Valleys. |
| Charles A. Poisel Indian Mounds | 1 Mile N. Kingston, Ia. 99 | 3 very large mounds, visible from Iowa Highway #99. Access only by permission of owner. |
| Clay Prairie | 11 Mi. N. Parkersburg | A small virgin prairie tract. Prairie flower bloom and grass progression (seasonal) is visible from county road intersection. |
| Coldwater Cave | 3 Mi. N.W. Bluffton | Forested area with spring-fed creek. Spring is only known entrance to Coldwater Cave, largest discovered in Iowa. |
| Decorah Ice Cave | N. edge of Decorah | Rare Iowa feature. It is one of the largest known ice caves in the middlewest. Cave walls and floor are ice coated from spring to mid-summer. It is a significant feature of the Decorah Park System. |
| Fish Farm Mounds | 4 Mi. S. New Albin, IA 266 | Wooded terrace containing 30 conical Indian burial mounds of various sizes probably dating from 200-500 A.D. |
| Fort Atkinson | Ajoins Ft. Atkinson, IA 24 | Reconstructed fort built in 1840 to protect Winnebagoes from other Indian tribes. |
| Gitchie Manitou | 9 Mi. N.W. Larchwood | Prairie and brushland bordering Big Sioux River. Pink stone outcrops of Sioux Quartzite are 1.2 billion years old. |
| Hartley Fort | 7 Mi. S.W. New Albin | Formerly a stockaded fort built about 1,200 A.D. by Woodland Indians as protection from invading Oneotas. Access only by permission of owner. |
| Hayden Prairie | 5-1/2 Mi. S.W. Lime Springs | Virgin or reverting to prairie land with at least 149 species of prairie plants found here. |
| Kalsow Prairie | 4 Mi. N.W. Manson | At least 230 species of prairie plants occur on this virgin prairie. |
| M.A. Stainbrook | 2-1/2 Mi. N.E. North Liberty | Forest and brushland with exposed geologic formations consisting of State Quarry Limestone overlying Cedar Valley Limestone. Fossils abound. |
| Malchow Indian Mounds | 1-1/2 Mi. N. Kingston 9 Mi. N. Burlington | 50 Hopewellian Mounds dating to 200 B.C.-200 A.D. on scenic hill overlooking broad Mississippi Valley floor. |
| Merritt Forest | 6-1/2 Mi. S.W. Guttenberg | Virgin forest stand. |
| Mt. Pisgah Cemetery | 5-1/2 Mi. S.W. Lorimor | Mormon Trail Cemetery |
| Old State Quarry | 1-1/2 Mi. N.E. North Liberty | Wooded tract containing remains of limestone quarry where stone was taken for building Old State Capitol. Access by water only. |
| Pecan Grove | 2 Mi. S.W. Muscatine | Northernmost naturally reproducing Pecan grove of this size known to exist. Contains mature crown trees and understory of seedlings and saplings as well as other tree species, flowers and grasses. |
| Pilot Knob | 4 Mi. E. Forest City | Wooded park which contains floating sphagnum bog with rare plants. |
| St. James Lutheran Church | Overlooks Ft. Atkinson | Church ruins and cemetery date back to mid-1800s. Offers scenic view of Fort Atkinson and the Turkey River Valley. |
| Sheeder Prairie | 5 Mi. N.W. Guthrie Center | Virgin hill prairie, with at least 180 species of native plants. |
| Silver Lake Fen | 3 Mi. W. Lake Park | Geologic formations with cold, hard water up-wellings and unique habitat containing rare Iowa algae, zooplankton and flowers in the adjacent spongy areas. |
| Starrs Cave | 1 Mile N. Burlington | Mature woodland hill, 140 acre tract, bisected by Flint Creek and its scenic significant geological Devonian and Mississippian Cliff strata containing "The Starr Cave Section". Also abundant and diversified flora and fauna. |
| Stinson Prairie | 4 Mi. S.W. Algona | Virgin prairie with seasonal prairie flower bloom and grass progression visible from road and interior foot trail. Excellent prairie overlook. |
| Turkey River Mounds | 4-1/2 Mi. E. Guttenberg | Forested ridge containing numerous conical and linear Indian mounds. Contains geologic features of interest and diversity of flora and fauna. Offers scenic view of Mississippi River and Turkey River. |
| White Pine Hollow | 2 Mi. N.W. Luxemburg | Rough forested terrain containing largest stand of native white pine remaining in Iowa. |
| Wittrock Indian Village | 4 Mi. S.E. Sutherland | Prairie land containing an ancient Indian village site occupied by Mill Creek Culture. |
| Woodman Hollow | 5 Mi. N.W. Lehigh | Forested ridge overlooking Des Moines River. Features a deep ravine containing rare plants. |
| Woodthrush Woods | 8 Mi. S.E. Fairfield | Many native wildflowers with mature oak, shagbark hickory, walnut, hackberry, and associated shrubs. Songbirds abundant. |

LAND USE PROGRAM

Continued from Page 4

use the same data in making their decisions. This would encourage logical and sound decisions that have a minimum impact on our natural resources.

*At the time of printing of this article the Iowa Senate was in the process of debating the land use issue.

SALMON FISHING

Continued from Page 11

The Grayling

"Is reported by those who have tried their propagation as being easily and surely manipulated, and being spring spawners enable the fish-culturist to give them attention when but few valuable fish are claiming attention. It is the intention of the commission to join with the Michigan commissioner in trying to secure a supply of their spawn next season, and it is thought they will be well adapted to some of the smaller rivers and largest creeks in this state."

White Fish

"In corresponding with United States Commissioner Baird, I learned that Frank Clark, of Northville, Michigan, was hatching white fish for the United States commissioner, and that Iowa could have one hundred and twenty-five thousand of them as her share, provided we would take them there. I accordingly went to Northville for them, about March 1st, 1876. I took them via Chicago, Milwaukee, and Prairie du Chien to Clear Lake, Cerro Gordo county, where they were all deposited. It was thought best, as the number of fish was not large, to deposit them in one place as this would more thoroughly and quickly test the practicability of transplanting them.

While the white fish is not a game fish, and could only be successfully caught with seines, which in our limited waters would hardly be permissible; still the fact that they live upon food different from that of the game fishes, and breed abundantly, makes them well worthy of favorable notice and introduction as food for our game-fishes, aside from the fact that they are one of the choicest table-fish. An effort was made by the commissioner to procure a quantity of spawn this fall, (1876) but owing to the time spent upon our river fish and lake trout it proved too late in the season, and was unavailing. It is hoped that in another season we may secure a large quantity. We have a few thousand in the hatching-house for the purpose of experimenting upon."

Just two years later some of the salmon excitement was dwindling away. Although some fish were taken in the various lakes, most of them just disappeared. The river experiments were also disappointing.

"As the first salmon planted in Iowa were planted by Mr. Haines, in the Cedar river, December 5, 1874, we need not expect their return, according to six year return cycles in eastern salmon streams, before the season of 1880 or 1881. Until the success or failure of this work is ascertained, it would not be policy to do much more with salmon as sufficient has already been done to give it a fair test." Needless to say, the fish did not return.

The experiments were carried on for several more years. The white fish and grayling programs were given up first followed in a year or two by the salmon. No one wanted to give up on lake trout however, and stocking continued into the early 1900's. Then, even the lake trout idea was abandoned and (except for a few thousand coho salmon the federal government gave to Iowa in the early 1970's for West Okoboji) the exotic salmon and trout days were over.

There was, however, a new fish on the horizon. This is what B. F. Shaw had to say:

"There is, in my opinion, no fish known the introduction of which into Iowa waters promises so much and such general good as the carp." □

Warden's diary

By Rex Emerson
Law Enforcement Supervisor

The turkey season is well under way and I spent the day in the Shimek State Forest area in the southern part of Lee and Van Buren Counties. This large and beautiful forest has the best turkey hunting in the state. A big tom turkey is indeed a trophy bird. He is smart and tough to hunt. He can run through the brush with the speed of a horse and fly through the treetops like a quail. It's really a quality hunt. The hunter goes out by himself and tries to call the wary bird into shotgun range. It's strictly one against one. This is no sport for the "slob" hunter who thinks he can get someone to drive the game to him.

The hen is on the nest some place out in the forest. She will take care of the little turkeys when they hatch, so we might as well harvest some of the toms. The forest will only support so many turkeys. They like to eat acorns, but so do other forest inhabitants like squirrels and wood ducks. Through proper management they all have enough to eat. The wildlife section has been live trapping some of the turkeys from Shimek Forest and transplanting them in other timber areas in the state. I hope no one gets the bright idea of buying some wild turkeys to release on his own. A person could very well get a species that wouldn't do well in our state, or they might be diseased birds, which could end up disastrously for the wild turkeys that are doing so well up to now. It is also illegal to release any bird in Iowa unless it has been inspected for disease, and it must also be a bird that is native to Iowa. The turkey was native to our state, but had become extinct. The Conservation Commission received some turkeys from other states and got them started again.

While I was at the check station three successful hunters brought in their turkeys. The largest one weighed twenty-four pounds. A beautiful bird, and a very happy hunter. Even though one turkey is the limit for the year I haven't heard one word of complaint. A turkey is so hard to get the hunter is happy with just one.

We have very few problems with the turkey hunter. The officers get in the timber early, in a spot where we can hear one or two hunters squawking on their turkey call, trying to sound like a lovesick hen. If we don't hear any early shots we get out of the woods and wait until noon, when the hunting hours are over, to check licenses. That way we don't ruin anyone's chance to get his trophy bird. After 12:00 when hunting time is over, I can go out into the woods and enjoy nature. The wild flowers are beginning to bloom. Spring comes a little earlier down here in the southern part of the state. You can even smell it in the air. Every minute out there is enjoyable. Of course, the main reason I am out there tromping around is to make sure all the hunting has stopped for the day.

On the way home I thought about the wild flowers and the new leaves coming out on the trees. At one place in the timber there had been some young foxes playing near their den. They didn't know a human watched their antics for about a half-hour. If everyone could get out and enjoy nature in our forests that are kept in their natural state, I'm sure it would be a better world to live in.

Most people visiting a fish hatchery notice very little of the hatchery operation. The average person visiting an Iowa fish hatchery will notice such things as station appearance, water turbidity, the fish, and if the visit occurs during feeding time, they notice the frantic splashing as fish fight for food. Some may notice the many shallow depressions in the pond bottom as they pass a bluegill spawning pond, or they may notice the systematically placed cream cans in a channel catfish pond. But few will realize the significance of what they are seeing.

This article is one in a series that is designed to increase your understanding of things you may see happening during your hatchery visit and to increase your awareness of fish production techniques.

Specifically, this article will briefly describe spawning and rearing techniques used to produce muskellunge for Iowa anglers. Although this article concerns musky production, the spawning techniques that will be described are similar to those you would observe if you visited a northern pike hatchery, a walleye hatchery, or a trout hatchery.

Producing Iowa Muskellunge

By **WALLACE JORGENSEN**, Hatchery Manager
Spirit Lake Hatchery
and **TERRY JENNINGS**, Fish Hatcher Supervisor

Spawning Techniques

The Iowa Conservation Commission does not possess sufficient pond space to maintain musky broodfish at a hatchery. Therefore, we must rely on collecting them from lakes previously stocked with them. Techniques used to capture broodfish vary with the lake from which they are being collected. Consequently, the collection procedures described in this article apply only to operations at the Spirit Lake fish hatchery.

When the water temperature in Lake West Okoboji warms to about 45°F., hatchery personnel begin their quest of adult muskellunge. This search continues until musky have completed spawning or until a sufficient number of females have been captured to produce the required number of eggs.

Gill nets, a fish entanglement device, are set perpendicular to the shoreline at locations where musky have been captured. The nets are set six consecutive hours daily beginning at 7:00 p.m. All fish are carefully removed from them every three hours. All musky are transported to the hatchery where they are placed into

holding tanks. The following day the fish are sexed and checked for gonadal development. They are then treated with chemicals to help them resist bacterial infections and to inhibit fungal growth. Immature fish are released. "Ripe" females are spawned and fish not ready to spawn are held. Fish that are not ready to spawn, or "green" fish as they are referred to by fish culturists, are checked for ripeness and chemically treated daily. Experience has shown that if fish are not ready to spawn within three days after they are brought into the hatchery, they will not "ripen" naturally. After three days of holding all fish, males and females are injected with a hormone that hastens sperm production and ovulation. Injected fish will be ready to spawn 72 to 96 hours after injection.

Prior to spawning, each fish is anesthetized. This procedure does not harm the fish and it decreases the chance of injury from handling.

Eggs are "stripped" into a pan by gently applying pressure and stroking the belly from head toward tail. After the eggs have been removed, sperm is removed from the male fish in the same manner as that described for egg-taking. Sperm and eggs are mixed and water is added to activate fertilization. After fertilization, excess sperm is washed from the eggs and they are placed in flowing water for about six hours. During this time, water enters the eggs increasing their size and making them firm. The water hardening process is very important to obtain good survival of fertilized eggs, because water inside the egg helps cushion the developing embryo from shock that occurs when eggs are placed in hatching jars.

Egg incubation occurs inside a transparent hatching jar. Throughout incubation, the eggs are gently rolled by a flow of fresh water through each jar. Hatching occurs about ten days after spawning.

Research has shown that sudden decreases in water temperature, for instance a 5°F. drop within a 24 hour period, is detrimental to development of musky eggs. While visiting the Spirit Lake hatchery, you will notice that all musky eggs are placed on a special unit where the water temperature can be controlled. Prior to installation of this unit, egg survival ranged between zero percent and 10 percent. Since installation, survival has been about 60 percent.

Rearing Techniques

During the first 10 days after hatching, musky fry are very inactive. During this time they are using the energy stored in their yolk sac to grow and to complete development of their body systems. When the yolk sac is nearly depleted, the small fish begin to swim toward the surface then settle back to the tray bottom. This stage lasts about two days before they begin to actively swim and search for food. This is the time they are stocked into rearing ponds or into hatchery holding tanks. Rearing techniques differ between pond and tank production.

Pond Production: About 14 days before the fish will be stocked, the production ponds are fertilized with dehydrated alfalfa. Introduction of the organic fertilizer stimulates production of minute organisms, zooplankton, which are eaten by the small musky. In conjunction with fertilization, a chemical that inhibits pond weed growth, is also added. Periodically, the fish culturist monitors progress of food production and tries to stock the musky when food production is highest.

Approximately two weeks after the musky have been stocked, adult fathead minnows are added to the production ponds. The reason behind stocking them is they will spawn and a suitable sized fish that can be eaten by the small musky will be available when they are ready to switch diet from zooplankton to fish, about one and a half inches. If edible size fish are not available when the musky are making the transition, they eat one another. Except for controlling vegetation and periodically seining the musky ponds, there is little else a fish culturist can do to assure adequate fish production.

The fish are harvested from the ponds as 7 to 11 inch fingerlings during September.

Tank Production: Pond production of Iowa muskellunge has been an unreliable source of fingerlings. Some years a high number of large fingerlings were harvested while other years

produced no fingerlings. In order to increase the reliability of fingerling production, the Fisheries Section has been experimentally growing musky in hatchery holding tanks. Producing musky in this manner is much more time consuming and costly than pond production.

Tank production of musky consists of producing a large number of fish in a small area. For example, at Spirit Lake the initial stocking rate was 600 fish into 18 cu. ft. of water. This would be equal to stocking 1,437,480 fish in a one acre pond that is one foot deep. Tank production of musky require constant

Photo by Wally Jorgensen



This musky is ready to be stocked.

He began his life in a dish when eggs and sperm were mixed.



Photo by Ken Formanek



Fertilized eggs are poured into hatchery jars. Someday the little fish in the jar may reach the size of this "tiger".



Photo by Bob Runge

attention from man. Man must collect food for the fish daily. To minimize collection time zooplankton is collected from fertilized ponds containing dense plankton populations. This routine is completed daily for about the first 30 days at which time the musky require small minnow fry for food. Minnow fry are collected daily from fathead minnow production ponds. As the fish grow so must the size of forage that are fed. Musky are maintained in the tanks until they are between 5 inches and 7 inches long (late August) before being stocked into Iowa lakes.

Although collection of food is the most time consuming part of tank culture, there are other equally serious problems that the fish culturist must face. Rearing large numbers of fish in a confined area is conducive to rapid spreading of potentially serious diseases. The entire production can be lost in a few days if disease is not controlled. Therefore, our fish are chemically treated at least three times each week to eliminate bacterial infections and external parasites. Another serious problem is predation by larger fish. To eliminate this problem, the fish must be frequently size sorted.

Although this method of production is time consuming and costly, we are nearing the goal of more reliable fingerling production. During the past three years, tank production of muskellunge fingerlings has increased from 1,400 to 2,971 fish annually. We still have some problems to overcome to increase production in available tank space. But, the problems are not insurmountable and production efficiency will increase.

The Fisheries Section of the Iowa Conservation Commission has overcome many of the obstacles in establishing a successful muskellunge fishery in Iowa. The first hurdle was to establish a dependable source of broodfish so that we do not have to rely on outside sources for eggs. This has been successfully accomplished. Next we needed to increase hatching success. Installation of a water temperature control unit accomplished this. We also needed to improve our rearing techniques to obtain a more dependable number of fingerlings. We are not completely across this hurdle, but success in tank culture has brought us nearer this goal.

The Iowa musky program has been successful. Anglers are harvesting more of these "tackle-busters" each year. There were reports of 58 legal musky taken from West Okoboji in 1975. Twenty of these fish were over the 18 lb. class. The former state record muskellunge taken at Clear Lake (29½ lbs.) was topped twice by anglers fishing in West Okoboji. On August 4, 1975 Leo Kofoot landed a 32½ lb. musky. Several weeks later this record was broken when Ed Feldhacker weighed in a 38 lb. fish which now stands as the state record. The original stocking of musky in Lake West Okoboji and Clear Lake has been expanded to include Big Creek Reservoir and Rathbun Reservoir. Within a few years, state record musky will be living within moderate driving distance for most Iowa anglers. □



Photo By Sonny Satre

Southern Iowa Kingpin

By Marion Conover
Fisheries Biologist

"Small yet mighty big on the stringer." That's the story for bluegill and crappie, the two panfish that are the kingpin to southern Iowa fishing.

According to McClane's Fishing Encyclopedia the term "panfish" applies to those freshwater species ordinarily too small to fall into the game fish category with bass, walleye, pike, etc. Surely the term correctly describes the round, robust, pan-size shape of bluegill and crappie. The exceptional flavor of these fish would also lend support to the theory that the term panfish was coined because they are unexcelled in the frying pan.

While bluegill and crappie may be individually dwarfed in size by the larger game fish, and often serve as their food, these two panfish come out on the winning end when measured by number and weight on the angler's stringer. The reason is simple: Most southern Iowa lakes support an average of 300 pounds per acre of panfish. These same lakes do well to contain 60 pounds per acre of bass. This strength in numbers plus no panfish bag limit leads to the high harvest typical in many southern Iowa lakes.

Annual panfish harvest rates of 100 to 150 pounds per acre are not unusual. Yet always next year there are more panfish to be caught.

The panfish success story begins with their high reproductive potential. Each female is capable of producing 20 to 25 thousand fry. Both bluegill and crappie are nest builders. The majority of crappie spawning activity occurs in May. Bluegill reproduction is greatest in June, but is often spread out into August.

Males of both species fan out nests in shallow water areas. These are often grouped together in colonies of 10 to 30 nests. Many nest colonies can be observed from shore, and appear as numerous miniature volcanic craters. Each "crater" is guarded by the male during egg incubation.

This annual prolific production of young fish ensures perpetuation of these panfish species. It is also important to the largemouth bass population. A stable supply of abundant forage is insurance for good bass growth, and bluegill is the species best meeting this need.



Photo by the Author

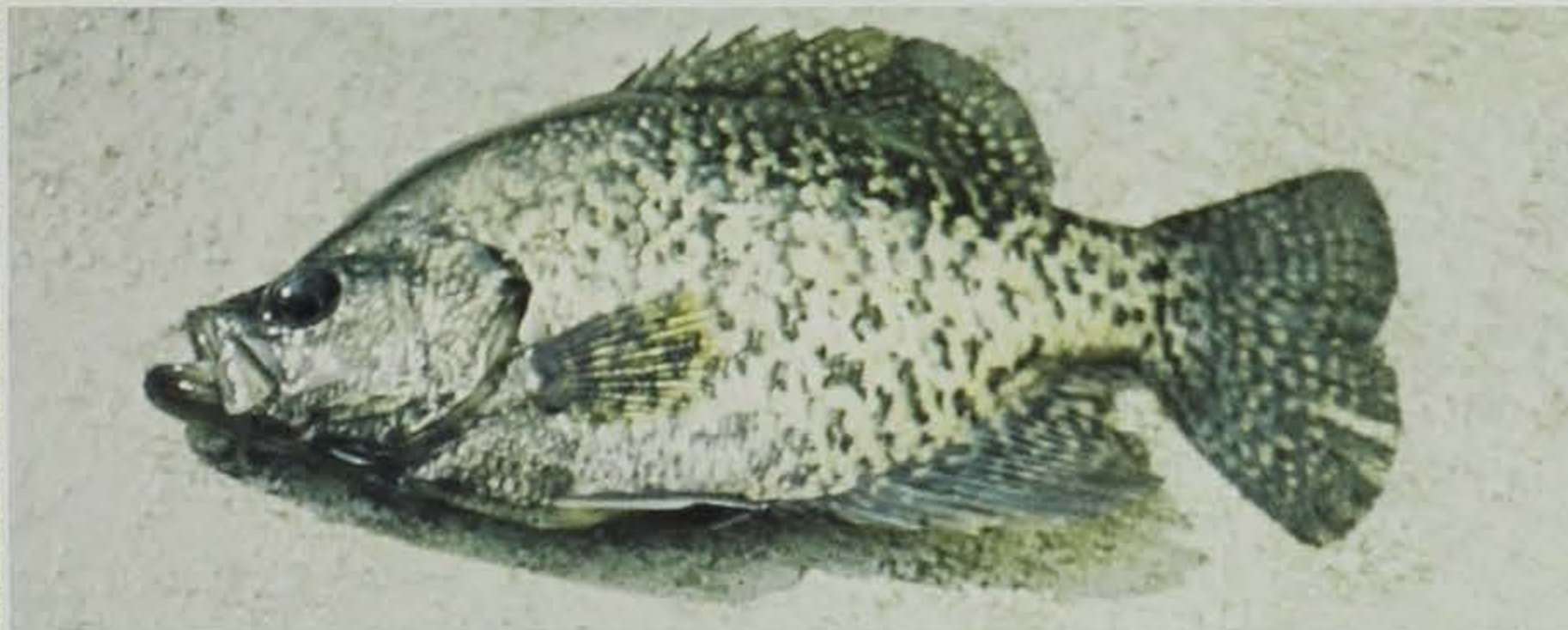


Photo by the Author

Even large bluegill and crappie, like those shown, take small baits and lures.

Panfish numbers must not overpopulate however, or the entire lake's fishing will suffer. The presence of too many bluegill and crappie will limit bass reproduction. It will also result in slow growth of the panfish, as their food supply dwindles. Small, slow growing panfish are undesirable to fishermen.

There are two methods fishermen can practice to ensure quality panfishing. Number one is not to overharvest bass. Throw back unharmed bass less than 14 inches in length even where a minimum size limit restriction is not in force. That bass population is important in controlling panfish numbers.

Number two and the most fun of all is to fish for and keep panfish. There are no daily bag or possession limits on bluegill or crappie in Iowa. This is to allow fishermen to harvest the large annual surplus. As a courtesy to other anglers, and to avoid waste, take home only those fish you will clean.

The key word to panfish fishing success is light tackle. Almost any method will take some of these eager biting fish, but 2 to 6 pound test line on a light action rod will bring home many more. A number 8 hook is hard to beat whether used with live or artificial bait.

May is the most productive month for crappie fishing in Iowa. This is the time when you can "score from shore," as the fish move bankward during the spawning season. Small artificial baits headed by 1/16 ounce jigs work best. Minnows will also take fish.

Later on during the warm weather months crappie move away from shore into deeper water. A boat is a must now to locate the fish. They can often be found suspended 10 to 15 feet off the bottom near brush. Minnows normally take the most crappie now.

There isn't a fish in southern Iowa waters more cooperative to anglers than the scrappy bluegill. It seems he's a willing partner to any fishing venture. Small jigs, spinners, flies, or worms work best. He too moves toward deeper water during mid summer, so a boat is helpful in locating the best hot weather fishing locations.

Ice fishing for both species is also very good. Fish near the bottom for bluegill and up a bit for crappie. Minnows produce the most crappie action, while tiny jigs baited with waxworms are hard to beat for bluegill.

For panfish action, leading to a tasty meal, try the following southern Iowa lakes: Big Creek (Polk county), Viking (Montgomery county), Rock Creek (Jasper county), Anita (Cass county), Prairie Rose (Shelby county), Ahquabi (Warren county), Three Fires (Taylor county), Green Valley (Union county), Red Haw (Lucas county), Iowa (Iowa county), Keomah (Mahaska county), Hannen (Benton county), Miami (Monroe county), Geode (Des Moines county), and Wapello (Davis county). □

Photo by Wayne Lanning





FIRE: Wildlife's friend or foe?

By Ronnie R. George
Wildlife Research Biologist

A THIN PILLAR OF SMOKE rising from a distant spring grass fire catches the attention of a leisurely circling red-tailed hawk. A combination of past experience and instinct guides the raptor swiftly toward the distant smoke for he has come to associate smoke and fire with an imminent meal. A terrified meadow vole, darting frantically before the advancing flames,

provides an easy target as the hawk drops through the smokey haze like a thunderbolt.

To even the casual observer, fire can have very obvious, dramatic effects on wildlife. The blackened remains of a pheasant nest in a smoldering road ditch, the burned-over duck marsh, or even Bambi's narrow escape from an animated forest fire might convince the wildlife novice that fire is invariably harmful to wildlife populations. However, wildlife research studies have shown that this not always is the case.

Burned over last season, area below, left offers excellent nesting cover for pheasants while unburned plot, right is being invaded by trees.





A fire at the wrong time of year is devastating to wildlife.

Photo by Dick Namsen

To better understand the effects of fire on wildlife populations it may be helpful at this point to discuss natural succession in plant communities and its relationship to wildlife. Consider what happens when cropland is abandoned and left idle. Once an idle field is freed from the restraints of cultivation and herbicides, various annual weeds and grasses soon become the dominant vegetation. After a few years the field is slowly invaded by woody species such as boxelder, mulberry and honey locust; various types of brush and small trees eventually become the dominant vegetation. If left undisturbed, the brush itself is slowly replaced by mature forest species such as oak, hickory, and maple. Each of these changes in the dominant vegetation is called a successional stage and each is accompanied by various forms of wildlife which are more or less dependent on that particular successional stage for survival. The early grassy-weedy stage of an idle field can provide excellent pheasant nesting cover, and young quail may dart about under a weedy-brushy canopy in search of seeds and insects, but this open vegetation will eventually give way to dense brush and matted vegetation which is unsuitable for nesting game birds but may provide shelter for the shy white-tailed deer. After many years, forest dwelling wild turkeys may come to scratch for acorns in a mature oak-hickory forest that was once the site of a cultivated field.

In order for a wildlife biologist to manage for a particular species of wildlife, he must first know the biological requirements of the animal and then control natural plant succession in such a way as to develop or maintain the vegetative cover at the proper successional stage. Wildlife research studies in many states have shown that fire, properly used, can be a very useful tool in controlling plant succession and ultimately, wildlife populations.

Fire has been successfully used to manage quail habitat on hunting preserves in the southeastern United States for more than fifty years. In the midwest, prescribed burning is used to control brush and maintain grasslands for prairie chicken habitat. Western and northern game departments often use fire to top kill brush and stimulate resprouting of woody species to provide browse for mule deer, white-tailed deer, and moose. The Iowa Conservation Commission's Upland Wildlife Research Team is presently conducting a prescribed burning study on the Rathbun Wildlife Area in southern Iowa to evaluate fire as a habitat management tool for pheasants, quail, and cottontail rabbits.

While all of this talk about burning may sound as if wildlife specialists are completely ignoring Smokey the Bear's advice about the dangers of forest fire, this is not the case. We realize that uncontrolled or indiscriminate burning can still be very destructive to wildlife habitat. This is especially true during the reproductive season when nests and young are exposed to fire, but indiscriminate burning can be quite destructive at other times as well. The illegal burning of public roadsides by private landowners is a good example. This activity not only destroys valuable wildlife winter cover, but it may completely eliminate residual cover needed for pheasant nesting the following spring.

In summary, we should all remember that uncontrolled, indiscriminate burning of wildlife cover can be extremely detrimental to many forms of wildlife. However, a carefully planned, controlled burn conducted by trained biologists, under the proper weather conditions, and at the proper season of the year can be a very useful tool in controlling plant succession and managing wildlife habitat. □

How to catch a "STOCKED TROUT"

By Ron Johnston
Hatchery Manager

DID YOU EVER have the "hankering" to catch a nice rainbow or a big brown? Then - after pondering thoughts about sophisticated equipment and expensive trips to far off places, you forgot about it? That is when you made the first of several mistakes.

If you haven't tried Iowa's unique trout program yet, you're in for a big surprise. Up to 300,000 catchables (½ pound average) are normally stocked each year from April through October. Several thousand more fingerling browns go into marginal streams to grow. We also stock some large brood fish yearly and they always stir excitement. In fact, certain agencies have suggested that we spoil Iowa trout fishermen. Regardless, chances are that a trout caught in Iowa is a "stocked" trout.

Last summer I sort of sneaked down to feed the trout in the raceways one Sunday afternoon. There were quite a few visitors and it can be hair raising to answer questions while weighing feed. Out of nowhere a three year old girl appeared at one raceway with a stub of a bamboo pole, cotton store string, a split shot and a #12 gold hook with no bait. Quick as a wink she tossed in the hook and jerked out an 11 inch rainbow. I quickly unhooked the undamaged fish and slipped it back in the water saying, "Honey, you can't fish here". The "raspberries" I received from the visitors were proof I was the "heavy". Don't read me wrong! I **do not** recommend fishing in a hatchery raceway. That **can** get expensive in fines. What I am saying is that little girl **went** with minimal equipment and caught a fish. Maybe you just "didn't go".

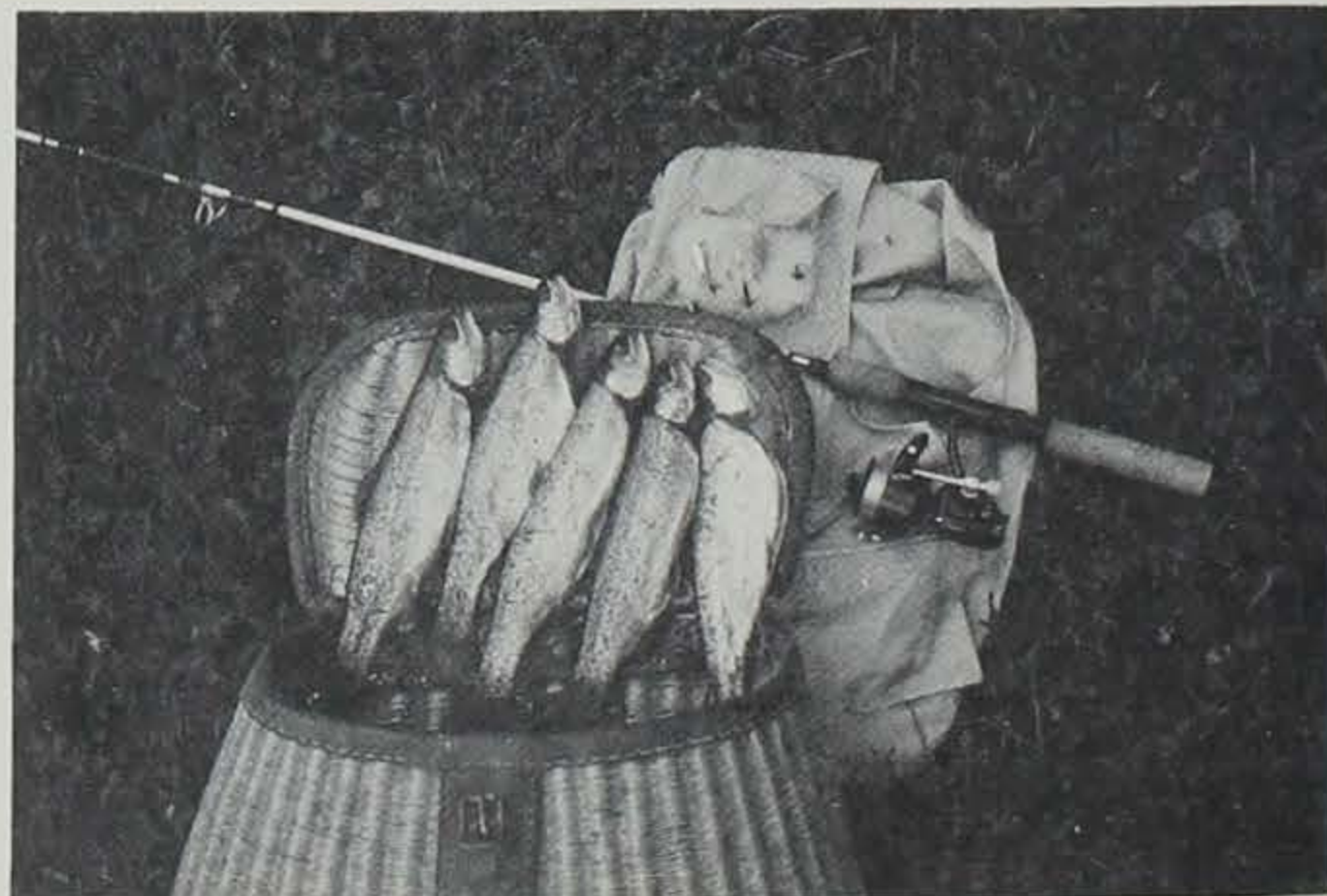
I hesitate to tell anyone how to fish for several reasons. A fellow named Ron Johnston caught a brown that was entered in Iowa's Record Fish a couple of years ago. But that wasn't me. He is from Des Moines. I'm still waiting for my record fish. I'm also reminded of an officer's experience at the Iowa Great Lakes area years ago. While checking through binoculars, his attention continually returned to a lone boat fisherman who would swing his fishing rod like a baton at irregular intervals. The curious officer had to investigate. After a license check, he found the angler was jigging a floating type bass plug with a **big** lead weight attached. The plug was going straight down fifteen feet. The perplexed officer explained the plug wasn't intended for use in this manner and it was doubtful if it would catch fish. The fisherman smiled and quietly produced a stringer of smallmouth bass averaging 5 pounds and one fish short of the limit. The officer stated that would be the last time he would ever try to tell anyone how to fish.

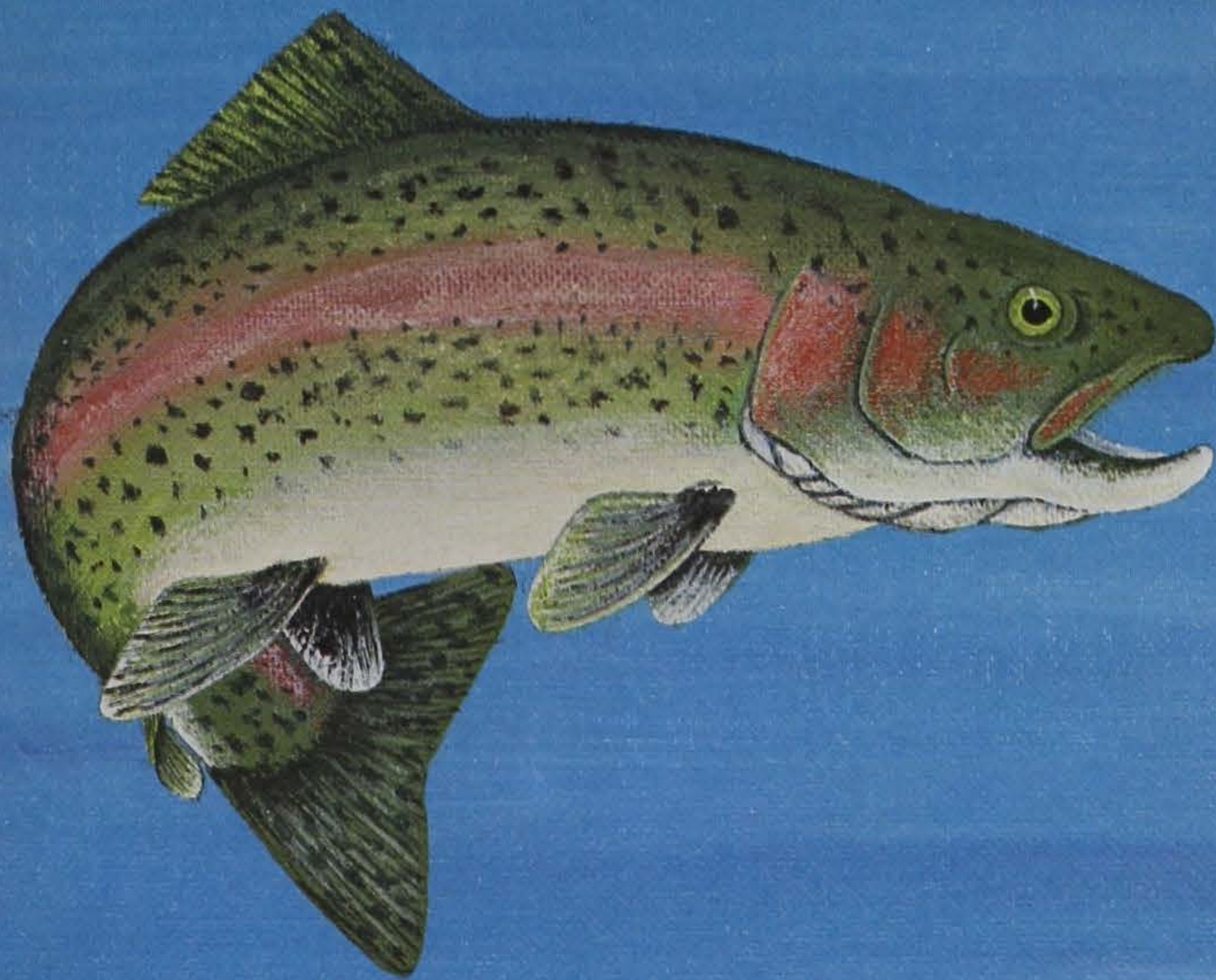
I have "started" quite a few men and women trout fishing during the past few years. Most of them are still at it. Many of them came from southern Iowa where I told them about trout while I was stationed there in warm water propagation. Even Dad said "Do you really think I can go out and catch a trout?" Now, I occasionally remind him of "possession limits". How do I start them? — I stick to quick "basics". These can usually be picked up on the first trip. It's how I started. I checked into a fish hatchery in Iowa's trout country for some help. Remember, besides fish propagation, we're there to help fishermen. We're even using bulletin boards at the trout stations posting weekly stocking by the day - **after** the streams are stocked. That is a big help to fishermen.

I recommend a stream that isn't too clear for beginners. If you see the trout - they are looking at you. I like a light pole limber enough that a chub minnow will make the tip bounce - and it often does just that. Some good fishermen go down to 1 or 2 pound test monofilament line or leader, especially in very clear water. I can't use it because I have the bad habit of snapping it when I set the hook. I can manage with 4 pound test but 6 pound is also a good line. Don't use anything heavier. For sinker weight, I think light and small - or the number of split shot it will take to get the bait where I hope it will go. If I must use a float to get to fish downstream in clearer water, I like one that attaches easily and is no bigger around than a nickle or dime. Hooks? I think small there, too. I use from number 10's to number 16's. I've caught some of my biggest trout on hooks I could hide inside a salmon egg. I've used flies, spinners, salmon eggs and worms for bait. The "purist" will cringe in pain, but I've seen cheese, kernels of corn, marshmallows, beef melt, liver and dough made from trout feed catch many fish. I've used a few of these, too. I recommend a variety and switching back and forth. If they don't "hit" on one - they might on another. Again, my biggest trout was caught on a bit of bait no larger than a pea. I fish both the head and tail of pools, around rocks and snags, in riffles and around drifts and stumps. In other words - any place I think a fish might be hiding. Usually, that's where I also seem to lose my share of hooks and line. I recommend a prospective trout fishermen to write or stop at a station for an Iowa Trout Fishing Guide. This brochure will provide much excellent information. Trout fishermen should acquaint themselves with several streams. A person can sit at a favorite "hole," but I prefer to move around on the streams. After a fish or two is hooked and caught out of one pool - I think it pays to let that pool cool off awhile. A bit of fish identification might be advisable. One day along a stream, an individual proudly displayed his limit of "rainbows". I casually informed him it was a nice stringer of northern redhorse suckers. I don't think I'll ever do that again.

My last and probably the best recommendation would be to - Stop Wishing! Go Trout Fishing! □

Photo by: Ken Formanek





LARRY POOL
"75"



Photo by Ken Formanek

Spring scenery at Red Haw State Park.