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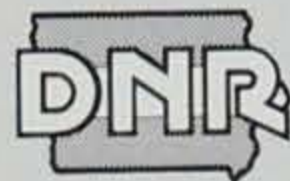
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COVERS: Front -- Fishing the canal area off West Okoboji. Photo by Ron Johnson.  
Back -- Butterfly milkweed. Photo by Ken Formanek.



# The REAP Act

## A Brighter Future for Iowa's Diverse Environment

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by Ross Harrison

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The Resources Enhancement and Protection (REAP) Act passed in the 1989 session of the Iowa General Assembly, and signed by Governor Terry Branstad on May 27, is one of the premier conservation laws ever enacted in Iowa. It ranks right up there with the Groundwater Protection Act of 1987 — the effects of both are catapulting Iowa to the front nationally in environmental and conservation initiatives.

Both laws became a reality due to a combination of factors: recognition of the need to protect Iowa's resources, highly spirited public support and responsive state government in both the legislative and executive branches. Iowans should be proud and optimistic as the 20th anniversary of Earth Day approaches in April 1990, that Iowa is on a progressive track to a healthier environment and a better quality of life.

In the early part of the REAP Act are some carefully chosen words



*Over the next 10 years, \$300 million will be targeted for REAP towards the protection and preservation of Iowa's natural resources. This recent legislation has placed Iowa in the national forefront for environmental and conservation initiatives.*

which define its intentions:

"The program shall be a long-term integrated effort to wisely use and protect Iowa's natural resources through the acquisition and management of public lands; the upgrading of public park and preserve facilities; environmental education, monitoring and research; and other environmentally sound means. The resources enhancement program shall strongly encourage Iowans to develop a conservation ethic, and to make necessary changes in our activities to develop and preserve a rich and diverse natural environment."

### Resources in Need

Within the REAP Act is language which justifies its broad scope and significant funding:

"The state of Iowa has lost 99.9 percent of its prairies, 98 percent of its wetlands, 80 percent of its woodlands, 50 percent of its topsoils and more than 100 species of wildlife since settlement in the early 1800s. There has been





*Ninety-nine percent of REAP funding will go directly into environmental programs, including conservation education.*

significant deterioration in the quality of Iowa's surface waters and groundwaters. Prevention of further loss is imperative.

"The air, water, soils and biota (plant and animal life) of Iowa are interdependent and form a complex ecosystem. Iowans have the right to inherit this ecosystem in a sustainable condition, without severe or irreparable damage caused by human activities."

#### **Major New Money Source**

While the complete details of the REAP Act are still being

analyzed and are quite complex and far-ranging, a simple overview reveals why it is such an important act. Although it applies directly to many functions of the Iowa Department of Natural Resources, there are significant parts of REAP directed to programs of the Iowa Department of Agriculture and Land Stewardship, Iowa Department of Education, Iowa Department of Transportation, Department of Cultural Affairs, each county conservation board and private conservation organizations.

Over the next 10 years, about

\$300 million will be targeted for REAP. This year, \$15 million was set aside for action on projects, with the intent of \$30 million a year for the following nine years being appropriated. A standing appropriation of \$20 million a year has been signed into law for those nine years and there is legislative intent that the additional \$10 million be added from lottery receipts. Some additional funding will come from a new state-sponsored credit card in which a percentage of the purchases would be deposited in the REAP fund. Other funds will

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come from state corporate income tax revenues collected on windfall profits.

The REAP fund represents an increase over existing conservation funding programs. It has replaced the four-year-old park user fee which had generated about \$1 million annually. And it increases lottery support from last year's \$2 million to four or five times that amount. Spending on REAP projects is directed by the following:

- ◆ The first \$350,000 for conservation education;
- ◆ One percent of the total receipts for administration.

The rest is divided up as follows:

- ◆ 28 percent for Open Spaces (state acquisition and development of lands and waters);
- ◆ 20 percent for county conservation boards (each county will receive a share);
- ◆ 20 percent for soil and water conservation;
- ◆ 15 percent for city parks;
- ◆ 9 percent for management/development of state properties;
- ◆ 5 percent for historical projects;
- ◆ and 3 percent for vegetation management.

#### Public Input Channels Created

REAP creates an entirely new and formal method of citizen input to the DNR, the General Assembly and the Governor on the issues of natural resource enhancement and protection policies, programs and funding. There will be two sets of committees composed of local citizens — one at the county level and

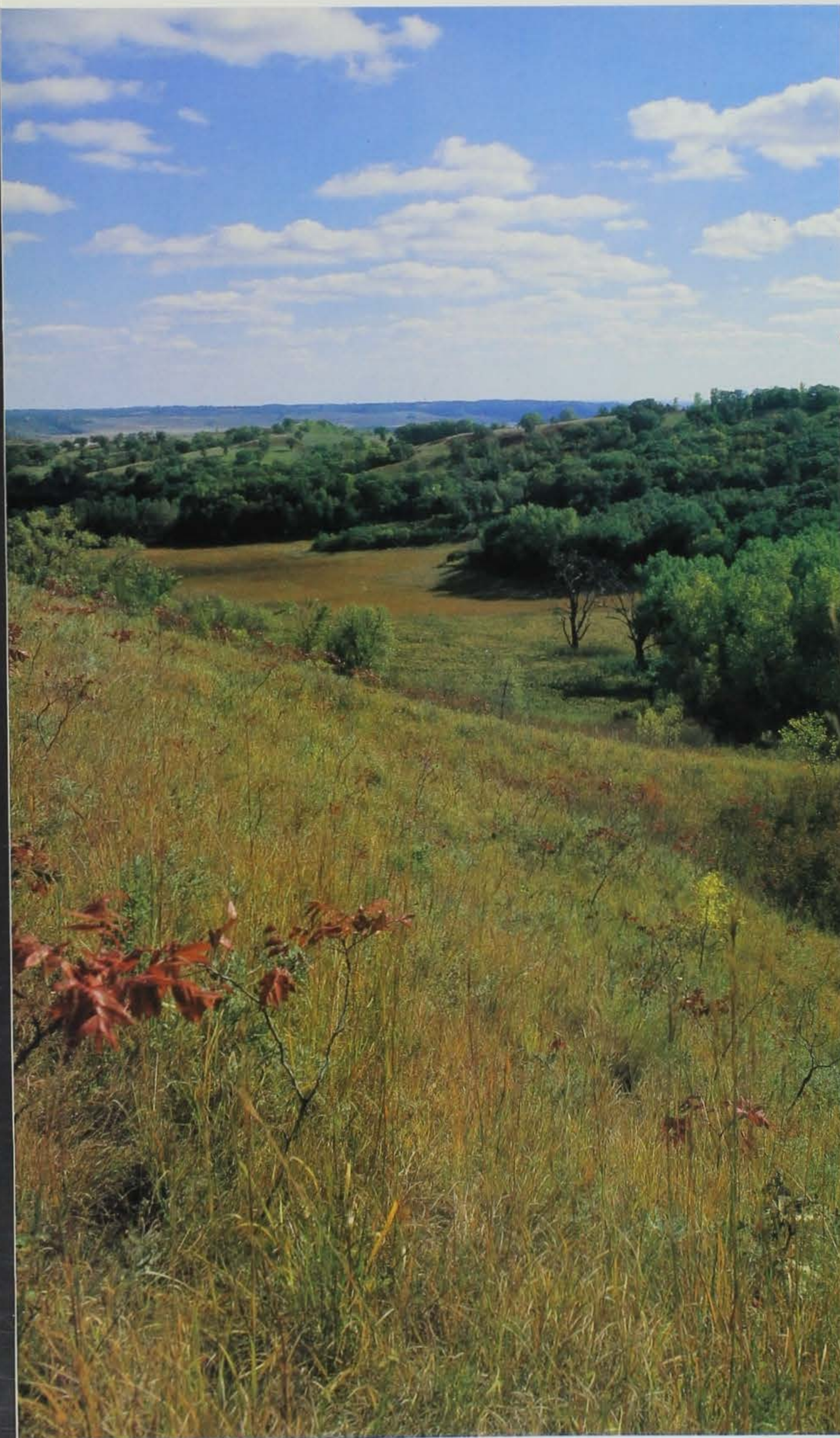
#### Resources Enhancement and Protection Fund Analysis

	TOTAL FY 1989 & FY 1990	EACH YEAR FY 1991 - FY 2000
<b>RECEIPTS</b>		
General Fund Appropriation	\$2,000,000	\$20,000,000
General Fund Supplemental	\$5,000,000	
Lottery Appropriation	\$8,000,000	\$10,000,000*
Transfer From Park User Fee Account - est.	\$500,000	
State Credit Card Receipts		
<b>TOTAL RECEIPTS</b>	<b>\$15,500,000</b>	<b>\$30,000,000</b>
<b>ALLOCATION</b>		
Conservation Education Board	\$350,000	\$350,000
Administration Fund (1%)	\$150,000	\$300,000
Programs (99%)	\$14,500,000	\$29,350,000
<b>Open Spaces Account (28%)</b>	<b>\$4,060,000</b>	<b>\$8,218,000</b>
Acquisition & Development (85%)	\$3,451,000	\$6,985,300
PWA Implementation (5%)	\$203,000	\$410,900
75% Match for Private \$ (10%)	\$406,000	\$821,800
<b>County Conservation Account (20%)</b>	<b>\$2,900,000</b>	<b>\$5,870,000</b>
Per county (30%)	\$870,000	\$1,761,000
On population (30%)	\$870,000	\$1,761,000
Competitive Grants (40%)	\$1,160,000	\$2,348,000
<b>Soil &amp; Water Enhancement Account (20%)</b>	<b>\$2,900,000</b>	<b>\$5,870,000</b>
<b>City Park &amp; Recreation (15%)</b>	<b>\$2,175,000</b>	<b>\$4,402,500</b>
<b>State Land Management Trust Account (9%)**</b>	<b>\$1,805,000</b>	<b>\$2,641,500</b>
<b>Historical Resource Grant and Loan Fund (5%)</b>	<b>\$725,000</b>	<b>\$1,467,500</b>
<b>Living Roadway Trust Fund (3%)</b>	<b>\$435,000</b>	<b>\$880,500</b>
<b>TOTAL ALLOCATION</b>	<b>\$15,500,000</b>	<b>\$30,000,000</b>

\* General understanding is that the General Assembly intends to appropriate at least \$10 million from Lottery proceeds beginning in FY1991.

\*\* Includes transfer from Park User Fee Account for FY 1989-FY1990.





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Iowans have the right to inherit this ecosystem in a sustainable condition, without severe or irreparable damage caused by human activities.

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one at a multi-county, regional level. From these committees, a statewide REAP congress will be formed as well.

Each of Iowa's 99 counties will have a "Resources Enhancement Committee" composed of local elected officials and representatives of farm, conservation, recreation, education and other interests. There is no limitation on the size of these committees.

A county Resources Enhancement Committee is made up of the chairpersons of the board of supervisors, conservation board, commissioners of the soil and water district and school board of each district in the county (or if the school district overlaps counties, it will be in the county of its largest number of students). Also on the committee are each mayor (or the mayor's designee), the chairperson (or designee) from each farm organization in the county and from each of the following groups if they have an organization in that county:

- Audubon Society
- Iowa Sportsman Federation
- Ducks Unlimited
- Sierra Club
- Pheasants Forever
- The Nature Conservancy
- Iowa Association of Naturalists
- Izaak Walton League

Or any other similar groups as determined by the vote of those members who are on the committee by virtue of their other elected office.

County committees are required to make five-year plans,

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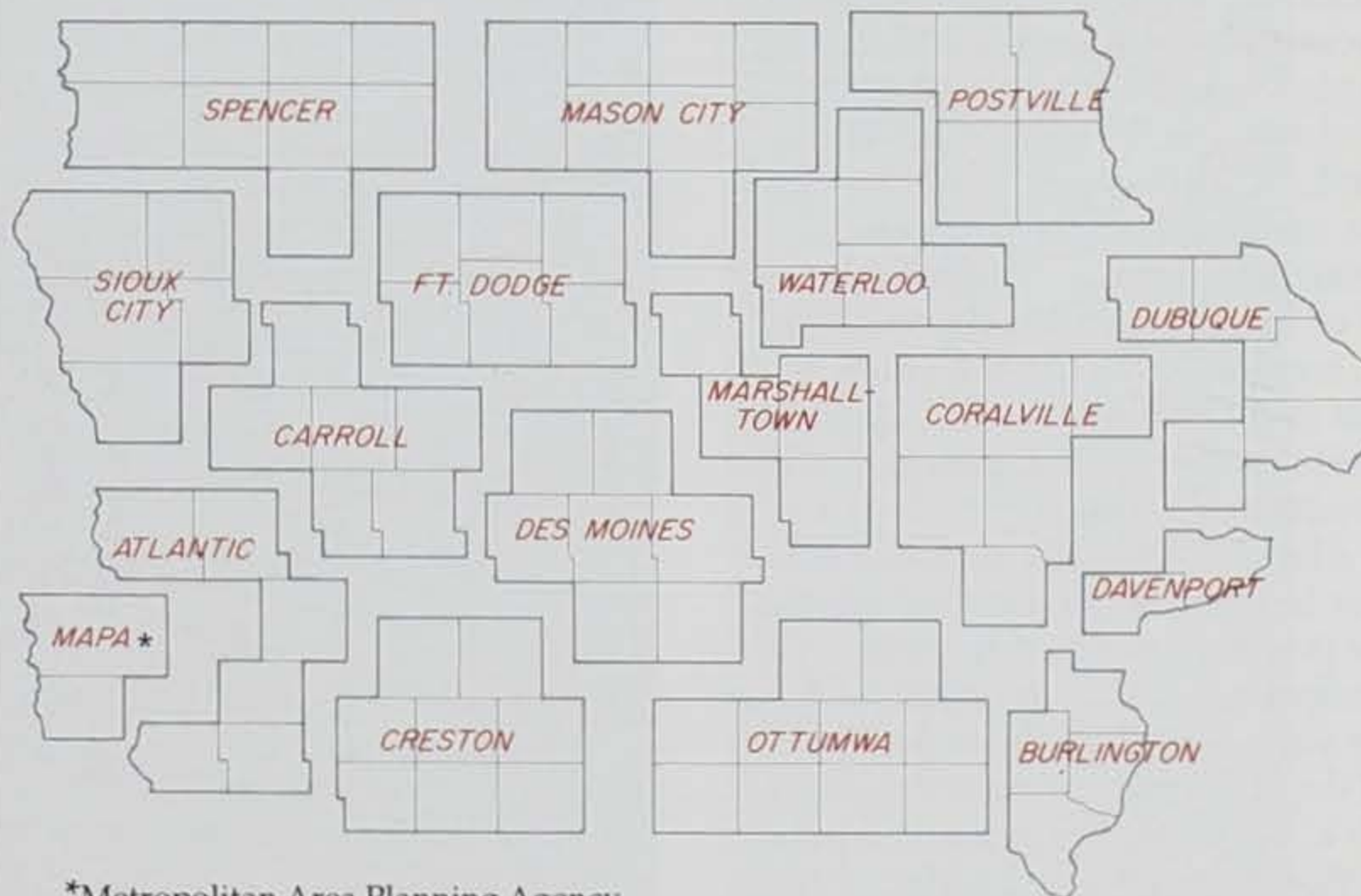
propose resource enhancement projects and coordinate the implementation of those projects.

Additionally, 17 "assemblies" are to be held on a larger regional basis, following the boundaries of the multi-county, "council of governments" areas.

Every two years, in even-numbered years, five delegates from each of these assemblies will be convened by the DNR for a statewide "congress" to identify opportunities for resource enhancement and protection and to develop recommendations for REAP projects.

Again, there is much to be worked out on how the county committees, regional assemblies and congress will operate, but it is certain they will offer opportunity for more Iowans to voice their interests on resource issues.

### Borders of Regional Assemblies (Council of Governments)



\*Metropolitan Area Planning Agency



# Plugging Abandoned Wells

Story by  
Donivan L. Gordon  
Photos by Ron Johnson

Among the many issues raised in regard to protecting Iowa's groundwater quality is that of abandoned wells. These are water wells that are no longer in use or are in such poor condition that continued use is unsafe or impractical. Such wells are liabilities which threaten our drinking water supplies, health, and safety.

Prior to 1985 we had no real idea of how many abandoned wells there were in Iowa, only that they were numerous. Information tabulated from a well inventory, conducted by county assessors in 1983 and 1984, showed that there were at least 21,775 abandoned wells in the state. Only about 60 percent of the inquiry cards distributed were returned. If these represented an accurate statistical sample, then the total number of abandoned wells could exceed 36,000. Additionally, in 1900 there were nearly 225,000 inhabited farmsteads in Iowa. Today only half of these are still occupied. This fact, coupled with other known types of abandoned wells, suggests a total number of abandoned wells exceeding 100,000.

Abandoned wells undoubtedly occur in each of Iowa's 99 counties; they probably connect to every principal aquifer in the state; and they vary considerably in design and depth. Wells are constructed with a casing that is supposed to function as a sanitary barrier to the





movement of contaminants into a well. As is often the case in abandoned wells, corrosion or deterioration has destroyed the effectiveness of the casing. Worse yet, such wells function as direct conduits to the groundwater environment. Chemicals and other contaminants from the land surface have easy access to traditionally dependable sources of water supply.

In addition, certain types of abandoned wells represent significant physical safety hazards to livestock, wildlife, and people. Historically, it was common practice to dig or bore shallow, large-diameter wells to supply groundwater. Most of these wells were 30 inches or more in diameter and from 15 to 50 feet deep. It was not uncommon for single farmsteads to have several such wells. It was easier to develop a well at a point of use than to install the plumbing to distribute water around the farmstead. Many of these wells are seen today in fields, pastures, around abandoned farmsteads, and even in backyards in some communities.

The principal reasons for permanently plugging or sealing abandoned wells are to remove the health and physical hazards they represent and to protect groundwater supplies from contamination. To assist in this effort, the Geological Survey Bureau has published "Guidelines for Plugging Abandoned Water Wells," as Technical



*An estimated 100,000 abandoned wells exist in the state, each posing a potential threat to the quality of Iowa's groundwater.*



Information Series 15 (\$2.00, plus \$1.00 postage and handling). This publication covers the recommended plugging methods and materials to meet the different situations that Iowa well owners can expect to encounter.

Ideally, an abandoned well should be plugged in a manner that will essentially restore the hydrologic integrity of the well site to its condition before the well was completed. This means using materials and methods that will prevent any surface water drainage into the well. Also, effective seals should be placed between individual water-bearing horizons to prevent the mixing of waters of different quality and to preserve aquifer pressure conditions. A common problem in determining how to proceed with plugging a well is not knowing how the well was constructed or even the depth of the well. These factors must be known to calculate the amount and volumes of well-plugging materials that will be required. If this information is lacking, the well owner is advised to check for records on file with the original well driller or with the geological survey bureau.

If these cannot be found, possibly a well contractor familiar with the area can be of assistance.

Well-plugging materials fall into two categories: sealing materials and filling materials. Impermeable sealing materials, used to obtain a water-tight barrier in a well, include cement, concrete, and bentonite clay products. Filling materials are used to take up space where sealing is not required and to help reduce the cost of the plugging operation. These include sand, gravel, and crushed stone.

In properly plugging a well, the placement of the plugging materials is particularly important. Only in large-diameter wells, greater than 28 inches, can plugging materials be poured directly into a well. In smaller diameter wells, "bridging," or incomplete filling of the well, is a problem. For this reason it is not recommended that concrete be poured into a well with standing water. Also, cement and aggregate can separate and prohibit an effective seal. It is recommended that bentonite and cement sealants be introduced into wells by means of a device known as a "tremie pipe." This pipe

should extend to the bottom of the well with the filling material pumped in from the bottom upward; the tremie pipe is gradually raised as the hole fills. This is the recommended procedure for most small-diameter, cased wells. Because of the specialized equipment required to seal a well in this manner, the work should only be done by a registered well driller.

As a final note, it is especially important to properly seal abandoned wells in proximity to new replacement wells, particularly if the two wells tap the same source of supply. In such contexts, an abandoned well can be a receptor of contaminants which move via the aquifer during pumping directly into nearby wells. To protect your investment and your neighbor's investment in a water supply -- plug your abandoned wells.

**Reprint from *Iowa Geology*, 1989, pages 18 and 19.**

*Donivan L. Gordon is a geologist with the water resources section of the department's geological survey bureau located in Iowa City.*

If your county has applied for and been approved to distribute grants for closing of abandoned wells, there may be some funds available to assist you in your well closure. Each approved county administers its own program and up to a limit of \$200 may be available in financial assistance for closing of each abandoned well. A list of the counties with some funds available for fiscal year 1990, which began July 1, is below. Contact your local county government for information on the program and the details of their participation.

#### Counties With Grant Programs for Abandoned Wells (FY1990)

Adams	Des Moines	Lee
Audubon	Dubuque	Linn
Black Hawk	Fayette	Mahaska
Bremer	Franklin	Mills
Calhoun	Greene	Mitchell
Carroll	Guthrie	Montgomery
Cedar	Hamilton	Muscatine
Cerro Gordo	Henry	Palo Alto
Cherokee	Howard	Poweshiek
Chickasaw	Humboldt	Sac
Clayton	Ida	Scott
Clinton	Iowa	Taylor
Crawford	Jackson	Van Buren
Dallas	Jasper	Wapello
Delaware	Johnson	Webster



## WARDEN'S DIARY

### A Lesson In Boating by Chuck Humeston

I remember the advice very well. Ben Davis, who was then a law enforcement supervisor, took me aside and said, "Remember, there are two kinds of pilots -- those who have landed with their wheels up and those who are going to!" It would be years before I realized the meaning of those mysterious words.

I had transferred to the Hardin and Hamilton County territory. I had five years experience on the lakes of northwest Iowa in all kinds of water and all kinds of conditions. I was an expert. Could I handle any boat? Yes!

Conservation officers are at home on the water. Sometimes we entertain ourselves by going to boat ramps to watch the miscues of others. You've seen them -- forgetting to put in the drain plug, leaving the car in gear, driving off the ramp. The mistakes of pilgrims, not of experts.

With this expertise in hand, I set off with a newly issued boat, motor and trailer to the Iowa River in Iowa Falls. It was a nice, hot summer day -- the start of a long day.

I drove to the boat landing. About 25 people were there boating or swimming. After loading my equipment into the boat, I unhooked the tie-down and the winch (mistake number one!). Backing onto the ramp, I looked into my mirror to see the nose of the boat rise to the sky followed by the boat promptly sliding at high speed off the trailer into the river. I panicked and jumped

out of the car to grab a bow line (mistake number two!).

Running down the ramp after my boat, I looked beside me to notice something odd. My car was passing me backwards, still in gear. We always instruct persons in this case in boating safety to jump away to keep from being caught under the wheels -- good advice if your alternative is not filling out a report explaining why your squad car is at the bottom of the Iowa River. Getting caught under the wheels seemed a better alternative. I jumped in the car head-first and slammed on the brakes producing a loud screech as the trunk went into the river. Now the bystanders were getting interested watching the miscues of this pilgrim officer at the ramp. Not wanting to explain a wrecker bill, I gave the car the gas. It shot out of the river and to my relief up the ramp.

Another problem remained -- my boat drifting downstream toward the power dam. I considered swimming as more reports went through my mind. A bystander swam out to the boat and brought it to me. I meekly thanked him and got into the boat to the applause of the gathering crowd. Getting my wits about me, I started upstream. At about two miles, I looked behind me to notice smoke from the outboard from a failing water pump. Shutting down the motor, I started to drift, trying to look like I was in control of the situation.

A ski-boat which had passed earlier (probably watching the miscues of the pilgrim officer) stopped to offer help. We towed my boat to the nearest landing, and the driver offered me a ride to the ramp to get my car. Okay, nobody will see me being carried back on my shield. He dropped me off at the ramp, and I walked to my car -- to the applause of bystanders.

I picked up my boat and limped home. Deciding to see if the motor was seized up, I decided to start it, but I couldn't find the key (miscue of a pilgrim). I went inside to hide. Yes, there are two kinds of pilots. It was a hard landing, too.

*Chuck Humeston is a conservation officer for the Hardin and Hamilton County area. He will be sharing some of his experiences in future issues under the Warden's Diary column along with Jerry Hoilien, long-time author of Warden's Diary.*

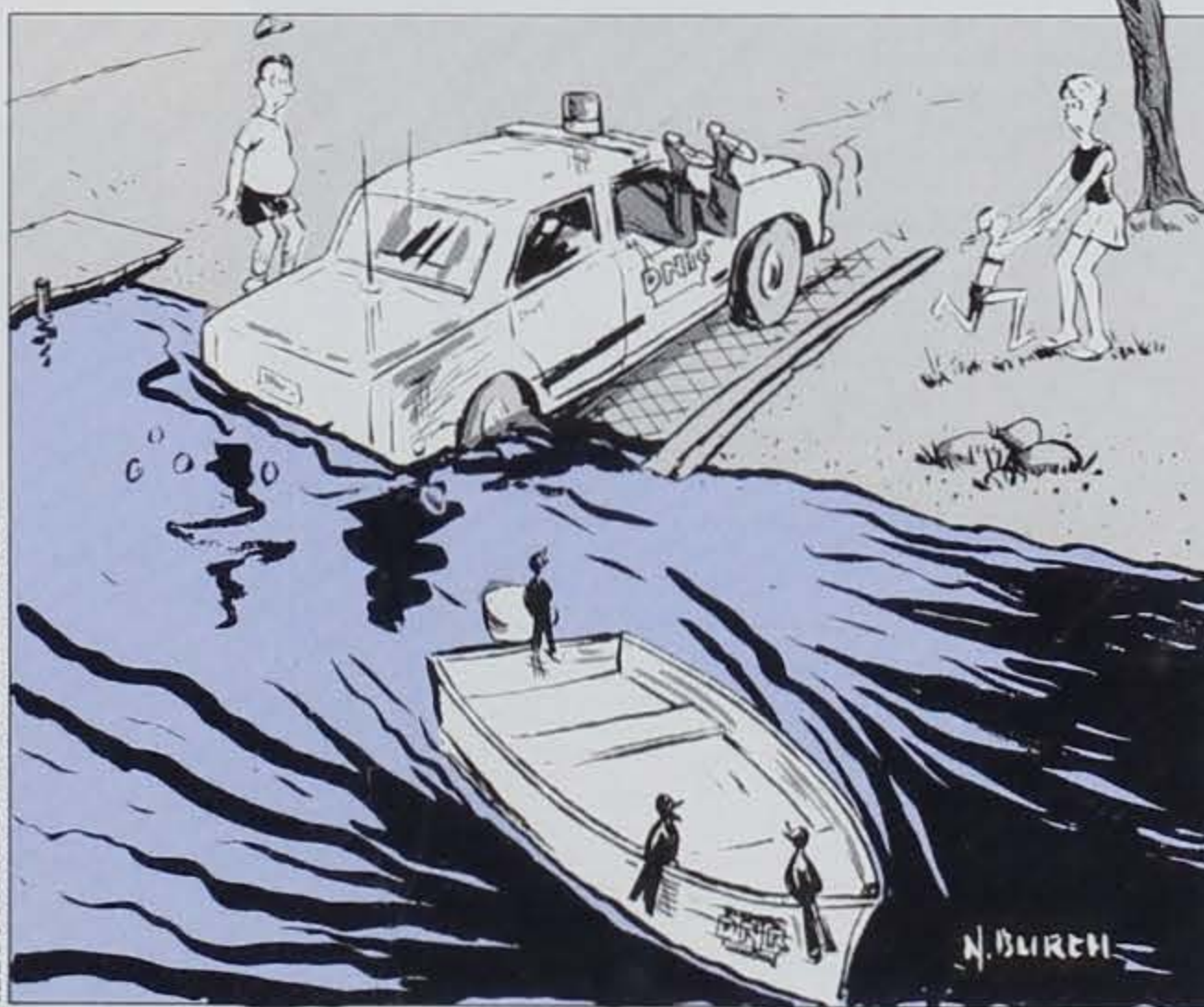


ILLUSTRATION BY NEWTON BURCH

**I jumped in the car head-first . . . as the trunk went into the river.**



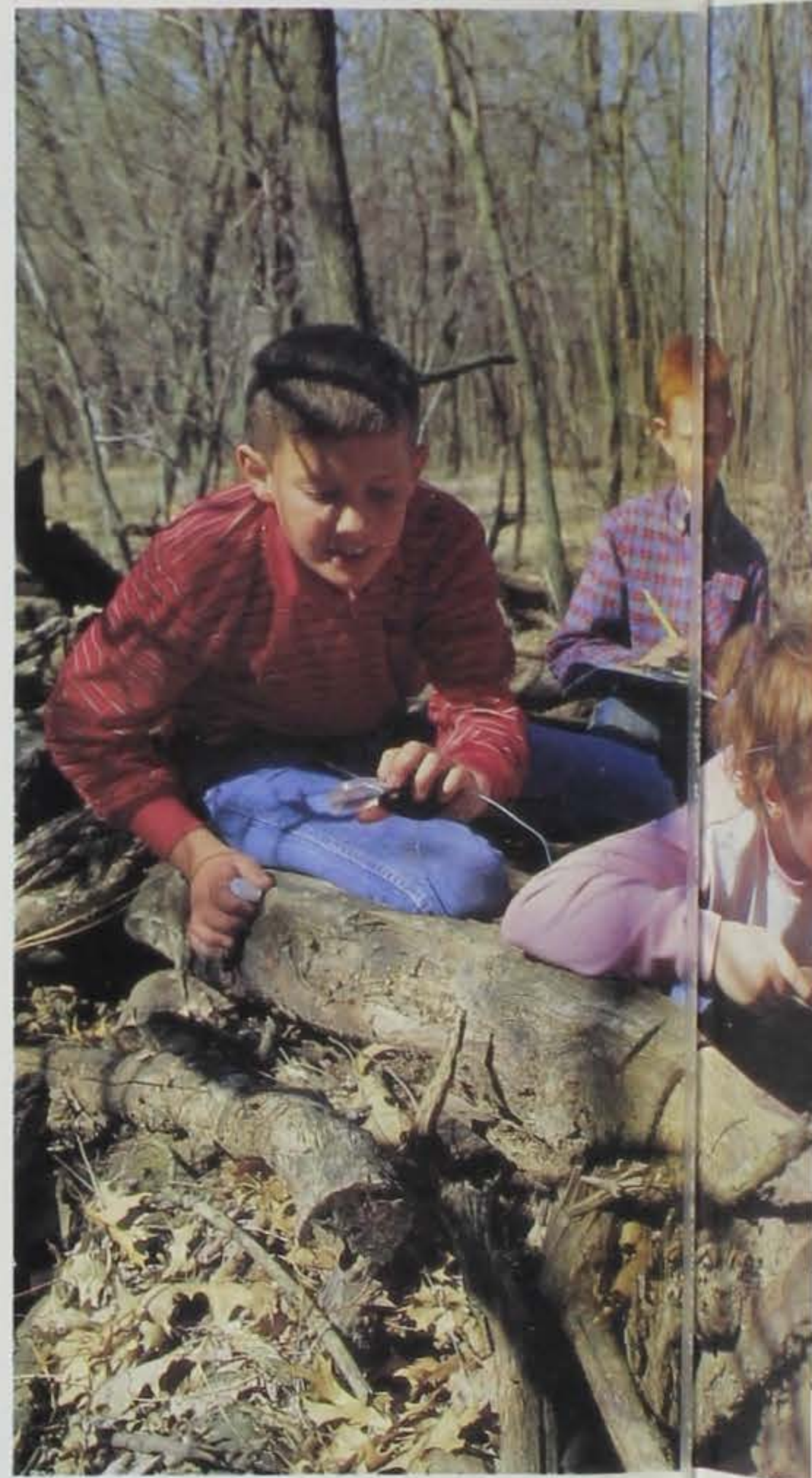
# What is Interpretation?

by James Scheffler

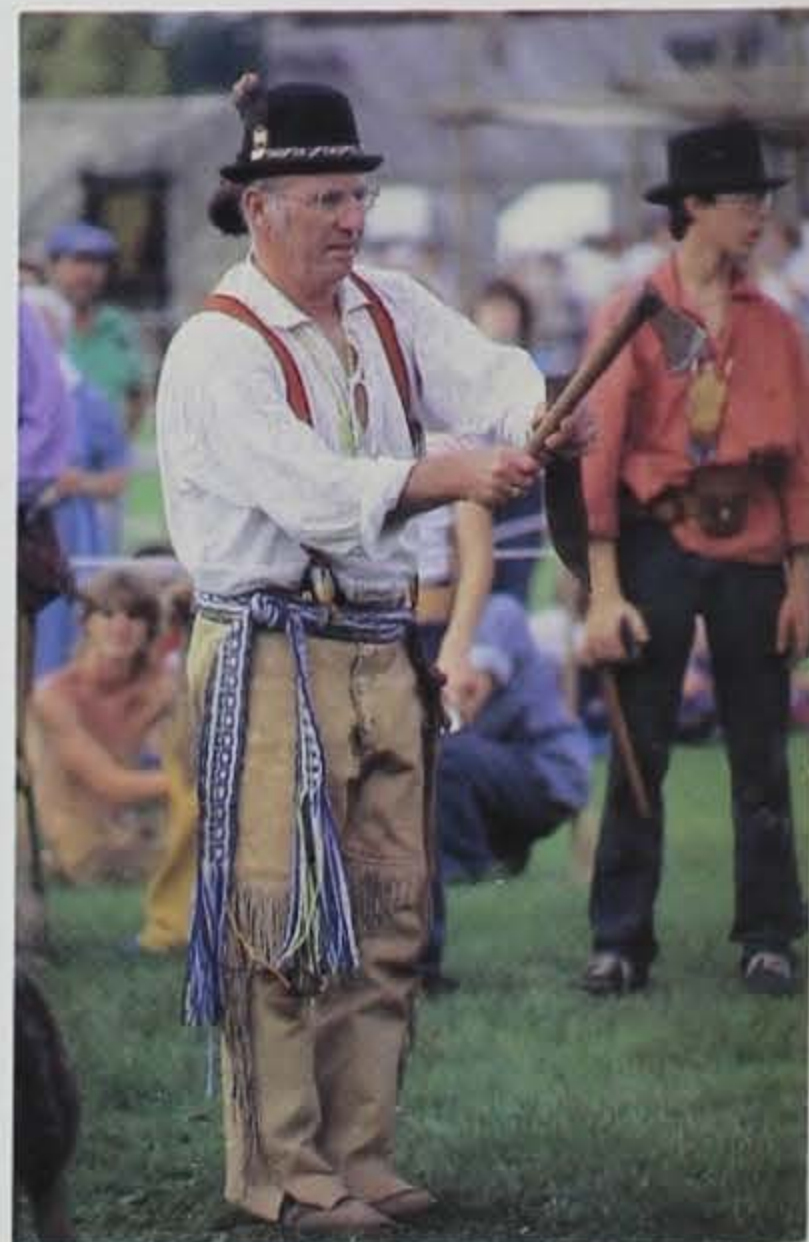
Just what is interpretation? In its broadest sense, interpretation is the art of making people better aware of the natural, geological, historical and archaeological resources of an area. It has an important place in the state park program. Parks are far more than just places to go and engage in the "traditional" activities such as camping, fishing, picnicking and swimming. In many cases, state parks were chosen during the early years of this century because of their truly unique features. The sandstone formations at Ledges and Dolliver state parks, the unique geological features of Maquoketa Caves and Backbone, the Loess Hills of Waubonsie and Stone state parks, and the historic

Pine Creek Mill at Wildcat Den all helped "target" these areas for state park designation. Yet, many visitors really do not "see the forest for the trees" when they come to state parks. Why is it important, though, that they do; that they become aware of the natural and cultural features of their parks?

Simply put, through knowledge comes understanding, appreciation and, yes, enjoyment. This is especially important for young people, many of whom have been raised in urban or suburban environments and do not have close ties with the outdoors. Iowa is blessed with a multitude of natural wealth, much of which is tied up in its rich soil. Over the years, an understanding and



*Nature walks, nature centers such as E.B. Lyons in Dubuque, festivals like the Fort Atkinson Rendezvous, and Frank Lloyd Wright-built Cedar Rock near Quasqueton all serve to make people better aware of Iowa's natural, geological, archaeological and historical resources.*







RON JOHNSON

appreciation of the importance and fragility of Iowa's soil resource has slowly developed. With this understanding have come agricultural programs and practices which help to conserve soil so that it will continue to be fruitful for future generations. Through interpretation of the natural and cultural features of state parks, a parallel understanding can also develop for the importance of maintaining and managing the total park resource so that it remains available for the enjoyment of future generations.

Interpretation can help make park visitors aware of plant and animal communities and their inter-relationships, of the geological processes which created unique landforms, of pre-historic Iowa and its "citizens," as well as Iowa's frontier history. Through knowledge can come understanding and an awareness of the effects people have on the park resource. Park managers have found, over the years, that rules are often broken and resources damaged as a result of a lack of understanding. Visitors may simply not be aware of the damage that can occur when, for example, they stray off of marked trails, gather wildflowers, or climb on fragile geological formations. Interpretation can increase visitor understanding and help to enhance the resource through better compliance with park rules and through support of agency programs and goals. This is especially effective with young people.

The Department of Natural Resources' park management bureau has been working for a number of years to develop a comprehensive interpretative program. Although this effort has been slowed by a lack of additional funding or provision of full-time interpretative staff, much has been accomplished through hard work



KEN FORMANEK



all trades," park staff have donned other hats and have provided a wide variety of excellent interpretive facilities and programs.

Most state parks and recreation areas feature self-guided interpretive trails where visitors can enjoy pleasant hikes and, at the same time, learn about the natural and cultural resources to be found there. During the main recreation season, park staff and guest speakers present hundreds of campground programs, guided walks and other interpretive events on a wide variety of topics.

Special events such as the annual Ft. Atkinson Rendezvous, the Onawa-Lewis & Clark Festival, and the Forest Craft Festival at Lacey-Keosauqua State Park are, essentially, interpretive programs on a large scale providing not only a lot of fun things to do for the whole family, but also understanding and appreciation of Iowa's history and resources. Other special events are held throughout the year in many state parks and offer similar opportunities.

The E.B. Lyons Nature Center at Dubuque lies adjacent to the historic Mines of Spain State Recreation Area. The Center provides a wide array of programs year-round on the natural and cultural resources of this unique area. Future plans for the Mines of Spain call for the development of such ambitious interpretive facilities as a Native American campsite, early settler's cabin, an "enterable" lead mine, as well as a system of trails.

Northeast Iowa's Bellevue State Park features the Garden Sanctuary for Butterflies (see following story). The garden, unique in the Midwest, contains over 150 plots, each with plants chosen for their food and cover value for butterflies. The overall view of the garden when it

## Upcoming Interpretive Events

### Fort Atkinson Rendezvous:

The annual rendezvous has been held since 1977 during the last full weekend in September at Ft. Atkinson State Preserve in northeast Iowa. The event recreates life on the 1840 Iowa frontier with authentic buckskinners, U.S. Army dragoons, blackpowder shoots, craftspeople, contests, movies and demonstrations.

### Forest Crafts Festival:

Held at Lacey-Keosauqua State Park the second weekend of October, the festival features wood craft demonstrations and sales, forest and wildlife management demonstrations and buckskinners. Nearby Keosauqua has a parade, carnival and other allied events.

### Special Winter Events

Special events are not just limited to summer and fall. Every year special winter events

are held in a variety of state parks and recreation areas. Contact the DNR for times and details of scheduled winter special events.

## Cedar Rock

Cedar Rock is a Frank Lloyd Wright designed residence on the Wapsipinicon River near Quasqueton in Buchanan County. Designed by the famed architect in the late 1940s, it is an excellent example of Wright's "Usonian" style of architecture. Wright not only designed the home but also its interior furnishings. The home and grounds were given to the state in 1981 by its original owners, Mr. and Mrs. Lowell Wlater. The residence, grounds and visitor center are open for public tours May through October, 11 A.M. to 5 P.M. Tuesday through Sunday. Cedar Rock is closed Mondays. Group tours are available on request. Telephone: (319)934-3572.

is in bloom is spectacular. The nearby South Bluff Nature Center contains a variety of displays on the geology, plants and animals of the park and northeast Iowa. The center is open seasonally.

Another interpretive facility with a different slant, is Cedar Rock, a residence on the Wapsipinicon River designed by famed architect Frank Lloyd Wright. Wright designed not only the house, but its furnishings and grounds. Cedar Rock is an important example of Wright's work. Tours provide an excellent opportunity to learn more about the residence and its architect. The tour season runs from May through October. The new Cedar Rock Visitor Center will open this summer.

Efforts are now underway on the development of a Civilian Conservation Corps museum at Backbone State Park. The CCC was responsible for literally laying the

foundation for state park development in Iowa. Backbone was Iowa's first state park and the site of a CCC camp in the 1930s. It is most appropriate that the museum, which will tell the story of the CCC, be located there. The museum is scheduled to open in May 1990.

Iowa's state parks and recreation areas truly have a great deal to offer in the total sense. If you have never visited one, come on out. If you are a veteran visitor, come out and take another look at your favorite area, and perhaps you will see something you have been missing.

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*James Scheffler is an associate superintendent for the parks management bureau and is located in Des Moines.*

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# metamorphosis of a garden

Story by Don Carrier

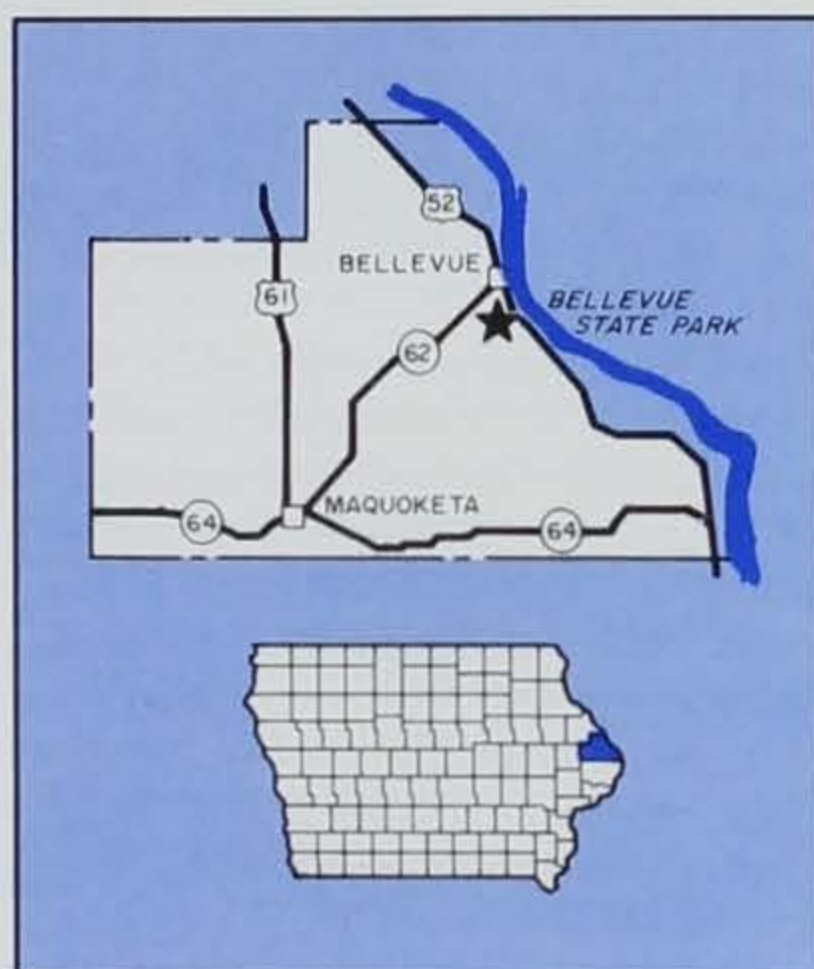
Photos by Ron Johnson

On a sunny July afternoon in 1984, an idea was presented to me by Judy Pooler, a volunteer who was working at the South Bluff Nature Center in Bellevue State Park. She handed me a book entitled *Theme Gardens* and asked me to look through it. I thumbed my way through the book not really paying particular attention to any one part of it. After I had closed the book, she took it from me, reopened it, and said, "Look at this one. What do you think?" Before me was a picture of a beautiful flower garden scene which appeared to be about 20 by 20 feet square entitled "Butterfly Garden."

Having never been closely associated with any aspect of butterflies or gardening, I must have appeared to be somewhat less than enthusiastic about what she had to say. She encouraged me to read the article and I promised I would give the idea some serious thought.

The next day Judy gave me some background on what a garden sanctuary for butterflies really is and does. "Garden" tells us that plants are to be cultivated — specifically, plants that are vital to the needs of the butterflies in all four stages of their life cycle — egg, caterpillar, chrysalis and adult butterfly. "Sanctuary" tells us that it is a relatively safe place for the butterflies to complete their life cycle. Judy also informed me that butterflies need water as well.

By the middle of August she had me convinced that a pond located in an adjacent habitat planting would be the ideal location for Iowa's first Garden Sanctuary for Butterflies. It was surrounded on three sides by mature timber and on the fourth side by a newly planted three-acre prairie site that would contain many



useful wildflowers and plants.

Initial research had begun on what species of butterflies we had in the area, what areas of the park they frequented, how sun and wind affected them and what plants they were using for food. In digging through numerous field guides, we came up with about 60 species we could expect to attract to our area. I was really beginning to enjoy this adventure, and I guess it was at this time I realized this idea of Judy's was something special.

By mid-September, we had made arrangements for the park bureau dozer to be on site, and the dirt work began. We removed the top soil and spent several more days shaping the area to create the desired watershed. An overflow tube was placed in the lower side of the pond area to assure that heavy rains would not create a high water problem. Shortly after the dirt work had been completed and the bottom of the pond sealed, we received a nice rain.

The morning after the rain, Judy and I were at the pond site to see how we had fared. It looked great!! Just the right amount of water and the slope of the water-

shed must have been correct as we had no noticeable erosion problems. Now, not only would the pond serve the needs of the butterflies, but other creatures as well, as was evident by the deer and raccoon tracks in the mud at the pond's edge. So far — so good.

Then we realized what we had done. In creating the necessary watershed, we had also created a very large garden area around it. One full acre to be exact. It became quite obvious that we were going to need help soon, and a lot of it, if we were going to do any planting in 1985. A solution to our problem would be volunteers, so a recruitment plan was initiated. We called on a high school vo-ag class in Bellevue and asked if any students would be interested in this project. When we left the school that day, we had the first volunteers.

Arrangements were made and a date was set to lay out the walkways and cover them with wood chips. Telephone poles, that had been donated by United Telephone System, were to lay end to end, eight feet apart, to form the sides of the trails. Work day arrived and so did the volunteers. And they were ready and willing to complete the job at hand. When that day in November ended, we were covered with mud, but we had completed about 900 feet of eight-foot wide wood chipped trails around and through the garden site. These trails would be used for conducting groups through the garden on a learning experience. After all, the garden was established not only as a sanctuary for butterflies, but as an outdoor classroom as well.

By late November, things were freezing up, and actual work in the garden ground to a halt. Time for more planning and research. Research had shown that wind and butterflies are not very compatible.



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One primary concern was to provide an area as wind free as possible. Because we wanted to know how tall each plant species would grow, study of the different plant species needed was time consuming. Not one to be easily discouraged, Judy set about the monumental task of figuring out what was to be planted from the top of the watershed to the bottom to achieve the desired results. We needed to plant the taller plants to the outside and the shorter ones to the center near the pond. This would accentuate the bowl-like effect of the garden to further prevent the wind from buffeting the butterflies about. Outside the perimeter of the garden we would have trees and larger bushes. Trees would include crab apples, alders,

hackberries, willows and wild cherries. In addition, two rows of lilacs were planted to provide beauty, nectar and a functional windbreak. Located in the center of the garden would be the smaller plants such as ageratum and allysum. Judy continued her research throughout the winter months.

One morning in mid-January, Judy awoke to see the ground covered with about 10 inches of



new snow. My phone rang about 7:30 a.m. and a happy voice on the other end said, "Don, we have just received a present." Not another snow I mused. "This is just what we needed," she said. "Get your warm clothes and boots on. We're going to lay out the garden today." I could think of a lot of other things that I would have rather done that



*The bowl shape of the garden protects the butterflies from the wind. Identification markers installed on each plot list the names of the plants and names of the persons taking care of the plot.*





day, but she won out as usual. Seven hours and two exhausted people later, we would see with our eyes what we had envisioned in our minds. In a fox-and-goose-like manner we literally stamped out the size and shape of our garden plots. All 150 of them, each approximately five by seven feet in size. With that task completed Judy could now finalize her planting plans.

My efforts at this time would be centered about lining up more volunteers for planting and completing the garden. I spoke to local

groups — the garden club, the explorer scouts group, anyone else who would listen. Things were taking on the appearance of being completely out of hand. But we survived the winter, and spring arrived in all of its glory. Much work still lay ahead if we were going to be ready to plant by our target date of June 1.

As soon as the ground had completely thawed, soil samples were taken to determine what nutrients, if any, were needed to make the garden plots productive. Each plot was treated separately so that

it would be compatible for the plant it was to raise. Some of the plots required no attention, while others needed one or more combinations of soil conditioners.

By the end of May, the individual plots had been laid out and marked with strings and stakes and we were ready to plant. Also by this time, our list of volunteers had grown to 90. On June 1, our target date, we began a week of planting and mulching.

We used annuals, perennials, hybrids, wildflowers, and even vegetables in planting the garden.

Dry weather became our worst enemy. Fortunately, we had had the foresight to install 1,300 feet of waterline for just such an emergency. Watering was to become an ongoing project. This was done until our dry weather crisis was over. The plantings did beautifully even under these adverse conditions, and by late August we had a beautiful one-acre flower garden, ready and waiting for the butterflies.

During the summer of 1985 we installed playground equipment, picnic tables and benches where one could sit and relax and observe the butterflies flitting about. We wanted this to be a place for people to come for learning and relaxing. The playground equipment would give the children something to do while mom and dad worked at tending their adopted plot in the garden.

As of this writing, our volunteer list is still growing (it now numbers 150), and the garden has become a real community effort and a major attraction. Words cannot express our gratitude to these people who have given so much of their time and talents to make Bellevue State Park's Garden Sanctuary for Butterflies the great success that it is today. The construction of this garden was our way of saying "this is conservation." It has been and will continue to be an excellent educational tool for groups of all ages. We invite you to come to Bellevue State Park and share this metamorphosis with us.

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*Don Carrier is the park ranger for Bellevue State Park.*

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# Fishing Variety

## The Spice of the Iowa Great Lakes Area

Story by Jim Christianson  
Photos by Ron Johnson

Bright and early one late spring morning, with the aroma of coffee and breakfast in the air, two anglers plot strategy for their fishing adventure. Chuck, the older and more experienced of the two, suggested trying for walleye on the north/south oriented reefs of Spirit Lake because the south wind was already producing a good walleye chop. Drifting a leech or minnow should be effective. Chuck then suggested going to Angler's Bay about 10 a.m. and using the electric trolling motor to move slowly in the shallows and cast for bluegill, both for some scrappy action and to put fish on the stringer for future eating. "After a lunch break," Chuck added, "we can try for a few crappies or maybe surprise a lazy-afternoon northern pike." After listening intently to these plans, Jeff, the younger, more impatient and anxious of the pair said, "Let's just go to the 'gill' hotspot, fill up the stringer, and then have a fish dinner."

This conversation could be a rather typical exchange between angling companions preparing for a fishing outing on the northwest Iowa chain of natural lakes -- collectively referred to as the Iowa Great Lakes. These lakes definitely offer the variety that can spice up an angler's life. This fishing variety is the result of different fish species inhabiting various niches within a variety of lake habitats. The chain of lakes consists of six natural lakes: Big Spirit, East and West Okoboji, Upper and Lower Gar and Minnewashta, ranging in size from 40 acres (Upper Gar) to 5,684 surface acres (Big Spirit) and averaging 4 feet deep (Lower Gar) to 38 feet (West Okoboji). Also, in close proximity to the chain of

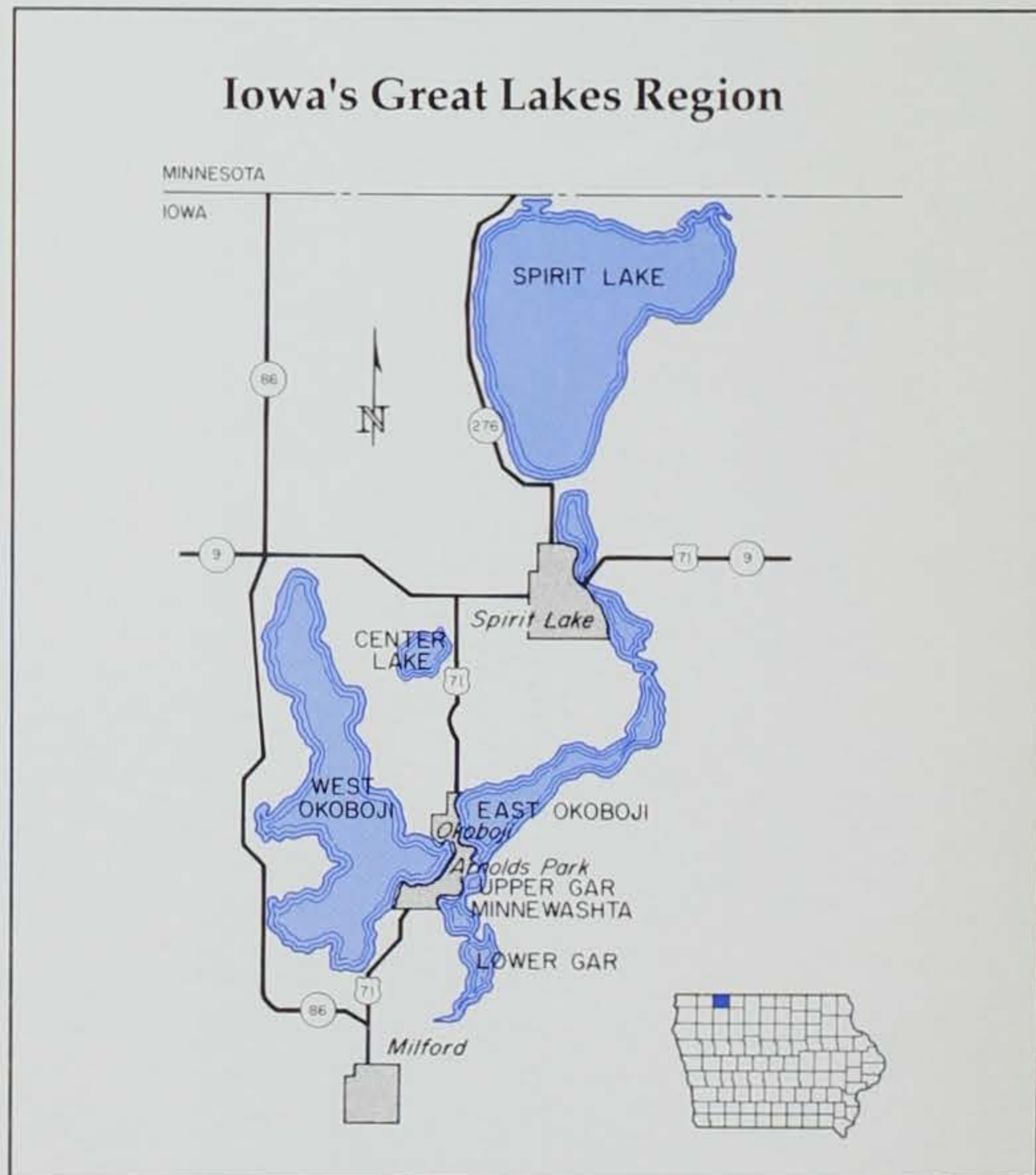
lakes is Center Lake which is located between East and West Okoboji and is in West Okoboji Lake's watershed. This 264-surface-acre lake has contributed many enjoyable hours for anglers in search of crappies, bluegills and bullheads.

Anglers of the Iowa Great Lakes have creeled some 14 different fish species at various times throughout the years. These species include top predators like walleye, muskie, northern pike and bass, or panfish such as, yellow perch, bluegill, crappie and bullhead. Miscellaneous species like the channel catfish, sheepshead and carp are also prevalent.

Walleye season opens with a flurry of activity on the Saturday closest to May 1 for Big Spirit, East and West Okoboji lakes. This activity can be very productive but is really a hit-or-miss situation which is dependent, to a large extent, upon weather conditions. Generally, walleye fishing is more productive a couple weeks after the opener, but after a long, cold winter some open water fishing can be just the remedy to cure a bad case of cabin fever. This walleye opener is hyped with anticipation, new equipment tests, comradery and that chance to outwit old "marble eyes."

Walleye angling is not a sport for anglers with intent to do battle with a mighty fighter but rather it is a test of knowledge, being where the fish are at the right time and offering the proper bait presentation.

Spring fishing (May and early June) brings out the





walleye dock anglers and the shorecasters. These two fishing methods take advantage of the fact that walleye move into the shallow littoral zone to forage at night. Dock walleye angling occurs on all the lakes but is most evident on Spirit Lake where dock lights and silhouetted anglers appear at dusk and linger well into the night. "Dock lights?" one may ask. "Doesn't that spook the light-sensitive walleye?" Generally light adversely affects walleye. But dock anglers have used light to their advantage. The light attracts small aquatic organisms, which in turn attract small fish, which in turn attract foraging walleye. This sounds good, and even logical, which at times can be a rarity in the angling world. However, it is not always necessary for successful dock angling.

Shorecasters, hearty souls that they are, venture into waist-deep chilly water and cast their lures to entice shoreward walleye into feeding activity. As mentioned before, no lights, unless to retie, and noise and movements must be minimal because spooked walleye in shallow water take some time to settle down. Some of these diehard wader anglers may not start fishing until after midnight and may still be around to watch a new day dawn while they try for that last walleye.

At this time of year, boat anglers have a good go of it for walleye either anchored off of rock piles or trolling the shallows. When the fish are real active, it can be exciting to fast troll a minnow-imitating lure at night in shallow water (8 to 12 feet). Daytime walleye anglers, at this time of year, like summertime anglers, usually have to go to the fish. This activity involves locating likely holding structure off of active night angling shoreline areas. Walleye will associate with rock reefs, a slight change in bottom contours and subtle changes in bottom materials -- from soft mud to firm sand, etc. Drifting and trolling are usually the preferred methods because more area can be covered, but once walleye are located, anchoring and casting can be most effective.

Summertime walleye fishing usually means weed walleyes. Anglers usually work the weed lines trolling or drifting and the weed pockets.

Fall walleye angling is a time when you can still chase the walleye day or night from the comfort of your boat or you can again take advantage of the walleye's in-shore movements and let the fish come to you. Dock anglers are out but not in the same force as that seen during the springtime. Shorecasters once again slip on the chest waders and are fairly successful, especially for big walleye foraging prior to the long, cold winter.

Walleye remain active, particularly right after freeze-up (usually in December) with the ice angler creeling good fish around rock reefs and bottom

contour breaklines. And then it is on to spring and the pattern starts anew.

Smallmouth bass fishing has picked up momentum in the 1980s. If you have not done battle with an active smallmouth, this freshwater fighter awaits you in the Iowa Great Lakes. Spirit and West Okoboji are the primary "smallie" hotspots with occasional catches



occurring in East Okoboji. Smallmouth fishing starts early in the spring, with the tinkle of ice still in the water, and goes throughout the entire fishing season. Early anglers usually use shiners over the rock piles in 15 to 20 feet of water, and as the water warms, crankbaits become very effective. Artificials are used through the entire summer season along with crawdads which are a dynamite bait, but do not forget the crawler and leech -- smallmouth will not pass up these tender morsels! Fishing activity for this freshwater leaper is usually concentrated around rocky points and reefs in depths of 10 to 25 feet.

Yellow perch are one of the most sought after fish in the area largely because of the, at times, fast and furious action, laid-back fishing techniques and superb eating qualities. Traditionally, perch fishing was a fall and winter activity, but there has been a relatively steady trend toward more summertime fishing during recent years. In West Okoboji there seems to be a flurry of perch activity in July but the "bite" does not usually start until late August and continues until November. Big Spirit perch usually start in July and go until November. The autumn fishery can be a very enjoyable experience. With boat, bait, ultralight fishing gear and refreshments, it is to the lake we go. The autumn air, a bit brisk at the start of the morning, yields to a bright blue sky and spectacular sun that still has the power to warm the earth. Fishing starts rather fast but may slow down a bit toward mid-morning, giving one a chance to soak in some autumn atmosphere and a hot cup of



*Variety is the drawing card of the Great Lakes region. And along with variety comes year-round fishing opportunity. Among the more popular species sought after by the Great Lakes' angler are walleye, perch and bluegill.*



coffee. The perch move back in and enough fish are creeled for an enjoyable fresh fish dinner. This scenario is repeated over and over again in the lakes region. If an afternoon outing is planned, remember the radio, it can give you the opportunity to enjoy the other fall tradition . . . yes, football and fishing.

Winter perch fishing is also a very productive endeavor at various locations on Big Spirit, East and West Okoboji. Like open-water fishing, winter angling is a rather gregarious sport and is usually done in close proximity to other anglers. This can give the novice perch angler a clue of where to fish, but remember, be courteous -- never crowd. Winter baits consist of some type of shiny attractant, terminal tackle or teardrop-type of bait, spiced up with silver wigglers. A minnow and bobber rig can also be effective, especially for larger perch.

Bullhead fishing is traditional in the natural lakes. An interesting mix of people using various types of tackle, hurl nightcrawlers into the water to jerk bullhead from their watery environment. Black bullhead are the quarry, and from April into June, shore anglers creel these whisker-bearing scaleless fish. Big Spirit, East Okoboji, Minnewashta, Upper and Lower Gar and Center lakes are bullhead producers. Just a couple of fishing reminders -- do not let the dark of the night



discourage bullhead fishing, many times nice bullheads are creeled after dark beside the flickering lantern light. Also, as the bullheads move from shallow water to deeper haunts, they can still be caught from a boat.

Crappie fishing usually starts soon after ice-out in late March and early April. The areas to concentrate on are the North Grade, Spirit Lake, the canal areas and Lazy Lagoon on West Okoboji and Center Lake. When the sun shines bright, it warms these shallow habitats and the crappie are attracted to these pre-spawn areas like metal fillings to a magnet. As the summer rolls around, crappie seek shade and shelter around the boat docks, particularly on West Okoboji. Also, this means deeper water fishing in Center Lake.

Winter fishing has not been a big activity in the natural lakes but has caught on a bit in Center Lake the last couple of years. This type of fishing is usually done with small minnows fished below a bobber or a small jig and wiggler or meal worm combination. Some anglers have rigged their fish flashers for winter-time use and find it is very effective as well as adding to the anticipation when fish are indicated near their hole!

Bluegill, that feisty little saucer-shaped quarry, is truly a fish for all seasons, especially in West Okoboji where open water and winter anglers alike reap the benefits of the "gill." Annually, there are approximately 45,000 bluegill harvested from West Okoboji with harvest fluctuations ranging from a few thousand to close to 100,000 fish. This level of harvest places the bluegill near the top for all species harvested from this lake.

Bluegill fishing usually starts in May, during the pre-spawn activity periods, in the shallow waters and canal area of East Okoboji. When water temperatures warm to about 68°, the bluegill will spawn. This will result in a bit of a lull in the action but be prepared for



some great fishing after the spawning period. Also, remember spawning can be quite variable among individuals; therefore, there always seems to be fish that can be enticed to bite. After the majority of spawning activity is over, the fish tend to move to a little deeper water (still less than 12 feet) to feed, but in years with high bluegill numbers, the shallow water seems to be good throughout the entire summer. Bluegill, like crappie, take advantage of all the artificial structures (docks and boat hoists) of West Okoboji throughout the summer months. These fish, susceptible to a variety of baits, are fished with a variety of rods and reels ranging from stationary, no reel rods, to fly rods and while it is traditional to fish for perch during the fall, the "gills" are still available around and in the many shrinking weed beds of the lake.

The winter fishery of December and early January can be very good for bluegill in Smith's, Emerson and Miller bays using small terminal tackle, such as tear drops and mini-jigs (1/32-1/64 oz.) baited with silver wigglers or meal worms. Lake ice fishing in March (remember, respect the ice and be careful) can also be excellent in Miller and Emerson bays.

West Okoboji is not the only lake in the region for bluegill. Spirit Lake, during the springtime and early summer months, can produce some nice catches of quality-sized fish with activity usually associated with both the submergent and emergent vegetation of Angler's Bay.

East Okoboji has been a consistent producer of bluegill during the last few years -- from the shallow water, vegetated areas, where the activity begins in June to rock piles for summertime fishing.

Minnewashta and Upper Gar are a couple of small lakes in the chain of lakes making up the Iowa Great Lakes that have to definitely be included when bluegill fishing is considered. Again, spring and fall activities are highlighted but particularly Minnewashta can satisfy the summer "gill" angler.

Center Lake, known generally for its crappie fishing also produces some good quality angling for bluegill, especially in late spring or early summer.

A muskie fishery has been created in Spirit and East and West Okoboji lakes for that diehard and persistent trophy hunter. The word trophy conjures up many different impressions to many different people (lucky for the taxidermists) but a large muskie is a real trophy throughout its range in the United States and Canada, and an angler who fishes an average of 50 to 100 hours to catch just one and then many times releases it is a true trophy angler.

Muskie angling activity usually starts in East Okoboji and Spirit Lake in late June and continues, depending upon weather and other variables, into the fall. West Okoboji catch patterns are generally confined to late summer and fall periods with occasional activity in Smith's Bay in late spring. Fishing periods are usually associated with the fish movement to the shallower waters of the Bays as the temperature started to cool after the warm summer months.

A channel catfish fishery has been created in East Okoboji after extensive fingerling stockings. This

species has been very successful in this lake and provided catfish anglers some good-quality angling regarding catch rates and size of fish. Catfishing starts out fairly early on East Lake with water temperatures still in the 50°F range but the more traditional catfishing experience seems to be the value of this fishery. "What is traditional?" You know . . . as the sun graciously gives way to a bright mysterious moon and the night sounds fill the air as usually silent night crawlers become active under the cover of darkness, the "cat" angler awaits that nudge and line movement indicating a bait pickup . . . now that is catfishing! This experience, common to catfish anglers on Iowa's streams and rivers, is also available to trophy "cat" anglers on East Okoboji.

Other species that should be mentioned when talking variety in the Iowa Great Lakes are largemouth bass, northern pike and white bass. These species may be the most important species to some anglers and are available in the natural lakes area. The largemouth is most successfully pursued in the springtime and early summer in the canal areas of West Okoboji with some occasional activity in Spirit Lake and Center Lake. Northern pike are many times taken intentionally by muskie and walleye anglers. White bass are tenacious feeders but are a very fluctuating fishery due to relative year class abundance. This species is typically fished around bridge structures on East Okoboji and around some rocky points on West Okoboji.

Just remember . . . when fishing fever grips you, no matter what the season, the fishing variety available at the Iowa Great Lakes can be just the prescription to cure your angling needs.

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*Jim Christianson is a fisheries management biologist located at Spirit Lake.*

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*There is plenty of bullhead action on the North Grade at Spirit Lake.*



# CONSERVATION UPDATE

## Reintroducing the Peregrine Falcon

by Laura Spess Jackson,  
nongame urban biologist

This summer the Nongame Program will start a peregrine falcon recovery project. Peregrines are crow-sized birds of prey which formerly nested on cliffs along the upper Mississippi and Cedar Rivers. Like the bald eagle, DDT in the environment affected the peregrine's ability to produce viable eggs. By 1964, the peregrine was eliminated from the eastern United States and drastically reduced elsewhere. The peregrine is listed as a federal and state endangered species.



*Peregrines are best known for their flying ability -- they can reach speeds of nearly 200 miles per hour when going into a dive. These high speeds are used when hunting other birds.*

Biologists at Cornell University in New York have discovered that the peregrines could be "hacked" into their former range. "Hacking" involves placing four- to five-week-old peregrines into a large box on top of a city building or a cliff. The young birds stay in the box for five to 10 days until their flight

feathers are nearly developed. The box is opened and the birds are free to learn how to fly. The young falcons cannot capture their own food for about a month after release, so food is provided at the hack box. After the falcons can capture their own food, they tend to join the fall migration and head south. The goal is to have falcons return to the hack site two or three years later to nest.

Minnesota began releasing peregrines in 1982. Some of their city birds have returned to the same city to nest. Others have found mates in other cities throughout the Midwest. Michigan, Wisconsin, Illinois, Missouri and Nebraska also have peregrine recovery projects. By joining the Eastern Peregrine Recovery Program, Iowa hopes to have some of its falcons return and nest at original hack sites and have other falcons settle in Iowa. Iowa will also be contributing birds that may nest elsewhere, but will ultimately help the regional goal of establishing 25 peregrine nests in the Midwest.

The first release will take place this month in downtown Cedar Rapids. Cedar Rapids is within the northeast quarter of the state targeted for releasing falcons. It is also near a historic nest site that occurred on the cliffs bordering the Cedar River. Cedar Rapids also has a downtown section with some tall and some medium height build-

ings. The layered effect of the buildings provides the young falcons with a choice of perching sites which will help them to avoid landing in the street. The tall buildings also funnel the wind upward which provides an updraft for the young birds to use when they are learning to fly.

The hack site where the hack box and young falcons will be located will be on the roof of the Telecom\*USA building, allowing hack-site attendants to view the falcons at nearly every other location in town. Because the view from one side will be inhibited by another building, Merchants National Bank will allow its roof to be used as a secondary observation area. Merchants also plans to acquire a remote camera and television monitor for the project. The camera will be used to observe the birds while they are being held in the box. The monitor will be set up at an educational display in the bank's lobby. This will allow people to visit the display and actually view the young peregrines as they develop.

Once the young peregrines arrive, they will be monitored by hack site attendants from sunrise to sunset. The hack site attendants will be charting the falcon's health, flight development,



whether they are returning to the box to feed, their movements and when they start feeding themselves. The attendants will also be watching for any problems the young birds may encounter.

To help people learn more about peregrines and to view them while they are in the city, the Nongame Program and Linn County Conservation Board will coordinate volunteers to run an observation area. If the peregrines start hanging out on certain roofs, spotting scopes will be set up so that people can observe the young falcons.

In case of an emergency -- a falcon lands in the street, is stuck on a ledge or enters a vent -- people can call the hack site attendants at Stouffer Five Seasons Hotel at (319)363-8161. Any falcon needing first aid will be taken to the Macbride Raptor Center.

Currently the Nongame Program is funding more than 90 percent of the project. Originally the Nongame Program was hoping to receive some federal money to support the project, but none of that money is available. In other states 20 to 100 percent of the project costs have been raised from outside means. Each falcon costs about \$2,000. Project costs also include developing the peregrine plan, purchasing food for the falcons, building the hack box, and hiring biologists to monitor the birds plus

developing educational material to inform people about the project. The project will cost about \$23,000 this year. Contributions are beginning to come in. As the project develops, we hope more people will help support the project.

Anyone interested in raising funds for the peregrine project or those wishing to make direct contributions should contact the Nongame Program, Iowa Department of Natural Resources, Boone Wildlife Research Station, Rte. 1, Ledges Road, Boone, Iowa 50036, (515)432-2823.

### Iowa Receives Food Safety Award

Iowa was one of five states to earn top honors from Renew America, a national group that ranks state and local programs to protect and enhance the environment. Iowa was cited for its efforts in food safety, particularly its groundwater protection programs that reduce food contamination from pesticides, herbicides and fertilizers.

Larry Bean, energy and geological resources administrator with the Iowa Department of Natural Resources, accompanied Governor Terry Branstad to Washington, D. C., to accept the award. According to Bean, "Our experiences are showing that alternatives that reduce the chemical intensity of agriculture, such as integrated pest management and energy, soil



Loren Forbes (center), president of the Iowa Wildlife Federation, presents a check for \$2,000 to be used for the reintroduction of the peregrine falcon. Accepting the donation are Sam Kennedy (left), Natural Resource Commission member, and Larry Wilson (right), director of the DNR.

and water conservation programs, can be cost-effective."

Iowa also moved up in Renew America's overall rankings of states' efforts for environmental protection. Iowa is now ranked 6th in the nation, up from 18th in 1988. Iowa received 34 out of 50 possible points in the categories of forest management, solid waste recycling, drinking water quality, food safety and growth and the environment.

### Is Your TV Set Really "Off"?

According to the Rocky Mountain Institute, most new television sets still draw 1.5 to 8 watts of power when they are turned "off," in order to run their remote control, electronic tuning and "instant on" features. This means that the

equivalent of a 1000 megawatt power plant, or 1/750th of the nation's capacity, must run continuously just to power the nation's TV sets while they are off.

The Rocky Mountain Institute has proposed that the U.S. Department of Energy require manufacturers to inform consumers about the standby energy usage of their sets. Further, the institute suggests that a front panel on the TV could give viewers the option of setting the set to a standby mode or turning it off completely.

*Tropical rain forests grow on less than two percent of the earth's surface. But, according to Ranger Rick magazine, the forests are home to more than half of the earth's species -- many of which have yet to be discovered.*



## Contaminated Carp From Mississippi River Pool 15 Should Not Be Eaten

Carp collected last year from the Iowa side of Pool 15 of the Mississippi River near Davenport, Iowa, contained levels of polychlorinated biphenyls (PCBs) that exceed federal guidelines for human consumption, according to officials with the Iowa Department of Natural Resources and Public Health. Officials recommend that people not eat carp taken from the Iowa side of Pool 15.

The carp were collected for a study of fish flesh contamination. According to the May 1989 final report average levels of PCBs in fillets of carp taken from locations along the Iowa side of Pool 15 exceeded the level recommended by the U.S. Food and Drug Administration as safe for human consumption. Levels of PCBs in carp taken from locations along the Illinois side of the river were below the FDA guidelines.

The study was conducted by the Aluminum Company of America (ALCOA) in October 1988 to determine whether PCBs formerly used at the ALCOA facility at Davenport were present in the fish of Pool 15 of the Mississippi River. The study involved collection of seven species of fish from five locations in Pool 15; three sites were along the

Iowa side of the river and two locations were along the Illinois side of the river. In addition to carp, the following kinds of fish were tested for PCBs: bluegill, crappie, freshwater drum (sheepshead), walleye, white bass and channel catfish. Flesh samples from all except channel catfish were found to be well below the FDA guideline of two parts per million. Several channel catfish contained PCBs above the FDA guideline. However, an insufficient number of fish was collected to determine the average level of PCBs in the channel catfish population of Pool 15. Additional sampling will be conducted during 1989 to determine whether consumption of channel catfish from Pool 15 poses a health risk.

PCBs were produced in the United States from 1929 until 1977 and were used as plasticizers, heat transfer fluids, hydraulic fluids, lubricants and wax extenders. They were also used in closed electrical systems (capacitors and transformers). In October 1977, the production of PCBs in the United States was discontinued due to their toxicity, carcinogenicity and persistence.

The primary source of PCBs in the fish of Pool 15 appears to be a waste disposal lagoon formerly used by ALCOA to dispose of hydraulic oil. ALCOA has taken steps to prevent further movement of PCB-contaminated oil

into the Mississippi River. Additional sources of PCBs include the industries and municipalities located along the Mississippi River.

PCBs are a common contaminant of fish in the upper Mississippi River, and levels are generally higher in fish from the portion of the river upstream from Iowa. Monitoring conducted by the U.S. Environmental Protection Agency, in cooperation with the Iowa Department of Natural Resources, has shown that levels of PCBs in fish from other locations along the Iowa portion of the Mississippi River are well below the FDA guidelines.

For further information on the flesh sampling, contact Marion Conover, Iowa Department of Natural Resources, Wallace State Office Building, Des Moines, Iowa 50319-0034, (515)281-5208.

## Boaters Urged To Follow Safe Boating Practices

~Avoid Alcohol While Boating

More than half of the boating accidents that result in death can be traced to alcohol use. Operating a boat while intoxicated is illegal and dangerous, warns Sonny Satre, recreational safety coordinator for the Iowa Department of Natural Resources.

With each drink, a person's ability to coordinate arm and leg move-

ments is decreased. A drunken boat operator, like a drunken driver, has difficulty responding in an emergency situation.

A loss of judgment is an early effect of drinking. After a drink or two, some people take more risks.

A person with alcohol in their blood is unable to scan the environment when operating a boat. The drinking person fixes their attention straight ahead when operating a car or boat and is unaware of activity on either side.

Satre suggests applying the designated driver concept to boating -- one member of the party staying sober to operate the boat. However, he cautions, an intoxicated person, whether the operator or passenger, is at risk on the water.

~Always Wear A PFD While Boating

Most of the people who died in boating accidents last year drowned in inland water; many were within a few feet of safety. "Most of those who drowned owned life jackets, but when they died, they were not wearing them," said Satre.

Satre urges people who use small boats to make sure, before leaving shore, that everyone on board is wearing a well-fitted life jacket.

Iowa law requires that each boat must have on board a personal flotation device for each person. If the boat is

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Many drowning deaths could be prevented each year if all boaters wore personal flotation devices (PFDs).

longer than 16 feet, wearable flotation devices are required. However, Satre warns that if the life jacket is tucked away inside the boat and not worn, boaters take a chance of becoming a boating statistic. "Most fatal accidents are capsizes or falls overboard. They happen suddenly, without warning, and with no time to get into a life jacket," said Satre.

If boaters fall into the water, life jackets keep them floating "while they tend to urgent business, such as climbing back on their boats, getting to shore or keeping still in the water to forestall hypothermia until help arrives," said Satre.

## Donations

Alpine Nursery, Inc. Kalispell, MT	Pine seedlings valued at \$150 for state park district 3
Marlin Olson Forest City	Railroad ties valued at \$50 for park construction projects at Pilot Knob State Park

Forry Thompson Forest City	Railroad ties valued at \$50 for park construction projects at Pilot Knob State Park
Franklin Elementary School Council Bluffs	14 bluebird houses for Wilson Island State Recreation Area
Jimmy Carter Missouri Valley	19 bat houses valued at \$275 for Wilson Island State Recreation Area
Heitland Bros. Const. Hampton	Sand valued at \$154 for playground construction at Beeds Lake State Park
Mr. & Mrs. Richard Merrick Anamosa	Sand valued at \$300 for playground improvement at Wapsipinicon State Park
George & Mary Matters Anamosa	Playhouse valued at \$625 for playground improvement at Wapsipinicon State Park
Bernet Construction Marion	Cement forms and materials valued at \$325 for rest room renovation at Wapsipinicon State Park
Kay Hill Cedar Rapids	8 truck rims valued at \$200 for fireplace construction at Wapsipinicon State Park
Anonymous	Use of high lift bucket truck valued at \$125 for flag pole repair at Wapsipinicon State Park

## Classroom Corner

by Robert P. Rye

The group of animals that many Iowans prefer to see are warm and furry and belong in the classification -- mammals. Try to identify some of these mammals from their brief description.

1. It is often mistaken for a dog or wolf -- bushy tail and pointed nose -- and is often pictured yapping at the moon.

2. It is a furbearer more frequently found on fur farms than in nature.

3. It is a mixture of black, brown and gray hair with black bands on its tail and one across its face.

4. It is gray colored in winter, brown in summer, with a tail that is white below.

5. It has a huge head, is hump-backed, and is dark brown with dark horns.

6. It is dog-like with a coat of black, brown and gray hair, lives in the forest, and occasionally climbs trees.

7. It lives near the water and has incisor teeth that will grow steadily all its life.

8. It is long -- up to 35 inches -- web-footed and becoming more common in our state.

9. It is black with varying amounts of white on the back of its tail.

10. It weighs about 20 pounds and is grayish-yellow with a white stripe beginning behind its nose and running over its head.

- a. Beaver
- b. Badger
- c. Coyote
- d. Skunk
- e. Mink
- f. River Otter
- g. Bison
- h. Grey Fox
- i. White-tailed Deer
- j. Raccoon

## ANSWERS:

1. c 2. e 3. j 4. i 5. g 6. h 7. a 8. f 9. d 10. b



## COUNTY CONSERVATION BOARD FEATURE

### Reestablishing A Natural Marsh by Mark Vavroch

The year 1988 will go down as one of the driest years on record in Iowa. Wildlife, especially waterfowl, suffered during the drought as did many Iowans. However, some waterfowl will benefit in the coming years. How can waterfowl benefit from a drought? They benefit when re-

source managers take advantage of the dry conditions to enhance waterfowl habitat areas that normally would be too wet to work.

The Poweshiek County Conservation Board took advantage of the dry weather during 1988 to complete a waterfowl project at Millgrove Access. This 246-acre wildlife area, located in the southwest part of Poweshiek County, contains one of the few remaining unchannelized segments of the North Skunk River, as well as one of the last natural marshes in the county.



RON JOHNSON

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**How can waterfowl benefit from a drought? They benefit when resource managers take advantage of the dry conditions to enhance waterfowl habitat areas that normally would be too wet to work.**

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nothing more than a 40-acre field of reeds canary grass.

The area posed problems for the Poweshiek County Conservation Board because it was too dry for waterfowl, but too wet to work with equipment. The conservation board decided to improve the area as waterfowl habitat by blasting out the potholes with dynamite, hopefully making them deep enough to hold water year-round. In the spring of 1988, 12 potholes were blasted. Unfortunately, the potholes were only 30 feet in diameter, and they did not create

Millgrove Access was once an area of natural potholes, oxbows and marshy floodplain. It contained water throughout the year, even during dry years. A few of the local residents remember when the marsh was one of the best duck hunting spots in Poweshiek County. But as the years passed, this wetland became choked with silt and



# CALENDAR

## JULY 14-16

**Frontier Days.** Fort Defiance State Park is the location for black powder shooting, knife and tomahawk throwing and early 1800s trades. For more information, contact Jim Hansen, Fort Defiance State Park, Estherville, Iowa 51334, (712)362-2078.

## JULY 15-16

**Cedar River Festival.** Cleanup along the river north of Cedar Falls on July 15. Arts and music festival at the Rotary Reserve north of Cedar Falls on July 16. For more information, contact the Cedar River Festival, P.O. Box 114, Cedar Falls, Iowa 50613, (319)277-1885.

## JULY 30

**Folk Arts Festival.** Waubonsie State Park is the location for a festival of folk artists such as wood carvers, blacksmiths and buckskinners. For more information, contact John Lambert, Waubonsie State Park, Rte. 2, Box 66, Hamburg, Iowa 51640, (712)382-2786.

## AUGUST 14-20

**Nature Photography Course and Nature Weekend.** A 5-day course by Carl Kurtz will be conducted August 14-18 at the Iowa Lakeside Laboratory on the west shore of West Lake Okoboji, Dickinson County. Cost is \$190 per person and includes lodging and meals. The course will be followed by a nature weekend, August 18-20. The cost is \$90 per person. For more information on the photography course, contact Carl Kurtz, R.R., St. Anthony, Iowa 50239, (515)477-8364. For more information on the nature weekend, contact George Knaphus, Department of Botany, Iowa State University, Ames, Iowa 50011, (515)294-2351 or Dr. Bruce Menzel, Department of Animal Ecology, Iowa State University, Ames, Iowa 50011.



*Potholes were deepened by blasting with dynamite. Later, the holes were enlarged even more with heavy equipment. These potholes, when filled with rain water, will provide excellent habitat for waterfowl and other wildlife in the area.*

ROBERT DOLAN



RON JOHNSON

enough surface water to provide good habitat for waterfowl.

As the drought became more severe through the summer, the conservation board staff brought in heavy equipment to dig larger potholes. Six weeks later, the waterfowl project was completed. Eight potholes, averaging one acre in size and four feet in depth, were dug. Soon the potholes will provide needed habitat for waterfowl and other wildlife in the area. All that is needed is a little rain to fill the potholes.

The project was a cooperative effort between the Poweshiek

County Conservation Board and the Poweshiek County secondary roads department. This cooperation between county agencies allowed the residents of Poweshiek County to work together towards a common goal to improve waterfowl habitat in the county. Hopefully, future generations will be able to enjoy the sights and sounds of an Iowa marsh.

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*Mark Vavroch is a ranger-naturalist with the Poweshiek County Conservation Board.*

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# Energy Efficiency

## Exorcising the "Ghost of Jimmy Carter's Sweater"

Story by Patricia S. Cale  
Photos by Ron Johnson

If you are old enough, you might remember the energy crises of the 1970s. The price of gasoline went to more than \$1 per gallon for the first time, and people *still* had to wait in line to buy it. OPEC had the U.S. over a barrel, an oil barrel. President Carter called upon the nation to keep the thermostat turned down and put on a sweater if it got cold.

Unfortunately, these experiences have conditioned Americans' responses to energy conservation. Conservation has come to imply personal sacrifice. To many people, conserving means doing without. America's vision of energy conservation is "haunted by the ghost of Jimmy Carter's sweater," according to one environmental organization.

Many energy experts now are calling for a new vision of energy conservation. The new catch phrase is "energy efficiency." Energy efficiency is a positive approach that says we *can* meet our needs for physical comfort, national security, and economic productiv-

ity by using our energy resources wisely and with maximum efficiency. Energy efficiency provides us with a realistic way of reducing our energy usage to save our environment and vitalize our economy.

Efficiency improvements can range from individual homeowners weatherizing their houses to national standards for automobile fuel efficiency. Efficiency includes both the simple — caulk and weather-stripping — and the high-tech — super-efficient lighting — and everything in between. Energy efficiency means looking at the ways we use energy and asking, "Are we wasting energy?" "How can we get the most from our energy dollar?" and "What is the best mix of energy resources to both meet our needs and solve our environmental problems?"

Damage to the environment has brought a new urgency to the call for energy efficiency. The greenhouse effect, global warming, acid rain, and air pollution, for example, have two things in common: they can be traced to the burning of fossil fuels and they can be alleviated through reducing energy use.

Energy consumption releases massive amounts of pollutants. Nitrogen oxides and carbon dioxide are emitted into the air; oil, grease and chromium pollute waterways; coal-processing, scrubber and fly ash wastes are disposed in landfills; and spent nuclear fuel builds up across the country with no permanent disposal method.

Transportation and electrical generation are the two largest



I CANNOT TELL A LIE  
**WASTING ENERGY**



**REALLY BURNS ME UP**

*Example of poster distributed to schools participating in the Iowa School Energy Bank Program. Through the program, schools around the state are saving thousands of dollars with energy management improvements.*





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**Scientists predict that we could see a global warming on earth of one to three degrees F. . . . A climate change such as this would make some areas of the United States wetter, and some drier.**

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contributors to air pollution. Vehicles and power plants that burn coal, natural gas, or oil produce: 1) carbon dioxide, which contributes to the greenhouse effect; 2) nitrogen oxides, which create smog and cause damage to human health, trees, and crops; and 3) sulfur dioxide, which creates the acid rain which is already killing aquatic life in northern lakes. North America leads the world in creating pollutants that degrade our environment.

Let us look more closely at one problem — the greenhouse effect. This name comes from the fact that gases in our atmosphere act the same way that glass does in a greenhouse. They trap the rays of the sun within the atmosphere to warm the earth. This is a beneficial effect, since with it the earth is 60 degrees F warmer than it would be without it. But as we build up greater and greater volumes of the "greenhouse" gases, primarily carbon dioxide, the effect may begin to work *too* well. The planet

Venus, whose atmosphere is 100 percent carbon dioxide, is 500 degrees F warmer than it should be based on its position in the solar system.

Scientists predict that we could see a global warming on earth of one to three degrees F. If these models are correct, within 100 years from now the earth will be hotter than it has been in one million years. And the change in climate will have happened more rapidly than any on record.

A climate change such as this would make some areas of the United States wetter, and some drier. The breadbasket of the world would have drier summers, and the possibilities for severe droughts and heat waves would be more likely. Our agriculture would feel the impact strongly, with some areas unsuitable for crops now grown there. The arid western U.S. would experience the greatest effects from lower rainfall, since a small change there makes a big difference.

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Scientists studying the effects of global warming on forests are now asking the question, "How fast can trees migrate?" The future of many species, particularly in the South, could be dependent on how quickly they can shift north to cooler climates. Trees which are highly specialized for their ranges will have little chance of surviving major temperature increases. As the trees disappear, the forest ecosystems will also be affected. The change in climate could be too rapid for some plant and animal species to adapt, causing accelerated extinction.

Energy efficiency can slow the buildup of carbon dioxide in the atmosphere. Studies have shown that without the energy efficiency improvements made in the U.S. since 1973, carbon dioxide emissions would have been a third higher this year.

A new focus for energy efficiency is on electricity use, because electrical generation is one of the major contributors to the greenhouse effect. The goal is to encourage electric utilities to use energy conservation as a substitute for having to build new power plants. Some utilities around the country are now trying to reduce demand through more efficient appliances, interruptible air conditioners and water heaters, weatherizing, and overall consumer education. This approach benefits consumers through lower utility bills, and utilities avoid the costs of building new supply. Making this "demand-side" management of energy use successful will require changes in focus for utilities, and in some cases, changes in state utility regulations.

Energy efficiency makes it possible to reduce consumption without reducing productivity, standard of living, or comfort.

Since 1980 there has been a 21 percent increase in Gross National Product and only a one percent increase in energy consumption in the U.S.

Energy efficiency, in fact, can allow greater productivity by lowering energy bills. Energy efficiency is an important element of an economic development strategy both for Iowa and the United States. Ninety-eight percent of the energy consumed in Iowa must be imported from other states

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### **A new focus for energy efficiency is on electricity use, because electrical generation is one of the major contributors to the greenhouse effect.**

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and countries. Each year about \$4 billion leaves the state in energy costs. More efficient use of energy would keep more of those dollars here in Iowa to be invested in our state's economy.

Energy represents a major cost



for many industries and agricultural producers. To be competitive and to remain competitive, Iowa and U.S. producers must cut production costs. Using energy efficiently is the single quickest,

most effective, and least expensive way to reduce energy costs and therefore the cost of production. Japan and West Germany have learned this lesson well — they use half as much energy to produce goods and services as the U.S. — and are leading us in world markets.

The U.S. energy industry has many different supply options — coal, oil, solar, wind, nuclear, biomass, and natural gas. Each has its benefits, but each also has its

drawbacks. Fossil fuels cause air pollution. The Exxon Valdez catastrophe has shown us the problems with getting oil out of sensitive environmental areas. Alternative energy sources such as solar, wind, and biomass have great potential, but development has been slow. Nuclear energy leaves radioactive waste, and new plants are often opposed by the public.

Energy efficiency, however, in addition to its many benefits, has none of the drawbacks of any of these supply options. It does not pollute. It is less expensive and easier to achieve. The technology is already here. And public support is growing.

The time is right for a new commitment to energy conservation. Energy efficiency will help our nation shed the cloak of sacrifice and suffering that has covered our views of conservation. We can exorcise that ghost of Jimmy Carter's sweater and move ahead to protect our environment, maintain or improve living standards, and make our economy even more productive. Energy efficiency works.

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*Patricia S. Cale is an information specialist with the department's energy bureau located in Des Moines.*

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