

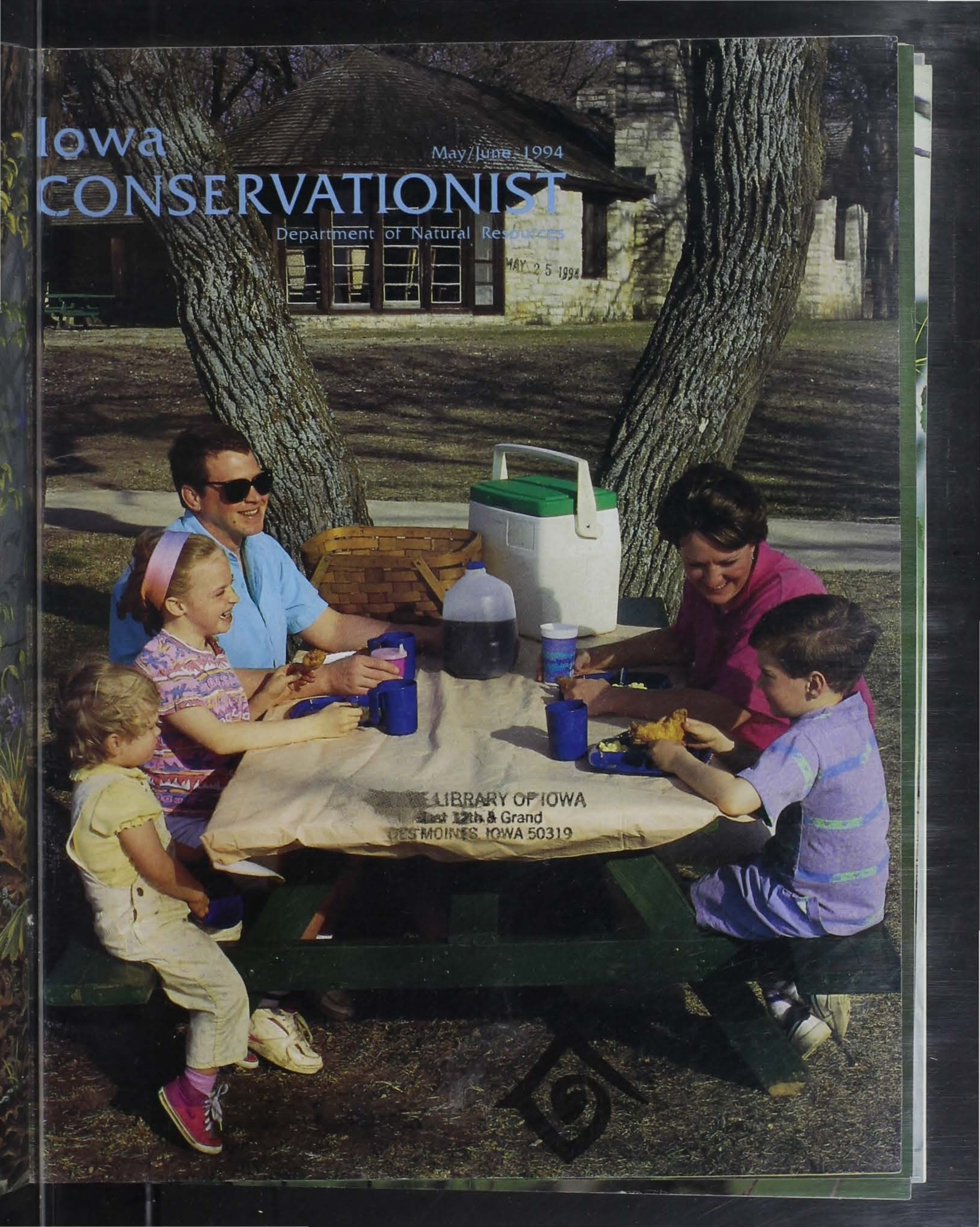
Iowa CONSERVATIONIST

May/June 1994

Department of Natural Resources

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Inside Front -- Robin fledgling by Roger A. Hill.





One of Life's Pleasures

All work and no play -- a few people can do it, but most of us occasionally need to "get away from it all." Where do people go and what do they do? Some go bowling and others golfing. There are those who travel half way around the world to get away, while a lawn chair in the back yard suits the fancy for several. A week's stay on grandpa's and grandma's farm is the ticket for some, and others enjoy going to the big city to visit a relative.

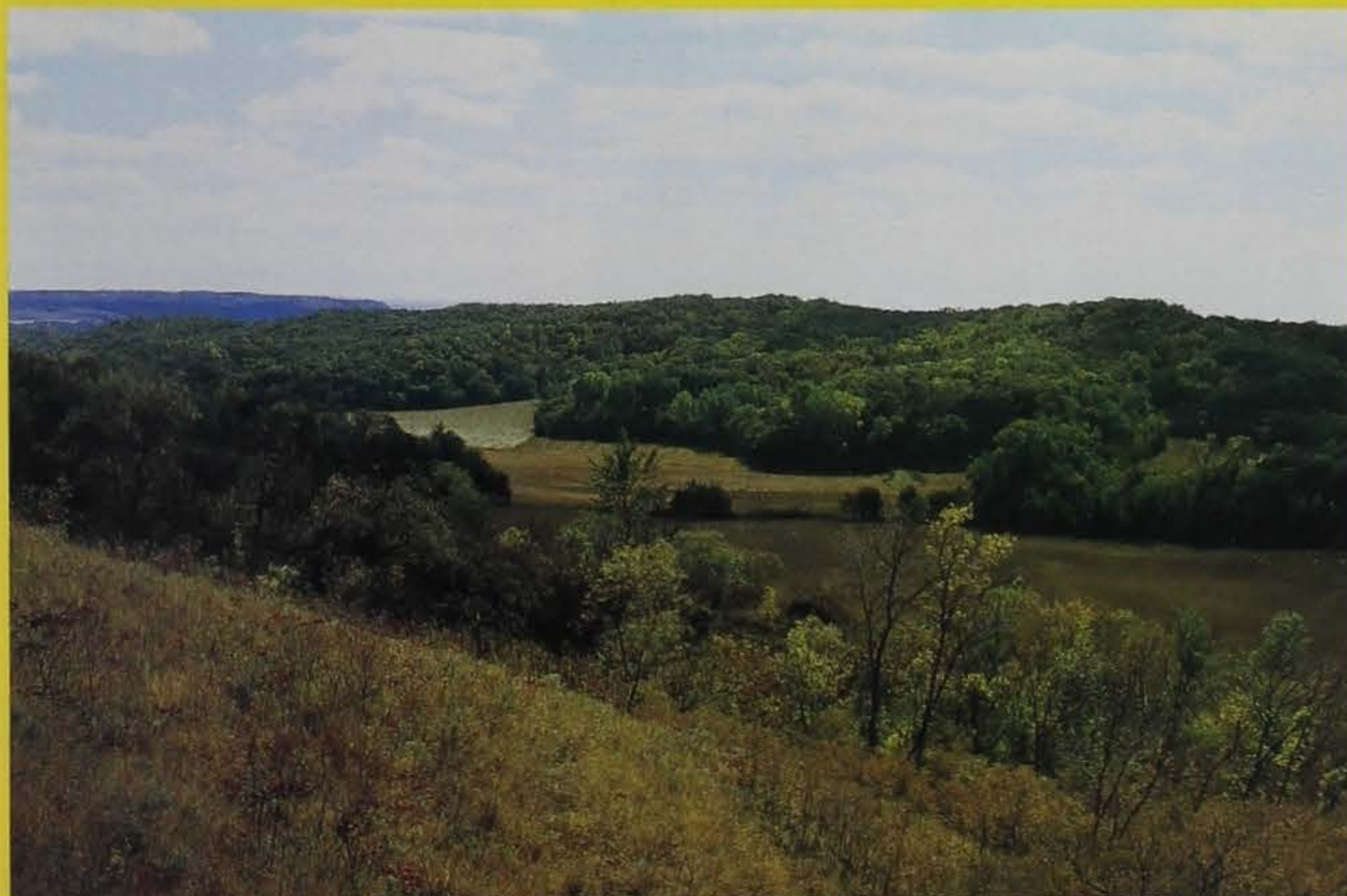
As you know, the list could go on and on, and still not cover everything. However, one old standby is worth mentioning because it is perhaps the most popular way to break up life's many routines. That is enjoying and learning about the great outdoors. Commonly called outdoor recreation, it takes on many forms. Fishing, hunting, hiking, camping, biking, picnicking, mushrooming, bird watching, canoeing, photographing nature, swimming, boating, snowmobiling and cross-country skiing are all examples. Where do people go to do these activities? Some are fortunate to have large enough "back forties," but most of us rely on public areas such as parks, forests, wildlife areas, lakes, rivers and trails.

Increasing numbers of Iowans are living and working in towns and cities. As this trend continues, the demand for public outdoor recreation areas will also increase.

Iowans have taken action in the form of the Resource Enhancement and Protection (REAP) program to help meet this demand. As its name implies, REAP is geared towards enhancing and protecting Iowa's natural and cultural resources. It was originally designed to be a 10-year, \$30 million per year investment in our state's resources. However, state budget woes have thus far prevented the program from reaching that level. But REAP promoters have high hopes that times will get better in the near future.

Twenty-eight percent of REAP dollars go to the acquisition and development of state parks, fish and wildlife areas and forests. This is the largest element of REAP and one that will prove, in time, to be a very admirable, worthwhile investment for our state. Mark my words, more and more "get-aways" from life's routines will be needed. The amount and quality of public land for outdoor recreation is becoming a big factor for employers and employees when deciding where to locate. Sustaining natural resource functions will become increasingly crucial to help assure we live in a healthy, comfortable environment. Public land managed for outdoor recreation will increasingly be "one of life's pleasures and treasures."

by Kevin Szcodronski



◀ A popular use of REAP open space money is to purchase existing wetlands (far left) and restore some that have been drained.

◀ REAP money has been used to purchase land in western Iowa for the 17,000-acre Loess Hills State Forest.

A Closer Look at REAP's Open Space Element

As mentioned, 28 percent of REAP money goes to DNR open space acquisition and development. According to state law, this money is more specifically dedicated three ways: 85 percent to DNR land acquisition and development; five percent to the Protected Water Areas Program; and 10

percent to private-public cost-share land acquisitions.

Public land acquisitions in past times have taken property off local tax rolls. However, this is not the case for REAP open space acquisitions. The law requires that REAP funds be used to continue paying property taxes on all land purchased under the 28 percent open space element. Therefore, these land acquisitions do not take the property off the county tax rolls. Local

staff to attain an equal mix of acquisition and development projects. In other words, half the money is used for land acquisition and the other half for development projects. This mix fluctuates somewhat annually, but the 50/50 goal will be attained over several years.

Normal DNR administrative and budget processes are used to select the projects that are funded with these dollars. A five-year plan has been developed by the DNR to help guide the selection process. This plan has been adopted by the Natural Resource Commission and is reviewed and updated annually. The schedule in the original five-year plan has been set back significantly due to the lower REAP funding of recent years.

Protected Water Areas Program --

Iowa's Protected Water Areas law was enacted in 1984. This program was unfunded until the initiation of REAP in 1989. Its basic purpose is to maintain the natural and scenic resources of the state's high-quality lakes, rivers and wetlands. Protection can be accomplished by public land acquisition, conservation easements, lease agreements, state preserve dedications and local zoning ordinances. REAP funds thus far have only been used for land acquisition.

Five rivers are officially designated as Iowa "protected water areas." They are the Upper Iowa, Wapsipinicon, Boone, Middle Racoon, and Little Sioux rivers. *See the map on page 7 for specific river reaches.*

Private-Public Cost Share Land Acquisition --

Iowa has several private organizations and individuals that are interested in helping increase the state's public land holdings. This portion of REAP allows them to meet their goals by sharing the cost of purchasing land. Specifically, the private entity contributes at least 25 percent of the cost and REAP pays the rest. This stretches tax dollars and gives private conservation organizations and individuals the opportunity to get involved in a specific project. It is definitely a win-win situation.

Projects are selected on a competitive basis, meaning the best areas are chosen for acquisition. Some of the deciding factors are relationship to existing public land, level of threat, natural resources on

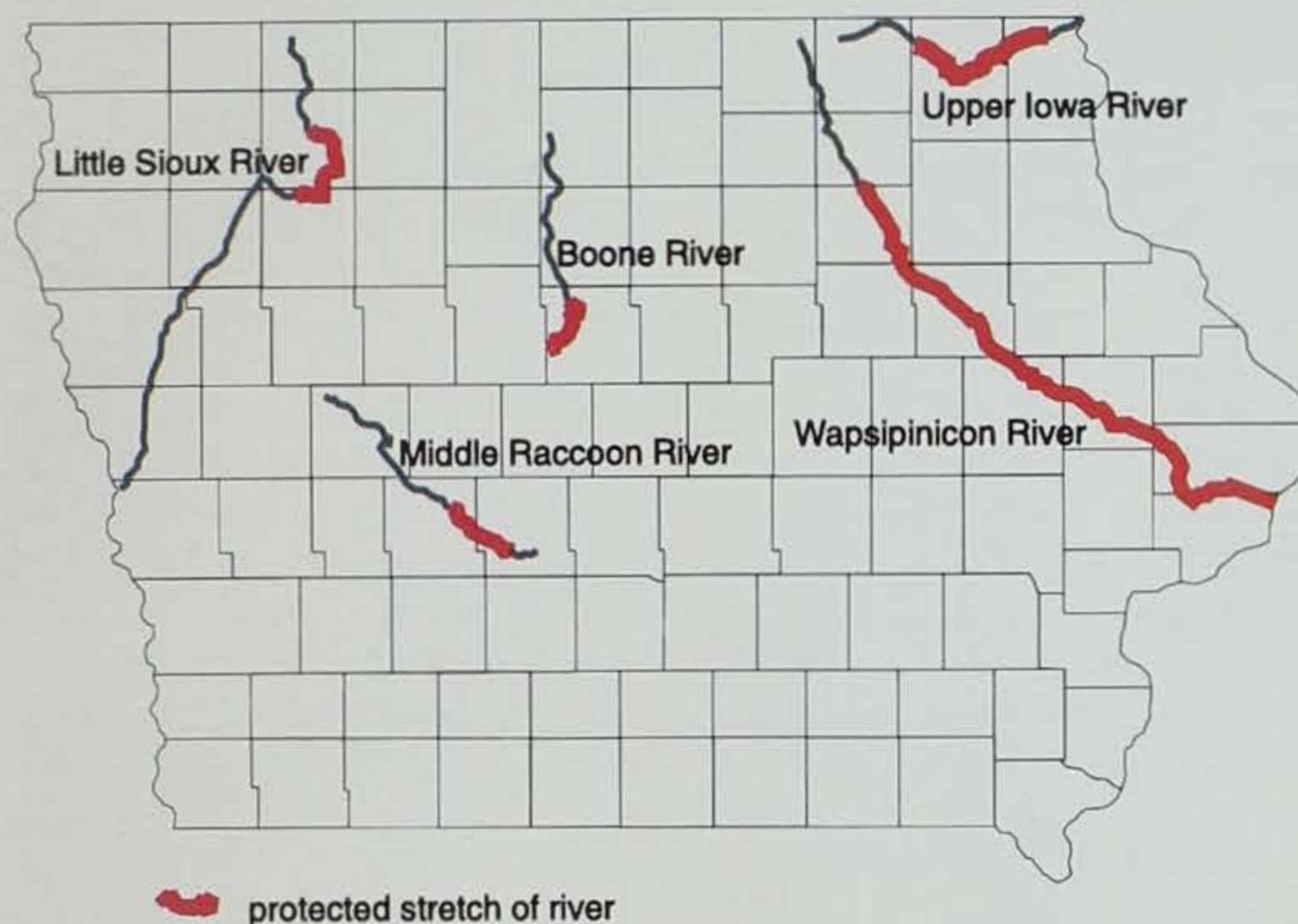


▲ Work done at Maquoketa Caves State Park is an example of how REAP open space money is being used to enhance and renovate Iowa's oldest state parks.

government officials and private landowners are grateful for this requirement. Some people say this requirement does not make much sense because we are just using tax money to pay taxes. They are right, but a couple key words are missing. We are using *state* tax money to pay *local* taxes. Therefore, all Iowans are helping pay local taxes on property that is managed for everyone's use and benefit.

DNR Land Acquisition and Development -- As the name indicates, this portion of REAP functions to purchase and develop land for public outdoor recreation and natural resource management purposes. The Natural Resource Commission (a governor-appointed body that sets policy for DNR parks, recreation, fish, wildlife and forestry programs) has directed DNR

Protected Water Areas



Wildlife Area in Jackson County and Pine Lake dam and spillway renovation in Hardin County. Currently, dam construction for a lake and development of associated recreation facilities at Brushy Creek Recreation Area in Webster County is the priority project being funded with REAP open space development money. These projects and others are highlighted ahead. Plan a "get-away" trip to one of these or the many other open space projects for a first-hand feeling of their treasures.

Green Island Wildlife Management Area — The Green Island Wildlife Area, located eight miles southeast of Bellevue adjacent to the Mississippi River, is the first public wildlife area to benefit from REAP. The construction of levees, water control structures, and a pumping station enables DNR biologists to

create 1,400 acres of wetland habitat and greatly improve waterfowl management opportunities. New parking lots, boat ramps, and boat channels were also constructed to allow public access to a much larger portion of the area.

Brushy Creek State Recreation Area Expansion: REAP open spaces has enabled the DNR to expand the Brushy Creek area by nearly 2,000 acres. A major benefit of this acquisition is the permanent protection of nearly seven continuous miles of scenic Des Moines River frontage and associated uplands. At 6,000 acres, Brushy is now Iowa's largest state recreation area.



▲ Bluffs along the Upper Iowa River in northeast Iowa. With the help of REAP open space money, five of Iowa's most scenic rivers are being protected.

the property, public benefits and presence of rare or unique species. Six people have been appointed by DNR Director Larry Wilson to review project proposals and make recommendations to the Natural Resource Commission on which ones should be purchased. Three of these people are DNR staff and the other three are representatives of private conservation organizations. This makes for a good combination of interests and expertise to assure REAP private-public cost-share dollars are used for the best available projects.

A Glance at Accomplishments

Since 1989, almost \$17 million have been used for REAP DNR open space projects. Approximately 15,000 acres have been purchased, of which 10,000 are general DNR acquisitions, 1,650 are within protected water areas, and 3,000 are under the private-public cost share program. These acquisitions are located throughout the state, with concentrations in western Iowa for the Loess Hills Pioneer State Forest, central Iowa for the Brushy Creek Recreation Area expansion, and northwest Iowa for wetlands and prairies. A part of this \$17 million is \$5.4 million of developments, with two major ones being Green Island

Brushy Creek Recreation Area
Land Development: Wildlife plantings, forestation and recreation facilities such as trails, picnic shelters, campgrounds and cabins are among the many improvements underway at Brushy. With completion planned for the Year 2000, this area will become Iowa's major multi-use state recreation area.

Pine Lake Dam and Spillway
Renovation: These aged structures had the potential to lose their stability and function. Open space funds were used to reconstruct the dam on Lower Pine Lake and the spillways on both Upper and Lower Pine. These improvements will last far into the next century and give new life to the lakes and the state park. As a result, other improvements to park facilities and the lakes have begun.

Bluffton Fir Stand, Upper Iowa
Protected Water Acquisition: This land purchase accomplished multiple objectives. It added valuable buffer land to a unique and beautiful state preserve. It increased protection of the scenic Upper Iowa River Protected Water Area by permanently protecting upland timber. And it added land for public enjoyment.

Maquoketa Caves State Park:
Redevelopment of Maquoketa Caves State Park is an excellent example of the use of open space funds for renovating and enhancing Iowa's oldest and most beautiful state parks. Constructed by the Civilian Conservation Corps, much of the park was in need of enhancement. Facilities had become overused and aged. Enhancements include a new campground, trails, service building, interpretive facilities, picnic areas and rest rooms.

Loess Hills State Forest Acquisition: REAP open space money has been used to purchase land in Harrison and Monona counties for this 17,000-acre state forest in western Iowa. To date, 7,815 acres have been purchased. REAP funds were also used to construct an equipment storage and shop building in the town of Pisgah. The building presently serves as headquarters for the forest.

►
Pine Lake State Park

Shimek, Stephens and Yellow
River State Forest Acquisitions: REAP Open Spaces has also been used to acquire small inholdings in the other three state forest areas.

Protected Water Areas Acquisitions: Five river reaches (*see map on previous page*) are officially designated as "protected water areas." To date, 1,615 acres have been purchased along these rivers with the help of REAP open space money. The overall goal of these acquisitions is to help maintain the rivers' beauty.

Wetland Development: Iowa has lost 98 percent of its original wetlands. A popular use of REAP open space money is to purchase existing wetlands and restore some that have been drained. Several private-public cost-share projects have involved the acquisition of wetlands.

Riverton Wildlife Area: This area lies along the West Nishnabotna River in Fremont County. The REAP open space acquisition of xxx acres allows for expansion of wetlands managed for waterfowl. It also includes 1-1/3 miles of river frontage with good catfish holes.

There's a saying -- "you can't get too much of a good thing." It applies to public open space for outdoor recreation. Granted, you can contend that in theory this means the whole state could be public land and it still would not be enough. But we all know from money, time, and social standpoints, that theoretical extreme is not possible. What is possible, however, is an ongoing commitment to add to our public land base and develop those areas for types of outdoor recreation that are most appropriate given the natural resources and public demand. This is one of the DNR's missions, and one that must continue for current and future generations. REAP has proven that its a big help in accomplishing this goal. These accomplishments will be enjoyed by people for many years to come -- and those people will "tip their hats" to REAP open space acquisitions and developments of the 1990s.

Kevin Szcodronski is the REAP coordinator for the Department of Natural Resources.

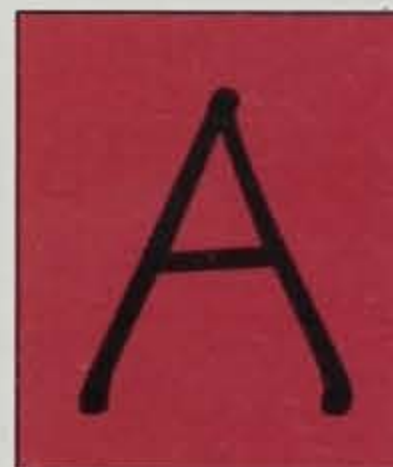




Hunting for the Past

Article and photos by Joe Wilkinson

▲ Two spear points and an ornamental pendant are some of Marolf's oldest and most prized pieces. These artifacts date back to the Archaic Period.



As he walks slowly along the ridgetop,

Dave Marolf keeps his eyes glued to the ground. The winter snow has melted. Spring rains have washed away the rocky topsoil. He will occasionally turn over a stone. A novice walking alongside would notice nothing out of the ordinary. But Marolf patiently searches through the leaf litter or freshly worked field rows. He turns over a stone or two. He will know it when he sees it.

On some days, he will have nothing to show for his effort, but hours of exercise. On a good day, though, he'll hit paydirt. A couple of flakes of flint. A stone point. He recalls a couple "red letter" days when he came home with rare finds. Dave Marolf is an artifact hunter. And judging by the display cases and boxes he has filled, he's a pretty good one.

"I started when I was a kid, about ten years old," remembers Marolf. "I was just tagging along with my dad in southern Iowa. He was a collector." Marolf's excursions still take him home to Wayne County and other sites near the Iowa-Missouri state line, but as manager of the DNR's trout hatchery near Manchester, he also scours the bluffs of northeast Iowa. "I hunt for campsites, on ridges overlooking streams and rivers. I'll also look in stream beds," Marolf explains. "But they can be anywhere."

Campsites hold more opportunity for artifacts. They are where prehistoric peoples would settle in for extended periods. They worked there. They fashioned the tools and utensils needed to hunt animals, to prepare food, to decorate their belongings . . . and to defend against enemies. "I look for discarded materials," says Marolf. "Flakes of flint, flaked off making utensils. There could be burnt rocks from fires, maybe pottery sherds. Flint flakes indicate they lived there long

enough to make tools. That could lead to other finds."

"It's a matter of searching the surface -- turning over rocks you see to find artifacts," says Marolf. Sometimes it is just a couple flint flakes, but they sometimes indicate more activity. Flint was used for tools. Prehistoric peoples built their implements -- hoes, spears, drills, knives and axes. They made ornamental materials -- pendants and breastplates. Of course, many other materials were used by them in their daily lives -- bone, leather, shell and wood. "They used everything," says Marolf. "Even seeds for beadwork. But these can rarely be found. These material just don't withstand the elements."

So what has Marolf found in 30 years of looking down? His inventory could supply a small museum. "I've found scrapers, knives, arrow and spear points, axes, pendants and drills," he says. "I've turned up hammer stones, grinding stones and bowls. Normally, you can always find something -- even if it's flint flakes."

But why spend all that time out doors, when a good day might mean just coming up with a couple stone chips?

"It's a hobby. Finding an artifact is really a thrill," Marolf says as he smiles.

"Occasionally I find more than one. You normally don't find quantities, though. Relics have been collected for years. They don't reproduce. Once one is found, there is one less to be found."

I tried to imagine a small circle of shelters with a couple cook fires started. Perhaps a small party of hunters was returning for the day. Maybe another villager was scraping a hide to be turned into a cloak, or perhaps some other clothing item. Near a fire, a village elder sat cross-legged, decorating a belt with beadwork. Is that the sort of evidence Marolf discovers hundreds, even thousands of years later? Not really.

Present-day laws prevent digging or keeping artifacts contained within a burial site. "I call what I do 'salvage archeology.' I never dig for anything," explains Marolf, erasing my vision of an ancient culture waiting to be discovered on the 'back forty' of an Iowa farmstead. "Many artifacts are broken up by agricultural equipment," says Marolf. "Most of the surface collection I do cannot be interpreted. It is in the 'plow zone.' It's been disturbed." Marolf targets ridges closest to streams. Ancient cultures wanted an area out of the floodplain, but near a source of water. Marolf says it takes a lot of footwork, investigating many spots that were not campsites, before he finds one that was.

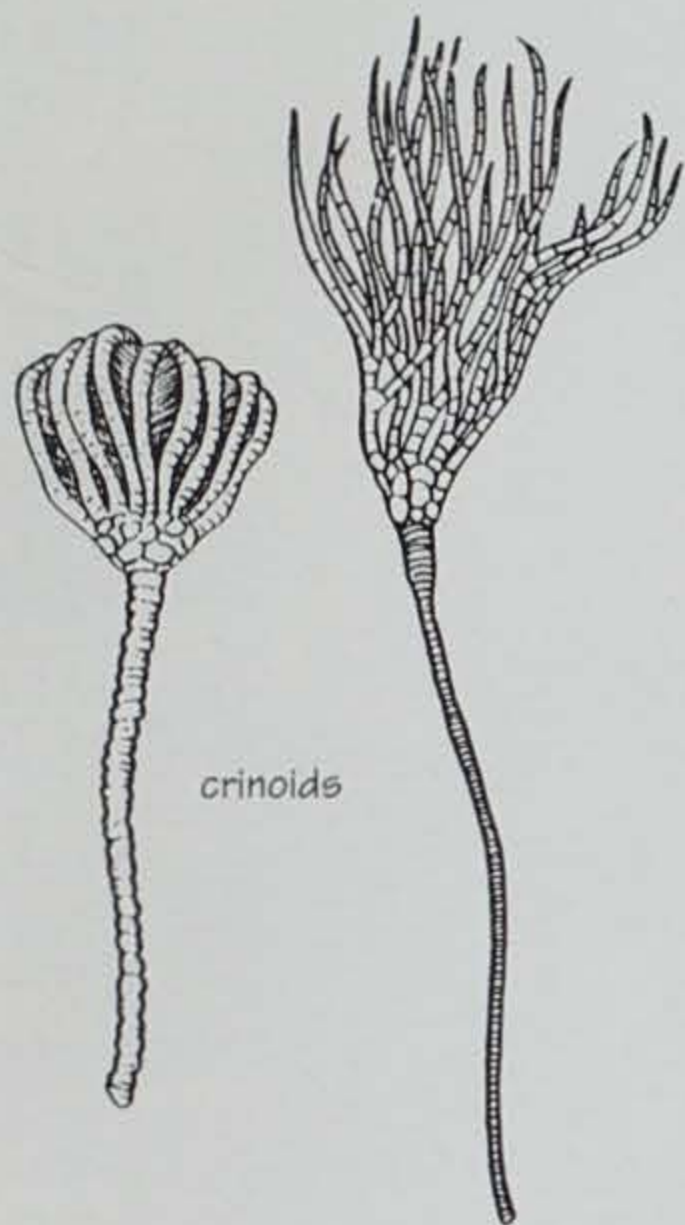
"I am looking primarily at the Mississippian, Woodland, Archaic and Paleo-Indian periods," says Marolf. The Mississippian Period spans the last 500 years. The Paleo-Indian Period ended about 13,000 B.C. The other periods lie between them. Sometimes, a campsite was just as desirable 300 years ago as 3,000 years ago. And, many of the sites found had more than one culture living there.

Though he does not expect to run into a treasure trove, Marolf says certain signs indicate the prospect of artifacts.

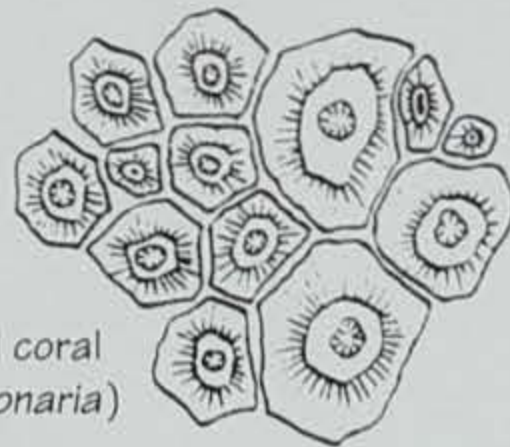
▼
Marolf displays ax heads and a celt from the Woodland Culture.



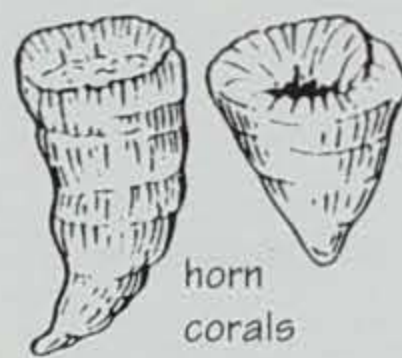
Geologic Features Exposed



crinoids

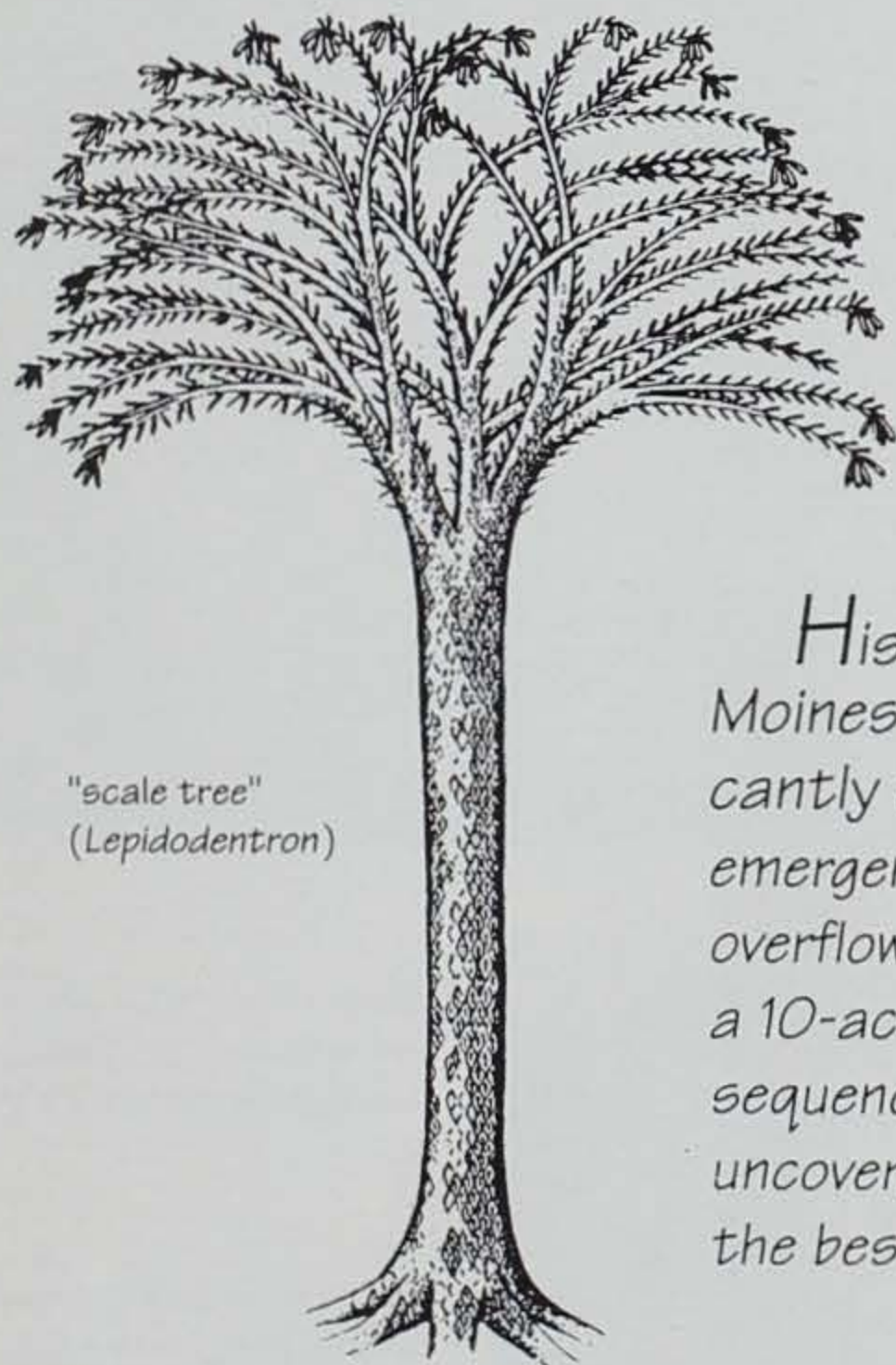


colonial coral
(Hexagonaria)

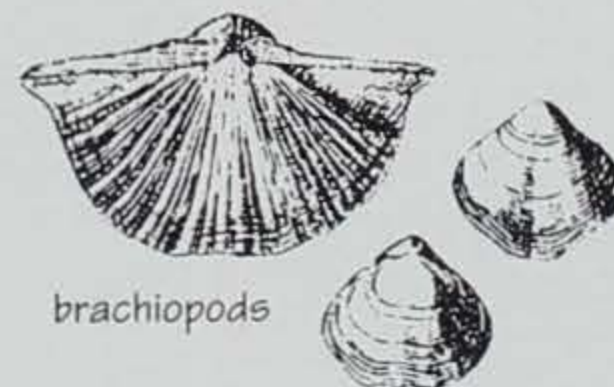


horn
corals

Historic floods during the summer of 1993 surged over the emergency spillway at Coralville Lake and eroded a 15-foot deep channel into the underlying bedrock deposits. It is now possible to walk over acres of Devonian-age sea floors and get a first-hand look at features normally hidden from view or glimpsed only in vertical cuts along roadsides or in quarries. These exposed rocks provide a rare opportunity for public observation of Iowa's geologic past.



"scale tree"
(Lepidodendron)



brachiopods

Historic flooding also occurred along the Des Moines River during the summer of 1993 and significantly enlarged a bedrock gorge below the Saylorville Lake emergency spillway. The gorge, first eroded in 1984 by overflow waters, has deepened to 70 feet and widened into a 10-acre "canyonland," with vistas of colorful, layered sequences of Pennsylvanian-age bedrock. The strata uncovered along the walls and floor of this canyon provide the best look at rocks of this age anywhere in the state.

For a visitor's guide to the newly exposed geologic features at the Coralville or Saylorville emergency spillways, write the Iowa Department of Natural Resources, Geological Survey Bureau, 109 Trowbridge Hall, Iowa City, IA 52242.

"The location of a fire rock, with the sides scorched, and other items, sometimes determine the location of lodges, says Marolf. "You have to remember eastern and southern Iowa were wooded at that time, with prairie interspersed. It doesn't look anything like that today."

What are some of his key finds? "I probably have three or four pieces I'm pretty proud of, as far as quality or rarity," he admits. "I found a sandstone pendant, from the Archaic Period. It's quite unique. I've never seen anything like that. I also found a fluted clovis (spear) point from the Paleo-Indian Period." Generally, I will identify a piece an artifact as soon as I find it."

These artifacts are about all that remains of the ancient cultures that called Iowa home, before the word "Iowa" existed. The earliest inhabitants, the Paleo-Indian Culture, were primarily nomadic. These people hunted mastodons and extinct giant buffalos. Through time they became more sedentary.

By the later days of the Mississippian Period, these nomads had evolved from hunters to agronomists -- the hunter/gatherers. They were the ancestors of the historic tribes we may be more familiar with -- the Sac, Fox and Ioways. The prehistoric cultures left no written records. "There were some inscriptions and pictorials," says Marolf. "But no details of their everyday lives."

Still, I can't help trying to picture the setting in my mind's eye. What would it have been like in those early days? It's a leisure activity the artifact hunter can fall back on. "It's fun to go out and search the fields for ancient history," agrees Marolf. "You can let your mind wander."

Joe Wilkinson is an information specialist with the department and is located in Iowa City.



▲ Most of Marolf's pieces were found in southern Iowa, near where he grew up.

◀ Ax heads have grooves, where they were strapped to a handle.

Them bones, them bones

As rivers rolled over their banks during record-shattering flooding last summer, they changed the face of their streambeds and the landscape. That's a good news/bad news situation for artifact hunters. Tons of silt was carried off fields and carved out of stream corridors to be deposited down the line. But as those raging streams scoured away bends and river banks, they peeled away another layer of history. *See Geologic Features Exposed on page 11.*

Canoeing the Maquoketa River last fall, I noticed the fresh black scars where the current had washed away a section of the steep bank. I was with my older daughter, Kelley, when we stopped on a sandbar for a break. Kelley wandered away. "I got bored, so I decided to look for shells," she recalls. "I thought I found a rock and picked it up. It was a bone in the sand."

I tried to discourage her, telling

her it was probably washed in or tossed in after a farmyard butchering years ago. But she came back with a rib bone, then a vertebrae. Finally, she showed up with a remnant horn attached to a piece of skull. Okay, I admitted, maybe it could be something. Still, it was weeks before I dropped off the mysterious find at the Geology Department of the University of Iowa. "Cow or bison?" I asked the University's Holmes Semken, almost apologetically. "Bison," he replied. Kelley beamed when I gave her the news. She knew it all along. On a sunny autumn afternoon, she had become an artifact hunter.

"The flood destroyed some areas by burying them," points out Art Bettis, soil geologist for the DNR. However, by eroding away banks, for example, it unburied others." The shift in the river this summer no doubt enabled Kelley to make her discovery.

Erosion is a natural process, though it was hurried along last year by the

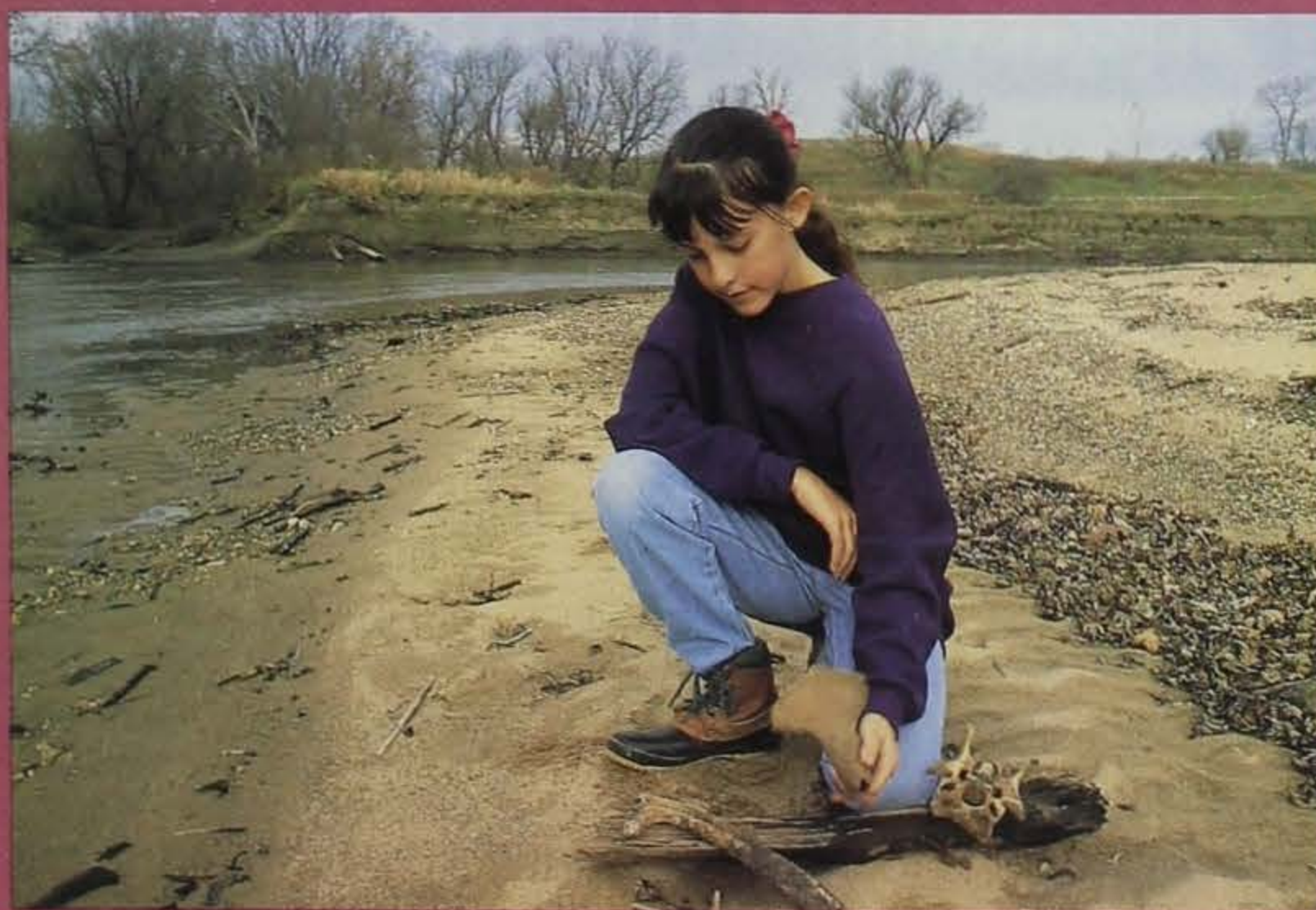
record water levels. "That's how the items get there in the first place," explains Bettis. "Erosion gradually exposes the bone, stone and other items that have not deteriorated under layers of mud or sand." This creates a golden opportunity for artifact hunters.

Bettis points out that most archeological sites are discovered in a similar manner. "They are exposed through disturbances such as floods, construction or agriculture." In this case, years or decades of erosion were accomplished in a matter of weeks.

Now it's back to the Geology Department again, with another find. Kelley's sister Kaitlin has gotten into the act. Kicking through a fresh layer of gravel, she found a flat rock with what appears to be a thumb depression in the middle and the edge flaked away. Could it be a scraper? That's a story for another day.

-- JW

▼ The shift in the river this summer no doubt enabled Kelley to make her discovery.



▲ Kelley's find did, indeed, turn out to be a bison horn.

A Recipe for Pheasants

The Conservation Reserve Program (CRP) was authorized as part of the 1985 Food Security Act, better known as the Farm Bill. The program provides payment to farmers who establish and maintain permanent cover on highly erodible land.

Other farmland retirement programs enacted over the years have caused noticeable increases in wildlife populations. The "Soil Bank" program of the 1956 Soil Bank Act and the Crop Adjustment Program (CAP) in the 1965 Food and Agriculture Act both contributed significantly to the wildlife habitat.

The DNR documented a decline in good pheasant nesting cover in northern Iowa from 59 percent of the land cover in 1941 to less than 10 percent in 1973, and an increase in cropland from 31 to 82 percent during the same period. Once good nesting cover dropped below 15 percent of the land area, pheasant numbers declined rapidly.

Between 1986 and 1993 more than 2.25 million acres of Iowa farmland were converted to idle grass and trees under the CRP. While idle grass cover undoubtedly benefits pheasants and other grassland wildlife, the cost of the Iowa CRP is high -- more than \$170 million in 1993. In light of an ever increasing national debt, it is essential that we identify where and how much idle cover had the most positive benefits.

Article by Terry Riley

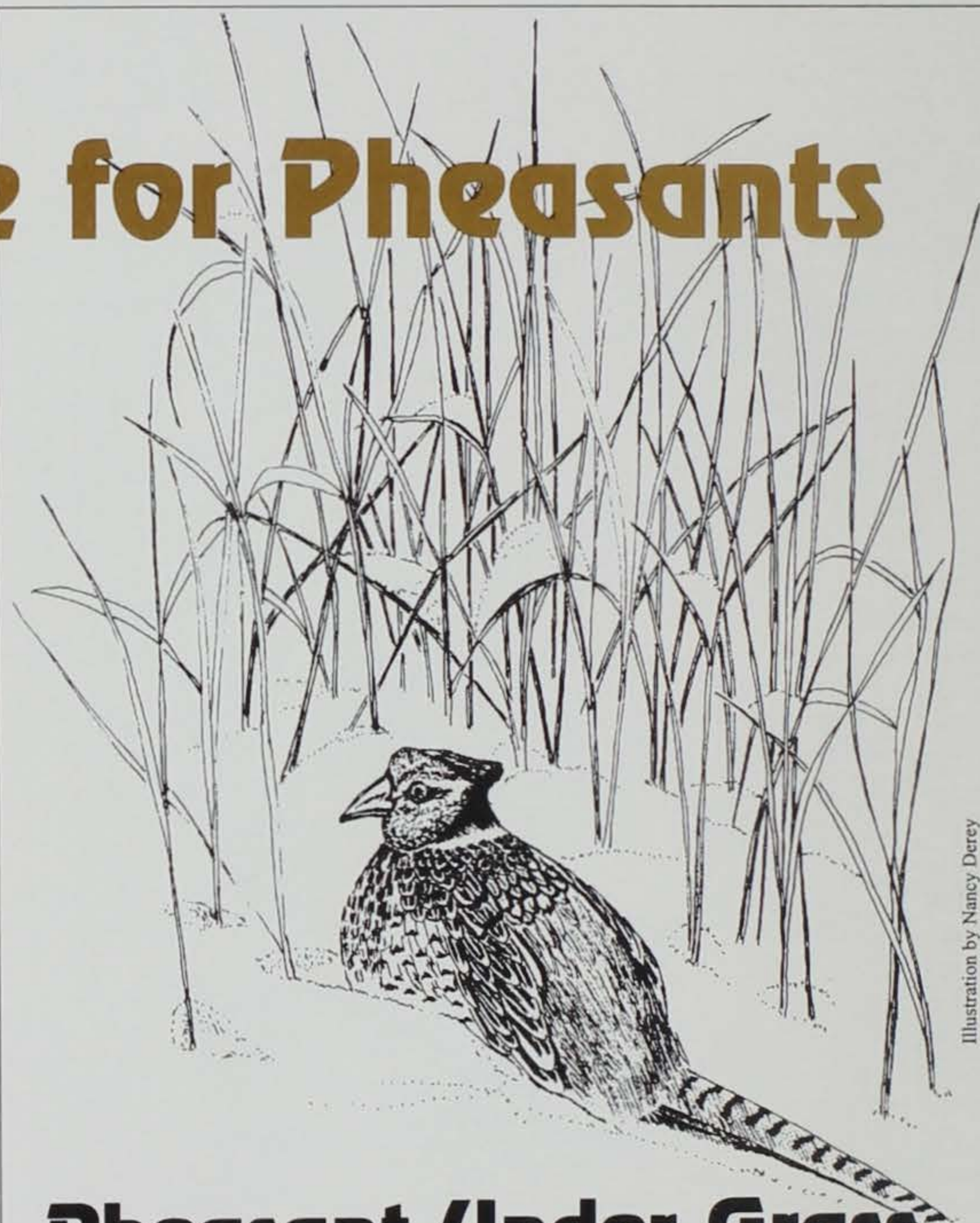


Illustration by Nancy Derey

Pheasant Under Grass

Take one landscape of at least 70 percent row crops.

Add 2 to 20 percent idle grass cover.

Mix well throughout the landscape.

Better Yet . . .

Use the above recipe.

Place idle grass adjacent to wetlands, waterways, drainage ditches, food patches, and shrub and conifer shelterbelts.

Place idle grass away from tall trees.

Where?

As most Iowa pheasant enthusiasts know, the change in pheasant numbers since the Conservation Reserve Program began in 1986 has not been similar in all areas of the state. At first glance, numbers appeared to have increased in the north-central, east-central and western regions of Iowa, and some people have concluded that pheasant numbers declined in south-central Iowa. These changes in Iowa's pheasant population might have been caused, in part, by the CRP.

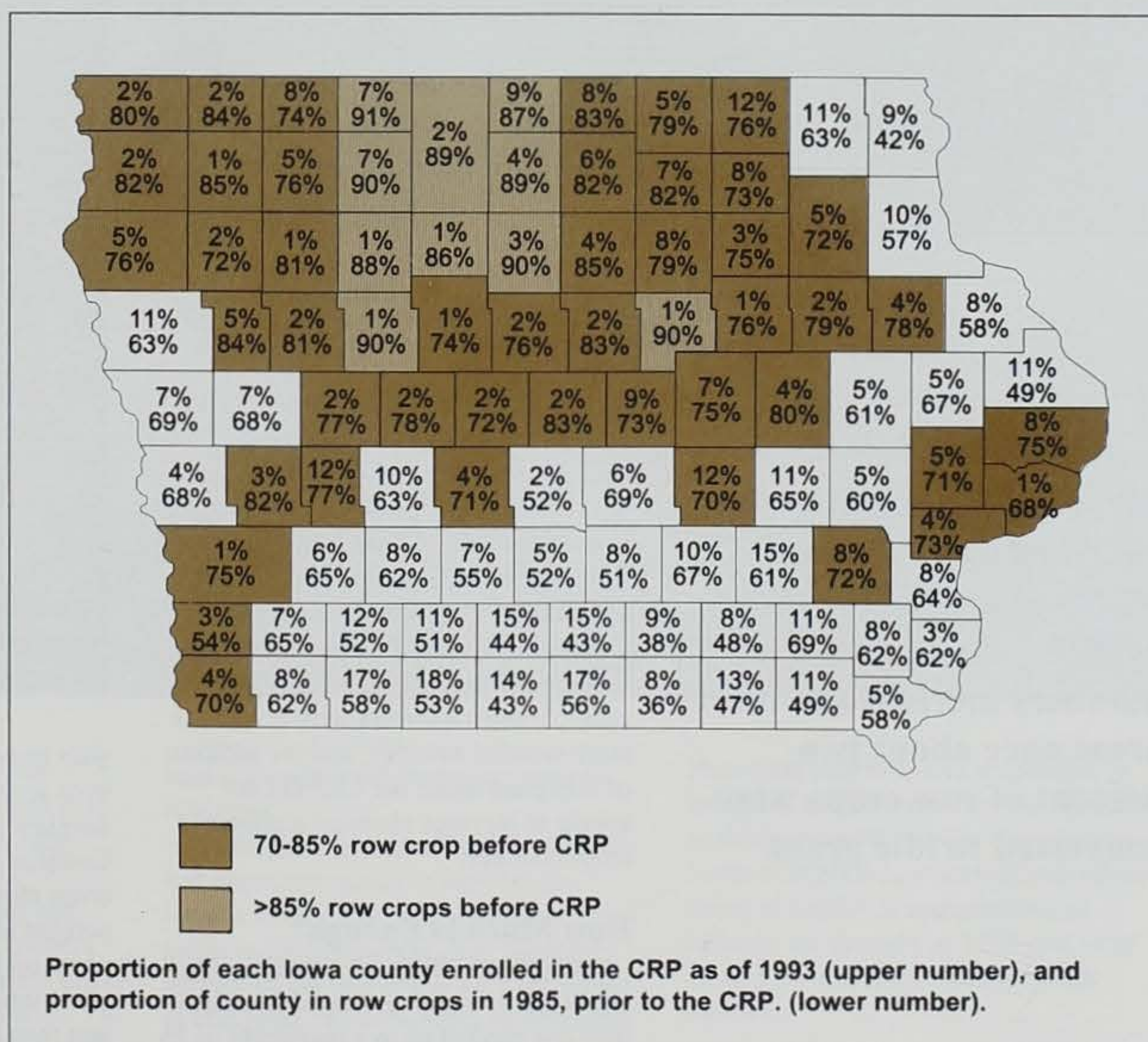
It appears the amount of farmland in a county prior to the CRP had an effect on whether more idle grass cover benefited pheasants. Pheasant numbers increased by an average of 34 percent during the first five years of the CRP in the 43 Iowa counties with 70 to 85 percent row crops (*see map at right*). The additional grass cover provided by the CRP probably increased the amount of good nesting and winter cover.

Landscape dominated by row crops tend to have fewer grassland wildlife species than counties with a more diverse landscape. These areas in Iowa tend to be on the better, less erodible soils. As a result, not as much land was enrolled in the CRP as was in areas with low quality or highly erodible soils. The 10 Iowa counties with more than 85 percent row crops had an average of about three percent of the land enrolled in the CRP by 1993. Prior to the flood of 1993, pheasant numbers in these counties had increased by about 19 percent.

The 45 Iowa counties with less than 70 percent row crops were located primarily in southern Iowa or along the Missouri or Mississippi rivers (*see map*). Pheasant numbers only increased by five percent

during the first five years of the CRP in these areas. These counties have more land in pastures, hayfields and/or woodlands. The addition of more grass might have had little effect on pheasants in areas with abundant nesting and roosting cover provided by pastures and hayfields. Pheasant numbers might not have increased in these areas because of the severe droughts of 1988 and 1989. Decreased moisture and emergency haying might have reduced nesting success and

The DNR documented a decline in good pheasant nesting cover in northern Iowa from 59 percent of the land cover in 1941 to less than 10 percent in 1973 . . . Once good nesting cover dropped below 15 percent of the land area, pheasant numbers declined rapidly.





Lowell Washburn

Roger A. Hill

Idle grass provided by the CRP has had some very positive benefits for Iowa wildlife. Pheasant numbers increased in most areas once about two percent of row crops were converted to idle grass.

chick survival. The drought was particularly severe in south-central Iowa.

Pheasants and trees don't mix well. Anywhere woodlands are predominant on the landscape, pheasants populations tend to be lower than in areas with fewer trees. This might result from the fact that trees attract hawks and owls, and placing more predators near where pheasants roost, loaf or feed might tend to reduce pheasant numbers. In any case, pheasant numbers were low in the more wooded counties, and the addition of idle grass under the CRP did not appear to increase pheasant numbers in those counties.

How Much Is Enough?

Cropland idled under the Conservation Reserve Program ranged from less than one percent up to a maximum of 25 percent, by law, of the farmland in each Iowa county (*see map on previous page*). Pheasant increases depended on land use in the area prior to the CRP. Very little increase occurred in counties



with less than 70 percent row crops, even with up to 25 percent of the farmland converted to idle grass. Counties with 70 to 85 percent row crops required as little as two to three percent idle grass to noticeably increase pheasant numbers. That doesn't mean pheasants didn't increase in areas with less than two percent CRP, but researchers were unable to detect any changes with the pheasant population and harvest surveys. The amount of cropland retired from production under the CRP in counties with more than 85



percent row crops ranged from one percent to nine percent. Emmet and Palo Alto counties had seven percent each, and Winnebago County had nine percent. The other eight counties had four percent or less. Pheasant numbers increased by 14 percent, 43 percent and 55 percent in Emmet, Palo Alto and Winnebago counties, respectively, during the first five years of the CRP (1987-1991). Pheasant numbers increased only slightly in the other eight counties. Increases in pheasant numbers might have been greater if more

land was converted from row crops to idle grass.

Idle grass provided by the CRP has had some very positive benefits for Iowa wildlife. Pheasant numbers increased in most areas once about two percent of the row crops were converted to idle grass. Most benefits to pheasants appear to have been reached in areas with 75 to 80 percent row crops. Intensely farmed areas (85+ percent row crops) may require more than seven percent idle grass cover before increased pheasant numbers are noticed.

Pheasants may not have responded to increases in idle grass cover in counties with less than 70 percent row crops, because of abundant nesting and winter cover in hayfields and pastures, or because the drought of 1988 and 1989 caused poor nest success and chick survival.

Terry Riley is the upland wildlife research biologist for the department located in Chariton.

THE UNEXPECTED, SINISTER SPINNER

by Rob Simbeck

The producers of horror films spend millions of dollars on aliens and poltergeists and creature from radiation-poisoned swamps in their attempts to frighten us. As any youngster can tell you, though, if you want to scare somebody, a spider will do just fine.

Some of the most devastatingly gruesome scenes in all of filmdom have involved these eight-legged crawlers.

Who can forget Dwight Frye as Renfield in *Dracula*, his face twisted in mad, tortured glee as he catches and eats spiders on

board that crewless ship? Or the climax of *The Incredible Shrinking Man*, with Grant Williams battling for his life with a common household spider, but on *its* terms, at *its* size?

Spiders are all the worse because they pop up so unexpectedly where we live and work and play. Miss Muffet was neither the first nor the last to have lunch ruined by the appearance of an uninvited envoy from the family arachnid.

Arachnid. The very word has a harsh other-worldliness to it, a grating quality that suggests mandibles tearing at flesh. What better word for the group that includes my personal favorite, the brown recluse spider? Often spurred on by drought, many of these normally shy creatures take to searching homes, including mine, for water. Since three of my friends have lost generous pieces of flesh to these tiny scourges, I greet their arrival with somewhat less enthusiasm than I might have under different circumstances.

Ornithologist extraordinaire Roger Tory Peterson, who toyed with the idea of becoming an insect collector before an attack of clear-headedness led him to bird watching, has described me as being "afflicted with an impulse to drop bricks on . . . small, creepy, crawly things." That's only partially true. He left out *large*, creepy, crawly things.

I guess we're lucky that spiders *aren't* large enough that we could easily get a good look at them. In fact, there ought to be a law against people in their tender, impressionable years (I consider myself, at 37, to be in that category) gaining access to hand-

held lenses or to books which feature close-up photography of spiders. No creature, real or imagined, has a more gruesome countenance than a spider. And if hell has monsters to unleash, surely they can be no uglier than spiders.

For all its horrors, when you turn from the creature to its handiwork the picture changes; you are entering the world of the angelic. A spider weaving its web in the slowly progressing twilight looks like it's building and plucking a delicately intricate harp. The web is a masterpiece of instinctual engineering, blending strength, utility and beauty.

All spiders make silk, but only some spin webs. The most familiar and impressive are the orb webs -- those flat, round, dinner-catching doilies of the dusk. With the exception of the caddis fly larva, the spider is the only animal to set traps for other animals using only natural secretions and a little handiwork, and the web is marvelously effective as such. Once the web is spun, a spider doesn't have to go through all the hard work normally involved with predation. It has merely to go to the pick-up window and sack it up.

The process starts with selection of a site. Let's assume that our little garden spider has decided to build a web between two of the vertical boards that form part of my porch railing. It will attach a thread to one of the boards and crawl around the frame, holding the thread away from itself with one leg so it won't get tangled. When it reaches the other side, it attaches the thread, forming a bridge from which it can begin its work. If the two supports were



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**The web is a
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and beauty."**

trees with a creek between them, the spider would raise its abdomen and spin the thread into the wind, which would carry it to the other tree, where it would stick. By attaching the other end to the tree it's on, it would form the bridge.

The spider crosses this strand a few times, adding a strengthening line with each trip. This bridge and another above or below it form the outer frame. Then it attaches a line to a bridge and carries it to a spot on the other or one of the porch rails. Repeating this process gives it an inner frame.

Once the center of that frame is established, spokes are placed from there to the outer frame, and a central hub is added to strengthen the structure. Then, starting near the center, the spider places a loose spiral of thread in a widening circle toward the outer frame. The final touch is the tight, sticky spiral that winds around and around the web. This spiral, made from the outside in and using the loose spiral (which is torn down) as a guide, is attached with a little slack left so that any insect which hits one

will, by jerking, catch itself in others nearby.

The web completed, the spider has merely to wait, either at the center of the orb or in a concealed spot near the outer edge. From there, it maintains contact with one or more of the "spokes" and can feel the vibrations caused by a struggling victim.

The insect's struggle stimulates the spider to go to it and inflict a long bite. Taste then stimulates the enshrouding process, wherein the spider wraps the prey in silk, and this is followed by a series of fatal short bites.

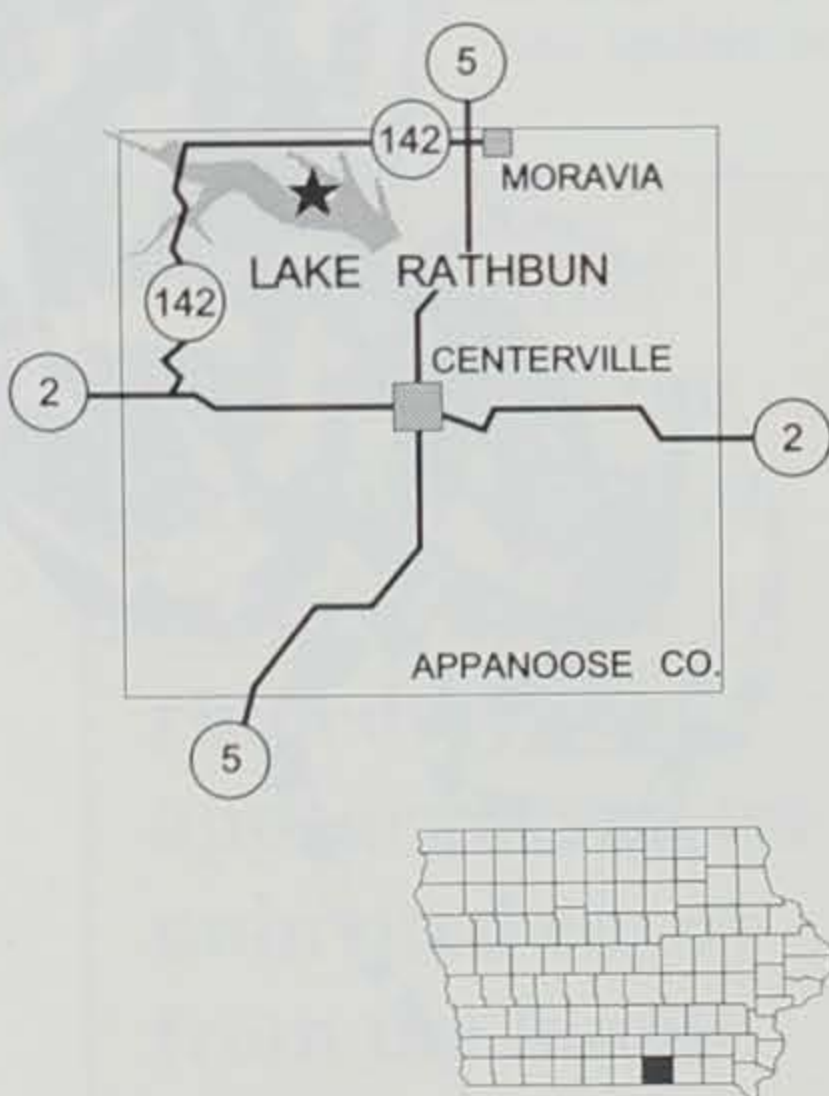
It's all gruesomely efficient, with beauty and symmetry leading directly to death. "Come into my parlor," said the spider to the fly. Silent, still, unseen, the spider waits, lurking -- nature's real beauty-and-the-beast show. Movie producers, eat your hearts out.

Rob Simbeck is a free-lance writer from Nashville, Tennessee. He writes for Birder's World and numerous other magazines.





Wayne Lomling



"Look Dad! This walleye I just caught has a tag on its jaw."

"Here, let me have a look. Sure enough, it does. It's small, and it has numbers on it . . . looks like AB9 to me. How did you know that was a tag?"

"I read about fish tagging a couple of years ago. Let's measure this fish and send the information to the DNR. They'll tell us a little about the history of my fish and why the information is important to fishing."



by Larry Mitzner

Conversations like this one could become more common each year among anglers fishing Lake Rathbun. This interest all began with a problem recognized back in 1984, but a problem that started to raise its ugly head in the early 1980s. Most of the walleye found in Lake Rathbun in 1984 were adult fish. Few juvenile fish were available to replace them as they died or were caught. The walleye population at Rathbun during the early 1980s could be compared to a poorly managed cow/calf herd. The truth was cows were numerous, but the replacement stock was lacking. A major effort was needed to find the best and quickest way to bring this walleye "herd" back to a healthier, more productive state.

A healthy walleye population at Rathbun is undoubtedly important to the anglers intent on catching some of these highly regarded sportfish. In fact, since 1972 an estimated 90,000 walleyes have been harvested, and that's many pounds of mighty fine table fare. But, of equal importance is the health and well-being of the walleye population to the Rathbun Fish Hatchery. The hatchery relies on eggs collected from large broodfish to meet the state's stocking needs. This fish culture facility is equipped to handle 500 quarts of eggs that produce about 50 million fish or about one-third of Iowa's stocking needs.

So, how was this dire situation to be fixed? The answer appeared fairly simple -- bring in more and younger fish. Examination of stocking records before 1984 showed a multitude of stocking schedules. Some years fry were stocked, some years fingerlings were stocked and other years no fish were stocked. It was also evident from these records that natural spawning and reproduction were definitely not doing the job, nor were these various combinations of stockings.

Based on this information, the stocking plan was adjusted in 1984 to add a greater number of young fish to the population. Fry were stocked each spring at a goal of 2,000 per acre, followed by fingerlings in September and October, at a goal of 10 per acre. At the same time, a project was also designed to evaluate this stocking plan. These fish would be observed very closely as they grew into egg-producers for the hatchery and scrappy sportfish for the angler.

Therefore, tagging entered the picture. All stocked fingerlings were tagged or fin-clipped. Likewise, all mature walleye netted and brought to the hatchery in April were marked.

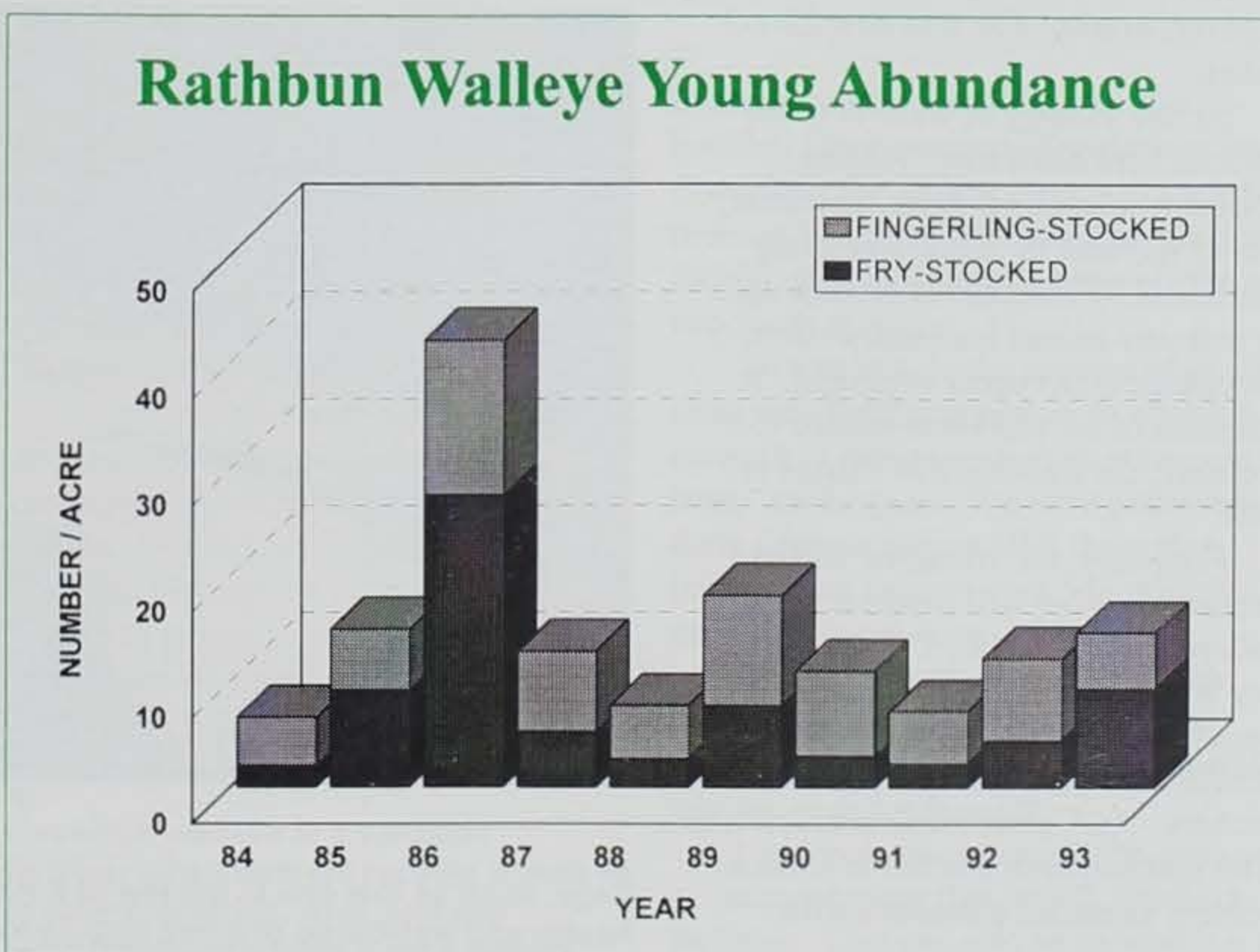
These identifying marks and tags were used to determine population abundance and survival from year to year. The marking experiment also

showed which stocks of walleye survived best -- fry or fingerling. For example, in the fall of 1984, an estimated 72,600 young walleye were present in Lake Rathbun. Fish stocked as fingerlings did better that year as they dominated 70 percent over fry stocked fish. The most successful stockings for both fry and fingerlings occurred in 1986 with a fall abundance of 462,000. Fry stocking was quite successful four out of the 10 years, yielding large numbers in 1985, 1986, 1989 and 1993 (see illustration below). Fingerling stocking showed best results in 1986, 1987, 1989, 1990 and 1992.

The outcome of this stocking plan has been highly successful. Two indicators showed this to be true, without question. First, the number of mature walleye has increased from a low of about 3,000 in 1986 to 9,000 in 1993 -- a threefold increase and an all-time high. The increase was noticeable in the hatchery as well as on the lake by the anglers. Eggs stripped in 1992 and



The outcome of this stocking plan has been highly successful . . . the number of mature walleye has increased from a low of about 3,000 in 1986 to 9,000 in 1993 -- a threefold increase and an all-time high.



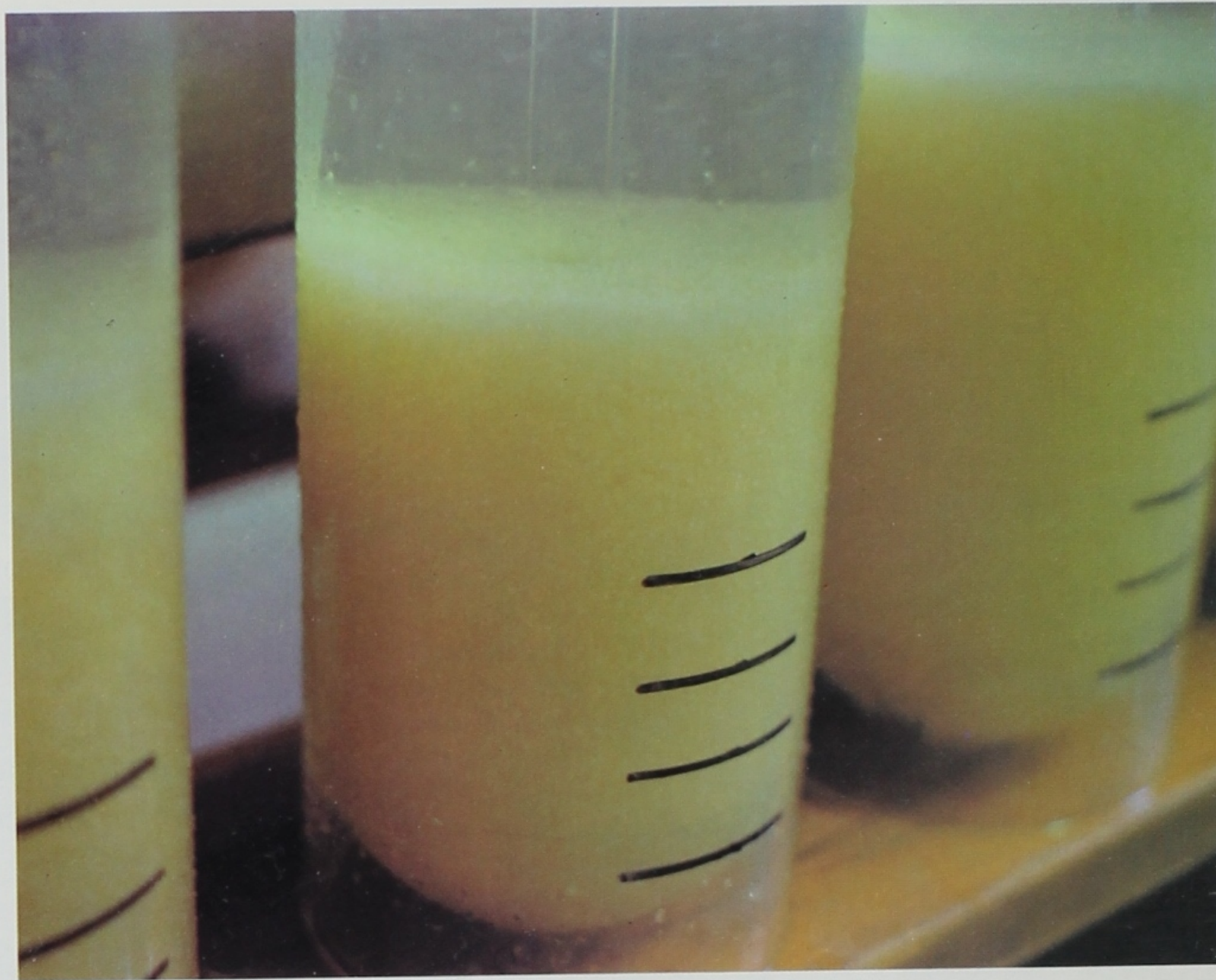
1993 amounted to about 30 to 35 quarts per day compared to the low of 15 quarts per day in 1989. Likewise, anglers experienced better walleye fishing, particularly since 1987 -- three years after the first large stocking of young walleye. One of the best years of fishing occurred in 1992.

The second indicator that showed the walleye population had recovered was the change in the average size of fish. In 1984, the average size of females in the hatchery was 26 inches, with some as large as 30 inches. Very few fish were smaller than 23 inches. By 1993, this had all changed with a much more uniform, healthier size structure. Walleye were still large (31 inches), however, average size was now 22-1/2 inches.

So, the analogy of walleye to the cow/calf herd holds true. Adding replacement stock has been successful, with an increase in "herd" size along with a healthy decrease in average age. As with any animal husbandry effort, this change didn't occur overnight. A minimum of six years was needed to overcome the situation that existed in 1984.

Hopefully, the youngster and dad mentioned earlier will continue to catch walleye at Lake Rathbun. Undoubtedly they will, and may even pick up a tagged fish from time to time. They'll know it was a fish that had been in the hatchery. And, more importantly, it was a fish that had been stocked to solve a problem identified a decade earlier.

Larry Mitzner is a fisheries research biologist located in Chariton.



DNR photo

▲ Walleye eggs. Eggs stripped in 1992 and 1993 amounted to about 30 to 35 quarts per day compared to the low of 15 quarts per day in 1989.



DNR photo

▲ Tags, such as this one in the jaw of a Rathbun walleye, help biologists track the health and well-being of a fish population. Information on tagged fish can be obtained by sending the tag number along with the fish's length, weight, time and location where it was caught to the Department of Natural Resources, Wallace State Office Building, Des Moines, Iowa 50319-0034.



Feedlot

Runoff

Open feedlots can be a major source of pollution when runoff washes manure down a watershed. While most confined livestock operations have systems to control their manure, like collection pits below slatted floors, few open feedlots have this type of tight control on wastes.

According to Ubbo Agena, DNR environmental engineer, improving manure management of livestock operations is a major focus of Iowa's nonpoint source pollution program. Under Section 319 of the federal Clean Water Act, the U.S. Environmental Protection Agency (EPA) provides money to the DNR to help solve some of the state's nonpoint source pollution problems.

Nonpoint source pollution comes from a wide range of sources, including construction sites, parking lots and other urban paved areas, suburban

lawns and a variety of agricultural sources. Nonpoint sources are just about every kind of water pollution that does not come from a single point like a pipe from a factory into a river. In Iowa, the most significant source of nonpoint pollution is from agricultural operations -- farm fields and livestock operations.

Agena explains that a three-pronged approach is being used to help Iowa livestock operators manage livestock waste and protect water quality.

"The first thing we did was to publish an easy-to-understand booklet that explains the regulations that govern

Livestock manure is a valuable fertilizer when farmers recycle it back to their croplands. And, just like recycling by-products from a factory, properly fertilizing with manure prevents pollution of public lakes, rivers and groundwater.



Lynn Betts, Soil Conservation Service



Lynn Betts, Soil Conservation Service

Research geologists Lynette Seigley and Bob Rowden of the DNR, collect weekly water samples across northeast Iowa.

Control

by Kimberly K. Coulter

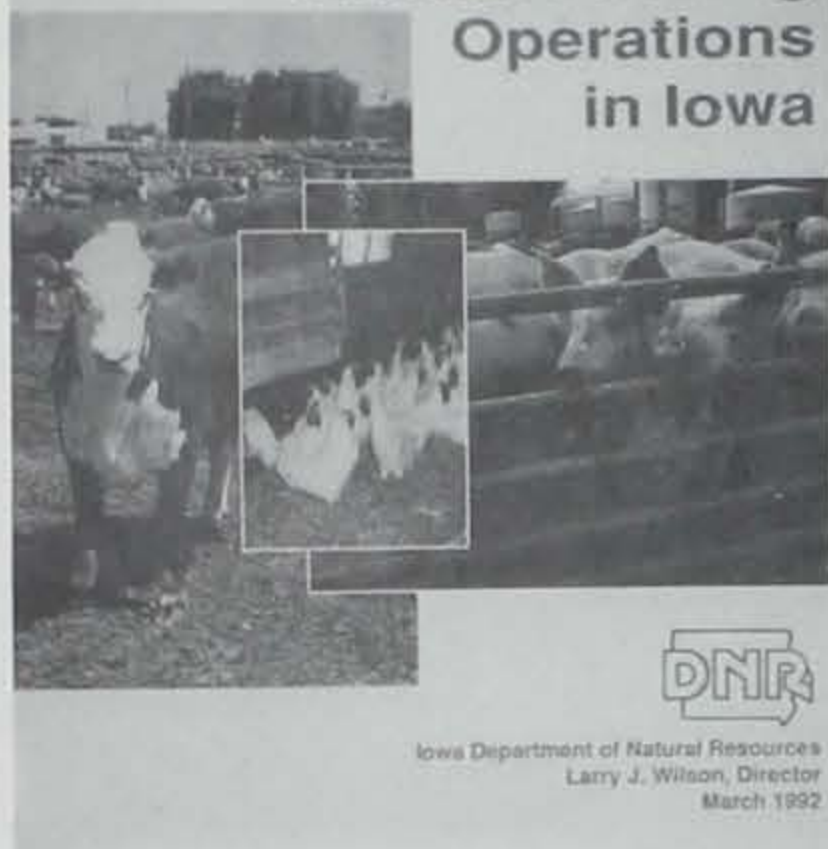
livestock wastes," said Agena. The booklet, *Environmental Regulations and Guidelines for Animal Feeding Operations in Iowa*, has been distributed to more than 14,000 operators since it came off the press two years ago.

"We're now in the process of cooperating with feedlot operators to establish a network of demonstration farms across the state," said Agena. We have patterned these demonstrations after those that helped Iowa farmers save \$40 million a year in nitrogen costs."

Finally, according to Agena, the demonstration farm projects will be accompanied by a more intense information program for farmers.

Livestock operators may be unaware of the regulations that impact livestock facilities. Cost can also be an inhibitor to installing a runoff control system, although cost-share money may be available through federal or state programs, and there may be

Environmental Regulations and Guidelines for Animal Feeding Operations in Iowa



▲ **Environmental Regulations and Guidelines for Animal Feeding Operations in Iowa** is available from the DNR, Soil Conservation Service and ISU Extension field and county offices.

Fact sheets are also available for each feedlot demonstration. The sheets include design and performance data on the system, environmental regulations applicable to the site, and information on manure disposal practices.

economic benefits in improving manure nutrient availability and use as fertilizer.

However, the primary reason why many open feedlot operators are not using runoff controls now is that they have not seen many of these systems in operation, and may not understand how they can be constructed and managed for their particular facility. "Consequently, the demonstration farm system, is expected to be the key to success," Agena said.

The DNR has contracted with Iowa State University (ISU) Extension Service to establish a network of 15 demonstration farms. Jeff Lorimor, animal waste management specialist with ISU Extension Service, says the project has focused on identifying open feedlots of swine, beef and dairy which already have manure control systems in use. Development of the demonstration sites was patterned after other demonstration programs, such as the Integrated Farm Management Demonstration Program and the Model Farms Project. Lorimor feels that because Iowa has set a precedent with the farmer-helping-farmer approach that the feedlot demonstrations will be successful too. "The idea is to help farmers make a better decision on what systems can work for them," explained Lorimor.

Demonstration sites were picked that

represented the most prevalent livestock species in a particular area of the state, for example dairy cattle in northeast Iowa and beef cattle in northwest Iowa. Another consideration in site selection was accessibility by the public. Everyone who signed up to be a demonstrator had to be willing to host tours and answer questions about their particular system. As part of the project, a sign has been posted on

"Achieving water quality goals through voluntary efforts is preferable to achieving them through regulations."

-- Agena

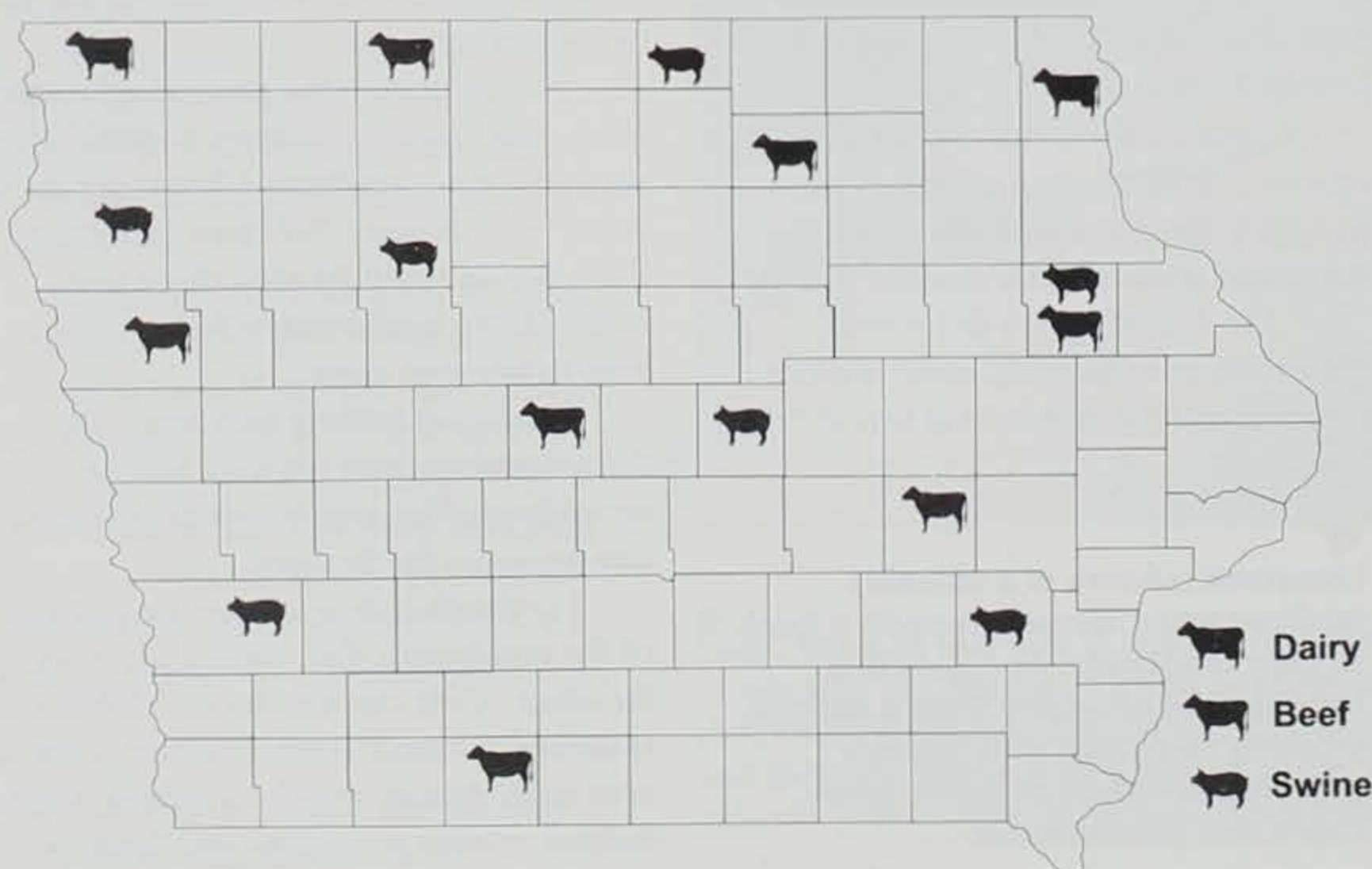
each of the 15 farms and informational fact sheets on each site have been prepared. These fact sheets describe the control systems installed at each site and the construction, operation and management of the runoff controls.

Field tours of the sites have already begun and those interested are urged to contact the county ISU Extension or SCS offices for fact sheets and information on demonstration sites.

A final component of the manure management program is public information materials that will continue the education started by the demonstration sites. These materials may be supplemented by field tours, news releases, videos, farm magazine articles and commodity group newsletters.

Environmentally sound methods of livestock manure disposal are an important component of each demonstration project site. Turning manure into a resource for crop production instead of leaving it as a water polluting by-product of livestock production is a worthy goal. A significant aspect of this project, according to Agena, is that farmers are participating in the project voluntarily. "Achieving water quality goals through voluntary efforts is preferable to achieving them through regulations."

Feedlot Demonstration Areas



Lavern and Mary Trumm, Delaware County

*Swine Farrowing
and Beef Production
Operation*

Located near Manchester on Highway 13, the Trumms feed both cattle and hogs. Mary and Lavern "Barney" Trumm had their runoff control system built in 1987 and in 1992 they added on a 300-head hog confinement building. Barney says he especially likes the system because it allows them to scrape the lots shortly after a rain, when the manure is in a semi-liquid form, so the yards dry quickly.

"Maintenance is minimal, there's no doubt about it," explained Mary. "In the summer, with the corn, beans and oats in the ground, there's no place to haul manure. The new storage pit allows us to store the manure while keeping the yards clean."

Another plus is that there is no manure runoff mess in the field. "The water that is diverted around the storage pit is pretty clean and we haven't seen any effect on corn production in the rows nearby," said Barney. "About 1,500 feet away there's a creek which is surrounded by permanent pasture land acting as a final filtration before the runoff reaches the creek." This enables the rain runoff to pass through three opportunities to clean and dilute the runoff -- solids settling area, cropland and grassland.

The control system for the hogs is a 16-foot-wide concrete collection alley that also serves as a settling basin and driveway. Liquids are collected in a round concrete storage pit with a 190,000-gallon capacity. This pit also receives runoff from the

hog confinement building. On the concrete cattle lots, runoff is retained by concrete fences. Wooden planks are used at the gates to cause most of the solids to settle on the lot and settling area. Liquids flow onto the cornfield and the solids are then scraped into the pit and hauled directly to the land. Once they're set up to haul manure, it only takes three to four days, and that is done only twice a year, in the spring and the fall.

"Construction cost is probably the number one reason why operators like us don't install more of these systems," said Barney. "A second reason is the

cost of the new equipment needed to run the systems. The out-of-pocket money is the hardest to find when you're a farmer and have no cash flow. We were able to do it because we owned a used tank and chopper for hauling the manure to the fields."

Mary says, "This project will get the word out to different people who haven't even considered installing these types of systems." Barney feels that it's important to have people view different systems. "I don't know if ours is the perfect site for the demonstration project, but it can help give farmers ideas for their own operations. That's what it's all about."



▲▶ The Trumm demonstration farm, concrete walls and planks settle out the solids while the liquid runoff flows to the storage pit for land application during the spring and fall.



Jeff Lorimer, ISU Extension

Greig & Company, Inc., Emmet County

*Beef Production
Operation*



Jeff Lorimer, ISU Extension

Located in the northwest corner of Emmet County is the Greig family operation. John Greig and his son, Joe, manage the earthen feedlots and have had runoff controls below the lots for many years.

Their 1000-head cattle operation is close to Estherville, and is in the watershed of Brown Creek, a primary source of water for their cattle herd. "In the early 70s, we saw the need for some kind of manure control," says John Greig, farmer and state representative for District 7. Through cost-share from Agricultural Stabilization and Conservation Service (ASCS) and design assistance from Soil Conservation Service (SCS), they were able to install a feedlot runoff control system. "Our farm won the Izaak Walton League's award for clean streams after we put in those initial controls."

Today, runoff from the lots is carried in a grassed ditch which runs down hill to a flat settling basin and an earthen holding pond/lagoon. They typically pump the liquid out in the spring and fall. "We see the benefits of a cleaner stream, as well as the savings in fertilizer to our nearby farm ground," said John.

"More people are using runoff controls than we realize," said John. "If farmers can talk to other farmers about their facilities, it's a great way to get the information out. After we were cleaned up we were proud."

"When I was a kid I played in the creek," John said. "After we enlarged the operation it wasn't good for the stream." Now it's back to being crystal clean because of the runoff systems we've installed. I'm tickled to death that my grandchildren will one day be able to play in the same stream I did."

▲ **Greig's 1000-head cattle operation with earthen lagoon for feedlot runoff.**

Kimberly K. Coulter is an information specialist working with the department's nonpoint source pollution program.

Article and photos by Alan Moore

Ideas are Hatching

Solutions to Fish Production Problems

Fish hatchery biologists are continually challenged by new problems, new ways of raising fish and new species to raise. Some problems that have plagued hatchery biologists for many years, but have been recently solved, are training walleye, largemouth bass and muskies to accept pelleted food, jar incubation of channel catfish eggs, gas supersaturation and low oxygen levels in hatchery water and preservation of walleye, muskie and trout semen.

Pellet Feeding

In the late 1970s, stocking requests for five- to six-inch largemouth bass began to increase. A similar demand for six-inch muskie and seven-inch walleye occurred in the early to mid-1980s. Since these fish are predators, and their main diet is fish, raising them to a large size would require much time and money to collect and buy enough minnows for food. A more economical

▶
Finding solutions to fish production problems can mean finding more fish to catch.

Ron Johnson





▲ Approximately 125,000 walleye are produced each year by Iowa DNR hatcheries using pelleted feed.

► "Free flowing" channel catfish eggs can now be jar incubated, thereby reducing disease and fungus problems.



and reliable method would be to raise them on pelleted feed. The key to success was finding a diet these predator fish would eat and provide the proper nourishment so the fish would grow well. The best diet for largemouth bass was a soft diet, while walleye and muskies, preferred a diet made of seafood by-products. The fish were fed every five minutes, 24 hours a day during the training period. The first success was obtained with one-and-one-half- to two-inch largemouth bass and walleye. Additional adjustments in techniques were made and now newly hatched muskies and walleye will also accept pellets. Since developing these techniques, Rathbun hatchery annually produces 25,000 five-inch largemouth bass and 75,000 seven-inch walleye on pelleted feed; while Spirit Lake grows 7,000 six-inch muskies and 50,000 six-inch walleye per year.

Jar Hatching Channel Catfish Eggs

Channel catfish eggs are laid in a spongy sticky mass that may weigh up to three pounds. Incubation was normally done in small troughs with paddles to fan the eggs and increase water circulation. This process, although the natural method, time tested, and effective in hatchery production allowed fungus to grow inside the egg mass, destroying eggs. Much labor is required to "pick" out the diseased eggs. The problem was solved when DNR biologists, along with Iowa State University, developed a method to "separate" the catfish eggs from the sticky mass. The process made the eggs free-flowing and allowed incubation in hatchery jars. Through experimentation, sodium sulfite salt was found to work. The salt took only five minutes to separate the eggs and did not harm the catfish embryo. By using this

process, personnel at Rathbun hatchery annually incubate 1.5 million catfish eggs in jars. Percent hatch increased from 55 percent when eggs are not separated to 70 percent when eggs are separated and hatched in jars.

Gas Supersaturation and Oxygenation

Fish take in oxygen for breathing by passing water over their gills. This process is much like humans absorbing oxygen from the air in the lungs. The main difference is that air always is about 20 percent oxygen, while oxygen levels dissolved in water and available for fish to use can fluctuate greatly. Other gasses, particularly nitrogen, may also replace oxygen and become more than 100 percent saturated in water. The levels of usable oxygen in water can be affected by temperature, location of the water in a lake or stream, the source of groundwater, and the type and amount of plant life and organic material in the water.

If oxygen levels are very low fish may become sick or die, and if nitrogen oxygen levels are extremely high, gas bubbles may enter the body and cause blindness or death.

Hatchery biologists battle these problems on a daily basis. A system has recently been developed that will eliminate these problems. In these systems, called oxygen columns, water is broken into small drops and exposed to a regulated flow of oxygen. This process allows biologists to rid water of excess nitrogen gas and maintain a

▼ Preserved walleye semen, now poured on to eggs during fertilization (below), has reduced spawning time and helped to increase egg survival.

► Water in oxygen columns (below right) is passed through screens, broken into small drops, and exposed to pure oxygen.



stable level of oxygen in the eater. Oxygenation columns have been installed at Decorah, Manchester and Rathbun hatcheries and will be added to the Spirit Lake and Big Springs facilities in the near future.

Semen Preservation

At times during the spawning of trout, walleye and muskies, male fish are in short supply or the handling of male and female fish at the same time causes crowding of fish in the hatchery and the possible loss of egg fertility. To solve this problem, fish semen needed to be collected before egg taking and stored in a refrigerator or frozen. This was not a simple task, as sperm cell died a short time after collection and

improper freezing caused sperm cell death.

From 1982 to 1987, DNR biologists worked on methods for the preservation of walleye, trout and muskie semen. As a result of these efforts, special salt solutions were developed to dilute the sperm cells, keep the cells alive and allow for refrigeration or freezing. On a routine basis, walleye and trout semen can be refrigerated up to 14 days and muskie semen for five days before use, with little fertility loss. Walleye and trout semen can be frozen indefinitely and frozen trout semen has been used to hybridize different trout strains. The use of refrigerated semen had reduced the numbers of fish to be processed at the time of egg collection, improved egg

fertility and made the supply of fish semen more reliable.

These fish production problems are just a small segment of a continuing effort to improve Iowa DNR fish hatcheries. Present and future studies include increased plankton production for rearing small fingerling fish in

ponds, improved fish disease prevention and control, improved walleye production and egg fertility, efficient use of low-head oxygen systems and delayed trout egg hatching for improved production efficiency.

Alan Moore is a fisheries research biologist for the department located at the Rathbun Fish Hatchery.



◀ Walleye semen is aspirated and preserved with salts, then later used to fertilize eggs.

State Park Summer Schedule Of Events 1994

Northern Iowa Region

Backbone

July 16-17
Blue Grass Festival

Bellevue

July 23-24
Buckskinner Rendezvous

Black Hawk Lake

July 16-17
Water Carnival

Cedar Rock

June 11-12
Candlelight Walk

Fort Defiance

July 16-17
Fort Defiance Rendezvous

George Wyth

May 14
Sartori Corporate Sports Challenge

June 18

"State Park Week"
Fishing Derby sponsored by Multiple
Sclerosis Service League and the
Iowa DNR

July 24

Dog Obedience Match sponsored by
Cedar Valley Dog Training

August 7

Dog Obedience Match sponsored by
Waterloo Kennel Club

September 24

Waterfalls Duathlon sponsored by the
Iowa DNR

October 1

Memory Walk sponsored by the
National Alzheimer's Chapter

October 2

Walktoberfest sponsored by the
American Diabetes Association

Lewis & Clark

June 11-12
Lewis and Clark Festival

Mines of Spain & E.B. Lyons

June 13-18
E.B. Lyons open house
Mid-month all summer
Youth Day Camps

September 10-18

Archaeology Week

Pikes Peak

October 8-9
Volksmarch

October 8-9

Great River Road Race (GRRR)

Pleasant Creek

June 5
Pigman Triathlon

Volga River

September 24-25
Ft. Atkinson Rendezvous

Wapsipinicon

June 11
Fishing Clinic sponsored by
WalMart

July 1-4

Buckskinner's Rendezvous

July 9

"Clean up the Wapsi"
An all-of- Jones County event.

Boating on West Lake Okoboji

Ken Formanek



Fort Atkinson Preserve



Ken Formanek

Try something new --
discover Iowa's state parks
during
Free Fishing Days
June 10-12!

License requirements are
waived for Iowa residents
during these three days.

Southern Iowa Region

Big Creek

August 20
Big Creek Triathlon

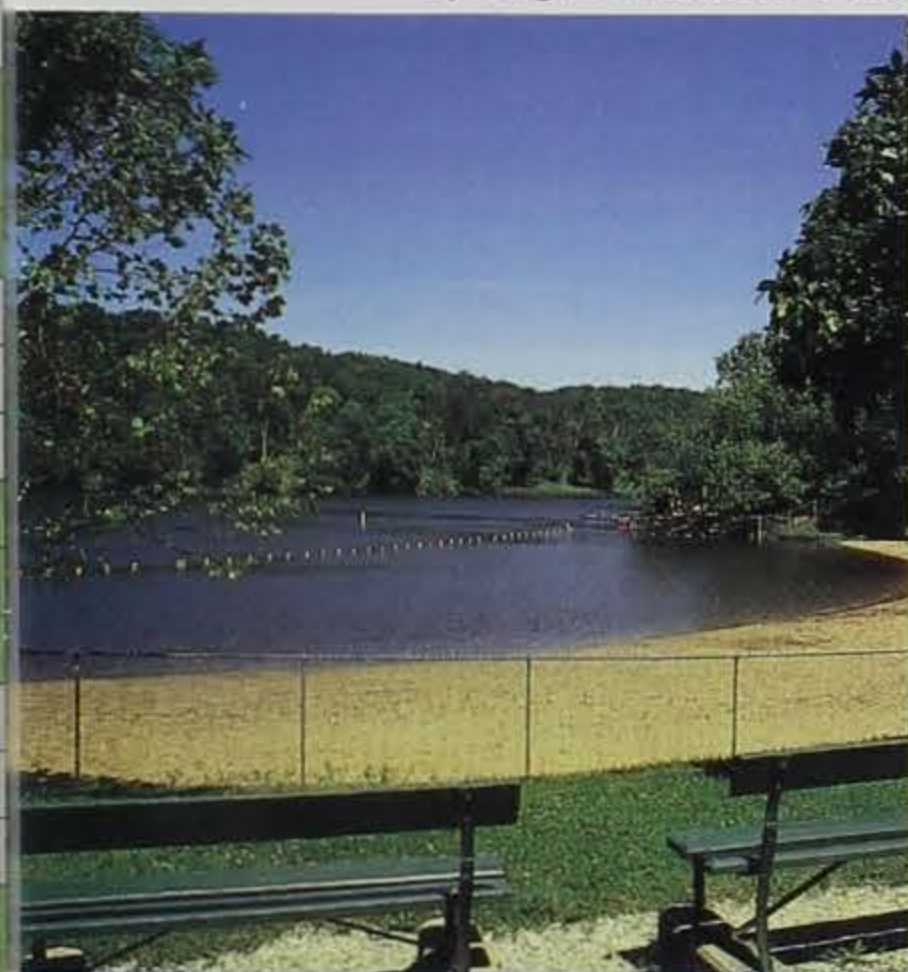
Elk Rock

June 11-12
Frontier Days

Geode

June 24
"Geode Beach Party Cruise"

Springbrook State Park



Ken Formanek

Lacey-Keosauqua

October 14-16
Forest Craft Festival

Lake Anita

August 13
Whaletown Triathlon

Lake Manawa

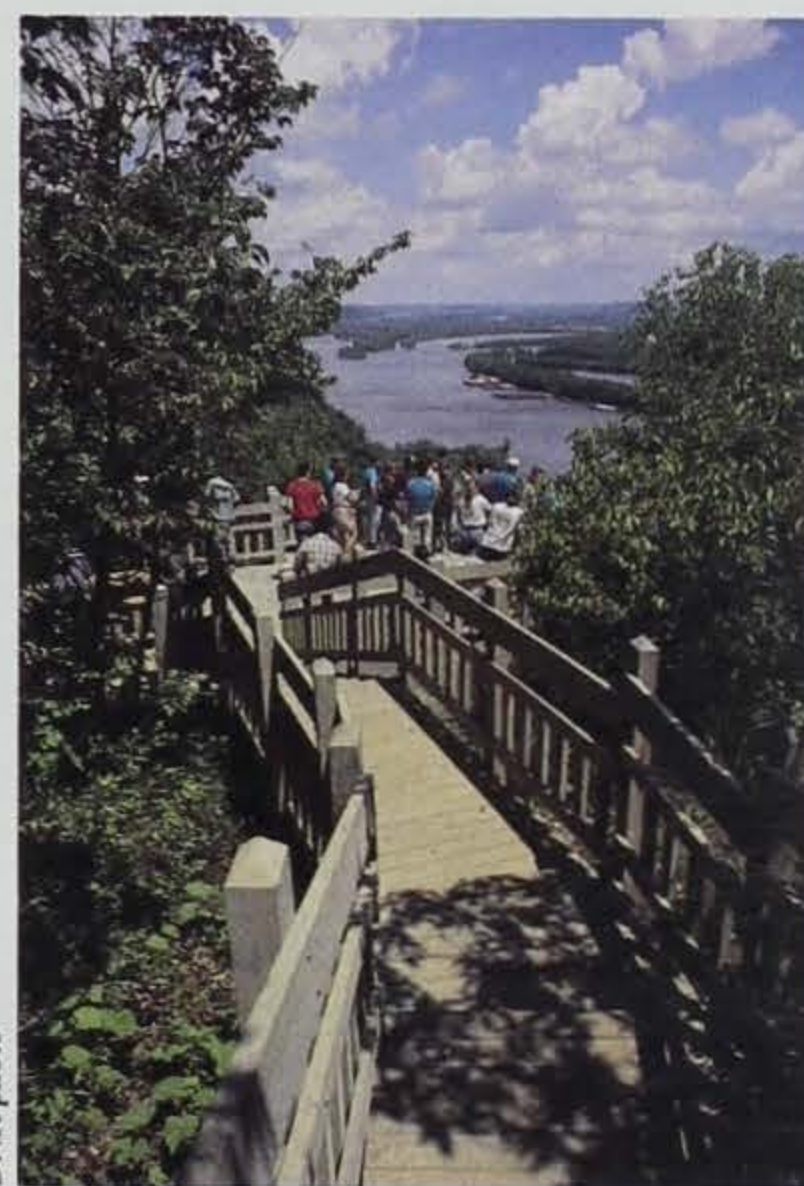
July 4
Fireworks display

Lake of Three Fires

July 4
Fireworks display

Walnut Woods

October 28-31
Haunted Forest Walk



DNR photo

Pikes Peak State Park

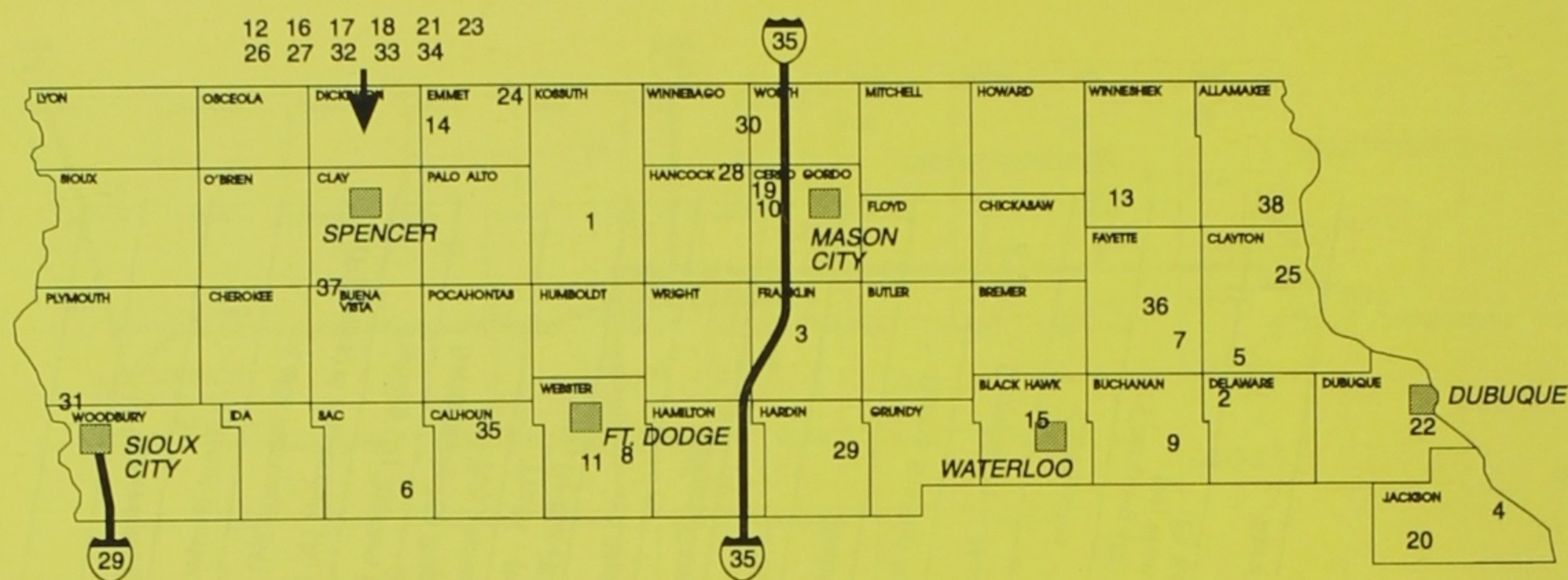
There's lots to see and do at
Iowa's state parks during
State Park Week, June 11-19.
Contact specific parks for special events.

For a free guide to Iowa's state parks and recreation areas call (515) 281-5145, or write: DNR, Wallace State Office Building, Des Moines, IA 50319-0034.

items indicate facilities
 able to the mobility impaired.
 accessible camp site may not be
 le. Contact part for details.

Telephone Location • Highway

			Area Acreage	Camping (M) Modern (N) Non-Modern (E) Equestrian	Campsites - Electric	Campsites - Nonelectric	Dump Station for Trailer	Cabin Rental	Lodge Rental	Group Camp Rental	Nature Trail	Trails - (H) Hiking (B) Bicycle	Swimming (S) Supervised (U) Unsupervised	Fishing (S) Stream (L) Lake (R) Federal Reservoir (A) Artificial	Lake Acreage (N) Natural	Boat Rental Nearby	Boat Ramp Nearby	Hunting	Snowmobiling
515-285-502	6 Mi. S.E. Van Meter	1162												L	276A				
515-984-473	2 Mi. N. Polk City-IA. 415	1536										H-Bi	U	L	905A				
515-873-370	1 Mi. W. Allerton-IA. 40	398	N	19	13							H	U	L	89A				
515-842-008	7 Mi. N. Knoxville-IA. 14	2218	M-E	32	60							H-B		L	10600R				
319-263-197	5 Mi. E. Muscatine-IA. 22	17	(M)	43										S					
319-392-601	4 Mi. S.W. Danville-CO. Rd.	1641	(M)	96	89							H	S	L	200A				
515-782-131	2½ Mi. N.W. Creston-IA. 186	1000	M	81	58							H	U	L	428A				
515-724-739	9½ Mi. W. 3½ Mi. S.E. Moravia- Hwy. 142	828	(M)	94	59							H	U	L	11000R				
319-293-502	Adjoins Keosauqua-IA. 1	1653	M	45	68							H	S	L-S	22A				
515-961-101	5½ Mi. S.W. Indianola-IA. 349	770	(M)	85	76							Bi-H	S	L	114A				
712-762-564	5 Mi. S. Anita Interchange-I-80	942	(M)	75	75								U	L	182A				
319-694-323	3 Mi. W. Brighton-IA. 78 & 1	1387	M	81	37							H	U	L	299A				
515-673-975	5 Mi. E. Oskaloosa-IA. 371	366	M	52	36							H	U	L	84A				
319-644-200	4 Mi. W. Solon-IA. 382	2180	N-M	40	82							H	S	L	812A				
712-366-220	1 Mi. S. IA. 92-Council Bluffs	1529	(M)	35	33							Bi	S	L	660N				
712-523-700	3 Mi. N.E. Bedford-IA. 49	694	(M)	30	82							B-H	U	L	85A				
515-722-371	6 Mi. W. Drakesville-IA. 273	1168	(M)	44	40							H	U	L	289				
515-432-852	6 Mi. S. Boone-IA. 164	1200	(M)	40	42							H		S					
712-423-829	3 Mi. W. Onawa-IA. 175	176	M	81								H	U	L	250N				
515-442-855	6 Mi. S.E. Davis City-Co. Rd.	1119	M	46	54							B-H	U	L	67A				
319-895-039	3½ Mi. W. Mt. Vernon-U.S. 30	603	(M)	45	31							H		S					
319-436-716	4 Mi. N. ½ Mi. W. Palo	1927	(M-E)	41	28							H	S	L	410A				
712-773-701	6 Mi. E. S. Harlan	661	M	61								H	U	L	204A				
712-423-829	5 Mi. S.W. Moorhead-IA. 183	344	N									H							
515-774-632	1 Mi. E. Chariton-U.S. 34	420	(M)	60	20							H	U	L	72A				
515-236-722	6 Mi. N.E. Kellogg-Co. Rd.	1697	(M)	44	200							H	U	L	602A				
319-878-811	1 Mi. E. Farmington-IA. 2		N-E		38							B-H		L	20A				
515-747-591	8 Mi. N.E. Guthrie Center- IA. 25-384	786	M	55	145							H	U	L	16A				
515-774-632	W. Lucas, E. Chariton-U.S. 65-34		N-E		80							B-H		L	10A				
515-473-556	4 Mi. S.W. Gladbrook-Co. Rd.	172	N	15	17							H	U	L	110A				
712-829-235	4 Mi. S.E. Stanton-Co. Rd.	1000	(M)	88	42							H	S	L	137A				
515-285-502	4 Mi. S.W. Des Moines-IA. 5	300	N	8	20							B-H		S					
319-462-761	Adjoins Anamosa-E 34	390	M	15	15							H		S					
712-382-786	7 Mi. S.W. Sidney-IA. 239-2	1247	M-E	22	73							B-H							
319-263-337	10 Mi. E. Muscatine-IA. 22	417	N		28							H		S					
712-642-069	5 Mi. W. Loveland-IA. 362	577	N-M	65	73							H		S					



LOCATIONS AND FACILITIES OF NORTHERN IOWA PARKS

CAMPING:

Iowa's state parks, recreation areas and forests offer 58 campgrounds with 5,700 campsites. Modern facilities (showers and flush toilets) are available at 42 campgrounds and electrical hookups at 47. Camping is permitted only at designated campsites, which are available on a first-come, first-served basis. NO RESERVATIONS ARE ACCEPTED. Campers are required to register themselves. Campsites marked with the wheelchair sign are reserved for use by persons displaying a handicapped parking permit on their vehicle.

STATE FOREST CAMPING:

Campground facilities are available at Yellow River, Stephens and Shimek State Forests. In the state forest campgrounds, the basic state park camping regulations and fees apply.

PICNICKING:

Open shelters, tables, water and grills or fire rings are available in most parks. Facilities are available on a first-come, first-served basis. Open shelters may be reserved through the park ranger. Open picnic sites marked with the wheelchair sign are reserved for persons displaying a handicapped parking permit on their vehicle.

STATE RECREATION AREAS:

The following areas are open 24 hours: Volga River, Pleasant Creek, Brushy Creek and Badger Creek. Hunting is permitted on designated portions of these areas.

PLEASE CARRY OUT YOUR TRASH:

Visitors to Iowa's state parks and recreation areas must carry out their trash from most day use areas. Receptacles are available at campgrounds, lodges, cabins and supervised beach areas.

ACCESSIBILITY FOR PERSONS WITH DISABILITIES:

A primary DNR goal is the provision of outdoor recreation opportunities for all visitors, including persons with disabilities. Facilities accessible to the mobility impaired may be found in many areas. Efforts are underway to provide additional access opportunities in the future. Interested persons should visit the site and/or contact the park's staff prior to scheduling outings to determine if facilities are adequate to meet an individual's or groups' accessibility needs.

No. Name

1	Ambrose A. Call	515-581-
2	Backbone	319-924-
3	Beeds Lake	515-456-
4	Bellevue	319-872-
5	Bixby	319-924-
6	Black Hawk	712-657-
7	Brush Creek Canyon	319-425-
8	Brushy Creek Rec. Area	515-359-
9	Cedar Rock	319-934-
10	Clear Lake	515-357-
11	Dolliver Memorial	515-359-
12	Emerson Bay-Lighthouse	712-337-
13	Fort Atkinson	319-425-
14	Fort Defiance	712-337-
15	Geo. Wyth Memorial	319-232-
16	Gull Point	712-337-
17	Isthmus Access	712-337-
18	Lower Gar Access	712-337-
19	McIntosh Woods	515-829-
20	Maquoketa Caves	319-652-
21	Marble Beach	712-337-
22	Mines of Spain E.B. Lyons Nature Center	319-556-
23	Mini-Wakan	712-337-
24	Okamanpedan	712-362-
25	Pikes Peak	319-873-
26	Pikes Point	712-337-
27	Pillsbury Point	712-337-
28	Pilot Knob	515-581-
29	Pine Lake	515-858-
30	Rice Lake	515-581-
31	Stone	712-255-
32	Templar Park Rec. Area	319-337-
33	Trappers Bay	712-337-
34	Triboji Beach	712-337-
35	Twin Lakes	712-657-
36	Volga River Rec. Area	319-425-
37	Wanata	712-337-
38	Yellow River Forest Camping	319-586-

Circled items indicate facilities accessible to the mobility impaired.

Fully accessible camp site may not be available. Contact park for details.

Telephone	Location • Highway	Area Acreage	(E) Equestrian (N) Non-Modern Camping (M) Modern	Campsites - Electric	Campsites - Nonelectric	Dump Station for Trailer	Cabin Rental	Lodge Rental	Group Camp Rental	Nature Trail	Trails (H) Hiking (B) Bicycle (U) Unsupervised	Fishing (S) Stream (L) Lake	(R) Federal Reservoir (A) Artificial	Lake Acreage (N) Natural	Boat Rental Nearby	Boat Ramp Nearby	Hunting	Snowmobiling
15-581-4835	1½ Mi. S.W. Algona	130	(N)	13	3			•		•	H							
19-924-2527	4 Mi. S.W. Strawberry Point IA. 410	1780	N-M	23	150	•	•			•	H	S	L-S	85A	•	•		•
15-456-2047	3 Mi. N.W. Hampton-Co. Rd.	319	(M)	70	74	•				•	H	U	L	99A	•	•		•
19-872-4019	2½ Mi. S. Bellevue-U.S. 52	547	M	23	29	•		•		•	H		S		•	•		•
19-924-2527	5 Mi. N. Edgewood	184	Rugged woodland with stream, ice cave and trails															
12-657-8712	Lake View-IA. 175 & 71	86	(M)	68	108	•				•	H	U	L	925N	•	•		•
19-425-4161	2 Mi. N. Arlington	217	Forested steep wooded terrain with diversity of habitats, flora and fauna.															
15-359-2501	4 Mi. S. Duncombe, Co. Rd. P-73	6500	N-E	10	115						H-B		S				•	•
19-934-3572	3 Mi. N.W. Quasqueton	400	Residence designed by Frank Lloyd Wright. Open May through October, 11 a.m. to 5 p.m., except Monday. Group tours on request. Visitor Center															
15-357-4212	2 Mi. S. Clear Lake-IA. 106	55	(M)	95	120	•		•			Bi	U	L	3684N	•	•		•
15-359-2539	3 Mi. N.W. Lehigh-IA. 50	600	M	28	13	•	•	•	•		H		S			•		
12-337-3211	2½ Mi. N. Milford-IA. 86	12	(M)	60	57	•						U	L	3847N	•	•	•	•
19-425-4161	Adjoins Ft. Atkinson-IA. 24	5	Reconstructed fort built in 1840. Museum open seasonally.															
12-337-3211	1 Mi. W. Estherville-IA. 9	181	N	8	24			•			H-B							•
19-232-5505	Adjoining Cedar Falls-U.S. 57	494	(M)	43	21	•		•		•	H-Bi	S	L-S	200A	•	•		•
12-337-3211	3½ Mi. N. Milford-IA. 86	165	(M)	60	52	•		•		•	H	U	L	3847N	•	•		•
12-337-3211	N. Shore E. Okoboji Lake	7										U	L	1835N	•	•		•
12-337-3211	½ Mi. S.E. Arnolds Park-U.S. 71	7											L	273N		•		•
15-829-3847	¾ Mi. E. Ventura-U.S. 18	62	(M)	45	4	•				•	H	U	L	3684N	•	•		•
19-652-5833	7 Mi. N.W. Maquoketa-IA. 428	272	(M)	18	10	•				•	H							
12-337-3211	2 Mi. N.W. Orleans-IA. 276	64	(M)	103	121	•						U	L	4169N	•	•	•	•
19-556-0620	S. Edge of Dubuque from U.S. 52	1380	Undeveloped area rich in natural and historic significance. Nature center • H •															
12-337-3211	N. Shore Spirit Lake	20										U	L	4169N		•		•
12-362-2078	3 Mi. N.E. Dolliver-Co. Rd.	19										U	L	981N		•		
19-873-2341	3 Mi. S.E. McGregor-IA. 340	970	(M)	60	20	•					(H)							
12-337-3211	2½ Mi. S.W. Spirit Lake-IA. 9	15										U	L	3847N				•
12-337-3211	Arnolds Park-U.S. 71	6									H	U	L	3847N	•			
15-581-4835	4 Mi. E. Forest City-IA. 9	700	M	48	12	•				•	B-H		L	15A				•
15-858-5832	½ Mi. N.E. Eldora Co. Rd. 556	572	(M)	76	52	•	•	•		•	H	U	L	69-50A	•	•		•
15-581-4835	2½ Mi. S.E. Lake Mills-Co. Rd.	47									H	U	L	612N		•		
12-255-4698	8 Mi. N.W. Sioux City-IA. 12	1069	M	13	33			•		•	B-H		L-S	12A				•
19-337-3211	3 Mi. N.W. Spirit Lake-IA. 276	10										U	L	4169N		•		
12-337-3211	Adjoins Lake Park-IA 219	57									H	U	L	1041N		•		
12-337-3211	N.W. Shore W. Okoboji Lake	5										U	L	3847N				
12-657-8712	7½ Mi. N. Rockwell City-IA. 4-124	15										U	L	569N		•		
19-425-4161	4 Mi. N. Fayette-IA 150	5422	(N) E		42					•	B-H		L-S	135A		•	•	•
12-337-3211	½ Mi. S. Peterson-IA 10	160									H		S					
19-586-2548	14 Mi. S.E. Waukon-IA. 76		N E		176						B-H		S		•	•	•	•

Homegrown Energy for Iowa

by Patricia S. Cale



ISU Extension

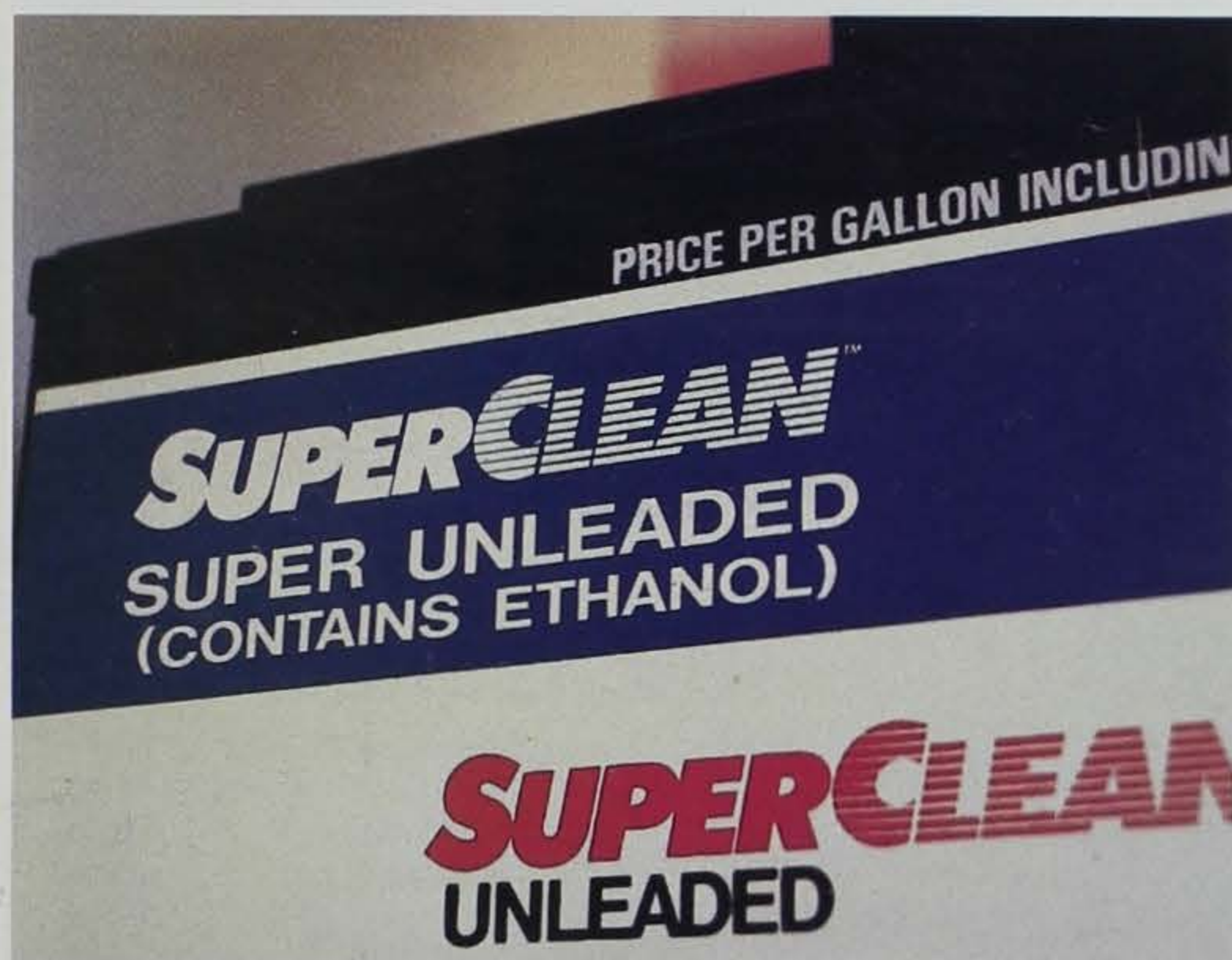
▲ Switchgrass is a native perennial prairie grass that holds potential as a renewable energy resource.

Energy powers Iowa's economy, but the energy we use and the ways we use it also deplete our economic strength. Iowans spend almost \$5 billion each year to import and consume coal, oil, natural gas and nuclear power. That money, for the most part, doesn't create jobs and wealth for Iowa, but for the states and nations supplying the fuels. Iowa's dependence on imported fuels makes us vulnerable to tightening supplies and increasing prices, posing a threat to future economic growth.

Energy affects Iowa's environment, and the energy we use and the ways we use it create costs to our health, and to

the health of natural and economic systems. Many of our environmental concerns are linked to energy production, transport, storage and use, from leaking underground storage tanks to power plant emissions to nuclear waste disposal. Using coal, oil and nuclear power pollutes the air we breathe, the water we drink and the land we farm and live on.

Iowa must address its energy dependence through two strategies. First, using energy more efficiently can reduce our economic, environmental and security costs. But a second strategy will take the state a step further. That strategy is to increase the use of renewable, "home-



grown" energy resources, particularly wind, biomass and ethanol.

Renewable energy not only is cleaner, thus reducing and avoiding environmental and health costs, but it can mean the creation of new industries, products and exports for Iowa. Renewable energy also provides long-term energy solutions by replacing dwindling supplies of fossil fuels.

Best of all, Iowa possesses great potential for the production of renewable energy resources. It is the 11th windiest state, with some of the most highly rated wind areas in the nation. Our agricultural production can yield biomass fuels as well as ethanol from corn and other feedstocks.

One of the most promising energy resources for Iowa's future is wind energy, an ultra-clean renewable resource. Although our current image of row upon row of wind turbines portrays California wind farms, the Midwest, including parts of Iowa, actually possesses a far greater wind resource. In fact, the region has been called "the Saudi Arabia of wind energy."

Iowa also has recently instituted laws that created a more favorable climate for wind power generation. First, resolving a long-standing controversy, the Iowa Utilities Board adopted rules in

1992 which set the guidelines for purchase by utilities of electricity generated by alternative power producers. The alternative energy production rules create opportunities for both small and large scale producers. Second, the development of wind energy was boosted by the passage of House File 664 in 1993, exempting wind generation equipment from the state sales tax and allowing local governments to reduce property taxes on wind energy conversion property.

Wind energy is the classic "overnight sensation" that has been around for years. Many factors are now combining to make wind the hottest thing going—better wind turbines, lower costs, concern over the environment and more conducive regulations. In Iowa, many organizations and individuals are getting involved with wind, from school districts and utilities to private developers and farmers.

To better determine the economic viability of wind power, wind developers require detailed annual hourly wind speed data. In Iowa, existing wind speed records are inadequate. Researchers from state universities and

◀ Ethanol is widely available in 10 percent blends, and now fleets are using higher blends of the renewable fuel -- up to 85 percent. The next step is to create a refueling infrastructure.

▼ PrISUm II, developed by Iowa State University students, demonstrated the future of solar-powered transportation in Sunrayce '93. The race, featuring solar vehicles from colleges and universities, was run through Iowa in June 1993.



DNR Photo

P.S. Gale

Renewable: *capable of being replaced by natural ecological cycles or sound management practices.*

▼
Hydroelectric power is produced at eight dams around the state. The hydro plant operated by Waverly Light and Power produces enough electricity to power the street lights in the city of Waverly.



P.S. Cale

private developers are now trying to remedy that by gathering data from some of the potential wind sites around the state.

Wind turbines have already been constructed in several locations in the state. Two school districts, Spirit Lake and Nevada, are now supplying part of their electric needs with wind power. Iowa's first wind farm, with five wind machines, is located at Allendorf. These projects also provide electricity to be sold to utility companies. And, Waverly Light and Power is pioneering the use of wind power in the resource mix of municipal utilities.

Ethanol is a proven transportation fuel that provides economic benefits to Iowa and environmental benefits to the nation. Ethanol answers several needs. First, it is a renewable fuel, the use of which lessens dependence on imported fossil fuels. Second, it is produced from Iowa crops, in Iowa. Iowa is the largest corn producer and the second largest

producer of ethanol after Illinois. And finally, ethanol is a cleaner-burning fuel, which has been recognized by its inclusion in strategies to clean up the air in the nation's smoggiest cities.

Ethanol has been available in a 10 percent blend with gasoline throughout Iowa for more than 15 years. Currently about 40 percent of the gasoline sold in Iowa contains 10 percent ethanol (E-10).

Renewable energy offers great promise to Iowa and the Midwest. Until now, though, renewable energy has had difficulty competing against low-priced, often subsidized fossil fuels.

State and local governments are mandated to use E-10. Ethanol's acceptance by Iowa motorists has grown as manufacturers have warranted and even encouraged its use.

Now efforts are underway to expand the use of higher ethanol blends, such as E-85 (85 percent ethanol, 15 percent gasoline). E-85 cars (and two police motorcycles!) are operating out of Des Moines, Sioux City, Ames, Iowa City and Cedar Falls. In addition, researchers are seeking other feedstocks for ethanol production, moving from corn to perennial grasses, for example. There also is interest in the on-farm production and use of ethanol.

Biomass is organic matter that can be converted to energy, such as agricultural crops and residues, wood and wood wastes, animal wastes and solid wastes. Biomass can be made use of in solid, liquid or gaseous forms. It can be used to generate electricity or can be converted into fuels to power cars and trucks.

Iowa has compelling reasons to pursue the development of biomass energy. Electric utilities and industries trying to comply with environmental regulations will find biomass the cleanest burning fuel available, producing minimal emissions of sulfur dioxide and nitrogen oxides. Using biomass also recycles, rather than adds to, the carbon dioxide in the atmosphere.

Biomass fuels could create new opportunities for farmers, providing them with new markets for their corn and soybean crops as well as developing markets for other energy crops such as fast-growing trees or perennial grasses. Biomass conversion could spur the need for facilities and infrastructure, stimulating local economic development and job creation.

The Union of Concerned Scientists estimated that as technology advances, Iowa would be able to generate 12,800 Megawatts of electricity per year, cost-effectively (at six cents per kilowatt hour), from the use of wood wastes, crop residues, municipal solid waste, switchgrass and hybrid poplars. Iowa's current electricity production from coal and natural gas-fired and nuclear power plants is 8,800 Megawatts.

The Iowa Biomass Energy Plan,



◀ The blades of five wind turbines, on Iowa's first wind farm, spin on land outside Allendorf, Iowa. Technological and regulatory improvements have made utility-scale wind generation possible in Iowa.

▼ A loan from the Iowa Energy Bank Program helped finance the wind turbine now powering the Spirit Lake elementary school. Energy savings will pay back the loan.

Ed Woolsey



P.S. Cale

prepared by the Department of Natural Resources, explores the potential for seven biomass energy resources: ethanol, dedicated energy crops, wood waste, methane, biodiesel, municipal solid waste and row crop residue. For each energy type, the plan provides an overview of its current usage, examines its potential and outlines goals, recommendations and projects.

The overall goal of the plan is to create a path to making Iowa a national leader in biomass energy production and use. The plan, which will be updated every two years, is a blueprint for Iowa's sustainable energy future.

The Department of Natural Resources received a grant through the U.S. Department of Energy for a demonstration of soydiesel, a fuel derived from soybean oil. The DNR has contracted with the Washington and WACO Community School Districts to use soydiesel in school buses during the next five years. The WACO district will run four buses on 20 percent soydiesel and 80 percent diesel, with the Washington buses serving

as controls.

Soydiesel is a renewable fuel produced from soybeans -- an Iowa crop. It is biodegradable, reducing the toxic effects of storage and transport, and its use produces less pollution than regular diesel fuel.

Recent U.S. Department of Energy-sponsored research conducted in Iowa has determined that switchgrass is a leading candidate for biomass energy production in the Midwest. Switchgrass is a native perennial prairie grass. A consortium of Iowa agencies is currently working in the Chariton Valley area, establishing new stands of switchgrass and optimizing best management practices for establishment, production, maintenance and storage and handling effects. More than 100 acres are under study.

Renewable energy offers great promise to Iowa and the Midwest. Until now, though, renewable energy has had difficulty competing against low-priced, often subsidized fossil fuels. However, it's often less costly

overall to use renewable resources when all the costs of using fossil fuels or nuclear power are included -- the costs of pollution prevention, environmental cleanup, waste disposal, health care and national defense.

To achieve the promise of clean, "homegrown," renewable energy will require a commitment to "leveling the economic playing field," as well as to further research, and technological and commercial development. The Department of Natural Resources is committed to helping Iowans explore, assess and develop renewable energy projects. Iowa organizations are dedicated to implementing renewable energy technologies -- both large and small scale -- through education and building the needed infrastructure. The promise of a truly sustainable energy future for Iowa is worth all of our efforts today.

Patricia S. Cale is an energy information specialist for the department in Des Moines.

The Ten-Year Great Iowa Morel Hunt



Article by George Knaphus, Lois Tiffany and Don Huffman
Photos by George Knaphus

When we suggested in 1983 that the recently organized Prairie States Mushroom Club study the distribution of morels and false morels in Iowa, we had no idea that this fascinating project would dominate our springs for the next ten years. Through these years, the Iowa State University Extension Service helped us by releasing information about the project each year and county extension workers sent collections to us. The newspapers, radio and television services of the state (including the *Iowa Conservationist*) relayed information, and people responded to our request for specimens of all kinds of morels and false morels, plus information about where they were found. We did not ask precisely (geographically) where -- no morel hunter would divulge that

information and one would not be foolish enough to ask -- but rather we asked what kind of area, the plants and trees in the vicinity and what county. The study has been informative far beyond our original hopes, and the people of Iowa have made it so. The magazine *Mushroom* published a story on the survey in 1991, noting especially the great response and breadth of the survey.

What have we learned about Iowa morels and false morels in these ten years? In Iowa, we have two species of false morels of the genus *Verpa*, two species of false morels of the genus *Gyromitra*, and, depending on how one interprets species, three to five species of true morels of the genus *Morchella*. We report our data as five species of

Morchella, recognizing that some people would interpret them differently.

We have received 941 collections, each with one or more specimens. These have been identified. Information on size, color and microscopic features have been recorded along with the field data. The specimens have been dried for permanent storage in the Ada Hayden Herbarium, at Iowa State University's Botany Department. Most have also been photographed. Contrary to rumor, we did not eat them. The collections that arrived in plastic bags after spending three days in warm mail bags were a real challenge to our scientific promise to examine all available materials. An estimated total of 2,000 individual fungi were examined and information recorded.

Dates of First and Last Collection for Each Species

	<i>M. deliciosa</i>	<i>M. esculenta</i>	<i>M. crassipes</i>	<i>M. semilibera</i>	<i>M. angusticeps</i>	<i>V. conica</i>	<i>V. bohemica</i>	<i>G. brunnea</i>	<i>G. caroliniana</i>
Earliest Date 1984-1993	April 6	April 14	April 30	April 18	April 19	April 17	April 1	April 1	April 11
Latest Date 1984-1993	May 26	June 10	May 27	May 26	May 14	May 17	May 4	May 27	May 17
Average First Day Found	April 22	April 25	May 8	May 6	May 2	May 1	April 22	April 21	April 22
Average Last Day Found	May 15	May 22	May 20	May 14	May 3	May 4	April 28	May 13	May 5

The accompanying maps with photographs of the species show by county where each species has been documented in Iowa. It comes as no big surprise that the common tan morel, *Morchella esculenta*, has been collected from most Iowa counties, and probably could be found in all. The two other common morels, the gray morel *Morchella deliciosa* and the larger *Morchella crassipes* also are well distributed. The half-free morel, *Morchella semilibera* has not been recorded from northwestern Iowa. It is different enough from the other *Morchella* species that field identification is often questioned by morel hunters. The black morel, *Morchella*

angusticeps, occurs only in the southeastern area of the state.

The false morel *Verpa bohemica* occurs mainly in the northeastern corner, and the more common *Verpa conica* in southern and northeastern areas. *Gyromitra brunnea* seems to be absent from northwestern Iowa. *Gyromitra caroliniana* also does not occur there and has a more southern distribution.

Why these distributions? We can only suggest some reasons. Northwest Iowa has fewer eastern deciduous forest remnants and less rainfall. We also recognize that there may be fewer morel hunters, or that we simply have not yet received collections from those counties.

The accompanying table summarizes the collection of each species received each year. Our vintage year was 1986, with 220 collections catalogued. This is 23 percent of the total collections of the ten-year period. In contrast, only 20 collections were processed in the desert-like spring of 1988. In addition, there are also interesting fluctuations in the number of collections of individual species in different years.

Information on terrain and plants in the immediate vicinity of the collection was often lacking or quite vague. However, these less-than-perfect responses were often interesting and yielded some potential for speculation.

Annual Collections -- Morels

Species	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Total per year
<i>Morchella esculenta</i>	27	18	47	17	6	25	25	32	7	7	211
<i>Morchella deliciosa</i>	20	5	30	11	4	18	16	19	6	10	139
<i>Morchella crassipes</i>	5	6	12	2	1	4	16	4	3	2	55
<i>Morchella semilibera</i>	34	4	32	8	3	17	7	28	49	22	204
<i>Morchella angusticeps</i>	4	6	6	1	0	3	0	0	0	0	20
Total collected	90	39	127	39	14	67	64	83	65	41	629

Annual Collections -- False Morels

Species	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Total per year
<i>Verpa bohemica</i>	0	1	2	0	1	0	0	0	0	2	6
<i>Verpa conica</i>	11	0	15	1	1	1	0	4	0	4	37
Total collected	11	1	17	1	2	1	0	4	0	6	43

Species	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Total per year
<i>Gyromitra brunnea</i>	49	9	72	26	4	3	13	25	3	4	208
<i>Gyromitra caroliniana</i>	8	2	4	6	0	9	12	7	12	1	61
Total collected	57	11	76	32	4	12	25	32	15	5	269

The common *Morchella* species were found in the vicinity of a wide range of tree species, but most commonly in association with live or dead elms. They were most frequently collected on slopes in the woods, but not uncommonly on flood plains.

The sparse field information about the two species of *Verpa* and *Gyromitra caroliniana* is insufficient for comment. However, the most common false morel, *Gyromitra brunnea*, was quite consistently associated with oaks -- live oak trees, dead oaks, oak logs or oak stumps. Most collections of that species were made on wooded slopes.

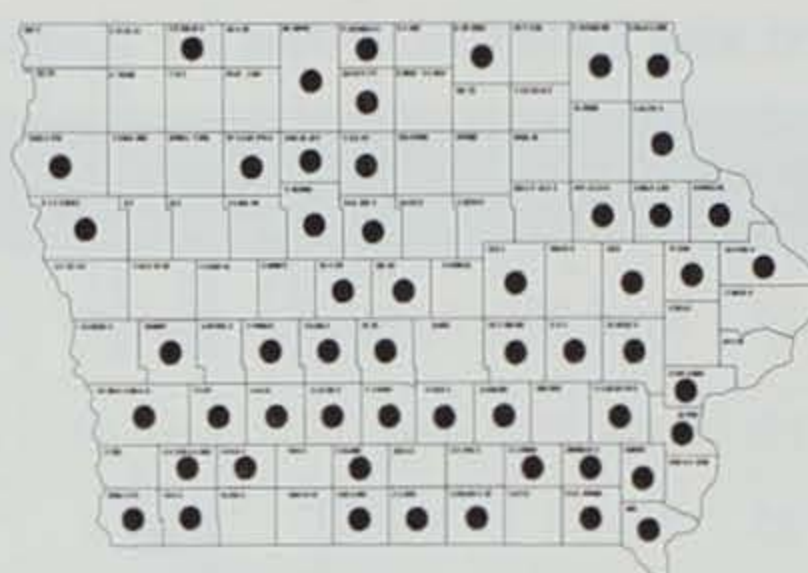
A broad range of plants was reported in the vicinity of all the morels and false morels. While elms were often associated with the common morels and oaks with *Gyromitra brunnea*, there were 36 other plant species reported in the vicinity of these fungi. We can only repeat what experienced morel hunters already know -- you may look for plant associations, but morels are where you find them. There were even several *Morchella esculenta* collections from state prairie preserves, a most unlikely habitat for morels.

We recorded dates of collections for most specimens or date of receipt if date of collection was not included.

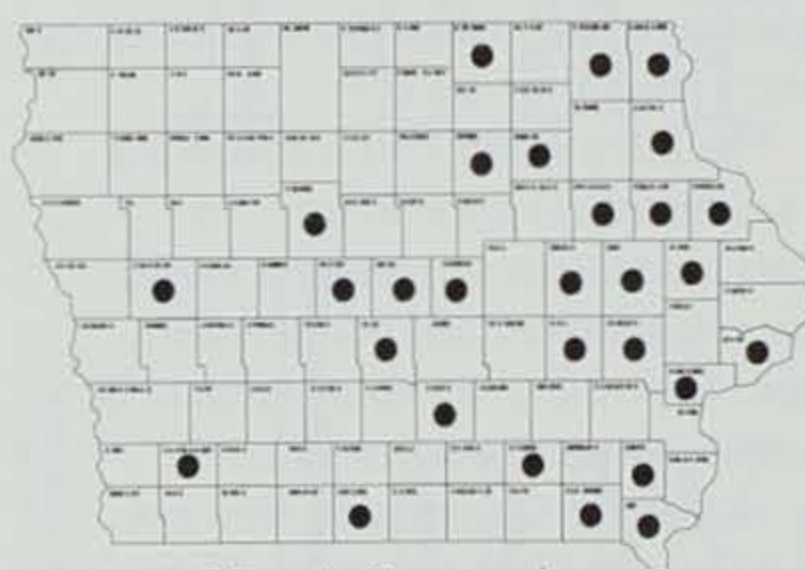
The earliest first collections date and latest last collection date for each species over the ten-year period are in a table on the previous page. This documents the time frame for finding morels and false morels in Iowa, indicating a four-to six-week season that fluctuates from year to year.

We did receive some unusual specimens. One *Gyromitra caroliniana* specimen submitted on April 27, 1991, weighed 4 pounds, 14 ounces and another decomposed specimen submitted on April 27, 1992, was reported by the collector to weigh six pounds. The largest true morel we have seen was a *Morchella crassipes* that was 12-3/8 inches tall. It was spectacular, and was accompanied by several others in the ten-inch tall range.

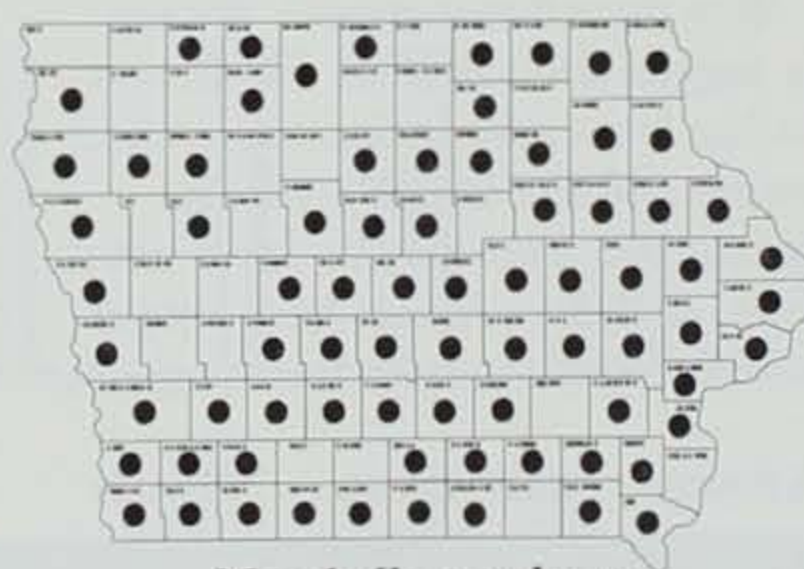
While we did not specifically study edibility or toxicity (remember we didn't eat any) it is appropriate to



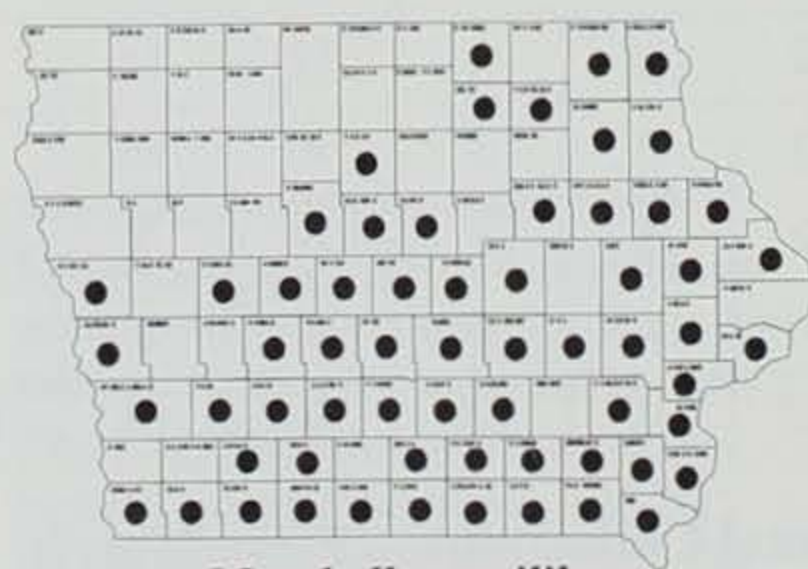
Morchella deliciosa
1984-1993



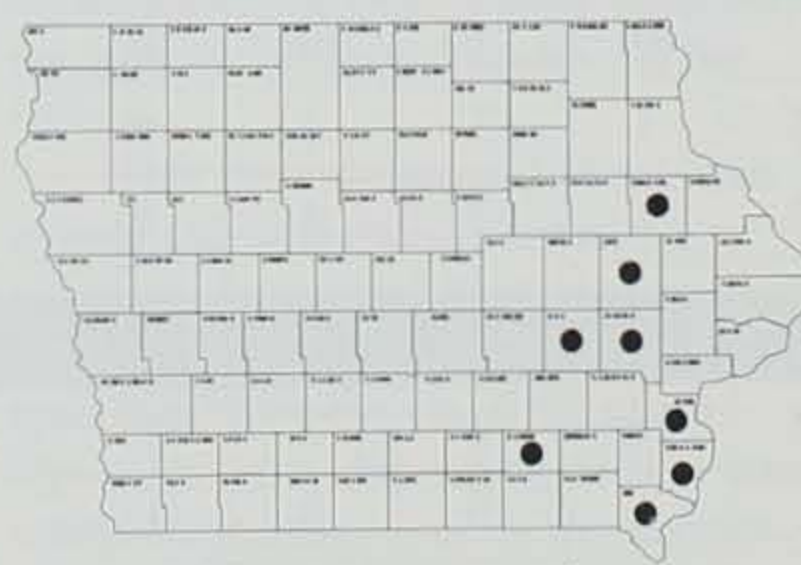
Morchella crassipes
1984-1993



Morchella esculenta
1984-1993



Morchella semilibera
1984-1993



Morchella angusticeps
1984-1993



caution morel aficionados to exercise good judgment. The rules of long life for mushroom hunters include:

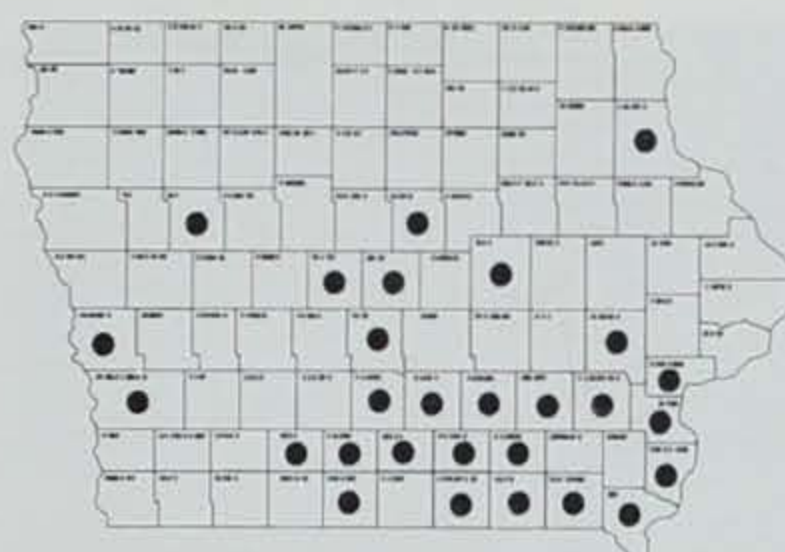
1. Be sure that *each* specimen you eat is identified correctly.
2. Don't eat too much.
3. Mushrooms spoil easily. Examine them carefully.
4. One of the false morels -- *Gyromitra brunnea* -- may contain gyromitrin which converts to a compound that is both a cumulative toxin and somewhat carcinogenic. Some Iowa morel hunters eat this false morel and consider it good. We **strongly** recommend that it not be eaten.

Finally, our thanks to our hundreds of co-workers in this project who collected and sent specimens, and showed so much interest. This may be a Guinness record for most participants in a science research project! Thanks again.

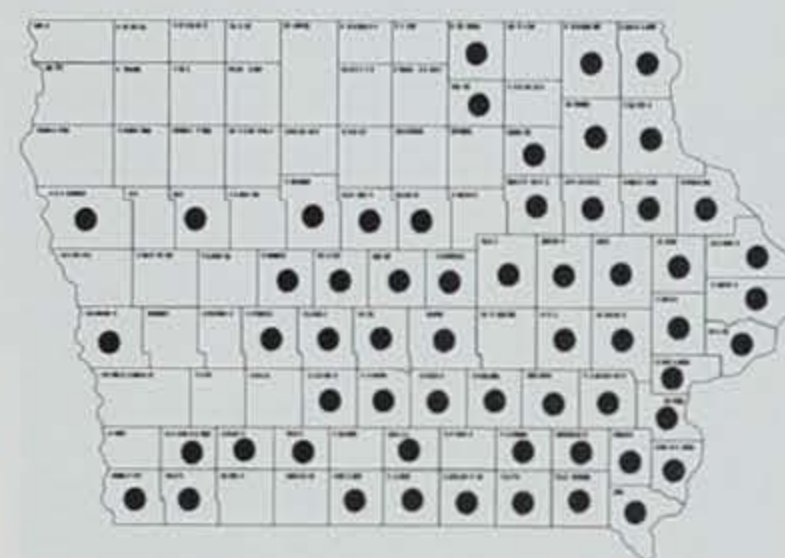
George Knaphus is a professor of botany at Iowa State University.

Lois Tiffany is the chairperson and distinguished professor of the botany department at ISU.

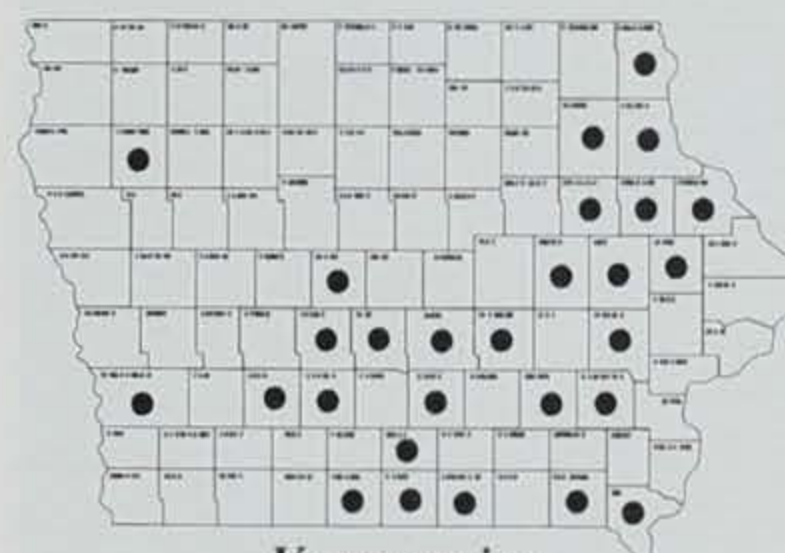
Don Huffman is a professor of biology at Central Collge in Pella.



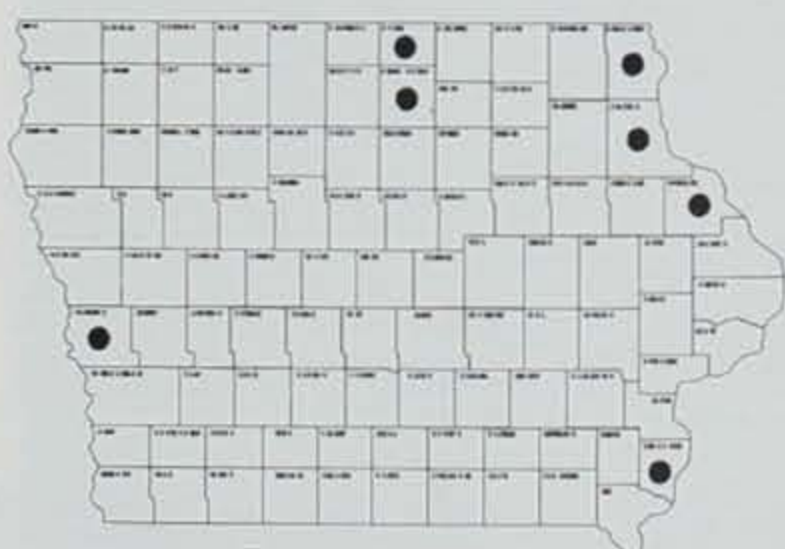
Gyromitra caroliniana
1984-1993



Gyromitra brunnea
1984-1993



Verpa conica
1984-1993



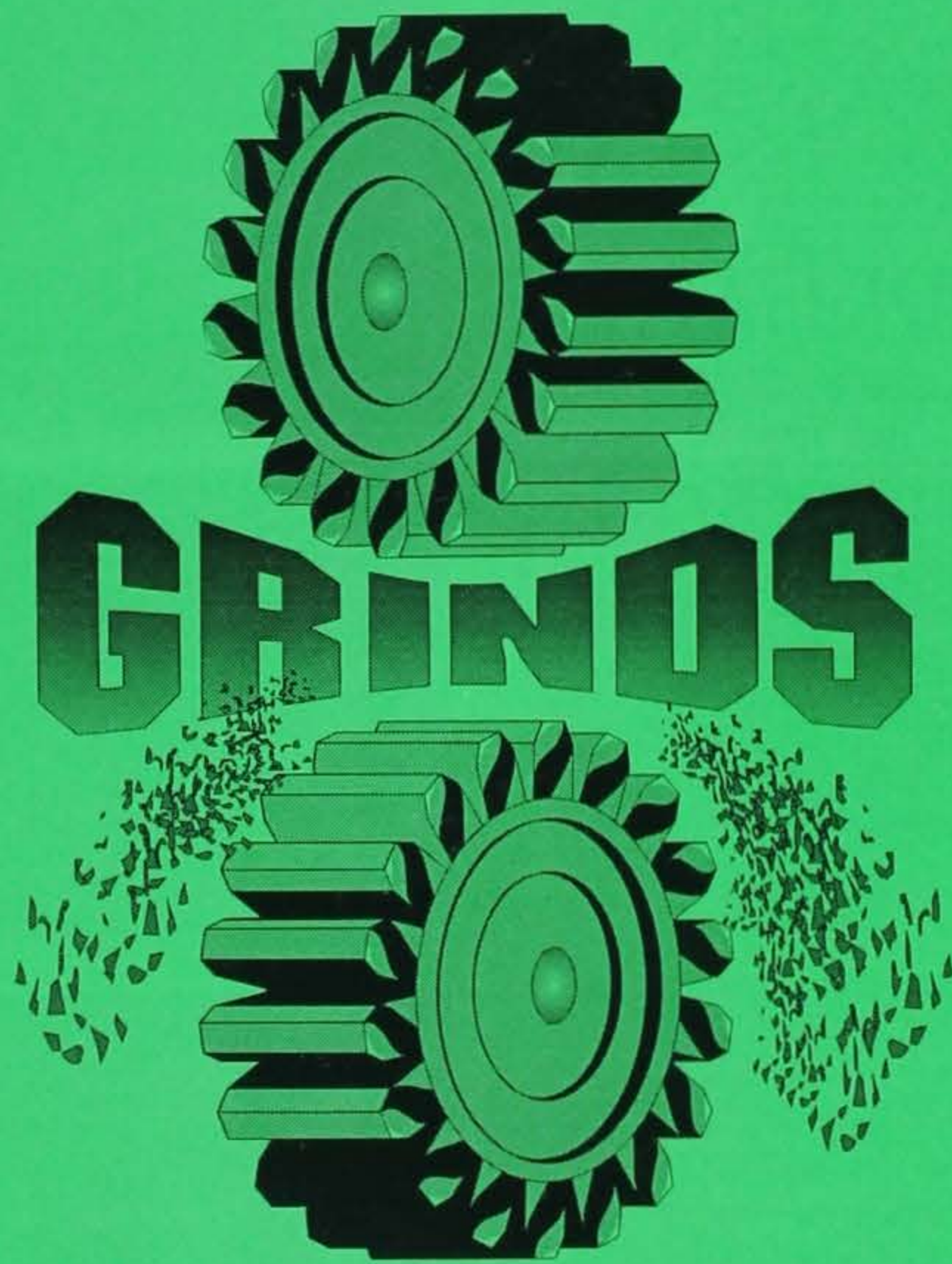
Verpa bohemica
1984-1993



The rules of long life for mushroom hunters include:

1. Be sure that *each* specimen you eat is identified correctly.
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3. Mushrooms spoil easily. Examine them carefully.
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PALLET WASTE



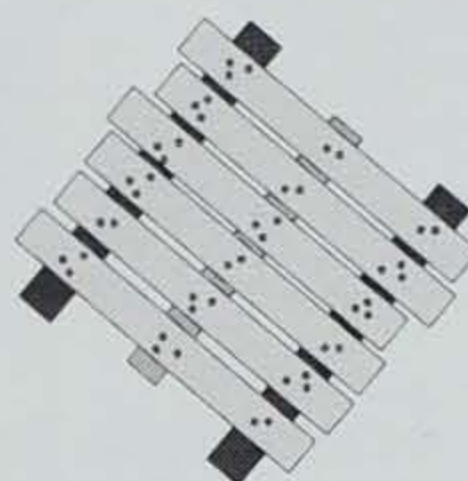
TO A HALT

by Jennifer Ryan

The adage, "everything old becomes new again," is a good way to describe the philosophy of two forward-thinking wood pallet companies in Iowa. Andrew Pallet Company, Inc. of Des Moines and Riverside Pallets of Riverside, 12 miles south of Iowa City, have both received Landfill Alternatives Grants from the DNR's Waste Management Assistance Division. The grants were used to expand their companies into wood grinding facilities, producing usable products from the wood waste generated by rebuilding pallets.

Wooden pallets are portable platforms that are used for moving, storing, and handling materials and products. Pallets are used by businesses of various sizes and types, from large manufacturing plants to your local grocery store. According to the National Wooden Pallet and Container Association in Washington D.C., there were 565 million pallets manufactured in 1992, of which 40 percent were landfilled.

The most obvious reason to recycle wood pallets and wood waste is increasing pressure on landfill space, but as both Andrew Pallet Company and Riverside Pallets have proven, it makes good economic sense as well. Over the last several years, the Midwest's landfill tipping fees have steadily increased to an average of \$27 per ton, according to a survey conducted by the National Solid Waste Management Association. Businesses that were previously land-filling damaged wooden pallets, now have a greater incentive to find an alternative. Another reason to recycle wooden pallets is the high price and relative shortage of virgin lumber in Iowa. The April 8, 1994 issue of *Pallet Profile Weekly* reports Iowa's lumber inventory is at low levels. As lumber prices become unstable or begin rising, the wooden pallet recycling services that Andrew Pallet Company and Riverside Pallets provide to area businesses gives them an alternative to purchasing new pallets.



In addition to rebuilding more than 336,000 pallets in 1993, the Andrew Pallet Company accepts scrap wood, including unusable pallets, for grinding into mulch and other useful products using machines like this.

Andrew Pallet Company has been in the business of rebuilding damaged wooden pallets since 1985. At that time, the company was restricted to accepting high-grade discarded pallets to rebuild into usable pallets. This is because 20 percent of the discarded pallets were too damaged to be reused, and therefore had to be landfilled at a cost to Andrew Pallet. In 1991, the Andrew Pallet Company received a \$100,000 Landfill Alternatives Grant from the DNR to purchase a primary wood grinder that enables the company to recycle the damaged material into usable products.

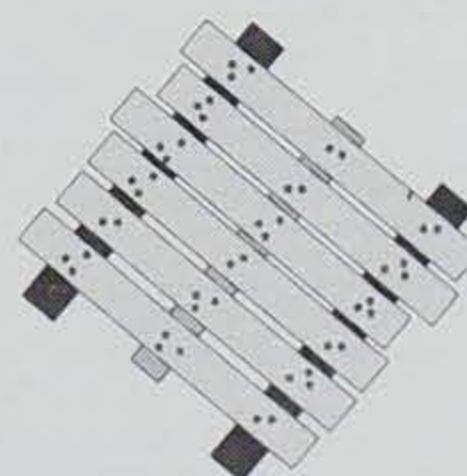
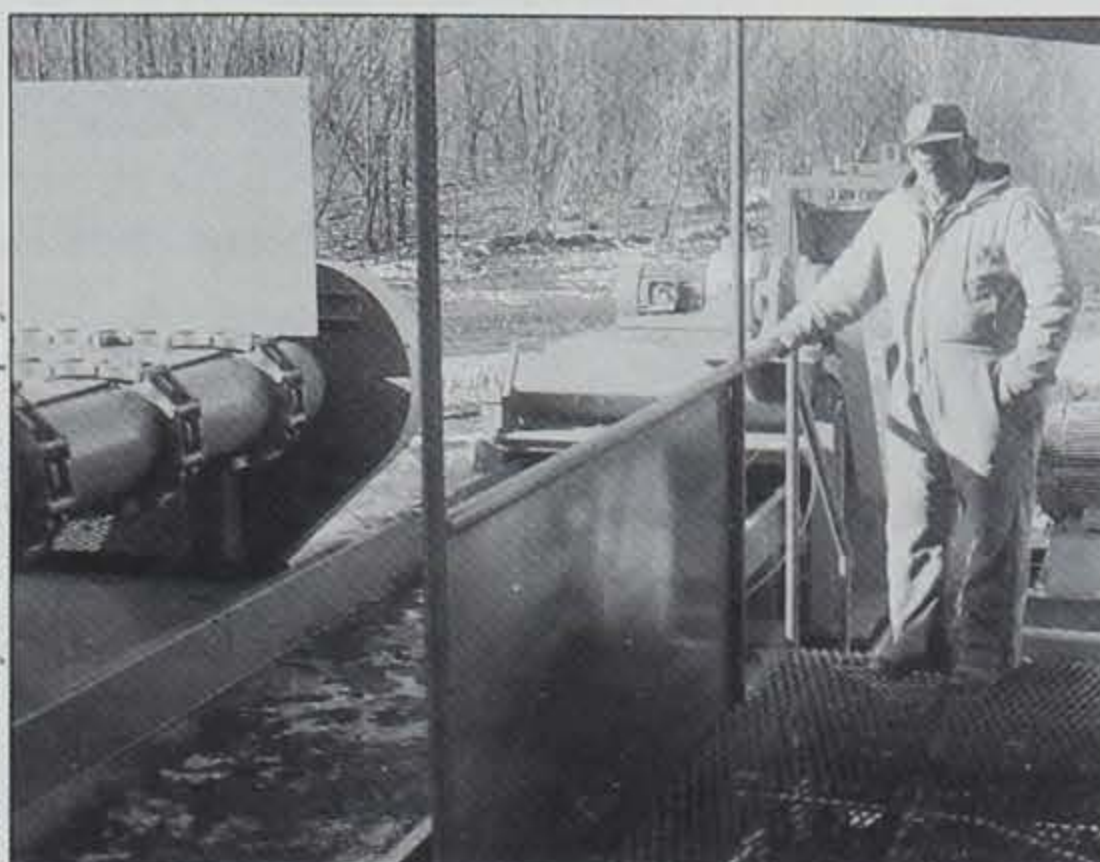
Andrew Pallet Company's wood grinding system began operating in January 1993, since then they have collected 972,000 pallets. The high- and medium-grade pallets are disassembled and used to repair high-grade pallets or to reconstruct a pallet from scratch. The company rebuilt more than 336,000 pallets in 1993. The sources of the discarded pallets are manufacturers, wholesale grocery warehouses, and meat packing plants throughout Iowa. The businesses that

supply the discarded pallets, along with other businesses and industries, buy back the rebuilt pallets for 30 percent less than the cost of a new pallet.

The Andrew Pallet Company also accepts scrap wood, mostly from wood product manufacturers. Since January 1993, they have collected more than 80 tons of scrap wood, in addition to the pallets they have collected. The scrap wood, along with the boards that are too damaged to be used in pallet reconstruction, are ground to produce a hardwood mulch and animal bedding product, or a ground softwood that is used in pressed wood products. The company produced 5,000 tons of usable mulch and animal bedding in 1993 — material that would have otherwise been landfilled.

The benefits of the wood grinding operation at Andrew Pallet Company have been both in terms of environmen-

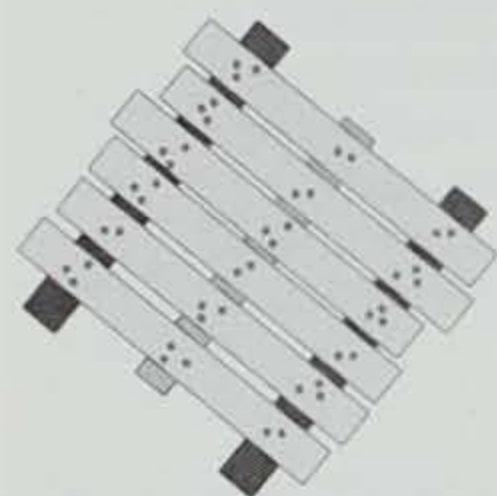
tal protection and economic gains. As a result of rebuilding pallets, the Andrew Pallet Company has significantly reduced the amount of waste they are landfilling. Before the wood grinding system was in place, they were sending a 40-cubic-yard dumpster to the landfill every week and an occasional semi-load of discarded pallets. Since the wood grinding system has been in operation, they now send a 40-cubic-yard dumpster to the landfill once a month and no semi-loads of pallets. This reduction in waste is in addition to the 972,000 pallets that were diverted from the landfill by Andrew Pallet Company. Landfill space is not the only thing being saved by using the pallet rebuilding services. Area businesses have avoided a substantial amount of landfill tipping fees as well. Andrew Pallet Company has also realized an economic



One of Andrew's large pallet grinders.



Jeff Geerts



▲ **Riverside is the only company in Iowa that grinds the cardboard cores used to roll paper. The product is a favorite animal bedding for livestock producers.**

benefit from the wood grinding system. By using wood recovered from discarded pallets to rebuild new pallets, they have decreased their production costs by 30 percent and have not purchased any new lumber for months.

Riverside Pallets was started as a small family business in 1989 by John and Pati Hahn, and since then has more than doubled in size. As a long-distance trucker, John Hahn was very familiar with the vast number of wooden pallets being discarded. John decided to invest in his belief that there was a way to recycle and reuse these pallets, and his company took off. The company is still a family business with six of their children involved in some way, but with the help of a \$150,000

Landfill Alternatives Grant from the DNR in 1992, they are able to recycle two to three times more wood pallets, wood waste and cardboard cores than before. Riverside Pallets recently expanded to a larger facility on the outskirts of town. They now serve approximately 200 companies in 21 counties, with the majority being manufacturers.

The DNR grant helped Riverside Pallets install a wood grinding system which was in operation in the fall of 1992. Riverside Pallets has collected more than

five million pounds of low- and medium-grade pallets, scrap wood and cardboard cores since the wood grinding system has been in place. The discarded pallets are collected from area manufacturers and businesses on a pick-up basis, and used to repair or rebuild new pallets. Riverside Pallets is rebuilding more than 100,000 pallets a year for resale back to the suppliers. The scrap wood and the unusable boards are ground into a hardwood mulch that is being used for landscape purposes by the Department of Transportation and by the DNR.

Riverside Pallets also collects the cardboard cores that are used to roll large quantities of paper. They are the only company in Iowa that grinds these cardboard cores. The ground cardboard produces an animal bedding product

that area farmers like. The cardboard animal bedding lasts much longer than newspaper bedding and costs half as much as straw, which is now in short supply due to the 1993 flooding. The demand for the cardboard animal bedding has been tremendous and Riverside has orders backed up for 15,000 bales.

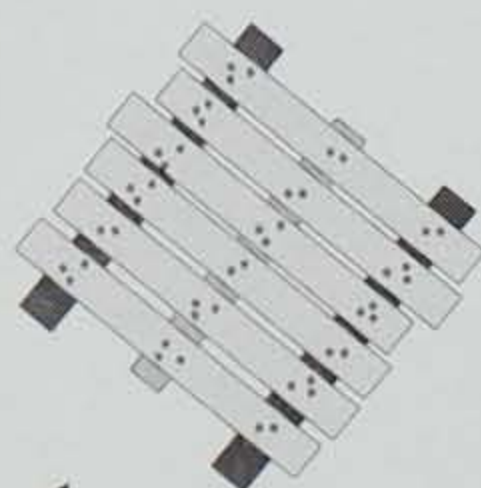
The wood grinding system at Riverside Pallets provides much the same benefits as the one at Andrew Pallet Company. Riverside Pallets has diverted five million pounds of material from area landfills and converted virtually all of it into usable products. They estimate they have saved area businesses more than \$7 million in landfill tipping fees. Beyond these benefits to the environment and economy, they provide a valuable service to the businesses and farmers of eastern Iowa.

Through the DNR's Landfill Alternatives Grant program, Andrew Pallet Company and Riverside Pallets have made booming businesses out of turning old pallets into new and usable products. With a total of \$250,000 in awarded grant money, these two companies have diverted more than 27,000 tons of material from landfills, created several new jobs and produced valuable products. Andrew Pallet Company and Riverside Pallets have also provided a much-needed service to Iowa businesses and industries by creating an alternative to landfilling their wood waste. This has enabled these businesses to save millions in disposal costs. Perhaps believing that everything old should become new again is a good way to do business.

Jennifer Ryan was a summer 1993 volunteer for the department's Waste Management Assistance Division.



Jeff Geerts



▲ **Riverside's machines grind pallets and other wood waste into a reusable product.**

Roots for Routes



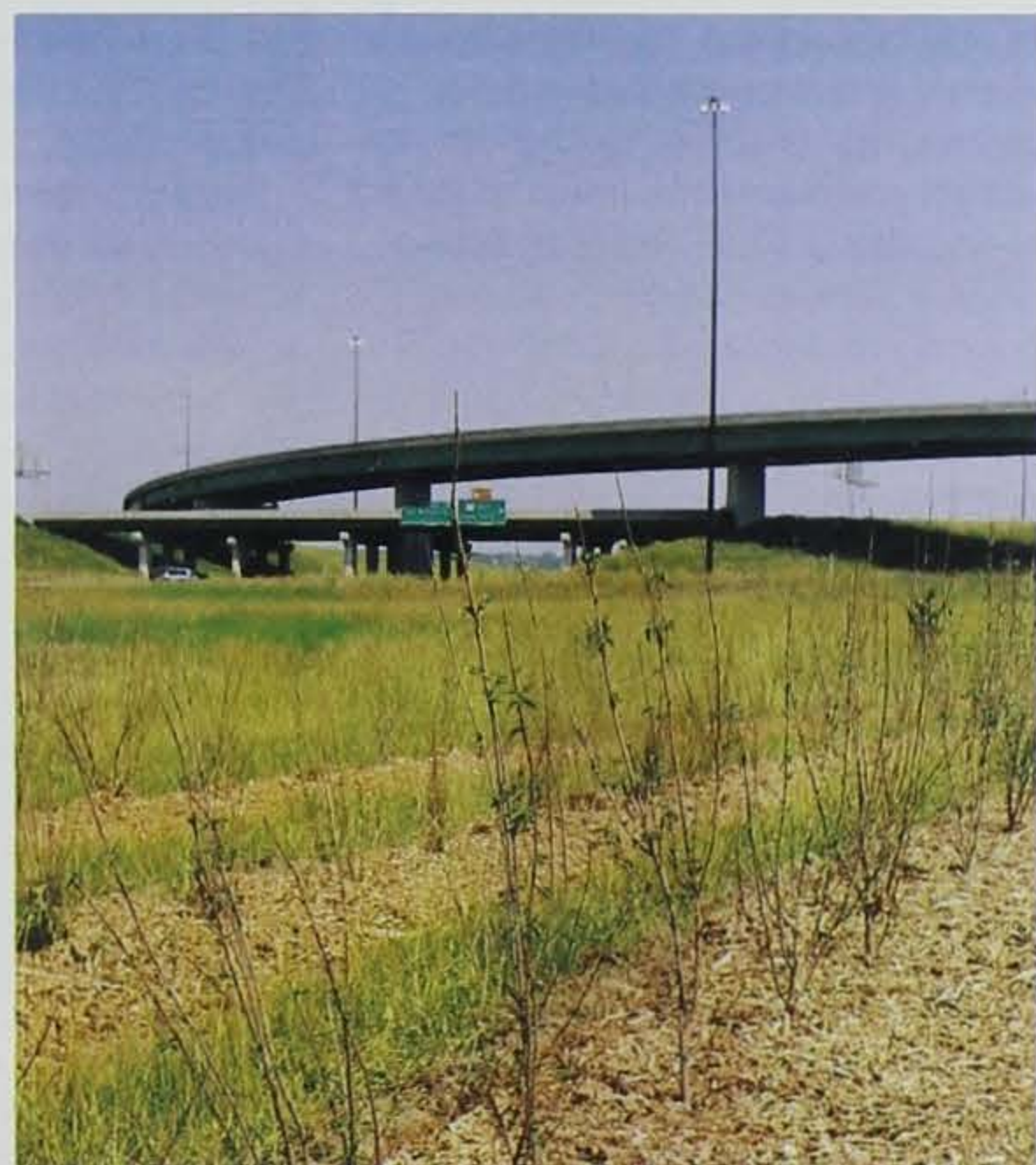
A Cooperative Roadside Tree Planting Program Brings **Green** to Iowa's Highways

by Mark Masteller and Roger Jacob

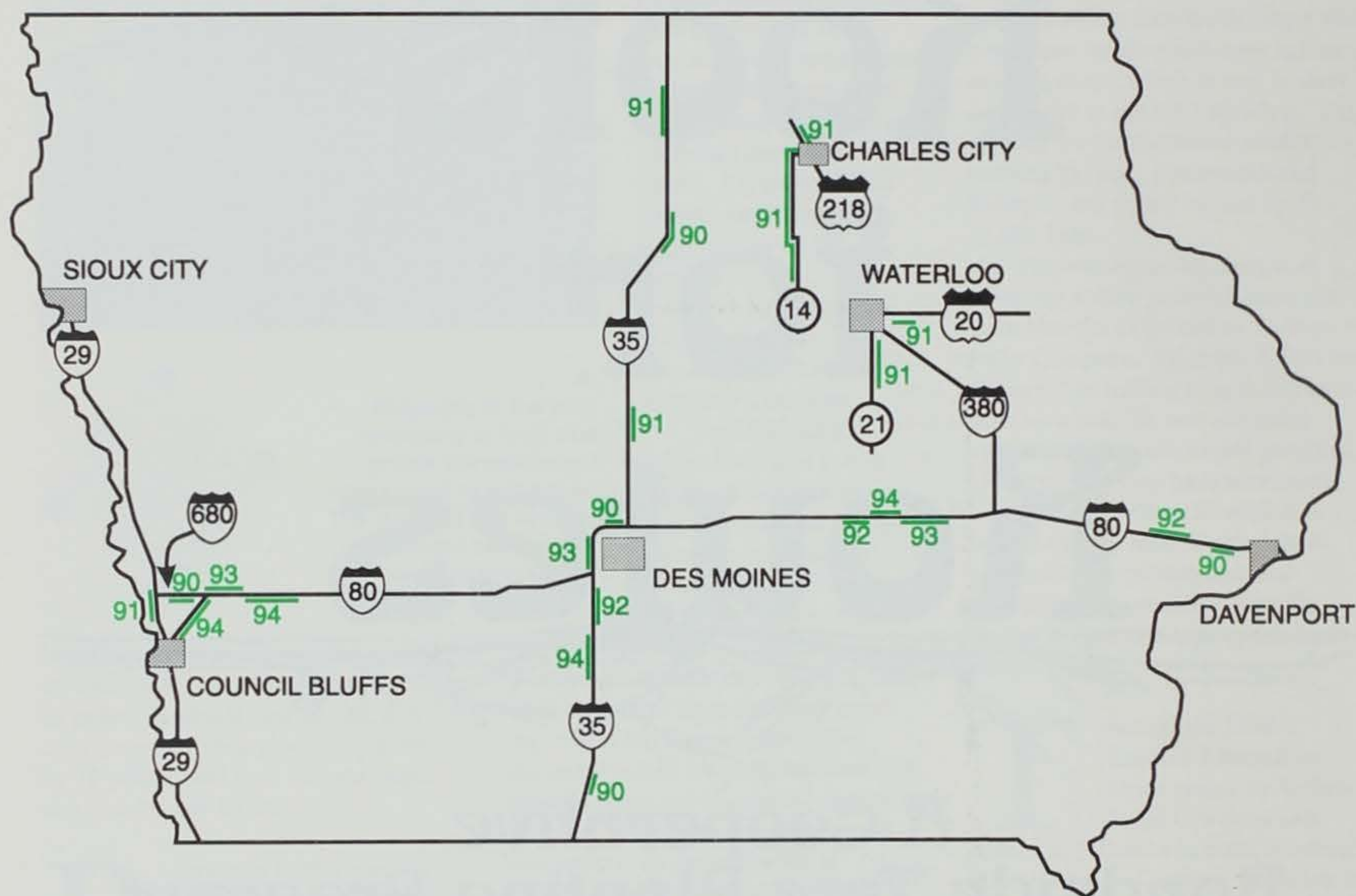
Several years ago, Iowa's departments of Transportation and Natural Resources began a cooperative tree planting program on highways throughout the state. The program, which began in 1990 with plantings at five locations, is aimed at bringing a forest vista to the landscape. Through the program, the DOT makes available a portion of its roadside beautification funds while the DNR designs plantings on roadside areas that have been approved by the DOT. Contracts are made with the private sector to complete the work. Through the 1993 planting season, the DNR contracted the planting of 381,725 trees and shrubs on 426 acres at 17 locations. The program shows how supposedly opposite land uses can be merged to improve the environment.

The DOT is often perceived as a destructive force where trees stand in the path of a highway improvement," said Darrel Rensink, DOT director. "The truth is that through programs such as this one we are returning far more trees to the Iowa landscape than we remove, and in the process making travel in Iowa more enjoyable."

▶
This planting at the intersection of Highway 20 and I-380, near Waterloo, has just had wood chips applied.



DOT photo



▲ The map shows the year and site of the tree plantings across the state.

Weed control is an important factor in seedling survival. Because the use of chemicals is not permitted on Iowa highway rights of way, except to control noxious weeds, it was necessary to find alternatives. The plan that was devised and successfully used is to cultivate four-foot-wide strips where the trees are to be planted, and after they are planted, to lay down a four-foot-wide strip of landscape fabric. A two-inch layer of wood chips is then placed on the fabric to keep it in place.

This method, along with mowing between tree rows has been successful in dealing with weeds as well as promoting growth by providing favorable conditions under the fabric.

These successful tree plantings will provide numerous benefits. The environmental benefits of trees have been well-documented -- they clean the air, reduce soil erosion and provide habitat for wildlife. They also benefit

motorists by providing a changing view to break the monotony of driving. Many of the areas feature dense plantings which will enhance the forested effect. Besides presenting a contrast to the open spaces, the trees will also add to the constantly changing colors provided by vegetation planted along the roadsides. In some instances the trees also act as living snow fences, keeping the force of winter from sweeping directly onto the highway. Trees and shrubs selected for the plantings are native to Iowa.

While the trees enhance safety by helping break the boredom and keeping the highways clear, they are planted far enough away from the roadway to provide a clear zone. The clear zone is an area which gives motorists a chance to recover control of their vehicles if they run off the road.

"Highway rights of way, because they are already state-owned, are excellent areas for reforestation projects

like this joint effort," said Larry Wilson, DNR director. "It allows us to concentrate our funds on the plantings themselves, and therefore get the maximum benefit from every dollar we spend."

Four additional locations will be planted this year, as a part of this ongoing project. These new locations are along I-35 from Highway 207 north to Highway 92 in Warren County; I-80 from the Brooklyn interchange east to the Victor interchange in Poweshiek County; I-80 from M16 to Highway 59 in Pottawattamie County; and I-80 from the Underwood interchange to I-680 in Pottawattamie County.

Mark Masteller is the chief landscape architect for the Department of Transportation at Ames.

Roger Jacob is a forester for the DNR at the State Forest Nursery at Ames.



DOT photo

DOT photo

▲ The crew places fabric over the newly planted seedlings.

► Wood chips are then spread around the seedlings and over the fabric. The chip-spreading equipment is followed by crews to assure that plants are not covered.



DOT photo

◀ The rows of trees and shrubs with wood chips freshly applied are set and ready to grow.

▼ This DOT planting features larger trees with wider spacing.



DOT photo



▲ This planting is in its third year. It is well established and the spaces between the rows are freshly mown.

DOT photo

THE PRACTICAL CONSERVATIONIST

Big Dividends From a Few Minutes of Effort -- The Practical Conservationist In the Garage and Around the Yard

Just a few minutes of vehicle maintenance can pay big dividends for Iowa's natural resources. Those few minutes produce immediate as well as long-term benefits -- protecting the land Iowans use, the water they drink, the health of fish and wildlife populations, conserving energy and reducing pollution clean-up costs.

When many Iowans think of an oil spill they think of the Alaskan spill from the oil tanker *Exxon Valdez* -- a one-site spill of 11.4 million gallons of oil. But each year across the state, Iowans contribute to the state's own oil spill of more than 4.6 million gallons. Do-it-yourselfers toss used oil in the trash, pour it on the ground or dump it down storm sewers, where it travels to Iowa's water supplies. (See *Don't Let Things Go Down the Drain In Your Community*, at right.)

Pollution from a single oil change can ruin a million gallons of fresh water. In addition, a valuable non-renewable resource is being wasted which can be reused as an industrial fuel supplement or re-refined for use as a lubricant. A gallon of used oil can produce 2.5 quarts of re-refined oil that is equal in quality to new oil.

Improper disposal of oil means money out of everyone's pocketbook. All Iowans end up paying higher consumer prices, taxes for environmental cleanups and increased health care costs.

As of July 1, 1990, all retailers who sell oil must have a sign posted stating they will take used oil or, if not, where the oil can be taken for recycling.

Take a few simple steps to prevent oil spills in Iowa and recycle your used oil.

Iowans can also protect their environment by returning their used lead-acid automotive battery when they purchase a new one. Land disposal of lead-acid batteries is prohibited by state law and lead-acid batteries are a household hazardous material.

Since the Waste Reduction Act of 1989, all car battery retailers must accept used batteries for recycling. Some retailers will even give a modest discount towards the purchase of a new

battery when the old one is returned.

Programs are in place to make it convenient for everyone to participate in cleaning up the environment. Oil and batteries are also disposable at any hazardous waste collection site or at Toxic Clean-Up Days.

For answers to questions regarding the disposal of used oil, batteries or other hazardous wastes call 1-800-DNR-1025.

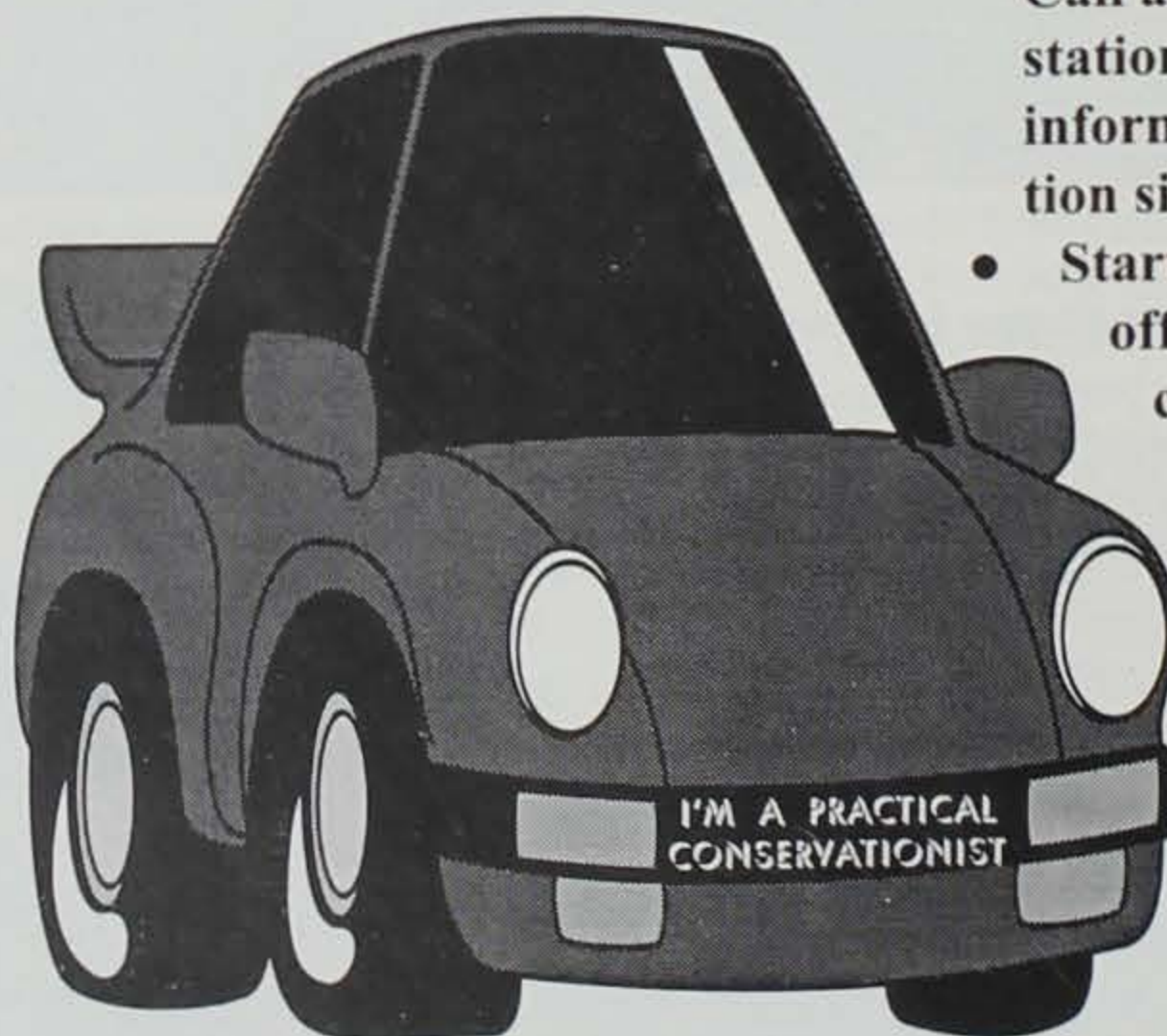
Remember, when changing oil:

Do Not . . .

- Dump oil down storm sewers.
- Throw it in the trash.
- Pour it on the ground.
- Mix it with other products -- such as paint, antifreeze or solvents.

You Can . . .

- Recycle the used oil.
- Put used oil in a clean plastic container such as a milk jug, that has a tight lid.
- Take the oil to a location that collects used oil for recycling. Call a local service station or the DNR for information on collection sites.
- Start a used oil drop-off site in your community. Local officials or the DNR can help.



▼ Look for this sign when buying new oil or recycling used oil.



▼ Look for this sign when you purchase a replacement lead-acid battery for your vehicle.



Don't Let Things Go Down the Drain In Your Community

Storm sewers or storm drains located at street corners and low points in streets are designed to allow rainwater to drain away, preventing street flooding. They are *not* intended for items such as sediment, pesticides, fertilizers, leftover paint, used motor oil and yard waste. Storm drains may appear to be an easy solution for disposing of leftovers or waste materials from the home, but these materials pollute water systems when they travel through drains into streams, lakes and rivers. This pollution affects people, animals, fish and plants.

Nonpoint sources of pollution such as rain runoff containing litter, motor oil, excess fertilizer, pesticides, leaves and grass clippings, are listed by the Environmental Protection Agency as a primary cause of water quality problems.

The East Central Iowa Council of Governments (ECICOG) serving Benton, Iowa, Johnson, Jones, Linn, and Washington counties received a grant from the Waste Management Assistance Division of the DNR to implement a storm sewer labeling program in their area. The program was started to help the public recognize that storm sewers drain directly into waterways. Three hundred storm drains were stenciled in Iowa City and Cedar Rapids with the message:

**DUMP NO WASTE
DRAINS TO STREAM**

Groups participating in the program included girl scout troops, boy scout troops, a neighborhood association and an environmental group.

Cities with a population of more than 10,000 are required by the Clean Water Act of 1990 to have a National Pollutant Discharge Elimination System (NPDES) permit if they have separate storm sewer systems that discharge directly into aquatic areas. The guidelines for the permit require public education regarding storm drains. The storm drain stenciling program can help fulfill that requirement.

Even if your community is not required to obtain a permit, the same pollution problems need to be addressed by everyone to protect our water. Give serious consideration to initiating this easy, beneficial program in your community.

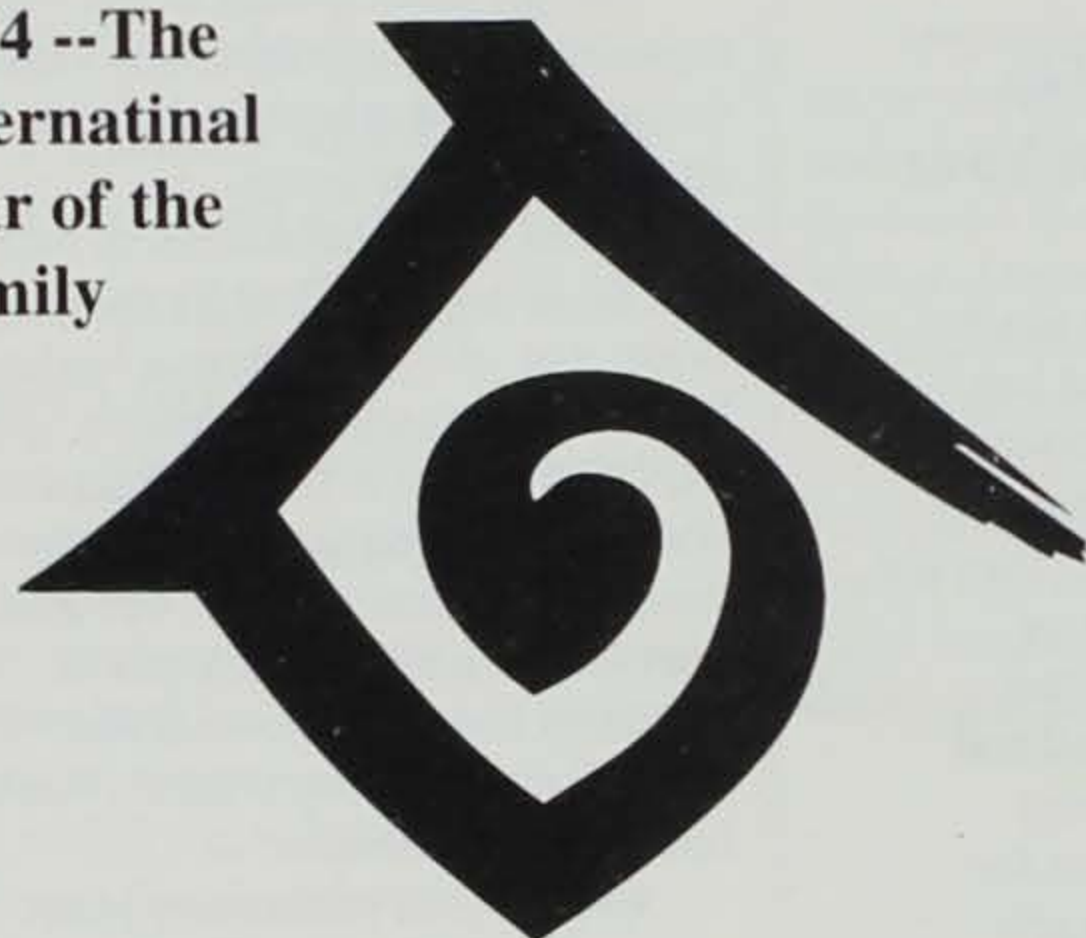
The educational components of a storm sewer labeling program, along with the hands-on community involvement, make it an excellent project for adult or youth groups. Two or three people can stencil a storm drain in approximately fifteen minutes. An entire neighborhood of storm drains may be stenciled in one day. This labeling activity provides an educational opportunity in itself as people are often drawn out of their homes to learn what is going on and why.

The ECICOG will be glad to provide an information packet to assist you in carrying out this project in your community. The packet includes a copy of *The Guide To Conducting A Storm Sewer Labeling Project*, sample promotional materials, safety guidelines for volunteers and a list of equipment needs. Contact the ECICOG office at 319-398-1266 to get this project launched in your neighborhoods.

If counties initiate this easy pollution prevention program, it can provide a continual, meaningful environmental reminder for everyone.

CONSERVATION UPDATE

1994 --The International Year of the Family



Recognizing the importance of family, the United Nations General Assembly has declared 1994 the International Year of the Family. The year's theme is "building the smallest democracy at the heart of society." The 1994 Year of the Family offers a unique opportunity to promote an understanding of the family and its functions in society. It is also a perfect time to appreciate Iowa's natural resources, through family-centered activities and events across the state at Iowa's state park and recreation areas.

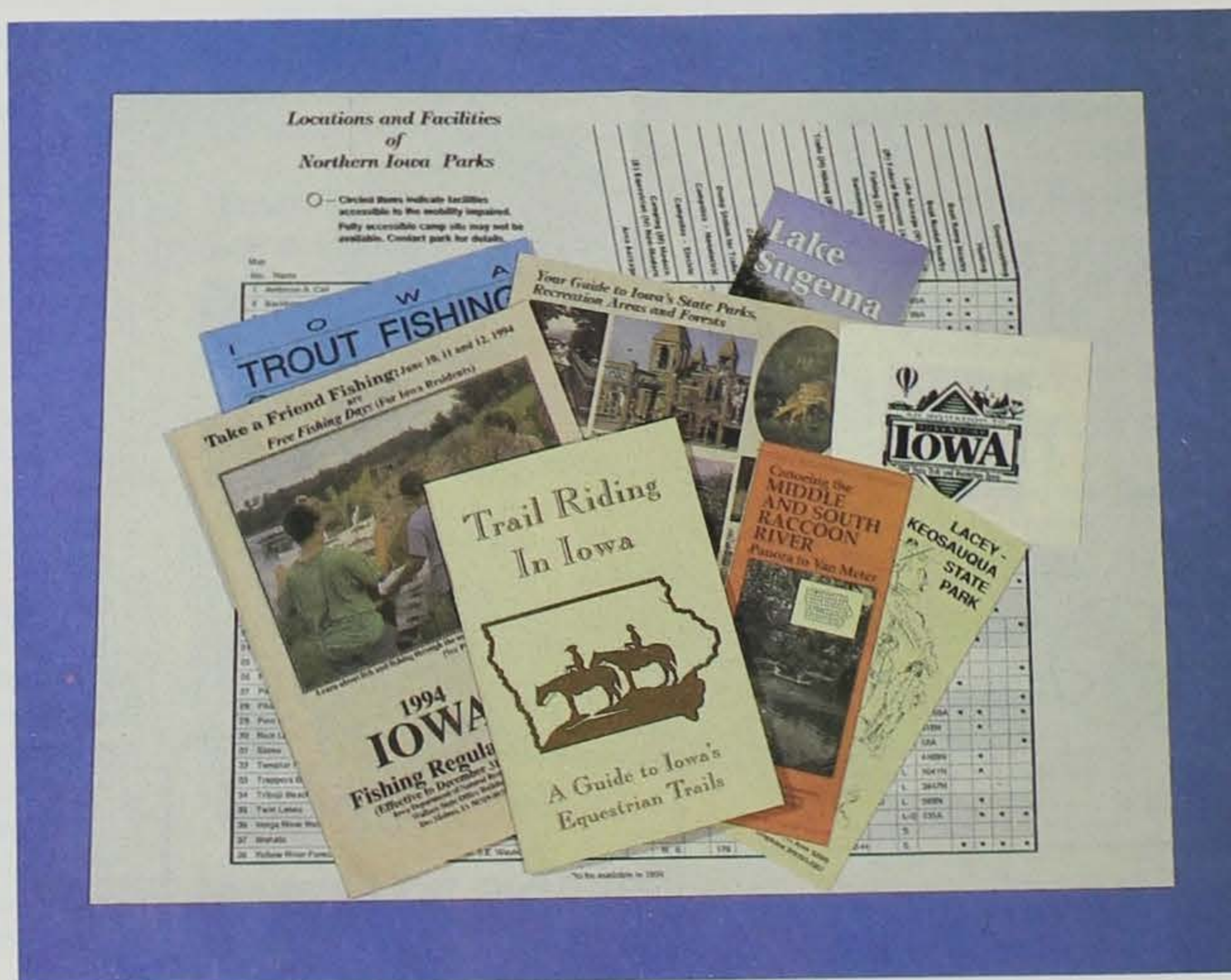
The International Year of the Family symbol, shown at left and on the cover, was designed by a Swiss artist. The symbol features a heart sheltered by a roof, and the two are linked together with another heart. It symbolizes life and love along with home, warmth, caring

security, togetherness and tolerance. It also symbolizes the family as the building block of society. While the emblem's open design shows the enduring and resilient nature of the family with a bit of uncertainty about the future, the open roof line represents the complexity of the family.

Iowa's state parks and recreation areas offer many opportunities to experience

family activities. See pages 30 to 35 in this issue for a list of state parks and their activities and watch for the other items marked with the family symbol. Check into the other activities mentioned in these articles for ways to celebrate and strengthen the family while enjoying the beauty and resources Iowa has to offer.

▼ The DNR has a variety of publications that highlight family activities from fishing and canoeing to trail riding or cave exploring. To receive *Your Guide to Iowa's State Parks, Recreation Areas and Forests*, any brochure featured below or additional information on any DNR facility or activity call the 24-Hour Information System at (515)281-5145 or write: DNR, Wallace State Office Bldg., Des Moines, IA 50319-0034.





Outdoor Journey for Girls

"Girls can do anything that boys can do!" In the eyes of some this may or may not be true, but for the girls who participate in the Outdoor Journey for Girls program, they know it as fact.

The Outdoor Journey for Girls program, established in 1993, offers a three-day outdoor skills workshop for young girls between the ages of 12 and 15. Iowa Women in Natural Resources sponsors the program in cooperation with the DNR. Besides teaching outdoor skills the program provides positive role models for the young girls.

"We believe this is a positive experience for young girls," says Gloria Baker, office manager of the DNR's Springbrook Conservation Education Center and coordinator of the Outdoor Journey workshop. "With the use of professional role models and positive opportunities we hope to influence them into new careers." Sessions are taught by DNR conservation officers and others such as county



Ken Formanek

▲ The workshop includes lessons on low-impact camping.

naturalists, fisheries and wildlife biologists.

The program is different from other traditional camps for girls. Workshops for boys have been held in the past, and girls were invited to participate, but few ever did. The Outdoor Journey for Girls provides a comfortable environment where girls can get their hunter safety certificate without the intimidation they sometimes feel in the presence of boys. They get a chance to feel comfortable with a gun while learning proper safety methods. Archery is also taught as part of the program.

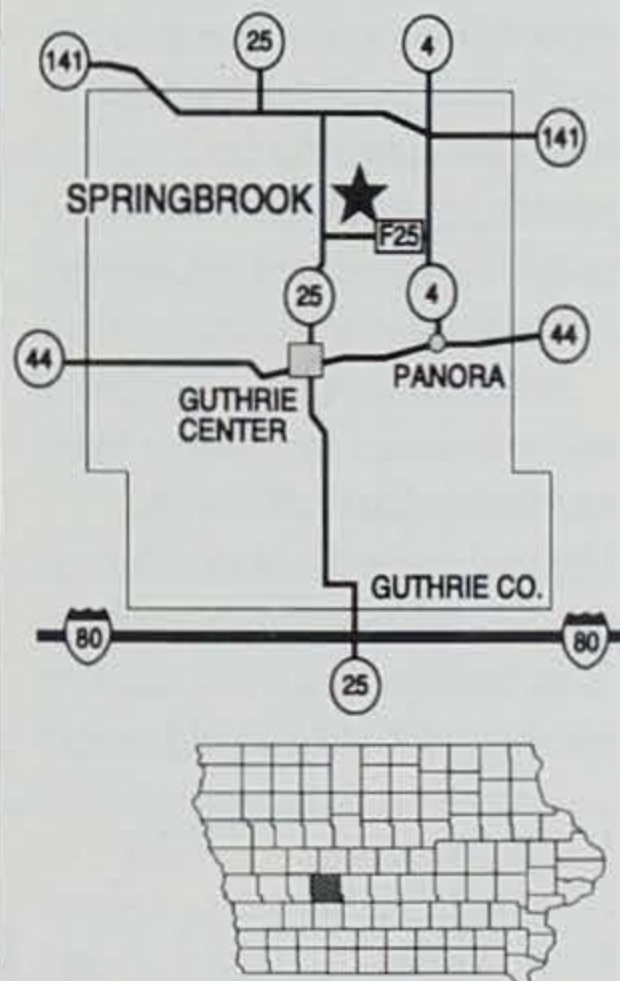
Girls are also taught many other outdoor skills including aquatic studies in which different fishing stations are set up to teach various skills. The girls then rotate between the stations. Topics include keeping the catch and preparing it, casting, safety, equipment assembly and fish identification. With all the knowledge gathered the girls then hike to a nearby lake for a two-hour fishing expedition.

Other activities include lessons in low-impact camping, tenting, orienteering, survival, shelter building, canoe safety and fire building. At night girls are able to

participate in owl calling and various night games.

This year the camp will be held June 8, 9 and 10 at the Springbrook Conservation Education Center north of Guthrie Center. Enrollment is limited to 60 girls and according to Baker it will fill up quickly. In the past Pheasants Forever has generously helped to sponsor 32 of the girls.

The program has received national recognition by conservation groups. Baker sees a trend in outdoor information for girls. "I believe we're in the right place at the right time."



Ken Formanek

▲ Canoe safety is one of the many skills the girls practice.

► Discussion groups also cover the opportunities for environmental careers.



Ken Formanek

CONSERVATION UPDATE

Safe Boating Week June 5-11


Safe Boating Week is June 5 through 11. This year's theme is "Boat Smart, Boat Safe, Boat SOBER." Many people who use boats do not consider themselves "boat-ers." Most of them are water-skiers, anglers, paddlers or those who just enjoy cruising on the water. These water-oriented forms of recreation are great family activities and this year's theme stresses drinking safety for everyone on the boat. National statistics show that more than 50 percent of boating fatalities are alcohol related. New studies also point out that it's not just the operator of the boat that needs to be sober. A passenger who has had too much to drink and falls over board is also a hazard.

Boating safety activities are scheduled across the state and many kickoff events begin during the weekend. In the central Iowa area on June 3, at Nollen Plaza in Des Moines, a kickoff event will

feature demonstrations, literature and personnel to answer boating questions. The event is sponsored by the Midwest Water Safety Council -- the U.S. Coast Guard Auxiliary, The Des Moines Power Squadron, U.S. Army Corps of Engineers and the DNR. June 4, there will be a kickoff event at the Lake View Shelter House at Saylorville. There will be a pancake breakfast, for a nominal fee from 9 to 11:30 a.m. Courtesy boat safety inspections will be given and the owner of any boat who passes inspection gets a free breakfast. The inspections will continue throughout the day until 5 p.m. Similar events are located across the state during the week. Check with DNR personnel to see what events are planned in your area.

Boating safety week is also an excellent time to make sure all life preservers are in good shape and note the most recent change in boating regulations. Effective immediately, anyone using a

boat of less than 16 feet or a canoe or kayak of any length is required to have a wearable Type III, personal flotation device (PFD) for each person on board. A Type IV or buoyant cushion device is no longer adequate. The DNR changed its rules to comply with Coast Guard Regulations. All PFDs must be Coast Guard approved.

 What are the family activities waiting to be experienced in Iowa's outdoors? It might be mom and the kids fishing, grandma and grandpa making a leisurely grand tour of all 58 state campgrounds, a family reunion held at one of the many enclosed shelters, or a stay in the newly-renovated cabins at Pine Lake. It can be an afternoon spent exploring the caves at Maquoketa Caves State Park or identifying plants at the Loess Hills. Family fun and sharing can be canoeing Iowa's streams and rivers, enjoying special events such as the Lewis and Clark Festival in Onawa or a quiet picnic at any one of the state parks, recreation areas or forests.



▲ Hunt for morels in Iowa's state parks.



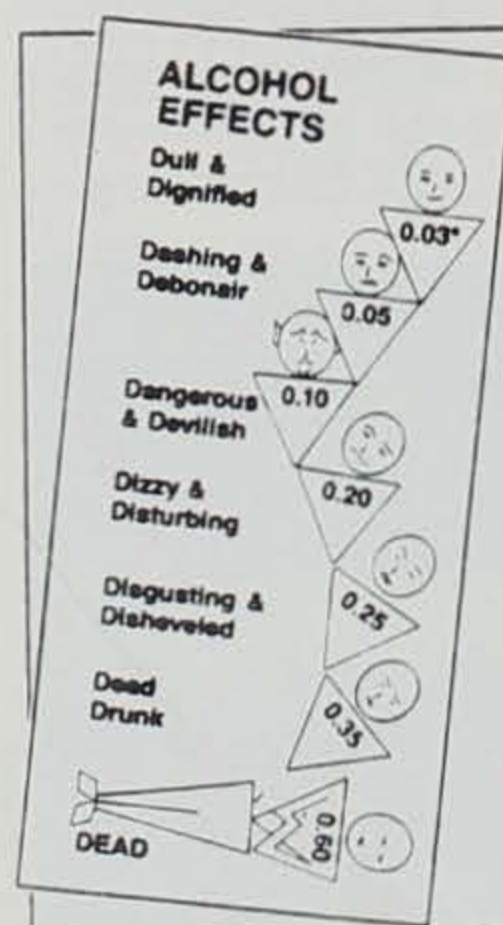
Roger A. Hill

▲ Spend a day at the Bellevue Butterfly Gardens.

Free Fishing Days June 10, 11 and 12


During the week of June 6 to 12 the DNR joins with other organizations and agencies to celebrate National Fishing Week. June 10, 11 and 12 are **FREE FISHING DAYS**. During these three days the sport fishing license requirement is waived for all Iowa residents. (All other fishing laws including size and creel limits are still in effect.)

Copies of the 1994 Iowa Fishing Regulations are available at fishing license outlets such as county recorder offices, sporting goods stores and DNR offices. If you want to try fishing, or if it has just been a long time since you have used your fishing equipment, head for the water. Take part in the many fishing clinics and events co-sponsored by the DNR during the spring and summer and go fishing during Free Fishing Days.



- Boat Smart
- Boat Safe
- Boat Sober

National Safe Boating Council





Ken Formanek

▲ Picnic at any of the state parks, recreation areas or forests.

Outdoor Fun Fair

On May 14 from 10 a.m. to 4 p.m. the DNR is co-sponsoring an outdoor fun fair at Gray's Lake in Des Moines. There are free scheduled activities and how-to instruction on fishing, canoeing, sailing, boating, camping and other outdoor activities. For more information contact Des Moines Parks and Recreation at (515)237-1386.

State Park Week June 11 to 19

June 11 to 19 celebrates State Park Week at state park and recreation areas. Special interpretive programs, hikes, fishing tournaments, bike rides and other organized events are scheduled across the state. Contact the local park ranger for information about scheduled events in a specific areas of the state. (See the list of state parks and events on pages 30 to 35.)

Roadsides and Filter Strips for Wildlife

Nesting for many Iowa wildlife species usually begins in late April and early May, and runs through most of the spring and early summer. "This winter's weather was hard on Iowa's upland wildlife," says Terry Riley, DNR upland wildlife research biologist. The snow cover persisted for well over 100 days in some parts of Iowa, particularly the northwest. Whenever snow is more than six inches deep and persists for an extended period, Iowa's resident wildlife suffer. "Cover is very limited under these conditions," says Riley, "and predators such as foxes are able to locate and catch birds and small mammals much easier. Most of the pheasants that die during these long, cold, snowy periods are killed at night as they rest."

"Most of the farm ground is actively being worked during spring and early summer, and in many areas roadsides, filter strips and headlands are the only undisturbed habitat avail-



Ken Formanek

▲ Visit the overlook at Pike Peaks State Park.



Ken Formanek

▲ Play on the wooden play structures at Lake Manawa or Big Creek state parks.

able. Many animals retreat to these idle habitats to nest and rear their young until the cropfields are developed enough to provide cover," says Riley. Disturbances along these important habitats can severely impact nesting wildlife. Mowing, burning, or driving on these narrow strips of grass can destroy nests and even kill the adults.

"Mowing and weed spraying usually begin in Iowa about the time many wildlife species are on nests," says Riley. Pheasants, quail, partridge and rabbits use roadsides for nesting. Each year many adults, nests and recently hatched young are destroyed during these activities.

According to Riley, there are several things that can be done to help Iowa's wildlife during the breeding and nesting season.

1. Establish grass along roads, waterways, drainage ditches and headlands.
2. Delay mowing and

burning of these grass strips until after August 1.

3. Spot treat problem weed areas rather than mowing, spraying or burning an entire strip of cover.

4. Do not use herbicides or insecticides in road ditches, filter strips or headlands. Simply turn off the sprayer as you approach these areas.

5. Replace vegetation in road ditches, filter strips and headlands with native grasses, such as switchgrass, big and little bluestem or indiagrass.

Some county, state and federal agencies are implementing progressive management programs to improve wildlife habitat along roads and waterways. Private organizations such as Pheasants Forever, provide financial incentives to enhance cover for wildlife. Riley suggests landowners contact these organizations, as well as the local DNR biologist, for more information.

CONSERVATION UPDATE

Upcoming NRC, EPC and Preserves Board Meetings

The dates and locations have been set for the following meetings of the Natural Resource Commission, Environmental Protection Commission and the Preserves Advisory Board of the Iowa Department of Natural Resources.

Agendas for these meetings are set approximately 10 days prior to the scheduled date of the meeting.

For additional information, contact the Iowa Department of Natural Resources, Wallace State Office Building, Des Moines, Iowa 50319-0034.

Environmental Protection Commission:

- May 16, Des Moines
- June 20, Des Moines
- July 18, Des Moines

Natural Resource Commission:

- May 12, Webster City
- June 9, Muscatine
- No July meeting

State Preserves Advisory Board:

- June 13, North Iowa Area Community College, Charles City

Iowa Biomass Energy Plan -- New Crops and Income from Renewable Energy

Production of energy from agricultural products could help revitalize Iowa's rural economy, according to a new five-year plan issued by the DNR. The report pictures a future in which Iowa's "homegrown" energy resources could supply a greater portion of the state's energy needs and create new crops and industries in the state. The *Iowa Biomass Energy Plan* sets goals for increasing the production and use of biomass, which is any organic matter that can be converted to energy.

"Biomass energy has several advantages," said Larry Bean, energy and geological resources administrator. "Growing and using it in Iowa can create new opportunities for farmers, processors, utilities and others. And, it is cleaner environmentally than conventional fuels."

According to Bean, some of the land currently in the Conservation Reserve Program (CRP) could in the future, be planted to energy crops such as trees or switchgrass, which would not only produce an energy resource and an income source for farmers, but also create wildlife habitat and prevent soil erosion. The plan estimates that if the 2.8 million acres in the CRP were used to grow switchgrass for ethanol production, more than half the gasoline used annually in Iowa could be replaced.

Putting all of the elements in place -- management practices, technology, economics and investment -- to realize these goals is the focus of the five-year biomass plan. "The next steps will be to prove that alternative crops are a viable and dependable energy source and then to bring the producers and the markets together," said Bean. "We need to create the industries and infrastructure to make biomass energy economically viable."

The plan outlines projects for researching and demonstrating the production and use of biomass energy, including ethanol, energy crops such as trees and switchgrass, wood and wood waste, methane gas, biodiesel, municipal solid waste and row crop residue. (See the *Home Grown Energy for Iowa* article on page 36.)



Roger A. Hill

Fall Wild Turkey Harvest Survey Results

Despite a spring production period plagued by torrential rains and poor wild turkey nesting success, 42 percent of Iowa hunters who used their turkey licenses were successful in harvesting a turkey during the fall 1993 season.

Hunters harvested an estimated 914 wild turkeys in the open hunting area north of Interstate 80 and east of U.S. Highway 63. The DNR issued 3,148 fall turkey shotgun hunting licenses of which 1,617 (51 percent) were issued free to landowners. Shotgun hunters had a 49-day season that ran from Oct. 11 through Nov. 28. An additional 488 archery-only licenses were issued for a season that ran from Oct. through Dec. 3, and Dec. 20, 1993 through Jan. 10, 1994. Non-resident hunters were not allowed to purchase a turkey license this fall.

"Another year of poor turkey production prompted the Iowa DNR to maintain the restricted fall hunting season. Fall turkey hunting is still biologically sound, but without fall harvest of hens, the population will recover faster than it would if we continued fall hunting," said DeWaine Jackson, DNR forest wildlife research biologist. "The department continued a fall season in northeast Iowa because it has maintained average production during the past five years while the rest of the state has had very poor production."

Due to continued poor brood production, the DNR has proposed similar regulations for the fall 1994 wild turkey season. The only area open for shotgun hunters will be the area north of Interstate 80 and east of U.S. Highway 63. However, unlimited archery-only licenses will be available and valid statewide. Applications for fall 1994 turkey season will be available in mid- to late June.

CLASSROOM CORNER

by Bob Rye

Prairie Acrobats

The following activity is adapted from the draft materials produced by the Walnut Creek National Wildlife Refuge Prairie Curriculum Team. These materials are being finalized for use on-site when the education center opens in 1995. The students learn about spiders' characteristics, habits and habitats through discussion and observation of spiders and harvestmen on the prairie. (Also, see pages 18 and 19 in this issue for more information spiders and their webs.)

Background:

Spiders have two body parts, the cephalothorax and the abdomen (insects have three). Harvestmen have eight legs, as do spiders, but only one body part. Spiders and harvestmen are both in the same group called Arachnids. Some spiders bite, while harvestmen do not. Harvestmen cannot spin webs as can most spiders. A spider's organs of taste, touch, hearing and smell are located in its legs. The harvestmen's are in its second pair of legs, which are longer and wave around in front. Harvestmen can survive the loss of one or more of their legs, which are designed to come off and distract predators with their movement, but unlike many spiders, these will not grow back. If disturbed, harvestmen can give off an unpleasant odor. They can withstand extreme cold and do not generally hibernate. During the winter, harvestmen often collect in protected places such as woodpiles and feed on small insects and other living things. They may also eat carrion.

Spiders breathe through "book" lungs. These lungs open by slits on the outside. A series of folds are found within each book lung. Blood circulates between these folds. Spiders survive on a liquid diet. They inject poison into their prey and release digestive enzymes to dissolve it. Not all spiders build webs. The wolf spider is a hunter rather than a web weaver. It lives beneath rocks or logs and runs down its prey as a wolf might. Its food consists mainly of small insects. The female wolf spider carries her egg sack under her abdomen. When the young hatch, they stay with the mother for weeks, riding around on her back.



DNR photo

▲ Harvestmen are sometimes called daddy longlegs.

Age:

Grades 3-6

Group size:

Up to 30

Time:

60 minutes

Objectives:

1. Students will become familiar with the physical characteristics, habits and habitat of spiders.
2. Students will understand the similarities and differences between spiders and harvestmen.

Materials:

paper
pencils
journals if desired
pictures of and books about spiders

Resources:

Duensling, Edward. *Talking to Fireflies, Shrinking the Moon*. 1990, Penguin Books, New York, NY.

Extensions:

Have the students compare the spiders found in the prairie to those they may find in their own homes. How are their habits and characteristics alike? How are they different?

Procedure:

1. Instruct the students to look for spiders, webs and harvestmen on the prairie. They should record their observations and add sketches and descriptions. Students should especially be looking at physical characteristics, habitat and behavior. The more detailed their observations and sketches are the easier it will be to note the differences between spiders and harvestmen.
2. While still in the field, have the students discuss their observations of the similarities and differences between spiders and harvestmen.
3. See if the students are able to observe the spiders' or harvestmen's sense of hearing by having them clap their hands or make noise near the creatures. The legs should immediately jerk backward. Have students imagine what it would be like to hear with their hands or taste food with their fingers and describe what impressions they have. How does soup "taste" if they are eating it through their fingers? What would it be like to "hear" a radio with their hands? With their eyes closed and their hands placed on the ground can they "hear" other students approach by feeling the vibrations.
4. Have the students guide a harvestman very gently onto the palm of their hands and strike the back of that hand, launching the harvestman into the air. The harvestman's entire body is a natural parachute and it can fall from great heights. The creature will freeze in its normal position with the body held well below the "bent elbows" of its legs, and float to earth. Harvestmen frequently use this behavior as a method of escape.
5. Find a common spider web. Have the students pick up a thin blade of grass and gently touch one of the circular threads that make up the spiral part of the web. When the tip of the probe contacts the web, have them roll the probe rapidly back and forth between their fingers (five to six times then rest two seconds). If the students act quickly and delicately, they will create vibrations similar to those made by a captured insect. The spider will come out of hiding and see what has been caught. If the vibrations are too strong, the spiders will remain hiding or drop to the ground and run away.

Evaluation:

Have the students create a *Calvin and Hobbes*®-type of comic strip featuring spiders and harvestmen, which combines the "actual world" with the imaginary world of the characters. This will allow students to illustrate some of the facts they have learned about spiders and harvestmen, and combine those with the imaginary adventures of the spider and harvestmen characters. The observations and sketches the students made in the field can be used for this classroom activity.



DNR photo

▲
Garden spider

Bob Rye is a training officer at the department's Springbrook Conservation Education Center in Guthrie County.

THE CONTINUING SAGA OF THE SOGGY SUMMER

Through a federal program known as the Emergency Watershed Protection program, the DNR has been able to restore some of its flood-damaged facilities.

by Laura Greiner

During the summer of 1993, a measurable rain fell somewhere in the state for more than 40 consecutive days and nights. The downpours repeatedly filled Iowa's streams and rivers to flood stage. Iowa experienced its wettest summer in history, officially receiving 48.2 inches of rain. These record-breaking rains resulted in statewide flood damage to cropland, residential areas and public facilities, including some belonging to the DNR.

Two of the DNR facilities damaged during last year's flooding have been repaired with help from a federally funded program called Emergency Watershed Protection (EWP). Another repair project aided by EWP is currently underway.

The USDA-funded program is designed to help repair damaged public facilities and is administered by the Soil Conservation Service (SCS).

Damages to DNR facilities included a nearly collapsed spillway at Lake Red Haw near Chariton, two broken levees at the Riverton Wildlife Management Area and a retaining wall that was threatening to give way at the Coralville Wildlife Unit headquarters.

Lake Red Haw

High waters this summer proved to be too much for the 60-year-old spillway at Lake Red Haw. The 60-acre lake is a reserve municipal water supply for the city of Chariton, as well as a perennial favorite of anglers.

"The lake's concrete chute spillway nearly collapsed in early July after severe

erosion undermined the structure," said Mike Carrier, administrator of the DNR's Parks and Preserves Division. "Without the spillway the earthen dam could breach if water levels get too high."

According to SCS civil engineer Roger Schnoor, officials lowered the lake water level by seven feet to protect the dam and they are constantly monitoring the situation.

After learning that Lake Red Haw was eligible for EWP, DNR officials contacted the SCS for help.

Engineers with the DNR are completing designs for the repairs, which will cost an estimated \$350,000. Construction should begin early this summer. The old concrete chute spillway will be removed and replaced with a more stable reinforced concrete pipe outlet which will run underneath the dam. In addition, an earthen emergency spillway will be built on the west side of the dam.



Ron Johnson

▲▼ Lake Red Haw is a perennial favorite of bluegill anglers. Last year's rains caused collapse of the lake's spillway. Repairs are estimated at \$250,000.



Michael Carrier

Riverton Wildlife Area

The 2,700-acre Riverton Wildlife Management Area was inundated with flood waters this July after two levees along the West Nishnabotna River were broken by high waters.

One levee was located on DNR property, the other was located on private land adjacent to the wildlife area. The entire wildlife area was flooded as well as thousands of acres of adjacent farmland.

"Our potential for managing water levels is destroyed without the levees," said Carl Priebe, DNR wildlife biologist.

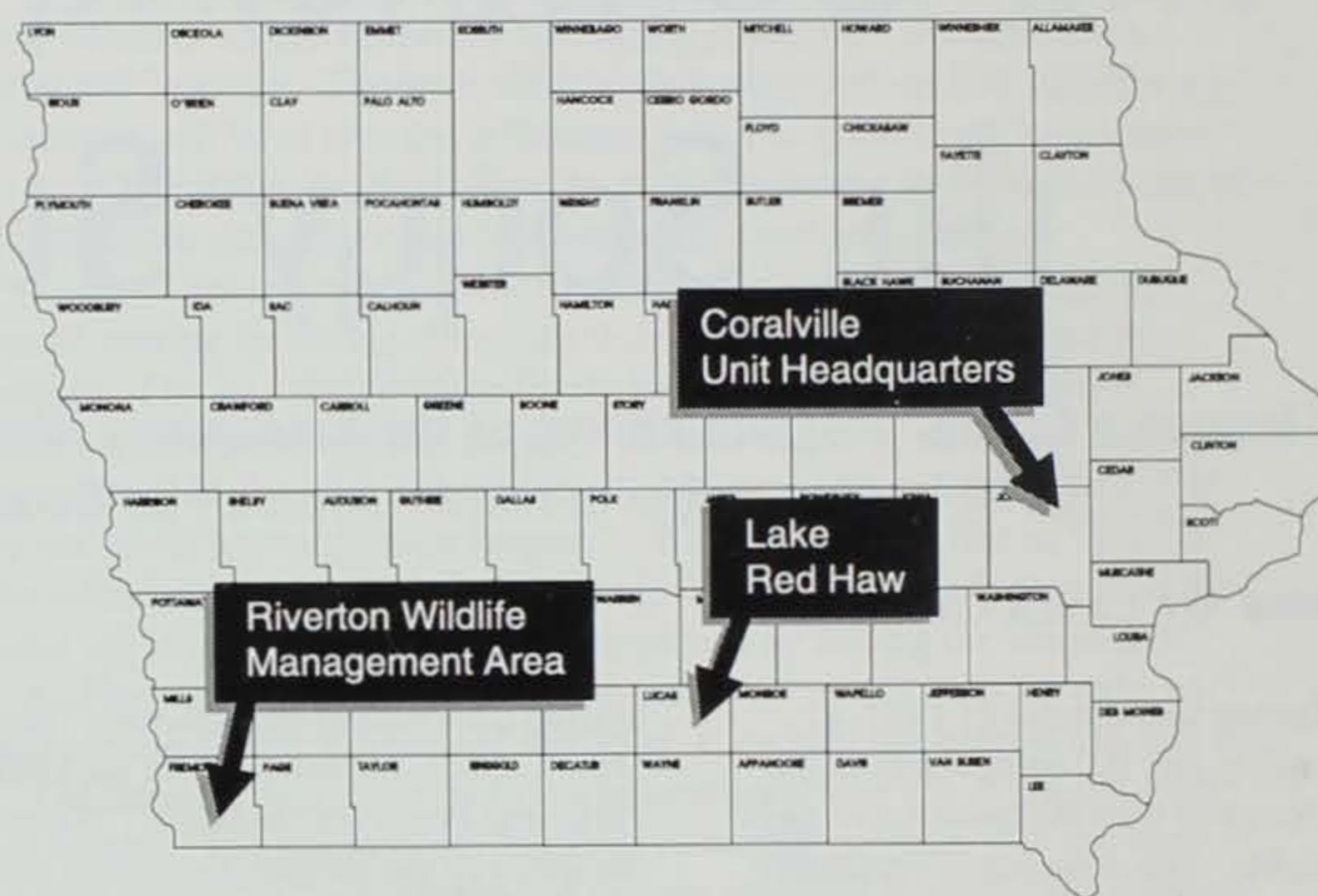
The wildlife area, just northwest of Riverton, is usually the temporary home to about 200,000 snow geese and hundreds of other migrating waterfowl every fall. Throughout the year the water levels in the wildlife area's wetlands need to be adjusted in order to grow the crops used for cover and food by the migrating birds.

"Last year there was total devastation," said Priebe. "There was no food or cover for any of the birds because of flooding." As a result, no ducks stopped at the wildlife area last fall.

"Flooding not only affected the waterfowl, but the birdwatchers and hunters as well," Priebe said. "And Riverton is one of the most popular wildlife areas in this part of the Midwest. People from Omaha and Council Bluffs come to use our facilities." One reason for its popularity is that some of the blinds in the wildlife area are accessible to the disabled.

The gravel access road to these facilities was washed out after the levees broke in July. "The DNR is currently working with

DNR Emergency Watershed Protection Projects



Ken Formanek

▲ Riverton Wildlife Management Area is a temporary home to about 200,000 geese and hundreds of migrating waterfowl each fall. Broken levees in 1993 caused flooding in the unit which resulted in no food or cover for the birds that fall.

the Federal Emergency Management Agency (FEMA) to make repairs to the road, as well as some channel and interior dike repairs," said Priebe.

The levee repairs cost about \$13,000. "We hope these repairs made last fall will prevent severe flooding this year," said Priebe. "Severe flooding usually hits the wildlife area every three to four years. The threat of flooding is always there. You just have to keep a positive outlook."

Coralville Unit Headquarters

Last summer one of the 20 DNR wildlife unit headquarters was in danger of becoming a landslide victim. The nine-foot retaining wall at the Coralville facility started to severely bow after record-breaking rains saturated the soil on the hill above. The wall was built in 1982.

If the retaining wall had broken, the 100-foot-tall hill probably would have taken most of the buildings and the equipment stored at the unit headquarters with it.

Tim Thompson, DNR wildlife biologist for the unit said he noticed the problem in late July. "Just one month earlier the wall appeared to be in perfect condition," he said. "By the time the hillside was stabilized in November, it had moved about four and a half feet closer to the headquarters' site."

"It seemed to move several inches closer every day," said Dennis Proctor, the wildlife technician who lives at the unit headquarters. "My house is far enough away from the hill that I didn't have to evacuate." However, DNR law enforcement officials did move their patrol boats, snow mobiles and other equipment out of the complex.

"Towards the end, I was taking the computer from my office into my home everyday," said Proctor. "If repairs had taken longer we would have moved everything of value out of there."

Proctor estimated the buildings and equipment that were threatened by the slumping hillside were worth about \$250,000.

"Repairs didn't start immediately because it was just too soggy," said Thompson. "We're lucky we had a dry October and November."

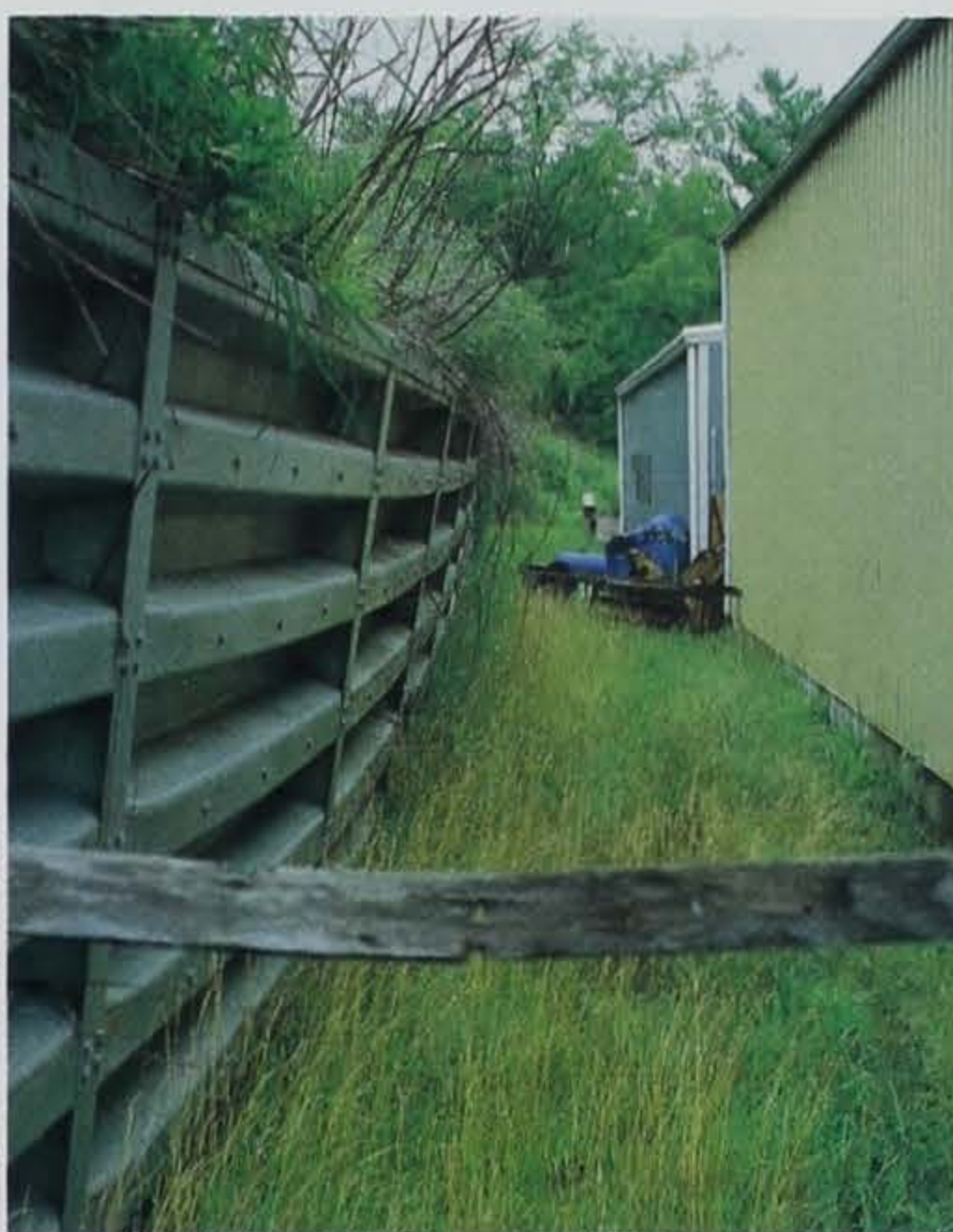
According to Thompson, when SCS first investigated the site the only way to reach the headquarters was by boat. Roads leading to the unit headquarters were all covered with high water.

During repairs, SCS officials reduced the slope of the hill from 1:1 to 3:1 by installing four terraces, which also help control water runoff. Tiling will also help prevent the soil from becoming too saturated.

The repairs for the Coralville headquarters were estimated to cost about \$150,000.

These three projects are only a small sampling of the repairs requested through the EWP program. According to Marty Adkins, EWP coordinator for Iowa, more than 1,000 requests have been sent to the SCS since the summer of 1993. About 250 of these are currently underway. Emergency Watershed Protection repair work is expected to continue through 1994 and possibly longer.

Laura Greiner is a water quality information specialist with the Soil Conservation Service in Des Moines.



◀ Coralville Unit retaining wall bowed by impending landslide.

▼ The hillside was stabilized by reducing the slope and by using terraces.



Soil Conservation Service photo

Soil Conservation Service photo

WARDEN'S DIARY

by Chuck Humeston

"Real Rescue 911"

Sometimes we get involved in the out-of-the-ordinary. Maybe the unpredictability is what makes the job enjoyable. Such was the great rescue at the foot of the cliffs of Iowa Falls.

I had received a call to contact the police department.

"We have a problem that maybe you can help us with," the dispatcher said.

"Sure," I answered without thinking first, "Anything to help."

"We have a cat stranded on the cliff by the swinging bridge. Could you get a boat, and help us get it?"

Why hadn't I thought first? Why couldn't I be busy somewhere else?

Now, let me acquaint you with Iowa Falls. The Iowa River runs through town and is impounded by a dam. Near where old Highway 20 passes through town there is a swinging walk-bridge. This local landmark hangs over the river, connecting a park on the west side with the top of a cliff overlooking the river on the east side.

One of the rites of passage for local youth is to jump off this cliff into the river to prove who is, "mas macho." It's highly illegal and the survivors then swim shakily to shore usually with the police in pursuit. My wife, an Iowa Falls native, actually admits to this act in her youth. After listening to her description of the event, she has proven she is "mas macho" than me.

Anyway, somehow a cat had gotten into the river and was stranded in a niche in the side of the cliff just above the water. It was in no mood to jump in and swim anywhere.

I went home and got my canoe and met the officer at the river.

"Want to go with me?" I asked.

He got in the front which surprised me because I was afraid word about my behavior in boats had spread. You see, there was this deputy in Emmetsburg who went on a boat mission with me. He ended up confessing eternal hatred for me after it was over, but I guess that's another story. Suffice it to say, I just hoped this wouldn't turn out the same.

We paddled out a little way. Now I can never resist this, but I know police officers don't work on the water a lot. I started rocking the canoe side to side. (Hey, it was just a slight wobble from side to side!)

"Whoa, a little rough out here today!" I said.

He turned around and glared at me. Remembering he was armed, I stopped rocking and continued paddling. We planned to paddle up to the cat, pick it up and take it to shore. There was no problem with that plan, right? Well, we paddled up to the cat. This cat was one wet, mad, *irritated* cat!

"Okay," I said to the officer, "Grab it."

He reached over the side for the cat. The canoe leaned. He grabbed the cat and placed it on the floor of the canoe.

I called the radio dispatcher. "Rescue completed safely. Call William Shatner. *Rescue 911* may want video on this," I chuckled. Ha! Ha! Ha! I was smiling smugly to myself just as the cat went berserk.

"Yeeow," it shrieked. It was a blur, all claws and fur -- yowling the whole time. The officer was vainly trying to press the panic-stricken cat to the floor of the boat and keep himself in the boat at the same time. The cat was jumping and howling and shrieking and clawing and throwing water on the officer all at

the same time. With a mighty leap at the officer it jumped into the river. The cat swam to the cliff, and we paddled around to start round two of the rescue.

We paddled up to the cat. Feeling more relief than guilt at not being in the front I said, "Grab it."

He did and the fight was on again. This time however, the officer was winning. The cat was finally subdued.

By this time two women were watching from the footbridge. As it turned out one was the cat's owner, so I paddled up to them on shore and turned the cat over to their tender ministrations. They wrapped it in a towel and spoke gibberish as some cat owners do. You know, "Oh googoogaga poor wittle babbu woodoo." Now the mission was completed.

We had performed a successful rescue. We had protected and served. We had not capsized. Another officer has vowed eternal hatred for me. Mr. Shatner, call us anytime. We'll tell you all about it.



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