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Iowa
CONSERVATIONIST

May 1986

Iowa CONSERVATIONIST

Volume 45 No. 5 • May 1986

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CONTENTS

- 2 New Life for The Ledges
- 4 Fish the Des Moines River Corridor
- 6 Environmental Education
- 7 Commercial Feed for Walleyes
- 8 Using Bytes
- 10 Good Fishing is No Accident
- 14 County Feature
- 16 Conservation Update
- 18 Nature Tale
- 19 Wildflower
- 20 Forgotten Habitats
- 23 Calendar
Warden's Diary

FRONT COVER: Photo by Cathy Meddin.

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IOWA CONSERVATIONIST (USPS 268-780), is published monthly by the Iowa Conservation Commission, Wallace State Office Building, Des Moines, Iowa 50319. Second class postage paid in Des Moines, Iowa, and additional mailing offices. **POST MASTER:** Send changes of address to the Iowa Conservationist, Wallace State Office Building, Des Moines, Iowa 50319.

Send subscriptions — one year; \$5.00, two years; \$8.00, or 3 years; \$10.00 — to the address above.

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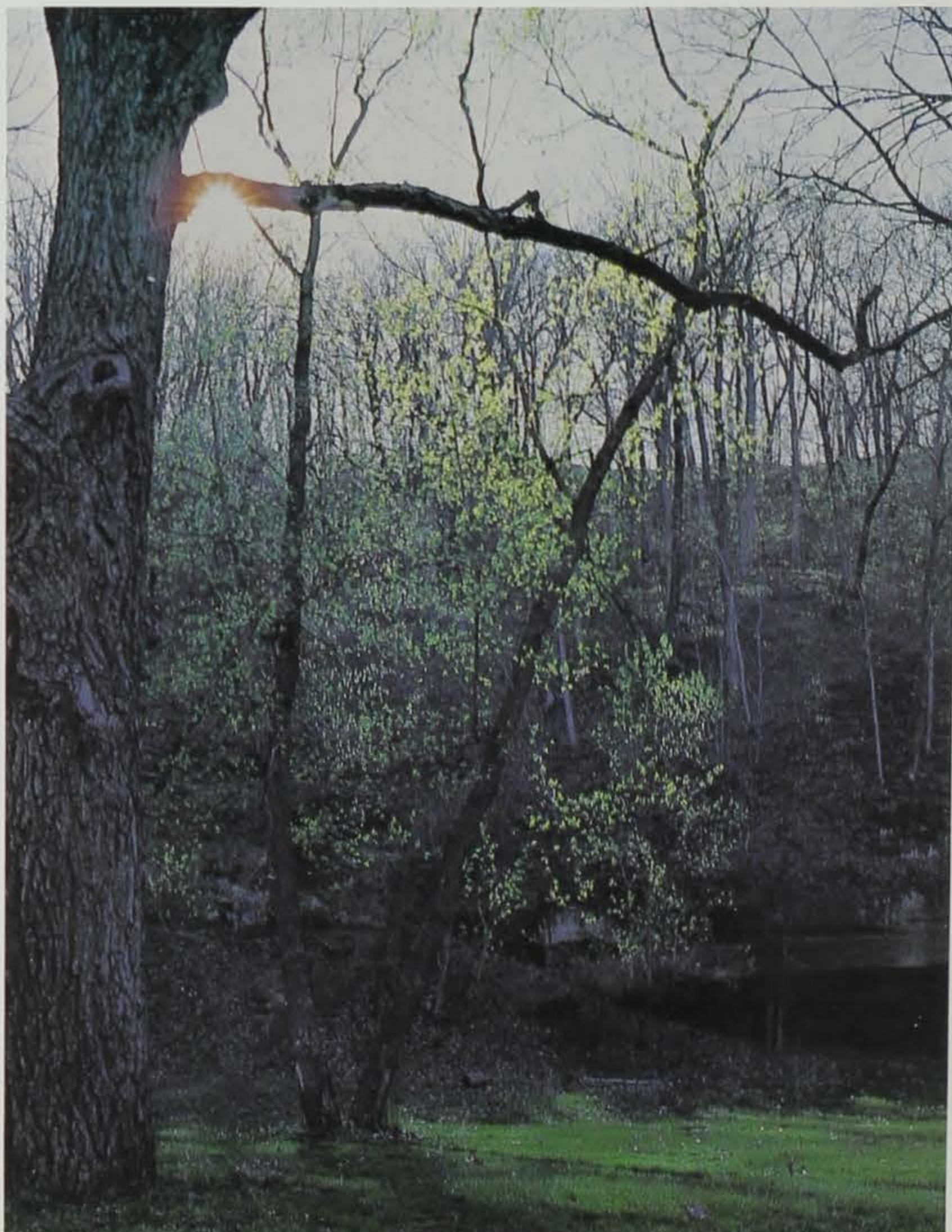
New Life

"Of Iowa's many bits of rare scenery, none can equal the Ledges in picturesque beauty. It is a rugged region full of life, romance, and legends; a bit of wilderness that has a marvelous wealth of scenic witchery; an enchanting rock-walled valley of peace and harmony through which flow woodland streams and babbling brooks, playfully leaping over rocks and boulders." Carl Fritz Henning, park custodian 1921-41.

Carl Henning may have been a bit biased in his statement about The Ledges; after all, he was the first custodian of the area and instrumental

in having The Ledges declared a state park. But many Ledges visitors would agree with his description. Each year, the park attracts over 300,000 visitors.

In recent years, visitation has been down due to a few obstacles. In 1984, virtually all of the lower Ledges was underwater, as heavy spring rains caused flooding in much of central Iowa. Saylorville reached an all-time high, backing water into The Ledges valley, covering the stone shelter and suspending picnic tables from tree limbs. A tall cottonwood at the mouth of Pease Creek records a his-



Roger Sparks

Life for The Ledges

By Julie Holmes

tory of high-water marks from the Des Moines River.

During the recent flood period and throughout the flood damage clean-up, Canyon Drive was closed to vehicle traffic. Canyon Drive takes visitors from the upper Ledges to the valley by means of one-way traffic. This is to prevent possible accidents at some of its blind turns. With the road closed, the majority of visitors were shut-off from the prettiest part of The Ledges. But The Ledges is back, with Canyon Drive open and the Des Moines River in its banks, visitors once again can enjoy the beautiful valley.

The newest feature to the park and one a number of regulars have been waiting patiently for is the new campground. The Ledges has been closed to camping since 1983 while moving and upgrading the camping and picnic facilities. Some \$500,000 have been spent on new modern showers, restrooms and other improvements.

The new campground offers 40

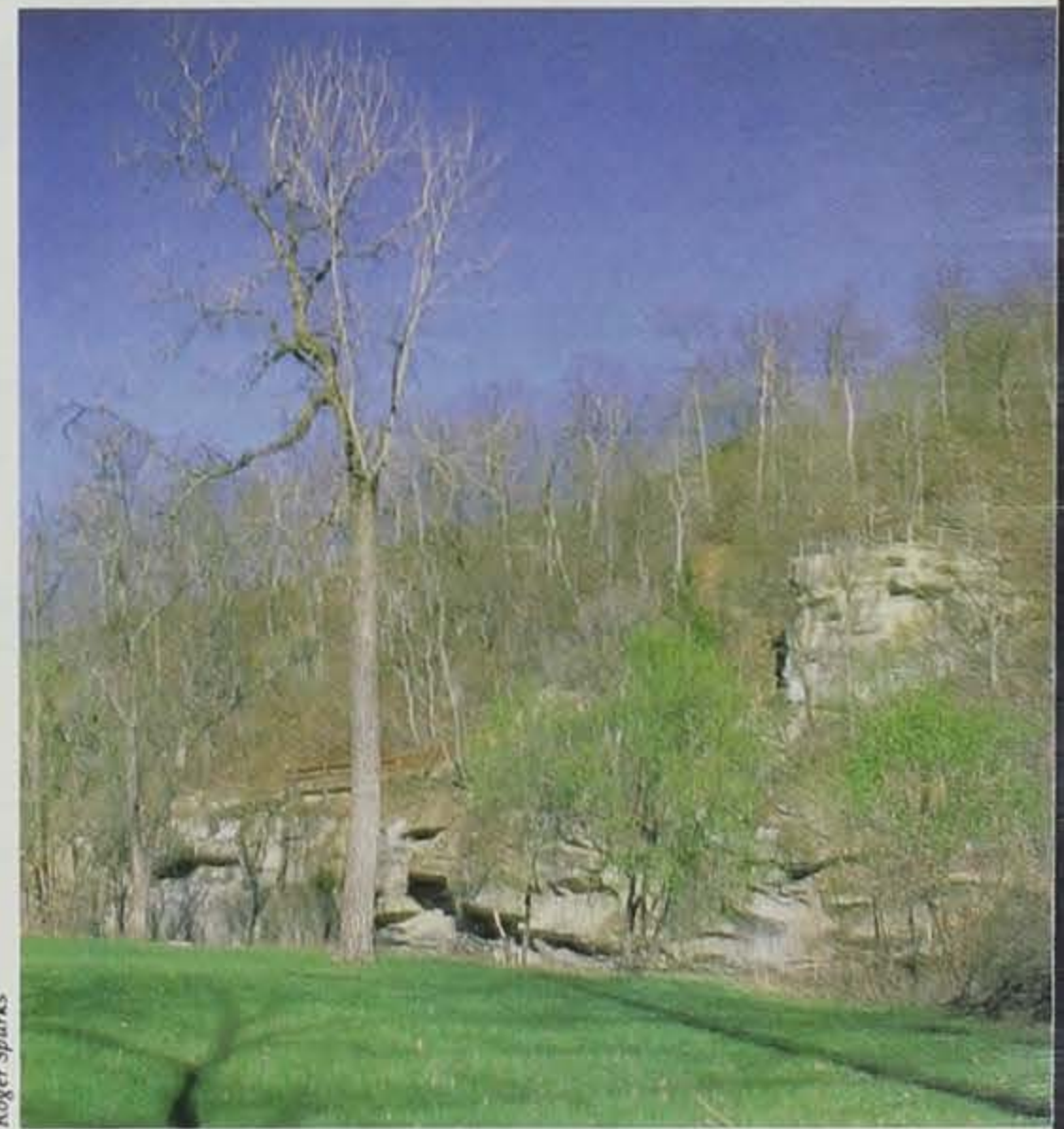
electrical units and 42 nonmodern units. A dozen hike-in sites have also been added, and will allow a more secluded primitive style of camping. An interesting note about the hike-in area — it is located on an old stagecoach route that ran to and from Boone.

A lot of history and legend surround Ledges State Park. It is rich in plant and bird life, and offers some of the finest scenery in Iowa. Vast improvements on the trails system throughout the park will make enjoying some of these features easier.

Carl Fritz Henning knew the richness of the area and had the foresight to preserve it. He wrote, "To write about The Ledges and its natural beauty, to the end that it may be preserved for the people of Iowa for a park is a subject broad yet inviting, the duty is a pleasant one, for I have enjoyed these many years the benefits of this beautiful piece of woodland. To spend a day or an hour at 'The Ledges' is a pleasure and leaves sweet memories."



Ron Johnson

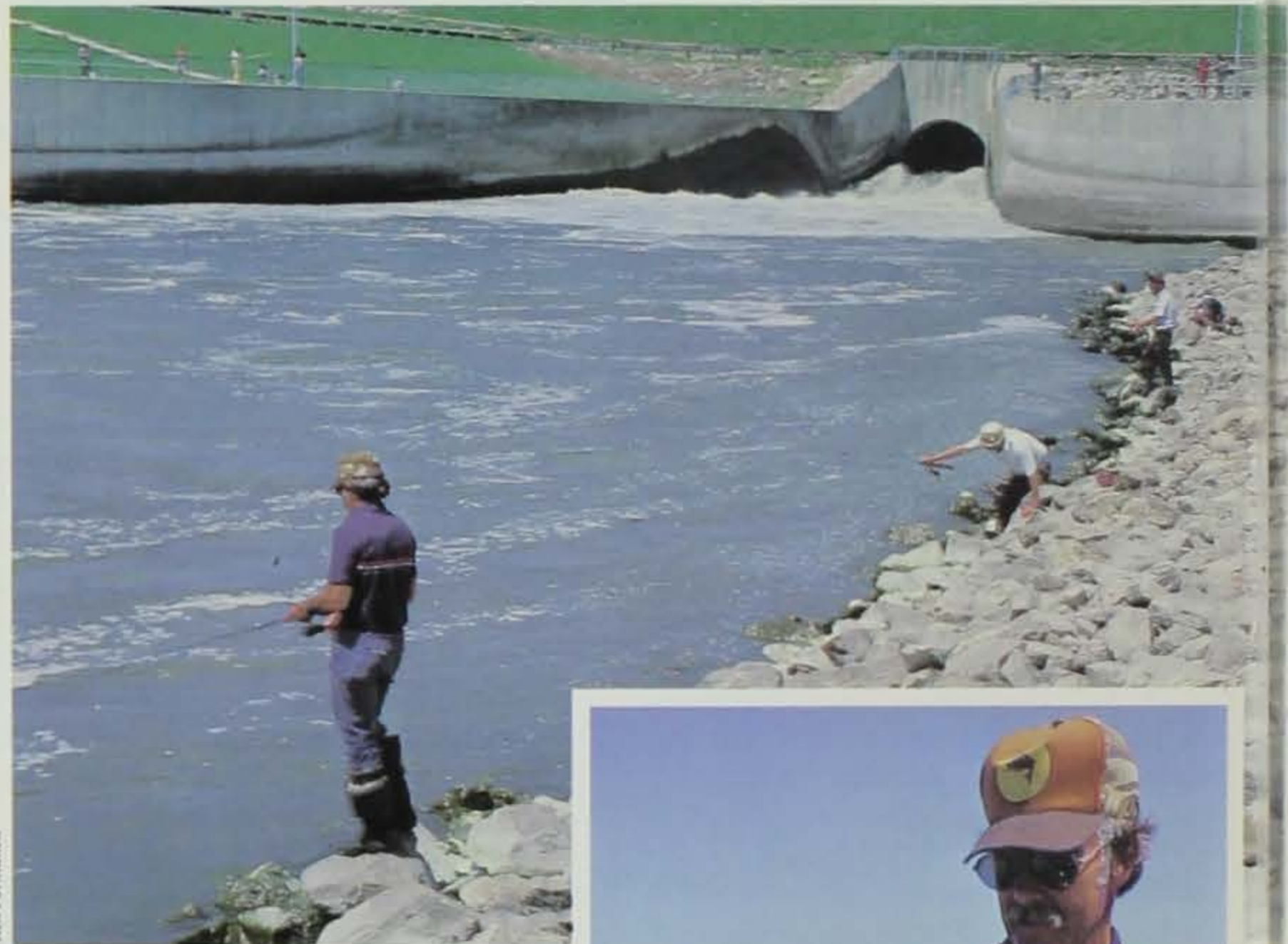
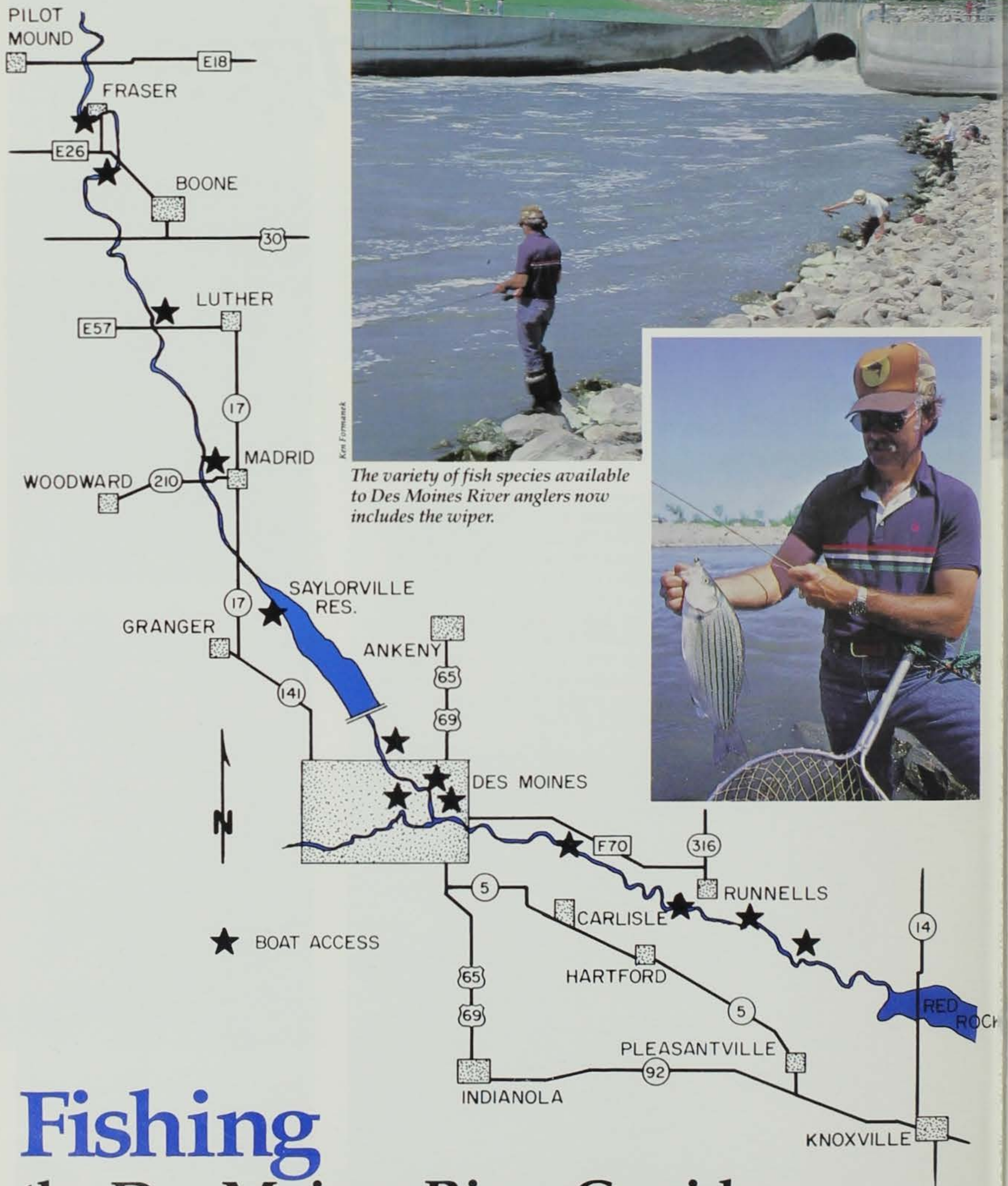


Roger Sparks

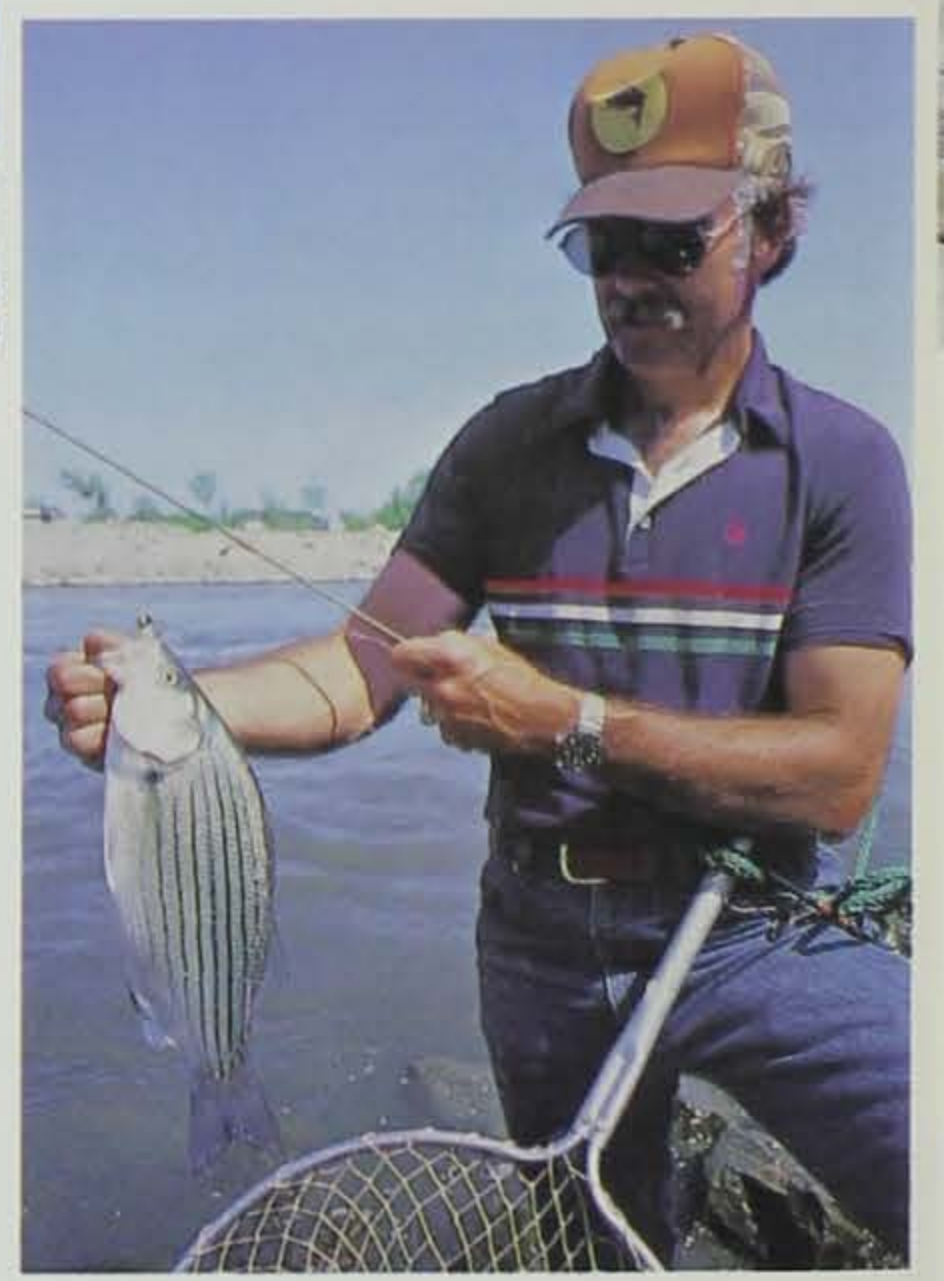


Roger Sparks

The new look to The Ledges includes a modernized camping area (left). Dutchman's breeches and other wildflowers enhance one of the state's finest trail systems (above).



The variety of fish species available to Des Moines River anglers now includes the wiper.



Fishing the Des Moines River Corridor

By Tom Putnam

The Des Moines River corridor, extending from the upper end of Red Rock Reservoir to northern Boone County, offers a great variety of fishing opportunity to central Iowa anglers. Access to this 80-mile segment of the river is easy because of the abundance of city, county, state and federal areas along its course. Seven popular fish species are found in the river, and it is difficult to find a time when something isn't biting.

By far, the most popular species is channel catfish. "Keeper" catfish range in size from one to twenty pounds, and it is surprising the number of three- to six-pounders caught each year. Success is especially good in April, May and June if the river levels stay near normal. The stretch above Red Rock Lake and the river in Boone County are two of the best areas. If Saylorville or Red Rock flood in early summer, catfishing can be super as long as the water continues to rise.

The flathead catfish is popular with a smaller but persistent group of anglers who use stout tackle to conquer this monster. Flatheads can be found around snags in deep-water holes. Best angling times are spring and early summer. Most anglers fish at night with live bait, usually green sunfish.

The success of walleye stockings in recent years has been encouraging. About 10 million walleye fry are stocked annually at the two reservoirs. Walleyes are notorious for their migrating habits, especially during the spring and fall. Walleyes are commonly found below all the dams these times of year.

They also congregate in deeper pools around rocky areas that harbor abundant minnow, shiner or shad forage.

Another species taken in large numbers, if conditions are right, is the crappie. Last year, above Red Rock and Saylorville and below Saylorville Dam, large crappies were frequently taken on jigs. July and August seem to be the only slow months for this species.

White bass "mania" takes place on the corridor any spring when the river is low. This doesn't happen every year, but when it does, it is worth taking advantage of the fast

action. Since white bass are found only up to Center Street Dam in Des Moines, angling takes place from there downstream. The entire stretch to the upper end of Red Rock Reservoir can yield heavy stringers of one-pound fish with an occasional fish approaching three pounds. If the river is very low and warms up rapidly in the spring, the white bass run can begin as early as the first week in April. Usually, it starts later in April and carries over into May.

Hybrid striped bass (wipers) have been stocked in Saylorville Lake to take the place of white bass. Wipers are also strong migrators and are now distributed from below Red Rock Reservoir to Fort Dodge. Best fishing areas in the river are below Saylorville, Center Street and Scott Street Dams, and in Boone County. The most consistent spot is below Saylorville where fish can be caught at any time of year.

The final gamefish species of importance to anglers in the corridor is the northern pike. More than three million fry are stocked each year in the two reservoirs. Since this species also migrates, pike are found scattered throughout their watersheds. Best areas are below dams, again in spring and fall. Northerns are most often taken below Saylorville Dam and at Cottonwood Access.

A few words about lures. All the species mentioned rely on fish as a major portion of their diet. With this in mind, using a lure that imitates a minnow, shiner or shad makes it possible to catch any of these fish. Lures most often used by seasoned river anglers are 1/8-ounce plastic twisters and small maribou jigs. Preferred colors are white, yellow and chartreuse, in that order. Anglers often tie two twisters or jigs on at once, especially if the river is swift and additional weight is needed to get the lure deep.

Boating access, developed over the past ten years, now makes even the most remote areas accessible. Concrete ramps are available at seven locations above Saylorville to fish that stretch of the river extending into northern Boone County. The ramps at Jester Park and Madrid (Laurie ramp) provide access to the upper end of Saylorville Reservoir and are

especially beneficial to those wanting to fish the river environment immediately upstream of the lake. Ramps at Sportsman's Landing, Dogwood (Luther) and the two ramps at Boone-Riverbend and Boone Waterworks Park make access available to the stretch between Madrid and Boone. A ramp above Fraser Dam opens the river in northern Boone County to boating. Another ramp is also planned for the stretch between Boone and Fraser.

Between Saylorville Dam and the north end of Red Rock, there are seven concrete ramps to help get anglers closer to fish. The Sycamore ramp, two miles below Saylorville, allows boat access below the dam and to good habitat for several miles downstream. Ramps at Prospect Park and Birdland Marina open up areas within the city. The ramp at the SE 14th Street Bridge gives excellent access to the stretch from below Scott Street Dam to the Des Moines power plant. The new ramp at Yellow Banks County Park, the Hartford ramp and Bennington Bridge ramp are very popular among anglers fishing above Red Rock Reservoir. Also, the Boxcar access, named for the old railway cars used to stabilize the cutbank there, has a gravel ramp which gives access to the river immediately upstream of Red Rock Lake.

Although dozens of good angling areas can be found in the corridor with accessibility from shore, several are most popular. These include the lowhead dams at Fraser and Boone, and the two dams in Des Moines at Center Street and Scott Street. Other favorites are the Saylorville tailrace area and the Cottonwood Recreation Area one mile below Saylorville Dam.

The Des Moines River corridor in central Iowa can be an exciting place to fish. With several gamefish species in plentiful supply, it is often hard to guess which will bite next. The size of the fish taken is often better than most lakes, and access is easy. No excuses now — give it a try!

Tom Putnam is a fisheries management biologist located at Boone. He holds a B.S. degree from Iowa State University and has been with the commission since 1971.

ENVIRONMENTAL EDUCATION

Learning to Appreciate

By James Zohrer

What lives in 18 homes, has 92 legs, and opens 100,000 eyes? If you guessed a sea urchin, you are wrong. It is the force of county naturalists that work throughout Iowa. This force includes 46 full- or part-time naturalists who operate out of 18 nature centers and hundreds of schools and natural areas. Each of these naturalists works for one of the 98 county conservation boards in Iowa. They open the eyes of over 50,000 children and adults each year concerning the fragile beauty to be found in nature.

Counties are also active in the training of student naturalists who will help in furthering conservation education efforts. Environmental education is being emphasized in several private nature centers and by many conservation groups across Iowa.

The parks section of the Iowa Conservation Commission is also carrying out an intensive environmental education program in state parks. This effort includes the development of many self-guided nature trails and increased interpretive programming in the parks aimed at educating the public in the appreciation and understanding of our natural world.

The Conservation Commission also operates a modern conservation education center located at Springbrook State Park, as well as a number of nature centers in other state parks. Many campground programs are being presented during the summer months to reach the actual park users.

Why are state, county, and private agencies so concerned with environmental education? There are three main objectives of our environmental education efforts. The first is to assist the public in developing a keener awareness, appreciation, and understanding of the natural world around them. The second is to accomplish management goals by encouraging the thoughtful use of a recreation resource and by minimizing human impact on the resource. The third is to promote public understanding of a

conservation agency's goals and objectives.

In the past, violations of park laws such as littering and vandalism were answered by increased enforcement patrol and the writing of citations. Today, although law enforcement is still important in protecting the park visitor and the resource, it is looked upon as a treatment of the symptom but not the disease. Through environmental education, the public can be shown how to respect and care for their natural surroundings. Once they have learned this respect, they will be less likely to damage natural features or facilities that were developed for the enjoyment of all. It is hoped that this education will carry over into a concern for the total environment, not just for that found in a public park. An awareness of environmental problems on the farm and in the cities can grow out of what is learned in our parks and nature centers.

The results of an environmental education effort may not be as immediately obvious in reducing thoughtless vandalism as increasing park patrols by the officer, but they will be much more permanent and far reaching. A public that better understands an agency's park and natural area management goals will also tend to support these plans. People who are aware of how much is being done by conservation agencies will be more

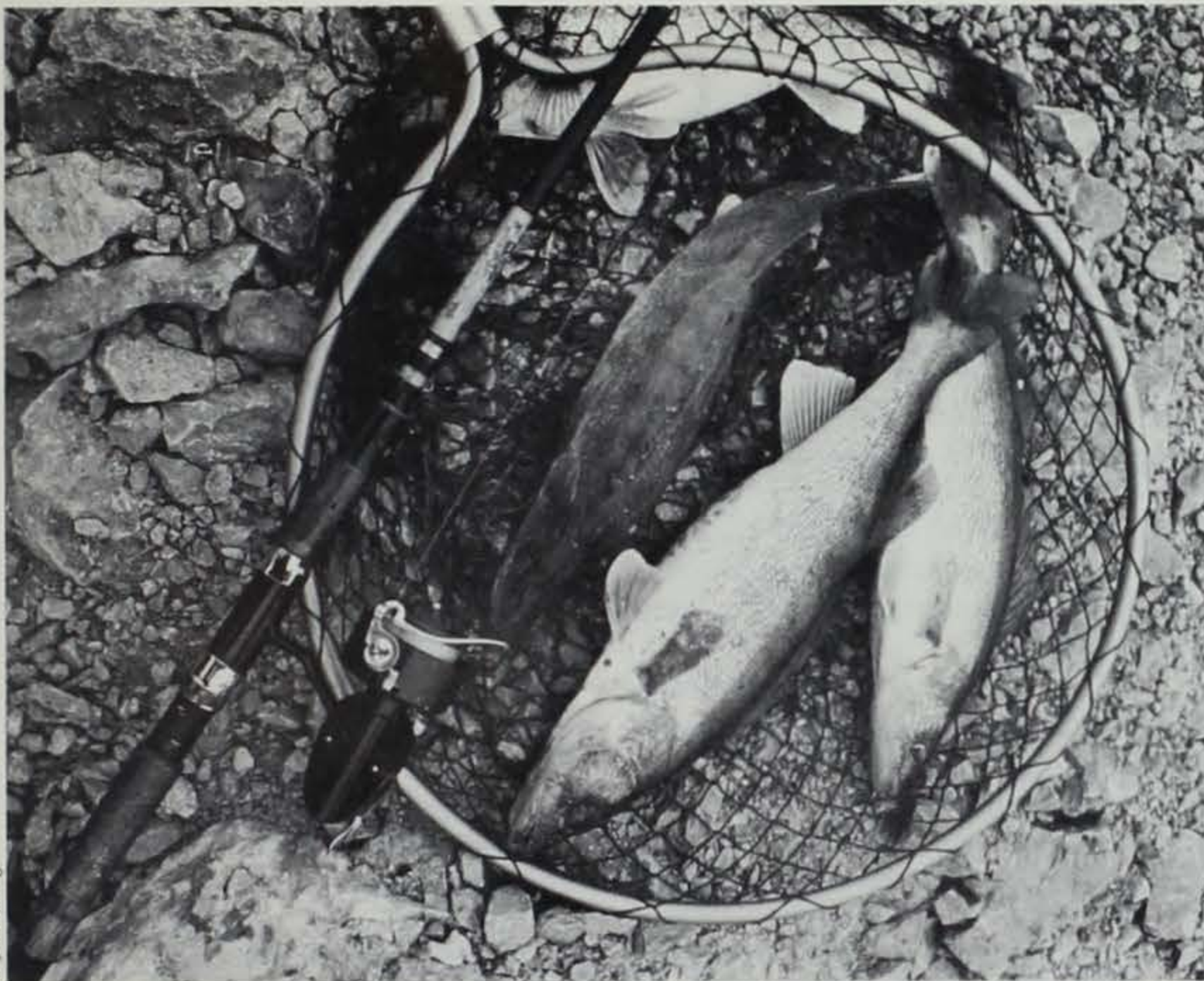
willing to pay for this conservation effort through park user fees and other means of support.

Almost all conservation agencies are facing financial problems at the present time. The donation of money, materials or labor by the general public can help in our conservation effort. When people are made aware of these problems through an active education program, they are often willing to donate needed items.

Environmental education programs are being presented at all state parks and many county parks across Iowa. Contact the park ranger in each park if you are interested in attending one of these programs. A list of state park phone numbers is included on page 16. Most county naturalists put on programs in the schools or for various clubs or groups in the county. Contact your local county conservation board for more information on their programs. A list of county conservation board phone numbers is also included on page 16 for your convenience. Many special programs are listed in each month's calendar section of this magazine. Plan on attending one or more of these programs and learn what nature has to offer in Iowa. A knowledge of the natural world around you can make your visit to a state or county park a much more interesting and enlightening experience.

Jim Zohrer is the assistant county conservation board administrator. He holds an M.S. degree from the University of Wisconsin and has been with the commission since 1972.





Wayne Lanning

Commercial Feed for **WALLEYES**

By Mike Mason

Traditionally, Iowa's hatchery production of five-inch walleye fingerlings has been by extensive methods. Extensive fish culture means rearing fish in large volumes of water at low densities with natural foods as their primary diet. Walleye fingerlings produced are stocked into lakes where fry stockings have been unsuccessful but suitable habitat exists for good growth and survival of these larger fingerlings.

The Spirit Lake Hatchery in northwest Iowa utilizes several nearby natural lakes, which usually winterkill, to rear walleye fingerlings. The lakes range in size from 14 to 200 acres and are stocked with walleye fry produced at the hatchery in the spring. The walleyes feed on zooplankton and insects for several weeks, then switch to a fish diet when they reach two to three inches in length. Hatchery personnel must continually stock fathead minnows into the lakes in sufficient quantity to keep up with the voracious appetite of the walleyes. If enough minnows are not provided, starvation and cannibal-

ism would occur. It takes about five months for the walleyes to reach a length of five inches if food is abundant. Thus, the size and number of fingerlings that can be produced is limited by the type and amount of natural food available in the lake. Production in these lakes is often unpredictable, unreliable and very time consuming for hatchery personnel.

It is not surprising that intensive culture techniques, similar to those used for years in trout production, are being adapted to rear walleye fingerlings. Intensive culture can be defined as the rearing of fish at greater densities than can be attained in the natural environment, using high water flows or exchange rates and feeding formulated or man-made feeds. Many agencies, including the Iowa Cooperative Fishery Research Unit at Iowa State University, are investigating the dietary requirements of both walleye fry and fingerlings reared intensively. Unfortunately, no formulated feeds yet exist that support satisfactory growth

and survival of larval walleye. The good news is that a coolwater fish diet developed by the U.S. Fish and Wildlife Service and tested at several hatcheries throughout the U.S., has shown to produce good growth and survival when fed to fingerling walleyes.

In 1984 at the Spirit Lake Hatchery, and in 1985 at both Spirit Lake and Rathbun Hatcheries, walleye fingerlings were produced by using a formulated feed known as W-16. Walleye fry were stocked into ponds or lakes and reared extensively for five to six weeks. The fish were then removed and transported to the hatchery where they were placed in rearing tanks. Water flows into each tank were set to insure there was enough oxygen in the water, and carbon dioxide and ammonia produced by the fish was removed. Automatic feeders dispensed the feed every five minutes, 24 hours a day. The tanks had to be cleaned daily and fish mortality was monitored.

In 1985, both hatcheries had trained over 40 percent of the walleyes they received to eat the dry ration. This compares well to results from other states producing walleyes on formulated feed. Besides the almost unlimited availability and easy storage of formulated feeds, a more predictable harvest and size is possible with intensive culture of walleyes. The cost to produce large fingerling walleyes has also been reduced.

Further experimentation and refinements in intensive culture of walleyes is necessary to improve production. The cooperation and sharing of information between the many agencies involved in coolwater fisheries will lead to advancements in intensive culture. Through these efforts, our fisheries biologists will be better able to stock the size and number of walleyes into Iowa waters that will yield the maximum return to anglers.

Mike Mason is manager of the Rathbun Fish Hatchery. He holds a B.S. degree from Virginia Tech and has been with the commission for four years.

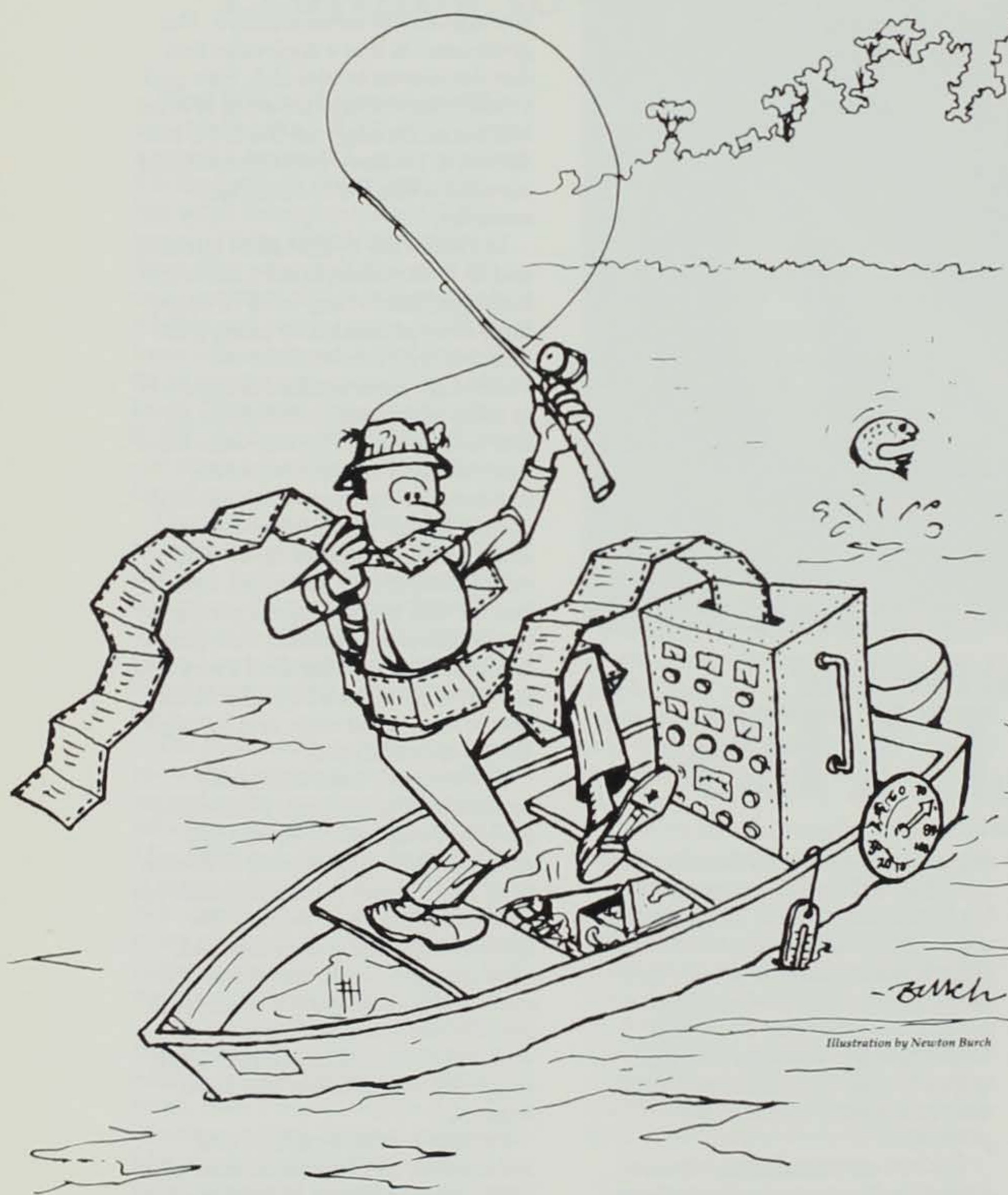


Illustration by Newton Burch

Using Bytes to Get More Bites

By Leo Schlunz

Computer language is creeping into the vocabularies of anglers and fisheries biologists.

The year is 1990, and we're going fishing at Lake Rathbun. But first we must install our "Porta-PC" computer in the boat and grab a data cartridge containing all the information we have that pertains to fishing this lake.

After launching at Honey Creek State Park, we hook-up the computer to our "Select-a-Fish" fish finder and start up the system. We enter the following weather conditions: air and water temperatures, wind speed and direction, barometric pressure and percent cloud cover. We type in the name of the fish we're after — walleye. The computer uses the weather conditions and information on the data cartridge to produce a list of the most likely spots to find a jumbo walleye. We select School House Point from this list. A map of the lake is drawn on the CRT with a pointer showing the location of our selection.

Upon arrival at School House Point, we request a contour map of the area. After turning on our fish finder, we move slowly parallel to the shoreline. Signals from the fish finder are fed to the computer and coordinated with the map to find our location. A flashing arrow on the map indicates our position and direction of travel. As we maneuver the boat over a rocky point, small numbers pop-up on the map. In the upper left hand corner of the monitor is a list of fish lengths and depths corresponding to the numbers on the map. These numbers indicate the locations of walleyes. Five of the walleye are longer than 16 inches, so we decide to go after them. We take a temperature profile and a turbidity reading which is fed to the computer. When we request a lure listing for these conditions, a list of six lures is printed out.

We tie on the top-listed lure and make our first cast. Wham! A strike! The rod flexes; a fish is on. Something doesn't feel right. It's not fighting like a walleye. It turns out to be a large white bass. We make another cast and get another bass. We instruct the computer to look for white bass and proceed back over the point. A solid string of numbers marks our path as a huge school of whites cruise the area above the walleyes.

About now you may be thinking "What a fish story — that could never happen." Don't be too sure about that. Most of us can remember fishing without a fish-finder. Times change — and fast.

The use of computers is not new in the world of fisheries. For years the Iowa Conservation Commission's fisheries section has been using computer facilities at Iowa State University for analysis of large blocks of data. Since 1971, the research station at Chariton has had a microcomputer. The first computer at Chariton had only 1K of memory, limiting it to short programs and small data sets. A dearth of commercial software plagued this machine. Furthermore, it was cumbersome to operate and had no permanent data storage.

In 1981, with the purchase of a microcomputer with 128K of memory and two floppy-disk drives, the section stepped into the computer era. Since then one or two units have been purchased each year. Rathbun hatchery, Manchester, Spirit Lake, Lake Darling and Cold Springs have been added to the ever-growing list of stations with computers.

A variety of commercial software ranging from word processing to statistical analysis is available for these computers. Besides the commercial programs, they can be easily programmed by using Basic, Pascal or assembly language. The use of these higher languages have lead to the development of sophisticated, user-friendly, specialty programs. With the development of user-friendly software the magic door to the computer world has been opened to people with little or no knowledge of computer languages.

Valid fisheries research and management requires accurate statistical analysis of volumes of data in a minimum amount of time. The computer has become a major implement for doing this analysis, saving hours of calculator button punching and reams of scratch paper. Besides doing statistics, programs have been developed for estimating population sizes and for finding age, growth and body condition of fish.

A computer is unsurpassed as a

piece of office equipment. Using it with a word processing program and a letter quality printer has all but replaced the typewriter. All manuscripts and most letters are typed on it, then saved on floppy disks. This saves many hours of retyping when revisions are made. Also, form letters can be produced that have that personal touch we all love. An accounting program turns the computer into a bookkeeper that makes zero arithmetic errors. As an electronic file cabinet it has become indispensable. Information can be sorted and any piece retrieved without fumbling through hundreds of sheets of paper. For example, performance records on brood catfish at Rathbun hatchery are entirely accessible by computer. One file for this study contains over 6,000 pieces of information that gets sorted in a dozen different ways.

A computer is used to calculate daily feed rations at the Rathbun and Manchester hatcheries. The number and mean weight of the fish in each pond or raceway is found every couple of weeks. Using this information the computer can calculate the amount of feed needed daily in each pond to sustain any given growth rate. This has reduced feed waste by 10 percent at Rathbun in 1984 — a big savings. Also the hatchery manager can use the computer to project the size the fish will be by using different feeding rates. This enables him to adjust growth rates to produce desired-size fish for stocking at almost any time of the year.

In the future all fisheries stations and hatcheries will be equipped with computers. Linking them through a network of telephone modems will permit rapid interchange of information. Pages of data collected and entered at Manchester could be sent to Chariton for analysis in a matter of seconds. A manuscript written at Spirit Lake could be sent to Lake Darling for editing and then to Des Moines for printing during the same day. This rapid communication will enable biologists all over the state to exchange information and work together without hours of travel or mailing delays.

With the development of more

powerful portables the clipboard may be replaced by a computer. Data entered and partially analyzed in the field will be transferred to permanent storage at the office. South Dakota has used a computer in the field for several years on Lake Oahe. It is connected to a fathometer and is being used to monitor the population of smelt, an important forage species.

Computers connected to fathometers may yield highly detailed contour maps. On these maps bottom type may also be indicated such as rock, sand, hard clay or soft clay. By integrating the computer with signals from satellites and a fathometer, it may be possible to locate and run transects with pinpoint accuracy and get a printout of the number, size and depth of fish. These fish may even be identified by species. Days of netting to survey a lake's fish population may be replaced by a few hours of running transects. The computer hooked up to water analysis equipment may be used to produce water quality maps. These maps could be used to identify and trace water pollution sources. Other probes connected to a computer may be able to identify and measure zooplankton and phytoplankton populations, eliminating a lot of time and eye strain. Much of the labor involved in hatchery operations such as cleaning ponds, may be handled by computer-controlled robots. Although some of the hardware and software to accomplish these prospective tasks has not been developed, the technology is available.

The only limiting factor in the use of computers is imagination. Maybe in the future the computer will become as valuable to fisheries managers and the fisherman as the boat and motor. I wonder if I could hook one up to a robot and teach it to bait my hook and operate a landing net?

Leo Schlunz is a fisheries research biologist located at Chariton. He holds a B.S. degree from Northeast Missouri State and has been with the commission since 1970.

Good Fishing is No Accident

By Don Bonneau



In the early 1900's, the fish hatchery at Lansing used trucks and rail cars to stock fish. Despite the effort, fishing quality declined.

Fisheries research today is designed to develop new and improved methods of producing high-quality fishing.

If you want better fishing, you've got to stock fish. This statement summed up fish management efforts in the early 1900's. During this period, resource managers and anglers believed good quality fishing was simply related to the number of fish stocked. The complex relationship between fish and their environment was relatively unknown.

Years passed, fish were stocked and dollars were wasted before anglers and conservationists realized stocking fish did not always improve fishing. Poor catches and a reduction in the quality of angling stimulated conservation officials to take a close look at the factors that affected fishing. These concerns, in the early 1900's, resulted in research which

marked the beginning of modern day fisheries management.

Research described the food and habitat requirements of the many species of fish, as well as the impacts of stress, disease, and angling on fish communities. Research conducted today builds on this basic information and is designed to develop new and improved methods of producing

high quality fishing. With this in mind, let's take a look at how what fisheries research accomplished this past decade is being used to improve fishing for Iowa anglers.

AQUATIC WEED CONTROL

Nuisance growth of aquatic weeds occurs in nearly all ponds and man-made lakes in Iowa. In the past, these weed beds severely limited angling from shore during June, July, and August and were believed to be responsible for the populations of slow growing and stunted panfish found in many lakes. Solutions to the problem involved either mechanical removal of weeds or the application of herbicides, and sometimes both. Herbicides did control weeds, but the results were unpredictable, time consuming and expensive. Mechanical removal methods, like herbicides, were found to be most effective when only limited areas were targeted for control, such as those areas near beaches and boat docks.

Biological methods were found to be an effective means of controlling nuisance growths of aquatic weeds in Europe. The result of this work was encouraging and findings indicated that this method of weed control had potential in Iowa. The white amur or grass carp was imported to Iowa and stocked in Red Haw Lake near Chariton. Over an eight-year period, fisheries biologists evaluated the effects these exotic fish had on natural fish populations, water quality of the lake, weed growth and angling. The research indicated nuisance weed growths were significantly reduced while angler use of the lake increased three-fold. The research also indicated grass carp had no adverse effects upon existing fish populations, and water quality of the lake remained high. As a result of this work, this weed-eating fish is currently the major method of weed control used in man-made lakes and ponds in Iowa.

FISH WINTERKILL

During severe winters in Iowa, fish kills occur in many of our shallow lakes. Lack of adequate depth and a



Roger Sparks



Mike Mason

Today, fisheries biologists work in the laboratory and on the water to provide quality stringers of fish and happy anglers.



Wayne Lanning

As a result of research, white amur have been stocked in many lakes. These fish reduce shoreline vegetation and improve fishing.



Research on shallow, natural lakes has provided a solution to major winterkills of gamefish. Aerators keep holes open and maintain safe oxygen levels for game fish.



thick blanket of ice and snow combine to limit production of life-saving oxygen in the lakes. The result is fish suffocation and death. Game fish are the first to die; thus, lakes which experience frequent fish kills contain mostly rough fish. Expensive hatchery fish stocked immediately after a winterkill grow rapidly, but die during the next winterkill event. A method was needed which would prevent this loss of fish and improve fishing.

A variety of mechanical methods have been employed since the 1930's in an effort to prevent fish winterkills. These were costly and were usually a failure. In the mid 1970's, fisheries biologists in northwest Iowa evaluated two new water circulation methods to determine their effectiveness in preventing fish winterkill. In 1978, Black Hawk Lake, a 923-acre winterkill lake in Sac County, was selected for this study. Due to a series of winterkills, the lake was loaded with rough fish and provided very little fishing opportunity. In 1978, two different types of water circulation systems were installed in the lake to determine their effectiveness in preventing chronic fish kills. The following year, the existing fish population was eliminated with a fish toxicant and the lake was restocked with game fish. Dissolved oxygen levels in the lake water were monitored each year. The growth and well-being of stocked fish and the numbers and species of fish harvested by anglers were also documented. The systems maintained life-saving levels of dissolved oxygen and were responsible for preventing winterkill of fish during periods of heavy ice and snow cover. Since installation of this water circulation system, no fish winterkills have occurred at Black Hawk Lake and similar systems have been installed in ten other lakes.

LAKE CONSTRUCTION

Fishery biologists have recognized for many years some lakes provide very good fishing with a minimum of maintenance costs, while other lakes produce poor fishing despite considerable management effort and

expense. What factors determine if a lake produces good or bad fishing?

To get an answer to this important question, 28 man-made lakes in the southern part of the state were studied. Some of these lakes produced excellent fishing, some fair fishing and others poor fishing. The results revealed that the quality of fishing produced by a lake was dependent primarily on the quantity of soil erosion occurring in the watershed and not on numbers of fish stocked. The better quality lakes were associated with watersheds subjected to minimal soil erosion. The study showed the greater the soil erosion problems in the watershed, the poorer the fishing in the lake.

This study was one of the first of its kind to link the quality of fishing

in a lake with erosion characteristics of the watershed. This information will be instrumental in long-term planning to improve fishing at existing lakes and location of future sites.

Once again the complexities involved in managing fish populations is apparent and the fact that a simple "fix", such as stocking more fish, is not the answer to better fishing. Research continues to demonstrate that fish are like other forms of wildlife. The quality of habitat is the single most important factor affecting the well-being of the fish community and the quality of our fishing.

Don Bonneau is the fisheries research supervisor located in Des Moines. He holds an M.S. degree from Kansas State University and has been with the commission since 1970.



Ron Johnson



Research demonstrates that the quality of fishing is linked to the amount of erosion occurring in a lake's watershed. The best lakes are subject to minimal soil erosion.

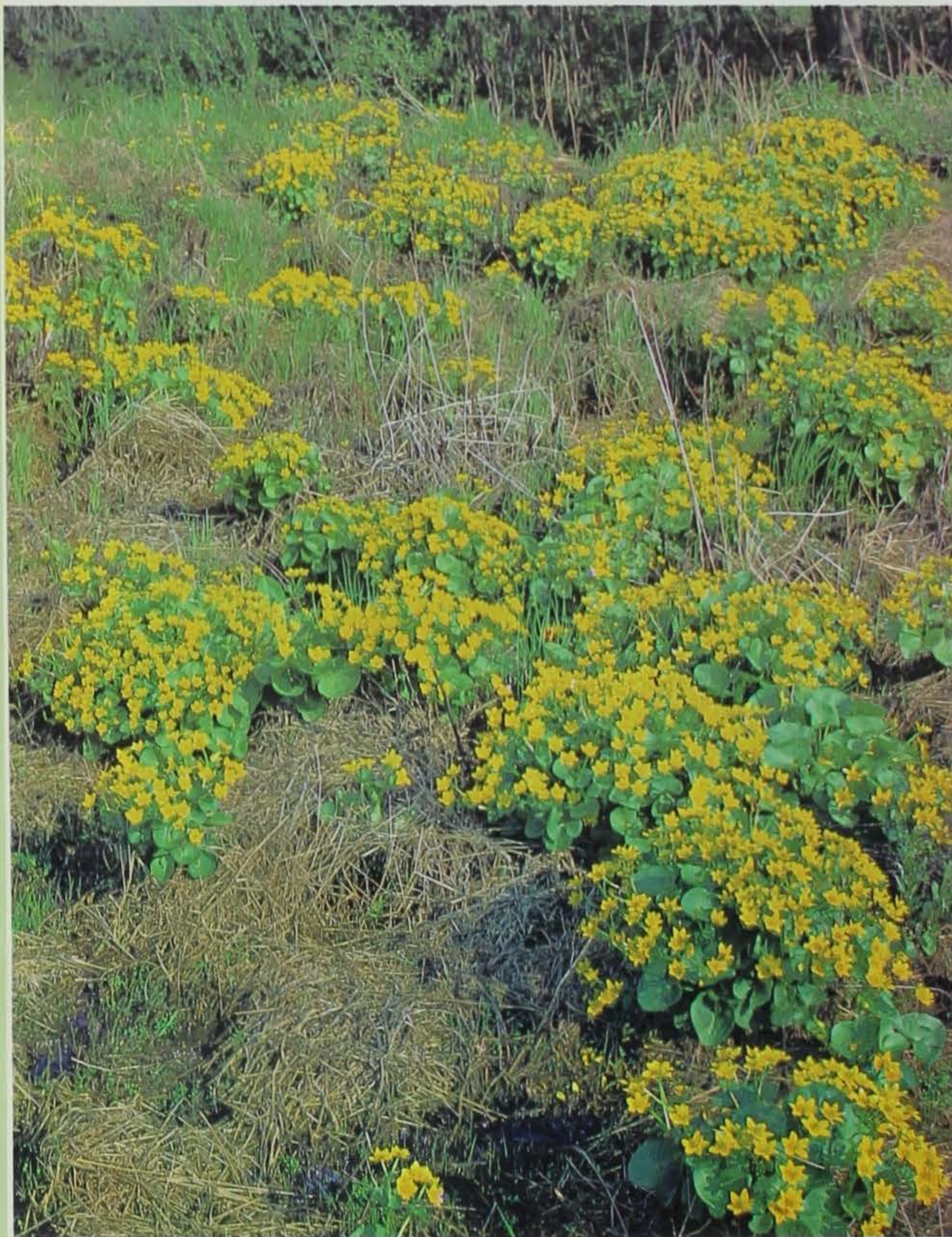
County Conservation Board Feature

Marshall County

More than Meets the Eye *Marietta Sand Prairie*

By Judy Levings

Naturalist, Marshall County Conservation Board



Garry Brandenburg

"Boy, you sure proved me wrong. When I first heard of the class trip to the prairie, I thought it would be boring... now I know it's beautiful," wrote Pamela Fisher, a Marshalltown fifth grader. Before Pamela and her classmates went on their field excursion, they probably had a preconceived notion of what prairies were like — barren, untended, weedy places. But the comments from them during their outing implied that they saw and were moved by many things at the Marietta Sand Preserve.

The sand prairie, in Marshall County, three miles west of Albion, is unlike most of the prairie that once covered Iowa. What makes it different is its sand — "the consistency of sugar, 36 feet deep in some places," Howard Conrad, the previous owner will often tell groups who visit the area. As the last glacier, the Wisconsin, ground to a halt and started to melt (13 to 14 thousand years ago), it left behind a poorly sorted mixture of clay, sand, gravel and boulders called till. Meltwaters from the retreating glacier deposited a variety of stratified sediments along drainage ways leaving the glaciated area. One of these drainage ways was Minerva Creek, northwest of the prairie. The sand, clay and silt, which were the finer of the floodplain sediments, were picked up from the creek and redeposited by the prevailing winds. Sand, being the heaviest of these materials, did not travel as far as the other materials and was placed not far to the southeast of its source, where the prairie is today.

The prairie is a 17-acre, triangular piece of ground. The dry, harsh environment of its higher, western edge gradually changes with the slope to a lower, moist bog where wet-loving or mesic species are found. The plant communities vary with the soil moistures found on the slope. On a fall day, like the one on the children's field trip, the dry western edge is

The moist soils found around the preserve's bog support marsh marigolds.



alive with the yellow blossoms of partridge pea and russets of sand reedgrass, witchgrass and dropseed. A few yards farther east, bushclover heads and the silvery leaves of white sage stand out against the delicate rusty seed heads of sand lovegrass. Down the hill, colonies of orange-petaled sunflowers and goldenrods provide nectar for butterflies. As the soil becomes more moist, the deep purple hues of blazing star, New England aster and bottle gentian add splashes of color among the seven-foot-tall Indiangrass and big bluestem. The descent ends in a grove of quaking aspen. Beyond, the ground becomes so moist only people with boots are encouraged to go further. This bog is probably caused by seepage from water percolating through the sand to an impermeable soil called a paleosol. The water flows between the sand and paleosol down the hill to feed the bog. Marsh and sensitive ferns, marsh marigolds and sedges (these are much like grasses, but have triangular stems) are mesic species doing well in this environment.

Children and others who visit the bog will often hop from one sedge hummock to another to stay dry. These hummocks, often two feet high and one foot across, are extremely hard to walk on. To a certain degree they were formed naturally, but may have been enhanced by bison (or in more modern times by cattle) walking between them.

Everyone seems to be fascinated by the prairie's animal life. It is exciting to hear others tell where they found recently shed deer antlers or deer hoof prints in the sand mounds. These mounds or borrows, often two feet across and six inches high, with quarter-size openings are made by plains pocket gophers. Not very far from the mounds are holes made and used by badgers. It does not take one long to figure out why both animals are here. The gophers like the easy digging sand, and the badgers like to devour gophers.

Future study will undoubtedly add to an impressive plant species list. To

date, more than 125 plant species have been recorded and the inventory has just begun. The most significant of these are sand lovegrass, purple lovegrass, sand reedgrass and marsh St. John's-wort. All of these are threatened or rare in Iowa. This prairie could also be the home of the ornate box turtle that has been found on similar habitats within the state.

Despite its beauty and scientific significance, acquisition of the area was a long and involved process. In 1962, Dr. Roger Landers, a botany professor from Iowa State University, began to make the prairie's importance known to others. Lured to the site because of the bog and the plant species he believed might live there, he began to notice the plants and animals that lived in the sandy prairie. His fascination with the prairie carried over to his friends, one of which was Garry Brandenburg, who is presently the director of the Marshall County Conservation Board.

In the summer of 1983, Howard and Gladys Conrad decided to sell their little prairie. Aware of the importance of the area, they turned to the Marshall County Conservation Board as a potential buyer. County funds were not available for the project, so the board sought the help of the Iowa Natural Heritage Foundation. During this time, a private citizen named Janet Paterson, who wanted to give a lasting gift to the county, came forward with the entire purchase price. The site name was suggested by Mrs. Paterson for the township it is in.

People came to Iowa because of its prairie land. The lure of rich soil, created eons ago by weathered rock and decomposing plant and animal life, attracted those with hope of a better life. All but a few of the prairies are gone, mined for their agricultural wealth. The Marietta Sand Prairie Preserve was saved because its wealth was less obvious. Many children and adults come out to the prairie now that it is in public hands. Children stop to watch a hawk circling above them or to watch a bee

open the petals of a bottle gentian to find nectar. What they learn are lessons better experienced than read about in the classroom. Only time will tell to what extent the last parcels of Iowa's tallgrass prairie will add to the quality of life. One thing is certain — future generations in the Marshall County area will have a chance to visit a beautiful place like a prairie.

• • •

On September 6, 1984, this prairie gem was dedicated as a state preserve as a part of "Prairie Heritage Week." Governor Branstad signed the dedication statement in the presence of some 275 prairie enthusiasts. The status of State Preserve provides special protection under the Code of Iowa, assuring this bit of historical Iowa will forever be a part of our environment.

SPECIES OF THE MARIETTA SAND PRAIRIE PRESERVE

Below is a partial list of the plants found at the Marietta Sand Prairie.

Sensitive Fern	<i>Onoclea sensibilis</i>
Marsh Fern	<i>Thelypteris palustris</i>
Big Bluestem	<i>Andropogon gerardii</i>
Little Bluestem	<i>Andropogon scoparius</i>
Sand Reedgrass	<i>Calamagrostis longifolia</i>
Purple Lovegrass	<i>Eragrostis spectabilis</i>
Sand Lovegrass	<i>Eragrostis trichodes</i>
Sand Milkweed	<i>Asclepias uniplexicallis</i>
Green Milkweed	<i>Asclepias viridiflora</i>
White Sage	<i>Artemisia ludoviciana</i>
Blazing Star	<i>Liatris pycnostachya</i>
Flowering Spurge	<i>Euphorbia corollata</i> L.
Bottle Gentian	<i>Gentiana andrewsii</i>
Marsh St. John's-wort	<i>Triadenum fraseri</i>
Bushclover	<i>Lespedeza capitata</i>
Purple Prairie-clover	<i>Petalostemon purpureum</i>
Milkwort	<i>Polygala sanguinea</i> L.
Marsh Marigold	<i>Caltha palustris</i> L.
Meadow Sweet	<i>Spiraea alba</i>
Quaking Aspen	<i>Populus tremuloides</i>
Prairie Alumroot	<i>Heuchera richardsonii</i>
Rattlesnake-master	<i>Eryngium yuccifolium</i>

Big Bluestem



Ahquabi Celebrates 50th

Ahquabi State Park, located in Warren County, will be celebrating its 50th anniversary May 26 from 10:00 a.m. to 8:00 p.m. in the park's lodge.

Memorabilia and historical news clippings will be on display. Civilian Conservation Corps members will be on hand to talk about their work in the 1930's. A brief ceremony will be held at 2:00 p.m. to dedicate a monument to Mary Louise Brownrigg-Hanrahan, the woman who named the park. A

reception of punch, coffee and cookies will follow.

This event is park user fee exempt.

A pamphlet entitled "Acid Rain and Eastern Forests: Is There a Silent War?" is available by sending a stamped self-addressed envelope to the Iowa Conservation Commission, Wallace State Office Building, Des Moines, Iowa 50319-0034. The brochure has been prepared by the U.S. Department of Agriculture and the U.S. Forest Service.



Take a Kid Fishing

National Fishing Week June 2-8, 1986

STATE PARK NUMBERS

Ambrose A. Call 515/295-3669
 Backbone 319/924-2527
 Badger Creek 515/285-4502
 Barkley Forest
 Beeds Lake 515/456-2047
 Bellevue 319/872-3243
 Big Creek 515/984-6473
 Black Hawk Lake 712/657-2639
 Bobwhite 515/873-4670
 Brush Creek Canyon 319/425-4161
 Brushy Creek Rec. Area 515/359-2501
 Caylor Prairie
 Cedar Rock 319/934-3572
 Clear Lake 515/357-4212
 Dölliver Memorial 515/359-2539
 Echo Valley 319/425-4161
 Elk Rock (Red Rock) 515/627-5434
 Emerson Bay 712/337-3634
 Fairport 319/263-3197
 Fish Farm Mounds
 Fort Atkinson 319/534-7543
 Fort Defiance 712/362-2078
 Galland School
 Gardner Sharp Cabin
 Geode 319/392-4691
 George Wyth
 Memorial 319/232-5505
 Gifford Forest
 Green Valley 515/782-5131
 Gull Point 712/337-3211
 Hayden Prairie
 Holst Forest
 Honey Creek
 (Rathbun) 515/724-3739
 Isthums Access 712/337-3211
 Kalsow Prairie
 Lacey-Keosauqua 319/293-3502
 Lake Ahquabi 515/961-7101
 Lake Anita 712/762-3564
 Lake Darling 319/694-2323
 Lake Keomah 515/673-6975
 Lake Macbride 319/644-2200
 Lake Manawa 712/366-0220
 Lake of Three Fires 712/523-2700
 Lake Wapello 515/722-3371
 Ledges 515/432-1852
 Lewis and Clark 712/423-2829
 Lower Gar Access 712/337-3211
 McGregor Heights 319/873-2341
 McIntosh Woods 515/829-3847
 Maquoketa Caves 319/652-5833
 Marble Beach 712/337-3211
 Margo-Frankel Woods 515/984-6473
 Mines of Spain 319/556-0620
 Mini-Wakan 712/337-3211
 Nine Eagles 515/442-2855
 Okamanpedan 712/362-2078
 Palisades-Kepler 319/895-6039
 Pammel 515/362-2188
 Pikes Peak 319/873-2341
 Pikes Point 712/336-1677
 Pillsbury Point 712/337-3211
 Pilot Knob 515/582-4835
 Pilot Mound Forest

Pine Lake 515/858-5832
 Pleasant Creek Rec. Area 319/436-7716
 Plum Grove 319/895-6039
 Prairie Rose 712/773-2701
 Preparation Canyon 712/423-2829
 Red Hawk Lake 515/774-5632
 Rice Lake 515/582-4835
 Rock Creek 515/236-3722
 Sheeder Prairie
 Shimek Forest 319/878-3811
 Springbrook 515/747-3591
 Stephens Forest 515/774-5632
 Stone 712/255-4698
 Trappers Bay 712/337-3211
 Triboji Beach 712/337-3211
 Turkey River Mounds
 Twin Lakes 712/657-8712
 Union Grove 515/473-2556
 Viking Lake 712/829-2235
 Volga River Rec. Area 319/425-4161
 Walnut Woods 515/285-4502
 Wanata 712/337-3211
 Wapsipinicon 319/462-2761
 Waubonsie 712/382-2786
 Wild Cat Den 319/263-4337
 Wilson Island Rec. Area 712/642-2069
 Wittrock Indian Village
 Woodman Hollow
 Yellow River Forest 319/586-2548

Emmet 712/867-4123
 Fayette 319/425-3613
 Floyd 515/228-5253
 Franklin 515/456-4375
 Fremont 712/374-2347
 Greene 515/386-2316
 Grundy 319/345-2688
 Guthrie 515/755-3061
 Hamilton 515/832-1994
 Hancock 515/923-2720
 Hardin 515/858-3461
 Harrison 712/647-2785
 Henry 319/986-5067
 Howard 319/534-3634
 Humboldt 515/332-4087
 Ida 712/364-2255
 Iowa 319/655-8465
 Jackson 319/652-3783
 Jasper 515/792-9780
 Jefferson 515/472-4421
 Johnson 319/645-2315
 Jones 319/487-3541
 Keokuk 515/622-3757
 Kossuth 515/295-2138
 Lee 319/463-7673
 Linn 319/398-3505
 Lousia 319/523-8381
 Lucas 515/774-4931
 Lyon 712/753-2313
 Madison 515/462-3536
 Mahaska 515/673-9327
 Marion 515/828-2213
 Marshall 515/752-3150
 Mills 712/527-9685
 Mitchell 515/732-5204
 Monona 712/423-2400
 Monroe 515/946-8112
 Montgomery 712/829-2241
 Muscatine 319/649-3379
 O'Brien 712/448-2254
 Osceola 712/754-4107
 Page 712/542-3864
 Palo Alto 712/837-4866
 Plymouth 712/947-4270
 Pocahontas 712/335-4395
 Polk 515/999-2557
 Pottawattamie 712/328-5638
 Poweshiek 515/623-3191
 Ringgold 515/464-2787
 Sac 712/662-4530
 Scott 319/381-1114
 Shelby 712/643-2231
 Sioux 712/552-1047
 Story 515/377-2229
 Tama 515/484-2231
 Taylor 712/585-3238
 Union 515/782-7111
 Van Buren 319/293-3589
 Wapello 515/682-3091
 Warren 515/961-6169
 Washington 319/657-3457
 Wayne 515/872-2004
 Webster 515/576-3230
 Winnebago 515/565-3390
 Winnebuck 319/534-7145
 Woodbury 712/279-6488
 Worth 515/324-1524
 Wright 515/532-3185

COUNTY CONSERVATION BOARD NUMBERS

Adair 515/743-6450
 Adams 515/322-4793
 Appanoose 515/856-8528
 Audubon 712/563-4551
 Benton 319/472-4942
 Black Hawk 319/266-0328
 Boone 515/353-4237
 Bremer 319/882-4742
 Buchanan 319/636-2617
 Buena Vista 712/295-7985
 Butler 319/278-4237
 Calhoun 712/297-7131
 Carroll 712/792-4614
 Cass 712/243-3542
 Cedar 319/886-6930
 Cerro Gordo 515/423-5309
 Cherokee 712/225-5959
 Chickasaw 515/394-4714
 Clarke 515/342-3960
 Clay 712/262-2187
 Clayton 319/245-1516
 Clinton 319/847-7202
 Crawford 712/263-2748
 Dallas 515/465-3733
 Davis 515/664-3358
 Decatur 515/442-3515
 Delaware 319/927-3410
 Des Moines 319/753-8260
 Dickinson 712/338-4786
 Dubuque 319/556-6745



EDWARDS RECEIVES AWARD

Conservation Officer Jack Edwards of Clarion was the 1986 recipient of the Shikar-Safari Club International Conservation Officer of the Year Award.

The Shikar-Safari Club International makes the awards annually in all 50 states, Canada and Mexico. The purpose of the award is to show appreciation to the dedicated officers who have given outstanding service in the fields of conservation and game management.

Edwards, who has been with the commission for 25 years, was presented with a parchment certificate and a pewter plaque engraved with the club's distinctive tiger and elephant logo.



DONATIONS

Dennis L. Shimon Vail, Colorado	Leo Shimon Marsh
Lucille Johnson	\$300 towards purchase in memorial unit of Loess Hills Pioneer State Forest
Emelie Suchomel West Branch	\$80 memorial to Bernard J. Schomel for the Loess Hills Pioneer State Forest
Mid-Iowa Bassmasters Des Moines	\$1,611 for purchase of 400 metal signs and 100 posters stating "Help Save Iowa Fishery Resources, Release A Keeper Alive"
Lowry Agricultural Flying Service, Grinnell	\$250 worth of flying time
Kendale Winkowitsch Appleton	48 Canada geese for Green Island Wildlife Management Area
Iowa Power and Light Company Council Bluffs	\$107.50 memorial donation to James A. Scott for fish management
Michael Oden Des Moines	Illustration valued at \$75 for activity report
Mr. and Mrs. Don Driskell, Creston	\$50 for playground equipment at Green Valley State Park.
Timothy McElderry Bloomfield	10 hours carpet stretching valued at \$100 for family cabins at Lake Wapello State Park.
Bedford Community Schools, Bedford	summer use of movie projector valued at \$260 for interpretive program at Lake of Three Fires State Park.
Bruce Runyon Lehigh	4 hours use of rolling scaffolding valued at \$80 for installation of ceiling fans in lodge at Dolliver State Park.
Bernard Wagner Lehigh	30 hours of electrical work valued at \$150 for installation of ceiling fans in lodge at Dolliver State Park.
Butch Milliken Otho	3 sets of horseshoe stakes and load of posts valued at \$125 for Dolliver State Park.
Brent Hammerstrom Lake View	30 tons of riprap for boat ramp stabilization at Black Hawk State Park.
Lake View-Auburn School, Lake View	assorted lumber for park construction at Black Hawk State Park.
Westside Auto Salvage Westside	9 truck rims valued at \$90 for fireplace construction at Black Hawk State Park.
Kim Sasa Monona	400 hours donated labor valued at \$1,760 for Pikes Peak State Park.
Waterloo Industries Waterloo	\$75 for fitness trail construction at George Wyth State Park.
Dalton's Plumbing and Heating, Cedar Falls	405 inches of one-piece pipe valued at \$57 for fitness trail construction at George Wyth State Park.
Central Office Equipment, Waterloo	IBM Selectric typewriter valued at \$225 for George Wyth State Park.
Todd Heck Waterloo	109.5 hours donated labor valued at \$482 for George Wyth State Park.
Brethren Camp Eldora	48 hours donated labor valued at \$160 for Pine Lake State Park.
Creston Jaycees Creston	\$150 for playground equipment at Green Valley State Park.
Pamida Discount Center, Hampton	storage cabinet and cabinet-parts bin valued at \$150 for Beeds Lake State Park.
Verlin Whipple Hampton	1 urinal and flush valve valued at \$25 for Beeds Lake State Park.
Earl Cannon Mason City	80 truck rims valued at \$1,600 for fireplace construction at Clear Lake State Park.
Ed Mincer Hamburg	2 days use of hayrack valued at \$50 for Waubonsie State Park.
Nikkel and Associates, Inc., Ames	electric water cooler valued at \$75 for Ledges State Park.
Deborah Smalley Madrid	20 hours donated labor valued at \$70 for Ledges State Park.
Stone City Quarries Anamosa	\$50 for "Ric Rac" state park mascot costume



Volunteers from his 7th grade life science classes gather around as Larry Zach displays a mounted sparrow hawk.

SCHOOLS INVOLVED WITH NONGAME PROJECTS

By Laura Spess Jackson

Thanks to some very generous donations by the Pella Screen Co. and A.K. Gilmore of Underwood, the nongame program recently received a good supply of lumber. Enough lumber was donated that employees couldn't efficiently use all of the donated material. Consequently, two schools became involved and donated their labor to assist the program.

The 29 students in Des Moines' Alternative Education Class worked nearly 300 hours to build 56 barn owl nest boxes. Through the coordination of teachers, Cliff Rooney, Doug Wensley, Eric Donhowe and Principal Vince Scaud, the students were able to mass produce the nest boxes in assembly-line fashion.

Forty of the boxes are a new design which has

attracted wild barn owls in other states. Since barn owls are endangered in Iowa, the nongame program hopes to find some remnant areas where wild owls occur by using the new boxes. It is suspected that any naturally occurring barn owls would be living in southern Iowa. Therefore, the 40 boxes will be placed in suitable habitat in that part of the state and monitored to document any barn owl use. If owls are attracted to these boxes to nest, this could be an important new tool in assisting barn owls in Iowa.

In Ankeny, 11 students from Larry Zach's Junior High school classes are building kestrel boxes. With the cooperation of the Department of Transportation, kestrel boxes have been erected on highway signs along I-35 in five counties. Over 90

percent of the kestrel nests in these boxes were successful. Now the nongame program hopes to expand the kestrel boxes into other counties using boxes that have been built for us.

Sam Hilbreth and Herb Larson of the Des Moines area have also donated their time to build kestrel boxes for the nongame program. Robert King of Des Moines cut over 40 bluebird nest box kits for the state which were distributed to ICC personnel and clubs who wanted to run a bluebird trail throughout the state. Our thanks to all of these people and others who have donated materials and time to assist nongame wildlife.

If your group is interested in assisting a project, call Urban Biologist Laura Jackson, 515/281-4815 or Nongame Biologist Doug Reeves at 515/432-2823.





Illustration by Brian Bemisdarfer

NATURE TALE

Pressing On

By Dean M. Roosa

*Not that I have obtained
but I press on.*
St. Paul

Let me expand...

*Not that I have obtained
as I may never do so
Not that I have seen
but I keep looking
Not that I have touched
but I keep reaching
Not that I have found peace
but I keep searching
Not that I have loved
for my heart keeps yearning
Not that I have obtained
but I press on.*

This is a story about walking, pressing on, if you like, pressing on down a new trail, always wondering what is beyond the next hill — around the next curve.

All of us were born to walk; its just that some never allow ourselves the joy, the solitude and the exquisite agony of long walks. What better time to reflect, to hurt, to heal, to hope or to forget.

Some of the sensitive person's most memorable moments have come while walking — with a loved one during a gentle snow, with a breeze that brings the haunting call of the goose, with the memory of an exquisite friend or with the greenish-blue sky that sends a bolt of lightning that splits a tree over your head.

Let me tell you about a walk — when I pressed on to see what was

behind that next hill.

I knew when I awoke that this was no ordinary day. I find weather conditions pervade people, making the courteous curt, the timid bold, the sensitive restless, the civil dangerous.

I was in southern Iowa, on the edge of a large forested area. Having finished for the day, I slept in my tent along a small stream. When I awoke I sensed a nearly desperate presence of uneasiness. The animals were acting strangely and there was a feeling in the air best described as electric. Sensing the unspoken urgency, I hurried to my car to get my inanimate friend, my hickory walking stick.

A dirt road led northeast from my tent; it beckoned me. As I said, the animals were not themselves today. On the dirt road a huge snapping turtle faced me. Fearful for its safety, I urged it toward the ditch with my walking stick. Hissing and snapping, it lunged at my stick, at me, at the air, genuinely unappreciative of my concern. Leaving this savage, primordial, yet in its own way, beautiful prehistoric reptile, I pressed on.

There was absolute stillness that day; not so much as a trembling leaf to reassure the walker. I was standing in the dirt road, listening to a far-off bird call when a sudden snort startled me. A white-tailed deer had walked onto the road and stood a few yards away issuing that sharp, high-pitched snort familiar to woodland walkers, followed by an intense stamping of a front foot. The dead air allowed no scent to reach it and it only vaguely recognized the human form, even from so close. I carefully retreated and left the road to pass on a nearby ridge. I pressed on, escorted by the piercing snort and occasional stamp of a foot.

Soon back on the dirt road, a barred owl on a low branch caught my attention. Normally shy and secretive, this one simply blinked its big, soulful, brown eyes at me, fluffed out its feathers, made a stifled barking sound and swayed back and forth while making it plain it was not going to leave. I carefully pressed on.

Walking northeast, I had not noticed the darkening sky behind me

until the sun was obscured suddenly by a fast-moving cloud bank. Now two miles from my car, I turned and began to hurry back the dirt road. The clouds were an angry gray-green that I had not seen since my childhood. The distant rumbling only served to hurry the pace of me and my walking stick. The first lightning bolt, a repeated discharge on the far ridge caused a tingling inside. I have always liked to see nature in all her glory — whether an intense lightning storm, a driving sleet storm or a sudden downpour. So the lightning was not frightful, just awesome. I will remember as a child hearing the crackling of the air followed by an intense screeching, high pitched crack near our home that meant a tree could be seen the following morning with a split from the top to the ground, sometimes with chunks of wood hurled many feet. I was remembering these things, keeping one eye on the sky, the other on the path ahead, walking toward an ancient cottonwood whose branches towered over the dirt road. This tree was partly dead, scarred by decades of lightning storms. I was looking at the tree, now a short distance ahead, remarking silently on its character and tough life when I heard the familiar crackling in the air. I was suddenly surrounded by more noise than I thought possible as the tree nearly exploded, wood fragments flying overhead. Was I scared, you ask? No, not scared — petrified!

It was over in a fraction of a second, before I could compose myself or throw myself into the ditch. I stood for a few seconds, wondering if the bolt would return; but no, a strike on the nearby hilltop assured me I was not in danger. Then the rain came — drenching, horizontal sheets of rain. I was in no hurry, for I enjoy these feats of nature.

As I walked the final distance to my car, my soaked tent and the swollen stream, I wondered how the deer, turtle and barred owl were faring in this downpour. I loaded my gear and drove away, glad for having pressed on down that woodland dirt road, with its many secrets, its unwary wildlife and its thundering bolt.



David Neuhouse

Yellow Ladyslipper (*Cypripedium calceolus*)

Wildflower of the Month

By Dean M. Roosa

Many wildflower enthusiasts readily admit that their favorite flower is one of the orchids. This is easy to understand because the orchids are not only beautiful, but often grow in some of Iowa's most remote, rugged and scenic spots.

Members of the orchid family are also compelling to botanists because of their highly specialized life history. Each is tied to a very specific pollinator; many depend on a delicate balance with a fungus associated with their roots; some can tell the ecologist something about the history of a landscape; and some have important phytogeographical implications.

There are perhaps as many as 28 forms of orchids in Iowa. This month's featured plant is the yellow lady's slipper (*Cypripedium calceolus*), which grows in the eastern two-thirds of the state, but is mainly confined to the rugged terrain of northeast Iowa. It grows on rich soils of mesic woodlands undisturbed from grazing livestock.

The plant may grow to a height of two feet, with 3-5 alternate leaves which sheath the stem with their bases. The leaves may achieve a length of six inches and half as wide, have smooth margins and numerous parallel veins. The showy flower has an inflated lip or "slipper" which is actually a specialized petal. The spreading lateral petals are strap-like, purplish-brown, and usually are spiraled. Late May and June would be a good time to search for this woodland beauty. There has recently been discovered in Iowa another variety of the yellow lady's slipper — smaller, with purplish or maroon lateral petals, and which grows in the rich organic soil of shallow wetlands.

Because of the delicate balance of soil fungus and the roots of this plant, transplanting is nearly always unsuccessful. So, should you be so lucky as to find this orchid, appreciate it in its natural state, photograph it carefully, but leave it in its woodland environment.



Forgotten Habitats

By Douglas Hart

In efforts to save large, significant areas of wildlife habitat, concerned citizens and even professional conservationists may sometimes overlook smaller but still important sites. Animals often depend on tiny areas for survival; but in recent years, Iowa has seen the demise of many fencerows, abandoned farmsteads and other areas which provided valuable living space for many creatures. We might call these our "forgotten habitats."

Many of us grew up in an earlier time or in a part of the country where fencerows were a part of almost every farm's environment. In those days and places, vast fields of a single crop and gigantic farm machinery were mostly unknown. Fences separated many small fields and pastures. These fencerows grew thick with plants and hosted a variety of wildlife. Weed killers were little used on the farm; weed control was accomplished by mowing the worst spots and by mechanically cultivating cropfields.

Any new fence was quickly sought out by birds for perching sites. Here, they discharged the remains of previous meals often laden with undigested seeds. In a short time, most fencerows turned into natural hedgerows, veritable jungles of wild plum, chokecherry, bittersweet, sumac, wild grape, poison ivy, raspberry, goldenrod, ragweed and, here or there, a few small trees. Such thriving plant communities, with their plentiful foods and beckoning shelter, attracted a myriad of creatures. Common residents included songbirds, pheasants, quail, cottontails, red fox and many others.

In much of Iowa today, this is just a scene from the past. Except in areas of eastern and southern Iowa, modern agriculture has all but eliminated fencerows and hedgerows from our landscape.

Another habitat of overlooked value and increasing disappearance is the rockpile. Especially in north central Iowa where the last glaciers left a legacy of rocks scattered in the soil, rockpiles were once a common sight on many farms. Every spring, the melting ground frost heaves up rocks from the size of pebbles to small boulders. Today's large farm equipment can frequently farm right



Photos by author

Rock piles, fencerows, old orchards and other tiny but important habitat are being destroyed.

through all but the larger surface rocks, which still must be removed by hand. But only a decade or two ago, it was virtually a spring ritual for a farmer and his family to spend the early season out picking up rocks and tossing them onto a "stoneboat," for hauling to the nearest rockpile. There were usually several on a farm.

Admittedly, a rockpile is kind of a man-made structure; but wild animals are often adaptable to things and tend to find rockpiles well suited to the lives of some species. Biologists have even tagged rockpiles with the rather cumbersome label of "hibernacula." This word is obviously related to "hibernate" and means simply the place where an animal sleeps, spends the winter or seeks safety.

Every rockpile has its resident varieties of native mice. Snakes, skinks and other reptiles or amphibians likewise call these structures home. Near wooded areas, chipmunks are sometimes common dwellers. Weasels slip in and out among the rocky passageways in search of resident small prey.

For all their value to small creatures, rockpiles may nonetheless follow brushy fencerows towards elimination, though perhaps not quite so completely. In northern Iowa, new rockpiles are seen less frequently, and some older ones have

disappeared. Farmers are increasingly able to simply bury the rocks deeply and farm right over the top. And during periods of high water on some northern Iowa lakes in the early 1980's, rockpiles met wholesale destruction as they were carted off to riprap the shorelines of lakefront homes.

Each coming spring is certain to offer a fresh supply of frost-heaved rocks, so the rockpile does have a better chance of surviving than does the fencerow. This depends on farmers continuing to pile rocks the old way, in some unused corner of the farm, but it seems likely there will always be at least a few rockpiles around to offer wildlife a bit of habitat.

Other habitats are also gradually passing from the rural landscape. A few decades ago, many farmsteads maintained a small orchard of 10 to 20 apple trees for personal use. Not all the apples were consumed by the farm family, however, and fallen fruit provided a good variety for the diets of many wild animals. Deer, woodchucks, ruffed grouse, red fox, robins and cedar waxwings were but a few of the species annually feasting on the leftover fruit in fall and winter. With such fruit now readily available in every supermarket's produce counter, the home apple orchard has become a kind of endangered habitat.

The old farm grove itself is similarly vanishing from the scene. Expanded, large-farm operations, coupled with a decrease in small, family farms, have resulted in an abandoned farmstead or two in almost every square mile of the state. Within a few years these old buildings are salvaged, and the accompanying grove of trees is bulldozed to make room for more rowcrop agriculture.

Even on presently inhabited farm-sites, large old groves of from two to five acres or more are removed and, if replaced at all, are substituted with a narrow, three or four-row windbreak. In each instance, valuable homes for deer, pheasants, raccoons, squirrels, hawks, owls, woodpeckers and other creatures too numerous to mention are lost. Like the fencerow, rockpile and old orchard, farm groves are becoming another forgotten habitat.

One might say, "So what?" These are small areas. A farm grove is at most ten acres and a rockpile but a few square yards. Such places could not mean that much to wildlife overall.

The answer is realized when one looks at the total of these lost habitats

in Iowa, not just the individual pieces. In the last two decades, we've lost thousands of acres of such habitats. If it had all been in one location and then destroyed, imagine the effect it would have on the total wildlife picture. Better yet, imagine the effect on those people who hunted game or just enjoyed watching birds in an area of several thousand acres. It is likely a hue and cry would rise and be heard from the local county supervisors' meeting room to the state legislative halls in Des Moines.

The whole of anything is the sum of many pieces. When we forget small habitats, we overlook the effect on our whole environment. Noted ecologist Dr. Paul Erlich has proposed a theory for endangered species, likening those plants and animals to popping rivets on an airplane.

An aircraft's fuselage and wings are held together with rivets. Airplanes are so well constructed that a few of those rivets might be popped before the wings finally fall off and the plane crashes. But the problem lies in knowing what rivet, when popped, will result in total destruction of the aircraft.

We might like to think that a particular endangered species is so insignificant that we can afford to lose it and no one will be harmed. Erlich's theory is that someday we will lose enough endangered species that the earth's ecosystem itself may break down. Every living organism on this planet is somehow significantly linked to everything else in its environment. Such a catastrophe could mean the death of major food crops for the world, loss of atmospheric oxygen and a host of other disasters.

Could a similar case be made for the loss of small pieces of habitat? Perhaps not on so catastrophic a scale, but at least large areas of Iowa could be threatened with almost total disappearance of all wildlife. In fact, large areas of north central Iowa's cash-grain farming region are nearing that situation at this time.

Our wildlife heritage has gradually been chipped away in small chunks, until many areas are almost devoid of wild creatures. The Iowa Conservation Commission, local county conservation boards, and private groups such as The Nature Conservancy are doing all in their power to prevent these losses by acquiring and preserving areas of significant habitat. But in many cases, the habitats being lost are too small for these organizations to deal with because of limits on time, money or personnel.

The responsibility then must lie with landowners if forgotten habitats are to be saved. Incentives exist to preserve small areas, especially the laws permitting property tax exemptions for wetlands, prairies, woodlands and various other types of wildlife habitat. It is, however, ultimately up to individual landowners to take advantage of these incentives.

The forgotten habitats discussed here are but a few of many different kinds in Iowa, all important for wildlife. Tiny remnants of habitat can no longer be overlooked as unimportant. Iowans must do everything possible to assure a future and a place for these areas in our rural environment.

Doug Harr is a wildlife management biologist in northwest Iowa. He holds an M.S. degree from South Dakota State University and has been with the commission since 1972.



CALENDAR

May, 1986

May 2, 3, 9, 10, 30, 31 June 6, 7	Halley's Comet Viewing 8:00 p.m. (June 8:30 p.m.)	Ashton Observatory Jasper County 515/792-9780
May 3, 4, 11, 18	Flower Rambles	Hartman Reserve Nature Center Black Hawk County 319/277-2187
May 4, 18, 23	Canoe Trips Reservations Only	Indian Creek Nature Center Cedar Rapids 319/362-0664
May 7, 14, 21	Sack Lunch In The Park	Marshall County 515/752-3150
May 10	Spring Float Trip	Wapello County 515/682-3091
May 10	Seasons of a Woodland Hike 1:00 - 3:00 p.m.	Basswood Recreation Area Palo Alto County 712/532-3185
May 10	Spring Volksmarch 12:00 - 4:00 p.m.	Lime Creek Nature Center Cerro Gordo County 515/423-5309
May 11	Mushroom Slides and Walk	Lake Meyer Nature Center Winneschick County 319/534-7144
May 11	Woodland Wildflowers Hike 2:00 p.m.	Swiss Valley Nature Preserve Dubuque County 319/556-6745
May 11	Wildflower Walk 2:00 p.m.	Indian Creek Nature Center Cedar Rapids 319/362-0664
May 11	Woodland Wildflowers 2:00 p.m.	Ashton Wildwood Park Jasper County 515/792-9780
May 15	Cerro Gordo County's Surprising Natural Areas 7:00 p.m.	Lime Creek Nature Center Cerro Gordo County 515/423-5309
May 17, 18	Pioneer Days Variety of Demonstrations	Scott County Park 319/381-1114
May 17	Warblers in the Woods 7:00 a.m.	Cass County 712/243-3542
May 17	Wildflower Walk	Bingham Park Wright County 515/532-3185
May 18	Snake Program and Hike 2:00 p.m.	Swiss Valley Nature Preserve Dubuque County 319/556-6745
May 18	Fishing Clinic	Lake Meyer Nature Center Winneschick County 319/534-7144
May 18	Chicken BBQ 12:00 - 4:00 p.m.	Lime Creek Nature Center Cerro Gordo County 515/423-5309
May 18	Spring Wildflowers	New Haven Potholes Nature Center Mitchell County 515/732-5204
May 18	Conservation Center Open House 1:00 p.m.	Conservation Center Warren County 515/961-6169
May 22	Night Hike	Clinton County Eden Valley Refuge 319/847-7202
May 25	Wild Edibles Foray 1:30 - 4:00 p.m.	Swan Lake State Park Carroll County 712/792-4614
May 25	Buffalo Chip Throwing Contest 7:00 p.m.	Swan Lake State Park Carroll County 712/792-4614
May 25	Mesquakie Indian River Trail Race	Jackson County 319/652-3783
May 25, 31 June 7, 14, 21, 28	Conservation in the Park	Gouldsberg Park Fayette County 319/425-3613
May 25 June 8, 22	Wagaman Mill Tours 2:00 - 4:30 p.m.	Jasper County 515/792-9780
June 1	Folk Arts in the Forest	East Lake County Park Osceola 515/342-3960
June 7	Gun Dog Training Workshop	Springbrook Education Center Guthrie County 515/755-3061
June 7	Fishing Clinic	Osborne Park Clayton County 319/245-1516
June 7, 8	Canoeing Competitions (Registration Deadline May 23)	Madison County 515/462-3536



WARDEN'S DIARY

By Jerry Hoilien

Butch Olofson called and needed some help. He was the warden at Oskaloosa and never asked unless he really needed it.

When a bunch of fish traps in a stream are located, you're going to set up on them and you're going to need help. So here we came. There weren't that many of us, just Ken Kakac, myself and Butch, and we had quite a stretch of river to cover. We met at Butch's house for coffee (Norwegians always have to have coffee first).

Butch really knew his area and described it to a tee, relating how much cover there would be for us (not much) and just where the illegal fish traps were located. We decided to camp in a small grove of trees across the river from a gravel road. There wasn't much of a way anyone could spot us or accidentally walk up on our camp.

Well, the weather was hot and getting hotter. We pitched a small camouflaged tent but couldn't use a wood fire — a small camp stove would have to do. Ken and I stayed the first day and night with Butch bringing in the groceries the following day about noon. We ate well and Ken took his break the next day and brought back more coffee (naturally). Well, Butch had to give a program the next day and I volunteered to stay as Ken was coming back that next afternoon. It's hard to tell when someone's going to run their fish traps.

Along towards noon it really turned warm. I couldn't take the heat anymore — especially with that nice cool river right in front of me. As

nobody had been near the river all morning, I took a chance. Looking all around first, off came my duds and I sank down in that cool water and soaked it up. After cooling down, I looked up and down the area again and swam out across the stream. Gosh it was nice! Nearing the opposite bank, I kicked into something sharp and reaching down, I felt the mesh wire of a fish trap we hadn't located at all. It had quite a few fish in it. Now I moved back and forth across and located *two* more. The river seemed full of them! The next one was full of dead fish. It hadn't been checked for a long time and the dead ones were attracting more. Once they got inside they had had it. The last trap was rusty and stuck in the bottom mud. Fish skeletons came up with the mud. This one had been abandoned several years ago.

Mumbling to myself, I waded ashore and looked right into Ken's eyes as he said something about wishing he had his camera. I didn't tell him mine was back at the tent.

I'm pleased to report that the following morning we heard a boat coming. Sure enough, two guys raised the fish trap just below us, then moved up to run three straight out from where Ken was watching from the weeds on the bank. Then they pulled up right below me. Laying on the high bank above them, I was only a few feet away. They were talking to each other about how many fish they had, when I parted the grass. When they looked up, hearing my shutter release, I said, "Smile — you're on Wardens Camera!"

FREE!

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Register at the 1986 Iowa State Fair, Aug. 14-24

State Parks Exhibit — Conservation Building

(Participants must be 18 years or older)