

Iowa

July/August 1995

# CONSERVATIONIST

Department of Natural Resources



# Drive Home Your Support For Iowa's Natural Resources

## Our plates are for the birds . . .



. . . and frogs and deer and beavers and fish -- in fact, all Iowa's wildlife. But most importantly, REAP plates are for people like you who enjoy the natural beauty and outdoor recreation our state has to offer -- and who want to improve it.

Created in 1989, the Resource Enhancement and Protection program, REAP, has received the highest national award for improving local, county and state natural resources. Money from the sale of REAP license plates is directly invested in natural resource improvements in Iowa. So far, that's \$70 million and rising.

### How to get yours:

Take your current plates and registration to your county treasurer and request the natural resource plates. The initial cost of the standard REAP plate is \$35 in addition to your regular registration fee, and in following years, \$10 annually. Personalized plates are also available. For additional information on a taped message, call 515-281-5145. After the recording starts, dial 145449



# CONTENTS

AUG 18 1995

AUG 18 1995  
STATE LIBRARY OF IOWA  
East 12th & Grand  
DES MOINES, IOWA 50319

## Iowa CONSERVATIONIST

July/August 1995  
Volume 54, Number 4

### STAFF

Ross Harrison, Bureau Chief  
Julie Sparks, Editor  
Kathryn Stangl, Assistant Editor  
Lowell Washburn, Writer/Photographer  
Larry Pool, Graphic Artist  
Ken Formanek, Photographer

### NATURAL RESOURCE COMMISSION

Richard Garrels, Chair, Mount Pleasant  
Douglas R. Smalley, Vice-Chair, Des Moines  
Thomas G. Monroe, Secretary, Sigourney  
Lavonne M. Troyna, New Hampton  
Marian Kieffer, Bellevue  
Joan Schneider, Okoboji  
Mark Doll, Council Bluffs

### ENVIRONMENTAL PROTECTION COMMISSION

Rozanne King, Chair, Mondamin  
Gary C. Priebe, Vice-Chair, Algona  
Charlotte Mohr, Secretary, Eldridge  
Kathryn Draeger, Bronson  
Michael Fesler, Danville  
Verlon Britt, Elgin  
William Ehm, Creston  
Kathryn Murphy, LeMars  
Terrance Townsend, Newton

### DIRECTOR

Larry J. Wilson

### DEPUTY DIRECTOR

Don Paulin

### DIVISION ADMINISTRATORS

Stan Kuhn, Administrative Services  
Larry Bean, Energy and Geological Resources  
Allan Stokes, Environmental Protection  
Allen Farris, Fish and Wildlife  
William Farris, Forests and Forestry  
Michael Carrier, Parks, Recreation and Preserves  
Teresa D. Hay, Waste Management Assistance

### SPECIAL PHONE NUMBERS

DNR Central Office, (515) 281-5145  
Emergency Spill Response, (515) 281-8694  
Telecommunications Device  
for the Deaf, (515) 242-5967  
Turn-In-Poachers (TIP), (800) 532-2020

*Iowa Conservationist* (ISSN 0021-0471) is published bimonthly by the Iowa Department of Natural Resources, Wallace State Office Building, Des Moines, Iowa 50319-0034. Second class postage paid in Des Moines, Iowa. Subscription rates: \$9.97 for one year, \$14.97 for two years and \$19.97 for three years. Prices subject to change without notice. Include mailing label for renewals and address changes. POSTMASTER: Send changes to the *Iowa Conservationist*, Department of Natural Resources, Wallace State Office Building, Des Moines, Iowa 50319-0034.

Federal regulations prohibit discrimination on the basis of race, color, national origin, sex or disability. If you believe that you have been discriminated against in any program, activity, or facility as described above, or if you desire further information, please write to: Director, Iowa Department of Natural Resources, Wallace State Office Building, 900 E. Grand Ave., Des Moines, Iowa 50319-0034 or the Equal Employment Opportunity Commission, Washington, D. C. 20240.



page 14



page 46

## FEATURES

- 4 ALIENS by Lowell Washburn
- 10 CHANGE IS IN THE AIR  
by Brian Button
- 14 PAY AS YOU WASTE by Jeff Geerts
- 18 THE GRASS IS ALWAYS GREENER ON THE OTHER SIDE  
by Ross Harrison and Kim Coulter
- 22 WHAT BIG WALLEYES WE HAVE by Dean Roush and Karen Aulwes
- 26 PARKS PROFILE -- THE IOWA GREAT LAKES REGION -- AN AREA  
RICH IN IOWA HISTORY by David L. Stoever
- HAYDEN PRAIRIE -- CELEBRATING 50 YEARS (poster)
- 37 CREATING A BUFFER by Joe Colletti, Dick Schultz, Rich Faltonson, and  
Tom Isenhardt
- 42 LAKE ODESSA AND THE FLOOD OF '93 by Don Cummings and Bill Ohde
- 46 A LAKE IS A REFLECTION OF ITS WATERSHED by Larry Mitzner
- 59 CONSERVATION AND ENVIRONMENTAL ORGANIZATIONS ABOUND  
-- GET INVOLVED!

## DEPARTMENTS

- 50 The Practical Conservationist 52 Conservation Update  
57 Classroom Corner 62 Warden's Diary

## COVER

Front -- Summer at Clear Lake State Park by Lowell Washburn



STATE LIBRARY OF IOWA  
DES MOINES, IOWA 50319

# Aliens

For centuries, people have been moving plants and animals from one place to another. Some of these moves have been intentional; some have occurred by accident. At last count, more than 4,000 exotics were known to have been introduced into the U.S. alone.

One of the most famous introductions came when Chinese ring-necked pheasants were released in Oregon's Willamette Valley in the late 1800s. The pheasant population quickly became established, and then exploded into the countryside. The rest is history. Today, the wily ringneck is the favorite of millions of hunters from coast to coast.

"Unfortunately, not all introductions paint so rosy a picture," said Joe Larscheid, fisheries research biologist and natural lakes investigator for the Iowa Department of Natural Resources. In fact, most could be best likened to a modern day plague.

"About the best thing that can be said concerning the introduction of most exotic species is that it doesn't work," said Larscheid. "Unless a nearly ideal set of climactic and habitat conditions are presented, most exotics quickly and quietly disappear from the scene," he said. "However, if an exotic species does manage to take hold, you

They're not from another planet, but when it comes to having a disastrous impact on Iowa's natural ecosystems, these biological invaders spell disaster and could cost billions of dollars in lost recreation.

are almost assured to have a major problem on your hands that will result in a significant negative impact," said Larscheid. "Worst of all, once they become established, you're stuck with them for life," he added.

The list of species supporting this claim is both long and depressing. In Iowa, the dubious roster includes such unwanted pests as house sparrows, house mice, starlings, dandelions, Norway rats and a host of European weeds. Most exotics currently established in Iowa either arrived here on their own (starlings) or were introduced by accident (ragweed). Pheasants and

gray (Hungarian) partridge are considered an exception -- having had a positive impact.

In most cases, expanding populations of exotic plants and animals are not limited in growth by the natural influences of predation, disease or other factors that control their numbers where the species is native. Consequently, there is generally no middle ground

when dealing with nonnative organisms. If a species is given the correct set of environmental conditions that will enable it to survive, then its



Minnesota Sea Grant Extension

▲ Zebra mussels arrived in the Midwest two years.

by Lowell Washburn

population can explode to epidemic levels.

"In a sense, nature is much like gardening," said Larscheid, "and you can only cram so much life into a given space. If one life-form becomes too abundant, then something else has to give."

That "something else" is generally a species, or worse yet, several species, that are beneficial or important for food and recreation. The introduction of the German carp is a classic example. Carp were first brought to Iowa during the late 1800s as a potential food and sportfish. Carp had soon invaded and populated most of the state's lakes and waterways, and within a short period of time, were rapidly displacing native gamefish. Adding insult to injury, the carp's "hog-like" feeding activities rooted out stands of native plant life, clouded the water and greatly reduced the quality of aquatic environments. Today, this troublesome roughfish remains one of the biggest problems in fish management.

Perhaps the worst news is that new and potentially damaging exotics, continue to arrive in the U.S. and Iowa. It was only a little more than a decade ago that the gypsy moth invasion destroyed more than 12 million acres of American forest lands, incurring millions of dollars in damage. And, the damage is still being assessed regarding the economic impact of the Mediterranean fruit fly.

More exotics are sure to come, and although you may not have noticed them yet, some are already here. The following is a look at three of those species, their current status, and some speculation as to what they may hold for Iowa's future.

## Zebra Mussel

The zebra mussel is a small, inch-long, striped clam. It is native to the Caspian Sea in Russia, and has been damaging ecosystems across Europe for nearly 200 years. These tiny mussels were first discovered in North America in Lake Erie in 1988 -- probably as the result of a European vessel dumping its ballast water. "In just seven years, the zebra mussel has spread to all the Great Lakes, and in all probability, we're just seeing the tip of the iceberg" Larscheid said. "Zebra mussels represent nothing short of a reproductive phenomena." One female may produce in excess of 30,000 eggs, and generations mature quickly.

"With zebra mussels you can go from where the species cannot be detected one year to where they literally cover an entire lake bottom the next year," said Larscheid. In Lake Erie, colonies containing up to 70,000 zebra mussels per square yard have been

documented. In utility water intake pipes, colonies of up to 700,000 mussels per square yard have been recorded.

Unlike other species of freshwater clams, adult zebra mussels attach themselves to any hard object they encounter, such as rock reefs, boat hulls, dock posts, boat hoists, crayfish, or even other, native clams. This barnacle-like trait can become a major nuisance for boat and dock owners. In the Great Lakes, huge navigational buoys have been sunk due to weight of zebra mussels on the anchor chains. Massive die-offs can putrefy water, and as billions of razor-sharp shells wind-row into shore, public beaches become deserted.

Zebra mussels feed by extracting microscopic plant life (algae) from the water, essentially robbing native organisms of much-needed food sources. "Each adult mussel is capable of filtering up to one full liter of water

▼ One zebra mussel female may produce in excess of 30,000 eggs.



Minnesota Sea Grant Extension

In utility water intake pipes, colonies of up to 700,000 mussels per square yard have been recorded. ▼



Minnesota Sea Grant Extension

every single day of their life," said Larscheid. (At their peak it was estimated that there were enough zebra mussels present in Lake Erie to filter every single gallon of water in the entire Erie basin every single day.) But unlike other clams, the zebra mussel binds whatever algae it doesn't use into a mucous-like ball that becomes unavailable to other organisms.

"Algae is eaten by zooplankton which is in turn eaten by tiny fish, which are eaten by bigger fish, and so on," said Larscheid. As zebra mussels effectively eat or bind up tons of algae, a critical link in the food chain is broken. "If you don't have phytoplankton (algae) in the water, then you have nothing," said Larscheid. "That translates into reduced gamefish populations and a reduced take by the angler," he added.

Zebra mussels arrived in the Midwest two years ago when an infested barge traveled, from Lake Erie down the Illinois River to the Mississippi River. "That's all it took," said Larscheid. That single barge seeded the entire Illinois and the entire Mississippi. Zebra mussels have now been documented in at least two interior Illinois lakes. "It's just a question of time and they'll be here, that much is for certain," said Larscheid.

## Eurasian Watermilfoil

Eurasian watermilfoil is an aquatic European/Asian plant that was first documented in the U.S. during the 1940s. It spreads mainly through fragmentation and forms dense mats that interfere with, or in some cases, totally eliminate recreational activities such as boating, fishing and swimming.

In the Midwest, Minnesota has been hardest hit by the milfoil invasions. In 1987, the plant took over Lake Minnetonka, a high-use recreational area in the Twin Cities. Forming huge floating reefs across the lake's surface, milfoil brought boating to a standstill and as dead plants washed ashore, the smell became unbearable. Recreational activities came to a standstill. Property values at this highly developed area began to plummet.

Today, efforts are being made to control the plant through mechanical harvesting with huge underwater "weed whackers" chewing travel lanes through the mats. The cost is tremendous, and the weed grows back quickly. In addition to Lake Minnetonka, Eurasian watermilfoil has now infested more than 40 southern Minnesota lakes.

Eurasian watermilfoil was first established in Iowa in 1992 in Hancock County's Crystal Lake. By 1993, the 260-acre lake had become so totally dominated by the plant, it was rendered virtually unusable from mid-July until fall. "This was particularly devastating to our fishery," said Jim Wahl, DNR fisheries management biologist. "Crystal Lake was one of north-central Iowa's most popular resources, particularly for bass and northern pike," said Wahl. "It was a shock to see how quickly the Eurasian watermilfoil took over. Crystal

Lake went from a high-use to a non-use lake in just one year," Wahl added.

In an effort to destroy the plant before it spread to other lakes, the DNR decided to treat the lake chemically. "We decided to use a herbicide known as Sonar," said Wahl. "This chemical appears to have been most effective in other states that have experimented with milfoil eradication," he added. The cost of Sonar was \$283 per quart -- a onetime application cost of \$15,000. However, the expense was easily justified, Wahl noted, because if successful, the treatment could save millions of dollars statewide. The treatment of Crystal Lake appears to have worked. No Eurasian watermilfoil has been seen there since.

Unfortunately, Eurasian watermilfoil has recently been found in Pools 9, 11 and 13 of the Mississippi River. It has also been discovered in two Kossuth County gravel pits and in Walnut Creek Marsh in Ringgold County. This spring the DNR treated the marsh and gravel pits with Sonar.

"If the plant becomes established in any of our larger lakes, we will be financially unable to treat it," said Larscheid. "That kind of money just isn't there."

"The public can serve as our best line of defense on this thing," said Larscheid. "They can report any plants they find and can make sure that they don't aid in spreading the weed on props and boat trailers."

"We (DNR) strongly suspect that the plant came to Crystal Lake on a boat trailer," said Wahl. "The very best way to avoid spreading milfoil is to be extremely meticulous about removing every single bit of plant material from your boat, motor and trailer," said Wahl.



Lowell Washburn



Lowell Washburn

▲ Eurasian watermilfoil forms dense mats that interfere with, or in some cases, totally eliminates water recreation activities.

◀ To avoid spreading milfoil, boaters should be extremely meticulous about removing every single bit of plant material from their boats, motors and trailers.



Lowell Washburn

**P**

flow  
sho  
disp  
catt  
valu  
U.S  
plan  
hard  
bloo  
up t  
the  
be a  
once  
beau

of d  
The  
sma  
Stor  
uppe  
to o  
estri  
type  
In fa  
bein  
bare  
be d

Lowell Washburn





# Purple Loosestrife

Purple loosestrife is a European flowering plant that grows along lake shores, stream banks and in wetlands. It displaces native vegetation, such as cattails, while providing little, if any, value to wildlife. Loosestrife came to the U.S., and Iowa, as an ornamental garden plant. Purple loosestrife is extremely hardy, and once in flower it seemingly blooms forever. One plant can produce up to two million seeds per season. On the surface, loosestrife would appear to be an ideal lawn and garden plant. But, once it manages to escape "captivity" the beauty becomes a beast.

The DNR conducted its first survey of distribution for loosestrife in 1985. The plant was found to be present in small numbers at scattered wetlands, at Storm Lake and along the banks of the upper Shellrock River. In sharp contrast to other exotic invaders, purple loosestrife does not usually exhibit wildfire-type, overnight explosions in population. In fact, during the first few years after being sighted, the plant may appear to barely expand its range. But looks can be deceiving, and in many cases, the

plant may be merely biding its time until the perfect set of climactic conditions occur.

As was the case with Eurasian watermilfoil, portions of Minnesota have been hard hit by loosestrife. "In 1974, we noticed a small amount of loosestrife on several Minnesota wetlands," said DNR state waterfowl biologist, Guy Zenner. (Zenner resided in Minnesota at the time.) "Plant densities appeared to remain low and the plant was regarded as something of a curiosity," said Zenner. But each time conditions proved favorable, the weed slowly but surely gained ground.

"I've been watching some of these wetlands for more than 20 years now," said Zenner. "Today, some of those natural cattail marshes have been completely taken over by loosestrife -- the cattails are gone." Zenner suspects the same scenario could ultimately occur on Iowa wetlands or waterways. "Having loosestrife along a stream such as the Shellrock River could prove particularly dangerous," said Zenner. Once those millions of seeds get into the current, they

can travel great distances in a short period of time. "The acre of shoreline habitat that has 10 percent of its surface covered by loosestrife today, could have densities of 80 to 90 percent 20 years from now," he said. "We just don't know."

Efforts to control purple loosestrife are expensive, labor intensive and most often, very frustrating. After repeated chemical applications to loosestrife at Silver Lake Marsh in Worth County, no significant progress was made in reducing plant numbers. But when a handful of loosestrife plants were found growing along the shoreline at the western end of Clear Lake in 1989, spraying and individual mechanical removal of the plants proved effective. None has been sighted there since.

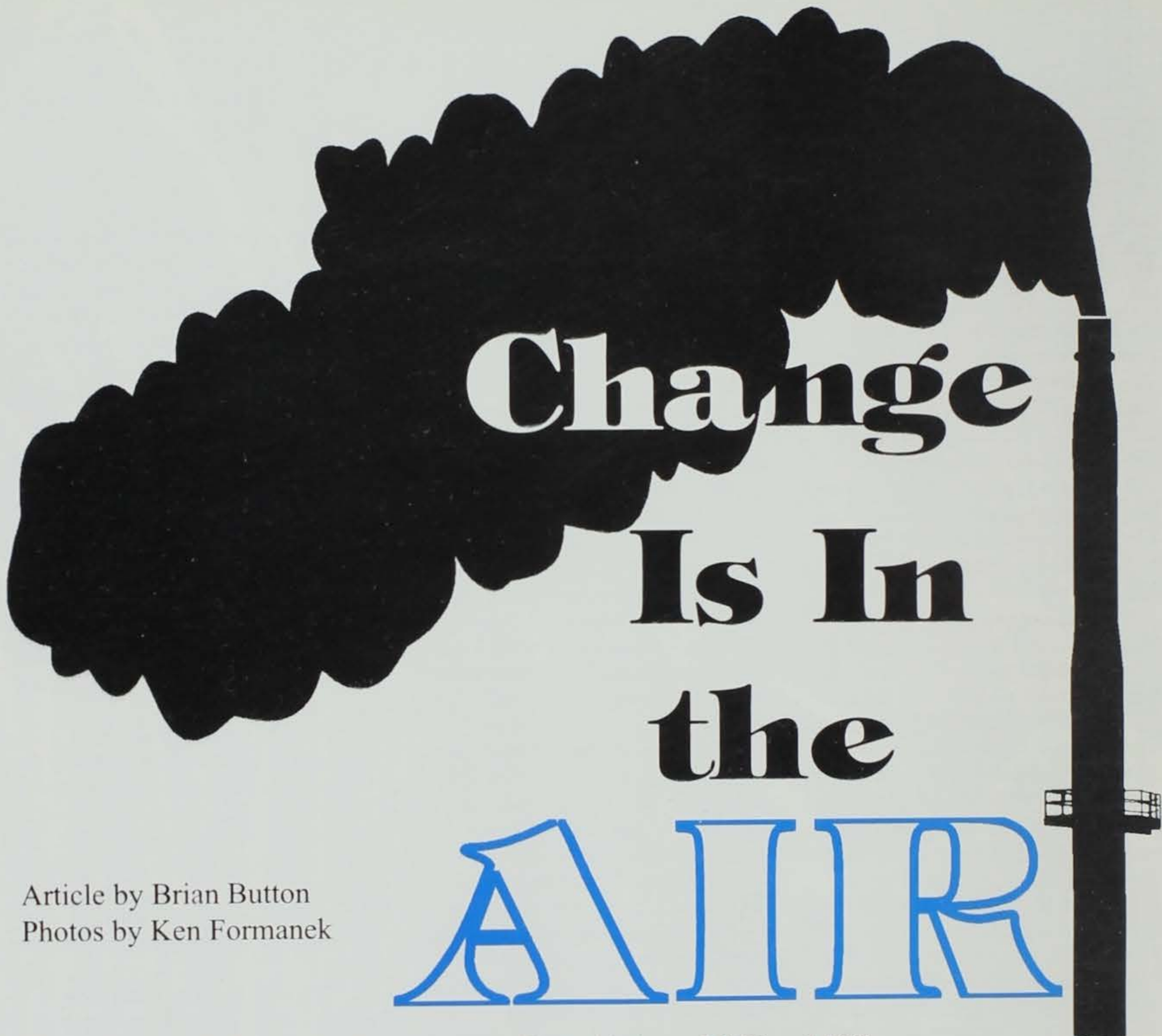
Last summer, the DNR began fighting fire with fire by introducing the European leaf eating beetle that is the natural enemy of purple loosestrife. "This was an extremely controlled project," said Zenner. Many generations of the foreign insects were studied over a four-year period to determine their potential impact on virtually every type of plant living in the U.S.

"This has been one of the most cautious introductions ever attempted," said Zenner. In 1994, the host-specific insects were finally released at Storm Lake and at Sunken Grove in Pocahontas County. "I think we need to keep things in perspective and realize that these insects will not totally eliminate the loosestrife problem," said Zenner. Hopefully what the insects will accomplish is to put a major stress factor on loosestrife populations and make them less able to compete with native vegetation. "In a viable plant community, competition is everything," said Zenner.

◀ Purple loosestrife would appear to be an ideal lawn and garden plant. But, once it manages to escape "captivity" the beauty becomes a beast.



Lowell Washburn



# Change Is In the AIR

Article by Brian Button  
Photos by Ken Formanek

**This is the second of a two-part series on the Clean Air Acts of 1970 and 1990.**

It was a decade ago that I measured acid rain high in the rugged mountains of western Colorado after hiking several days through wilderness. How could places of remote beauty be affected by human encroachment? Similar concerns were voiced throughout the nation. "Why were fish dying and forests sick?"

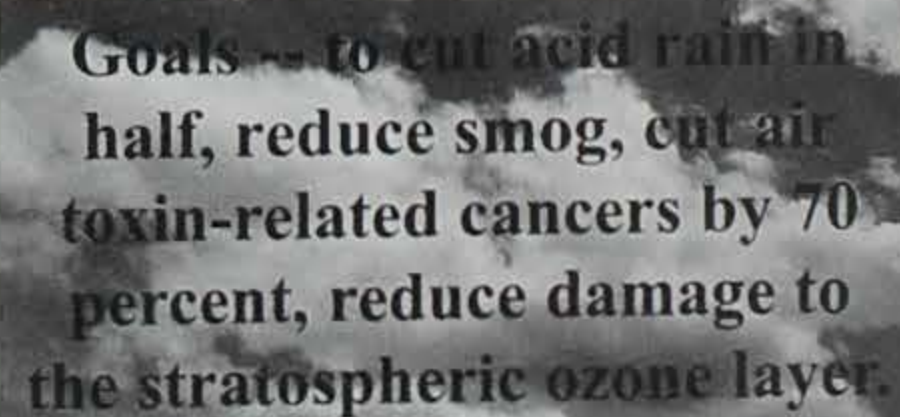
The answer . . . acid rain. This and other concerns about the thinning ozone layer and toxic air pollutants like dioxin and mercury helped prompt legislation. Today, as a result of the 1990 Clean Air Act, programs are being implemented to achieve many pollution reduction goals.

Through the Act, continued reductions of smog, particulates and other

pollutants will occur. Goals have been set to cut acid rain in half, reduce smog, cut air toxin-related cancers by 70 percent and reduce damage to the ozone layer. Another goal is a 90-percent reduction of sooty, black exhaust from diesel buses and large trucks. The Act is a results-oriented law that sets standards and industry is expected to help. In the new Act, industry is given the latitude to help achieve many pollution-reduction goals.

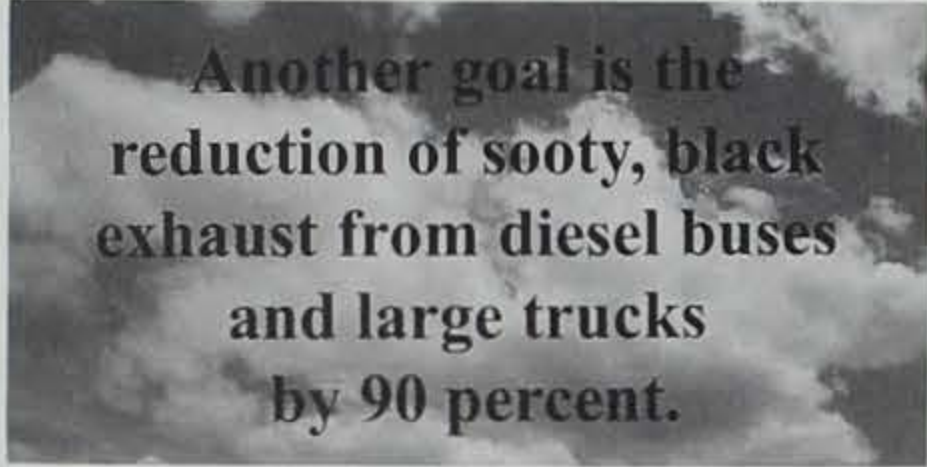
However, many gains in controlling industrial emissions are offset by increased automobile use. In 1970, Americans traveled one trillion

vehicular miles, but by 2000 that number is expected to quadruple. In Iowa, gasoline consumption increased



**Goals -- to cut acid rain in half, reduce smog, cut air toxin-related cancers by 70 percent, reduce damage to the stratospheric ozone layer.**

by 65 million gallons from 1987 to 1993. These trends make air-pollution control an ongoing battle.



**Another goal is the reduction of sooty, black exhaust from diesel buses and large trucks by 90 percent.**

One of the Act's major goals is to cut emissions that contribute to acid rain. By the year 2000, the goal is to reduce the 1980 emission levels of sulfur dioxide, a precursor to acid rain, by 40 percent. Large, midwestern coal-fired utilities -- contributors to acid rain problems in the East, Canada and upper Midwest -- are affected most by the Clean Air Act's innovative acid rain program.

Under the innovative, market-based program, EPA allows sulfur dioxide emissions by issuing allowances to large electric utilities. Each allowance is worth one ton of emissions. Utilities are allocated fewer allowances, thus requiring emission reductions or allowance purchases from other utilities. By reducing emissions, plants can sell, bank or trade unused allowances through nationwide brokers. This market approach encourages utilities to make early pollution reductions through energy conservation, renewable energy sources, better pollution controls or use of low sulfur fuels.

It also allows concerned citizens to make a difference. Recently, New York school children raised \$3,171 to buy 21 tons of sulfur dioxide allowances, thus preventing another utility from using them to pollute.

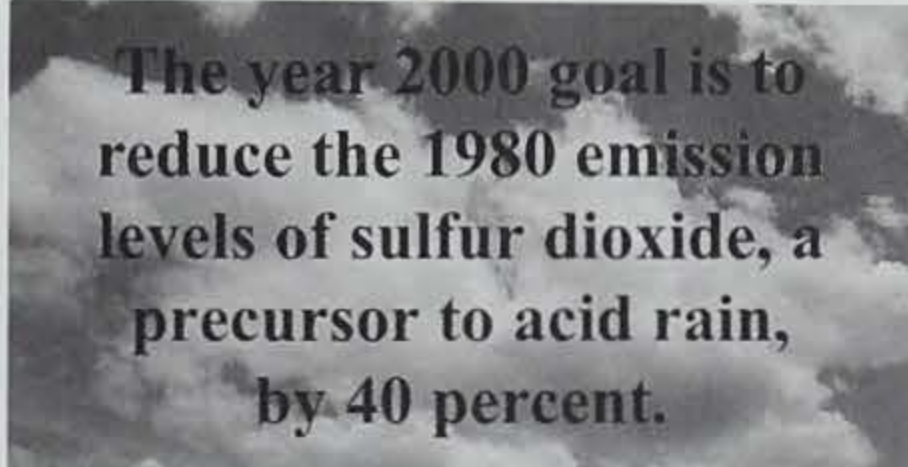
The Act ensures pollution reductions are met through stiff penalties. If a facility exceeds the allowed emissions, an automatic fine of \$2,000 per ton of excess sulfur dioxide is paid to the EPA, and the excess emissions must be offset the following year. So, if a utility has 12,000 allowances, but emits 15,000 tons of sulfur dioxide, the EPA collects \$6 million dollars in fines. Plus, the utility can only emit 9,000 tons the next year.

In Iowa, roughly 43 utilities are affected by the acid rain program. Phase

one cleanup affects the nation's largest 110 sulfur dioxide-emitting plants, including six in Iowa. Phase two tightens the annual emissions for large facilities and puts emissions restrictions on smaller plants. The Act also calls for a two-million-ton reduction of nitrogen oxide emissions by the year 2000.

Nitrogen oxides also contribute to acid rain.

While the Act addresses national pollution problems, it also has goals to protect the ozone layer. Over the last decade, thin spots and holes in the ozone layer have reduced its ability to shield the earth from excessive ultraviolet radiation. Because of the Act and international efforts to phase out ozone-damaging chemicals, many scientists believe the ozone hole should peak around the year 2000, then begin to repair itself -- hopefully a tremendous success due to efforts to



**The year 2000 goal is to reduce the 1980 emission levels of sulfur dioxide, a precursor to acid rain, by 40 percent.**

recognize and address the problem.

Along with pollution reductions comes paperwork as the Act requires a new, nationwide permitting system. Although states have required permits since the 1970s, most were for separate units of pollution control equipment such as scrubbers or filters, and single sources of air pollution such as boilers or paint booths. But new operating permits will consolidate pollutant information for the facility as a whole, listing potential and actual emissions, pollution reduction efforts, plans to monitor emissions and other legal requirements.

Developing the new permitting system is a lengthy process for industry and the DNR. The amount of information needed to complete a

permit application can be staggering, as air pollution control is extremely complex.

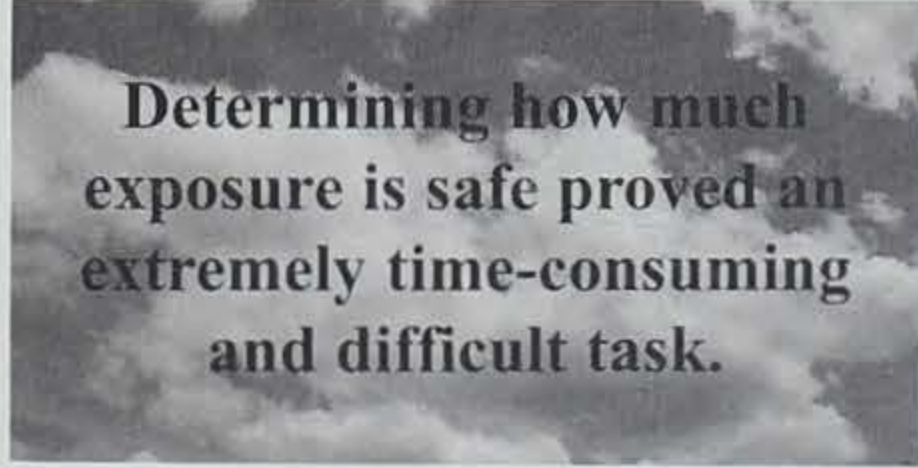
The 1990 Clean Air Act also made fundamental changes in regulating air toxins or hazardous air pollutants (HAPs). The original 1970 Act required emission reductions of toxins to health-based levels, providing an "ample margin of safety," based on risk assessment.

Determining how much exposure is safe proved an extremely time-consuming and difficult task. From passage of the 1970 Act to present, the EPA only issued regulations for seven toxins -- arsenic, asbestos, benzene, beryllium, mercury, radionuclides and vinyl chloride.

As a result, the 1990 Act uses technology-based standards to control hazardous air pollutants, and Congress designated 189 different toxins to regulate -- ending the long search for health-based standards.

The new technology-based standards are known as MACT standards -- maximum achievable control technology. In setting MACT standards, the EPA looks at requiring highly efficient pollution-control equipment and pollution-prevention methods such as substituting non-toxic chemicals for toxins. The Act sets standards that industry must meet, but doesn't dictate how to meet the pollution reductions. This allows industry the flexibility to develop their own cost-effective methods to reduce toxins.

An early reduction plan encourages industries to reduce toxin emissions 90 percent before a MACT



**Determining how much exposure is safe proved an extremely time-consuming and difficult task.**

standard is issued. In exchange, the EPA allows six additional years to comply with the standards.

Eventually, a second phase of regulations is designed to eliminate adverse health and environmental effects, as some residual emissions are likely after the technology-based MACT standards take effect. The 1990 Act also uses "ample margin of safety" again, meaning the risk to the most exposed individual is less than one in one million.

In Iowa, the DNR will regulate toxins this summer upon EPA approval of the state's plan to implement the Act.

Besides regulating toxins, the DNR has additional duties. To help ensure Iowa's air is safe and meets National Ambient Air Quality Standards (NAAQS), ambient air monitoring stations exist in 17 counties. Monitors use scientific methods to accurately determine pollutant concentrations. Areas where concentrations exceed federal human health-based standards are known as non-attainment areas. Specific plans are devised to clean up the air in non-attainment areas. Monitors help track progress in these areas and also ensure areas with clean air remain clean.

Potential impacts of pollutants from industrial sources are also calculated through computer modeling. Some permit applications are reviewed to determine if the pollution impacts could violate NAAQS. If so, the DNR will not issue the permit until modifications are made. Modeling helps prevent pollution problems, instead of relying on monitors to measure violations after the fact.

Iowans have benefited from a general cleanup and maintenance of our air since passage of the first major Clean Air Act 25 years ago. Today, Iowans recognize clean air is increasingly important as our population continues to age and is more susceptible to the adverse effects of pollution. And the DNR has the responsibility to ensure that all Iowans can continue to benefit from our life-sustaining clean air.

*Brian Button is an environmental specialist with the department's air quality bureau.*

## Here are a few simple things people can do to help spare the AIR!

### Drive Less and Drive Smart ▼

- Vehicles are responsible for a large amount of air pollution. To reduce pollution, avoid driving when possible by walking, cycling, carpooling or taking public transit. Combine multiple errands into one trip.
- Use energy-conserving grades of motor oil. An EC-II-rated oil can increase mileage nearly three percent.
- Don't idle unnecessarily by avoiding drive-up windows -- walk inside instead.
- Maintain proper tire inflation and engine tune-ups for better fuel economy.
- Travel light -- extra items in autos add weight and reduce efficiency.
- Use air conditioners sparingly.
- Drive at medium, constant speeds. Accelerate gently and coast to stops.





### Reduce, Reuse and Recycle ◀

- Buy only what you need. When making purchases, consider products with minimal packaging, or durable or reusable products. By consuming less, consuming smart and reusing, less pollution is created from manufacturing, and natural resources are conserved.

### Conserve Electricity ▼

- Install efficient, compact fluorescent light bulbs to save money and electricity, and therefore reduce electric utility emissions.
- Turn off lights and appliances when not in use.
- Purchase energy-efficient appliances.
- Use shades and curtains in the summer to keep homes cooler and reduce air conditioner use. Use fans instead of air conditioners.



### Avoid Leaf Burning ▼

- Leaf burning can be a significant source of air pollution, but composting is practical, convenient and less expensive than landfilling. The resulting organic compost is excellent for lawns, gardens and flowers.



### Plant Trees ▶

- Trees not only clean the air, but can save you money. Planting deciduous trees on the south side of homes provides summer shade to reduce air conditioning costs and electrical consumption. In the winter, leafless deciduous trees allow solar energy to warm your home and reduce heating costs. Trees also add value to property, create habitat and are aesthetically pleasing.



# Pay As You Waste



Article by Jeff Geerts  
Photos by Ken Formanek

**M**any cities in Iowa have reduced the waste they were putting in Iowa landfills just a few years ago, by more than 25 percent. The city of Clinton reduced its residential solid waste by 30 percent between 1992 and 1993. Mount Pleasant reduced its residential solid waste going to the landfill by 45 percent from 1990 to 1991. The city of Mt. Vernon has reduced its residential waste stream by 34 percent as a result of residents generating less waste and recycling more. How did these cities accomplish such large reductions in landfilled waste? Each of these cities implemented a new type of billing system called *unit-based pricing*, for the collection and disposal of residential garbage.

In most cities, residents are charged a flat fee for garbage collection and disposal. Therefore, they are billed the exact same amount for collection of one

container of garbage as their neighbor putting out five containers of garbage for collection. As a result, residents producing small amounts of waste are being billed extra to support the residents producing large amounts of waste. In cases where the waste management costs are paid through property taxes, commercial, industrial and institutional properties are sometimes subsidizing waste management costs for residents while at the same time having to pay a private hauler to collect and dispose of their waste.

More than 80 cities in Iowa have established unit-based pricing programs because of the equity they provide in billing, and the incentives they provide to reduce and recycle residential waste. Unit-based pricing is a system in which residents pay for municipal solid waste services per volume, weight or unit of waste collected rather than through a fixed fee or property taxes. For

example, a community may have the cost of collection and disposal paid for by requiring residents to purchase specific bags from retailers that must be used to have the garbage collected. A household which uses only one bag per week would only have to buy one bag, where as a household that uses three bags per week would have to buy three bags. Unit-based pricing is also known as variable rate pricing, user pay, or pay-as-you-throw. By implementing a unit-based pricing system, residents who put out more waste pay more than those who put out less waste.

In 1994, the Department of Natural Resources contracted with the East Central Iowa Council of Governments to conduct a study of unit-based pricing programs in Iowa. The East Central Iowa Council of Governments is a quasi-governmental agency in Cedar Rapids that serves local governments and citizens by addressing issues and

needs through communication, planning, advocacy, technical assistance and grant writing. With support from the University of Iowa, the East Central Iowa Council of Governments conducted a survey of every town in Iowa, to determine which towns were currently using some form of unit-based pricing. Follow-up surveys of greater detail were sent to the communities that indicated they had a unit-based pricing program in place.

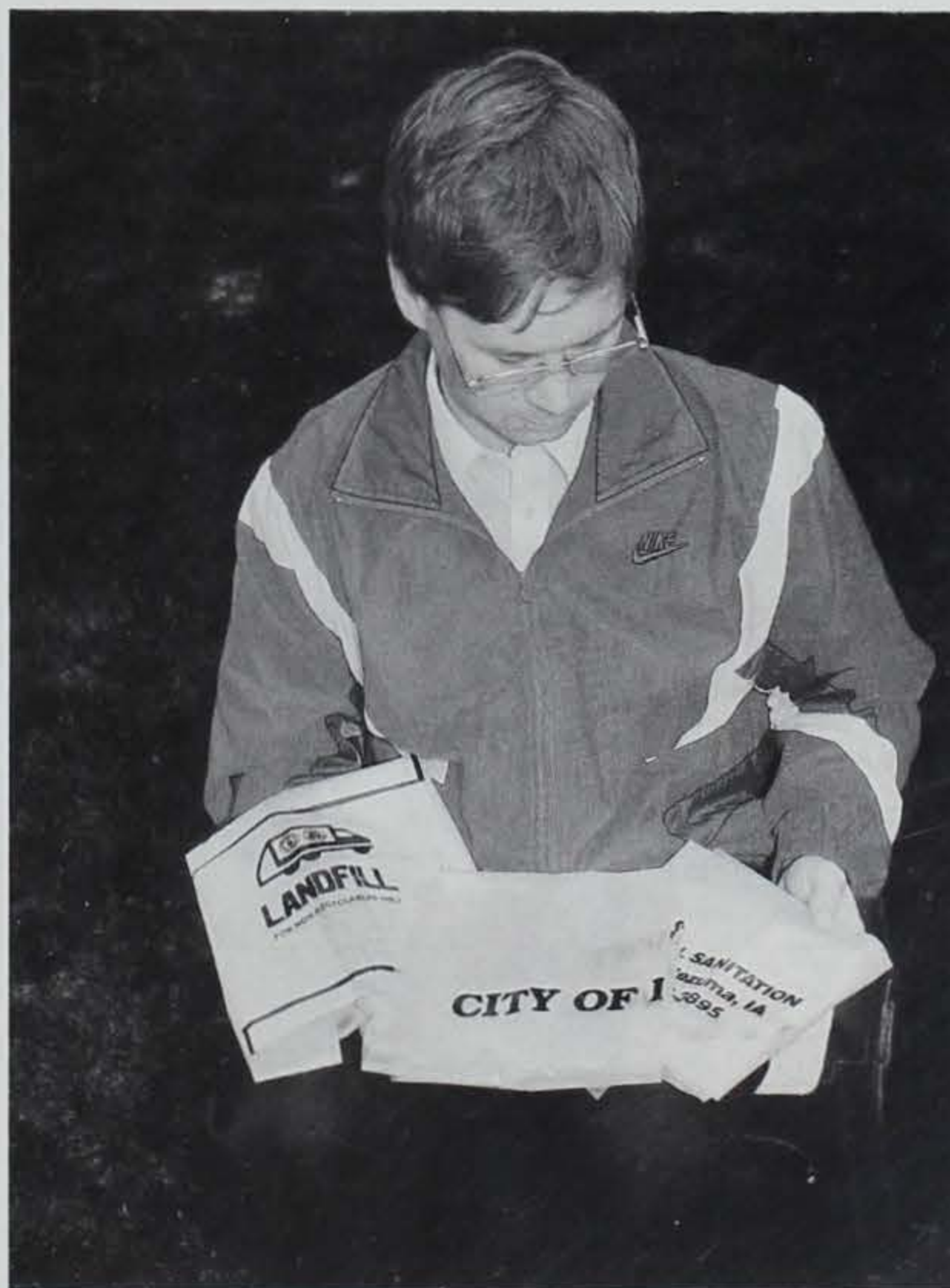
The surveys found that 83 towns and nearly 250,000 people in Iowa had some form of a unit-based pricing program. Ten Iowa communities used a type of program referred to as a *prepaid bag system*. In a prepaid bag system, residents must buy a specific bag sold by the city or local retailers. The cost of the bag is used to cover the cost associated with managing the waste. These types of programs also typically set a volume limit and or a weight limit per bag. Eleven communities in Iowa had a *prepaid tag or sticker system*. The prepaid tag or sticker program is very similar to the prepaid bag system in that residents have to buy a special tag or sticker to be placed on their garbage container before it will be picked up. Some communities also extend the tag or sticker system to include the pick up of items such as furniture or appliances, with each type of item usually having a set number of tags required for its pick up based upon size and handling difficulties. A *subscription system* was found in one Iowa community. In that community, residents sign up for collection of a certain number of containers and if they exceed that number, they must purchase a special sticker to be placed on each of the additional containers.

The most common type of unit-based pricing program in Iowa is the *hybrid system* used by 60 communities. A hybrid system typically

combines a flat fee for some form of basic service such as collection of one container. If any additional waste needs to be picked up, a special tag, sticker or bag must be purchased. Another basic unit-based pricing system is the *weight-based system*. Residents pay per pound of garbage collected in a weight-based system. Currently, no weight-based systems exist in Iowa. All but one of the 83 communities in Iowa had some form of recycling program in place with their unit-based pricing system.

Many advantages have been realized a unit-based pricing program. Ninety-six percent of the responding unit-based pricing communities indicated they had seen a decrease in the amount of waste landfilled in the first year of the program. The average

▼ In a prepaid bag system of unit based pricing, residents must buy a specific bag sold by the city or local retailers. The cost of the bag is used to cover the cost associated with managing the waste.





---

**More than 80 cities in Iowa have established unit-based pricing programs because of the equity they provide in billing, and the incentives they provide to reduce and recycle residential waste.**

---



Ron Johnson



decrease in waste landfilled was reported to be 38 percent. Sixty percent of the communities also reported that their cost of refuse collection and disposal decreased or stayed the same. The savings were realized through a combination of decreased landfill tipping expenditures, quicker collection routes, extended landfill life and increased use of recycling programs.

Ninety-seven percent of the communities found an increase in the amount of material recycled following implementation of their unit-based pricing programs. The amount of recyclable material collected increased an average of 52 percent. By providing a monetary incentive to produce less garbage, residents are also more apt to purchase items that will produce less waste, particularly packaging waste. Unit-based pricing is also viewed by many residents to be more equitable than charging every household the same flat fee or tax.

There are some concerns with unit-based pricing systems, but they can be managed with proper planning and education. Most communities fear that illegal dumping will increase as a result of unit-based pricing, and 39 percent of Iowa communities reported some illegal dumping associated with unit-based pricing. Many of these communities found that illegal dumping could be prevented or severely reduced through the use of a comprehensive education campaign, an available and easily accessible recycling program, and a strong enforcement program with significant penalties.

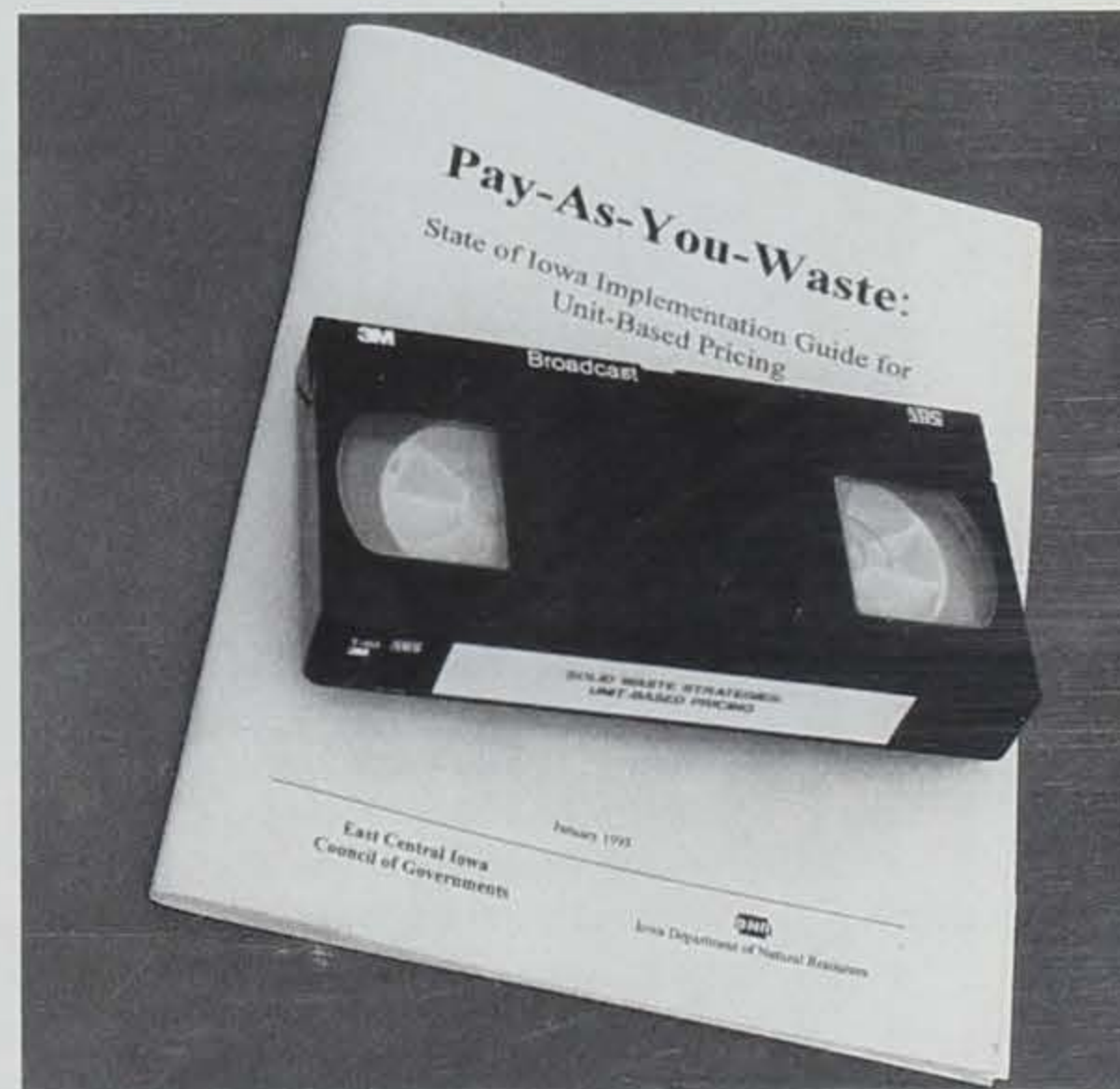
With possible increased needs for education and enforcement, communities may be concerned about their waste management costs increasing. But, 60 percent of the communities in the study experienced no cost increases and 57 percent of the communities had either decreased staff time or had no effect on staff time at all.

Communities also fear not having enough revenue and/or an unstable revenue flow. Much of the guess work in establishing a fee structure for unit-based pricing can be eliminated by thorough planning and looking at the program fee structure of similar-sized communities in their area. By using a hybrid system and charging a flat fee with a per container rate, communities are assured of at least part of the revenue stream being constant.

Iowa's Waste Reduction and Recycling Act of 1989 requires all cities in Iowa to be part of a comprehensive planning area and those planning areas have a goal of reducing the amount of waste going into the landfill in 1988 by 25 percent before July 1, 1994 and 50 percent before July 1, 2000. In an effort to reach the 50 percent goal, many communities will find that a comprehensive residential, commercial and industrial solid waste management program including public education, source reduction, curbside recycling and unit-based pricing will put them in a better position to achieve legislative goals.

The Department of Natural Resources' Waste Management Assistance Division has made a thorough unit-based pricing guide entitled "Pay-As-You-Waste: State of Iowa Implementation Guide for Unit-Based Pricing" available. The guide includes information on designing a unit-based pricing program, education and promotion, designing a rate structure for your community, case studies of three Iowa cities, and listings and descriptions of the unit based pricing programs in Iowa. An introductory video to unit-based pricing entitled "Solid Waste Strategies: Unit-Based Pricing" is also available. Both of these items can be received at no charge by calling the Iowa Department of Natural Resources' Waste Management Assistance Division at 515/281-8941.

*Jeff Geerts is an environmental specialist for the department's Waste Management Assistance Division in Des Moines.*



▲ A unit-based pricing guide and video are available at no charge by calling the Iowa Department of Natural Resources' Waste Management Assistance Division at 515/281-8941.

# The grass is greener...



Ron Johnson

by Ross Harrison and Kim Coulter

**W**ith two little bounces, the red and white bobber disappeared from sight, pulled deep into the pool of the creek by a fish of unknown description. *Bass, bluegill, or bullhead? How big?* raced through the seven-year-old's head as he jerked to set the hook and began reeling. Right away he knew it was better than a pound. It had to be a bass or a catfish, as the fighter took the line this way, then the other. The excitement of the moment took over and before the angler had much chance to savor the moment, an 18-inch channel cat was beached, right at his bare feet. He could hear his heart beating inside his ears.

Three years ago, the young angler wasn't old enough to do this on his own,

but that wouldn't have mattered. There weren't many fish worth catching in the creek that wound through his dad's pasture. He figured, and he figured right, that the cattle kept it too muddy all the time, standing in this same pool, clear up to their bellies when it was hot, leaving their manure and deep hoof prints all over the muddy banks. Putting the nice cat on a stringer, he pondered: "That was sure nice of dad to make this creek a good place to fish. He still has the cows in the same pasture and he says they are doing better than before. He really must know what he's doing."

Three years ago, the boy's dad had to make a choice. Should he rent more pasture for his cow/calf herd, or could

he get more out of what he already had? He decided on the latter. The creek, the boy, the cattle and the bank account all benefited, as well as some ground-nesting birds and the view from the farmhouse. The boy's dad simply changed a few things. Basically, he went from *continuous grazing* of his cattle to something called *management intensive grazing* -- more on that later. Like his son, though, he was glad he made the move.

The boy's dad easily could have been one of several Iowa participants in a government-sponsored demonstration on improving pastureland. Through the years, the best method of reaching farmers with techniques to improve their

operat  
tion p  
pastur  
still h  
the liv  
factor  
by red  
that g  
elimin  
the wa  
T  
U.S. E  
ture a  
Iowa  
soil er  
farm  
water  
better  
land, p  
One tr  
demon  
that ar  
reap e  
benefi  
Adam  
of vita  
Conse  
I  
acres  
landov  
from t  
grass o  
was in  
payme  
of that  
decisio  
While  
grass c  
an exer  
County  
leaving  
it for li  
decisio  
is show  
conditi

► Fences are used to exclude livestock from streams on the Manley Bigalk farm. Streams that are fenced benefit from bank protection and habitat improvement along the stream corridor.

operations has been through demonstration projects. In these demonstrations on pasture improvement, the economics still have to work out for the benefit of the livestock producer. Other important factors include improving water quality by reducing erosion and sedimentation that goes with it, and reducing or eliminating animal waste from entering the waterways.

The DNR, in conjunction with the U.S. EPA and state and federal agriculture agencies are working to reduce Iowa's number one pollution problem -- soil erosion and sedimentation. When farmland is in well-managed grass, the water running off of it will be much better than water running off of cropland, particularly if the ground is hilly. One track these agencies are taking is demonstrating to the livestock industry that an intensively managed pasture can reap economic as well as environmental benefits. One water quality project in Adams County is focusing on an issue of vital interest to conservationists, the Conservation Reserve Program or CRP.

Iowa has more than two million acres signed up in CRP, in which the landowner gets payment for ten years from the federal government to plant grass or trees on erodible land that once was in row crops. In a few years, payments may come to an end on much of that land and farmers will face the decision on what to do with those acres. While signed up as CRP ground, the grass cannot be grazed by livestock, but an exemption was made for the Adams County project to demonstrate that leaving the CRP in grass and managing it for livestock pasture may be a good decision for the farmer. So far, the study is showing that under south-central Iowa conditions, well-managed pastureland is



Tim McCabe, NRCS

the most profitable for the landowner. "That's economic profit, as well as water quality and wildlife benefits," says Rick Sprague, project coordinator.

Most pasture in Iowa is still under *continuous grazing* in which livestock stay in the pasture from spring through fall, as long as grass is available. Unless the operator is very careful, continuous grazing can lead to overgrazing which leads to formation of gullies and outbreaks of weeds. Overgrazing can dramatically reduce the benefits to water

quality and wildlife and it means less economic return to the landowner. Whether or not overgrazing occurs, continuous grazing does not allow the grass to produce at its best.

*Rotational grazing*, a step above continuous, is where livestock are moved from pasture to pasture, based on the condition of the grass. Rotating pastures allows plants to renew energy reserves and rebuild vigor. Rotating also more evenly distributes manure, improving its value as fertilizer. A

further step above, *management intensive grazing*, involves a higher level of management with more and smaller pastures or paddocks, a better water distribution system for the livestock and more controlled movement of livestock from one pasture to another. Using modern electric fences, a new, intensive grazing system can be set up for \$30 to \$60 per acre, less if built with used materials. Watering systems will add some cost, but once in operation, costs for fertilizer, pesticides and labor go down.

Another water quality project in southern Iowa is led by Becky Harris, of the USDA Natural Resources Conservation Service.

"We are looking at the total resource management system for cattle operations. First, we are looking at the impacts of grazing on the physical, chemical and biological characteristics along stream corridors," says Harris. "Then we will assist producers in setting up the best forage and herd management program for their specific operation." In her 16-county area, several projects will demonstrate management intensive grazing while limiting livestock access to streams.

At the North and Middle Bear Creek water quality project in Winneshiek County, Walter Langland and his son, Steve, use fences and livestock crossings to control access to a trout stream. "I believe farmer knowledge of the advantages of conservation is the solution to environmental problems on the farm," says Langland.

Some cattle producers use a watering device that is activated by the cow's nose so they can water themselves without having direct access to streams or ponds. Or, livestock access directly to water can be managed with fencing and stream crossing devices that minimize their impact. Some cattle producers even have water available in every paddock.

Linda and Manley Bigalk are in a Howard County water



Lynn Betts, NRCS

▲ Walter Langland and son Steve are fencing out their cattle on Bear Creek.



Tom Oswald, NRCS

▼ This photo at Bigalk Creek was taken before the livestock were excluded from the stream. The shade of the burr oak was used as a salting area and congregating place for the herd. After one year of livestock exclusion, the area has shown vegetative growth along the bank and even under the trampled burr oak area.



J.R. Olson, DNR

► Example of a livestock stream crossing using electric fencing with stringer.

quality project using fencing to exclude livestock from streams, allowing grasses to grow and give maximum protection to streambanks. The grasses also help filter contaminants out of water flowing through them and into the stream. "We think its worth doing what we can to preserve one of the few cold water streams in Iowa. Even when my grandfather owned the land, the stream was fenced with hand-set burr oak posts and barbed wire," says Bigalk. Bigalk Creek, in fact, was named after one of Manley's forefathers.

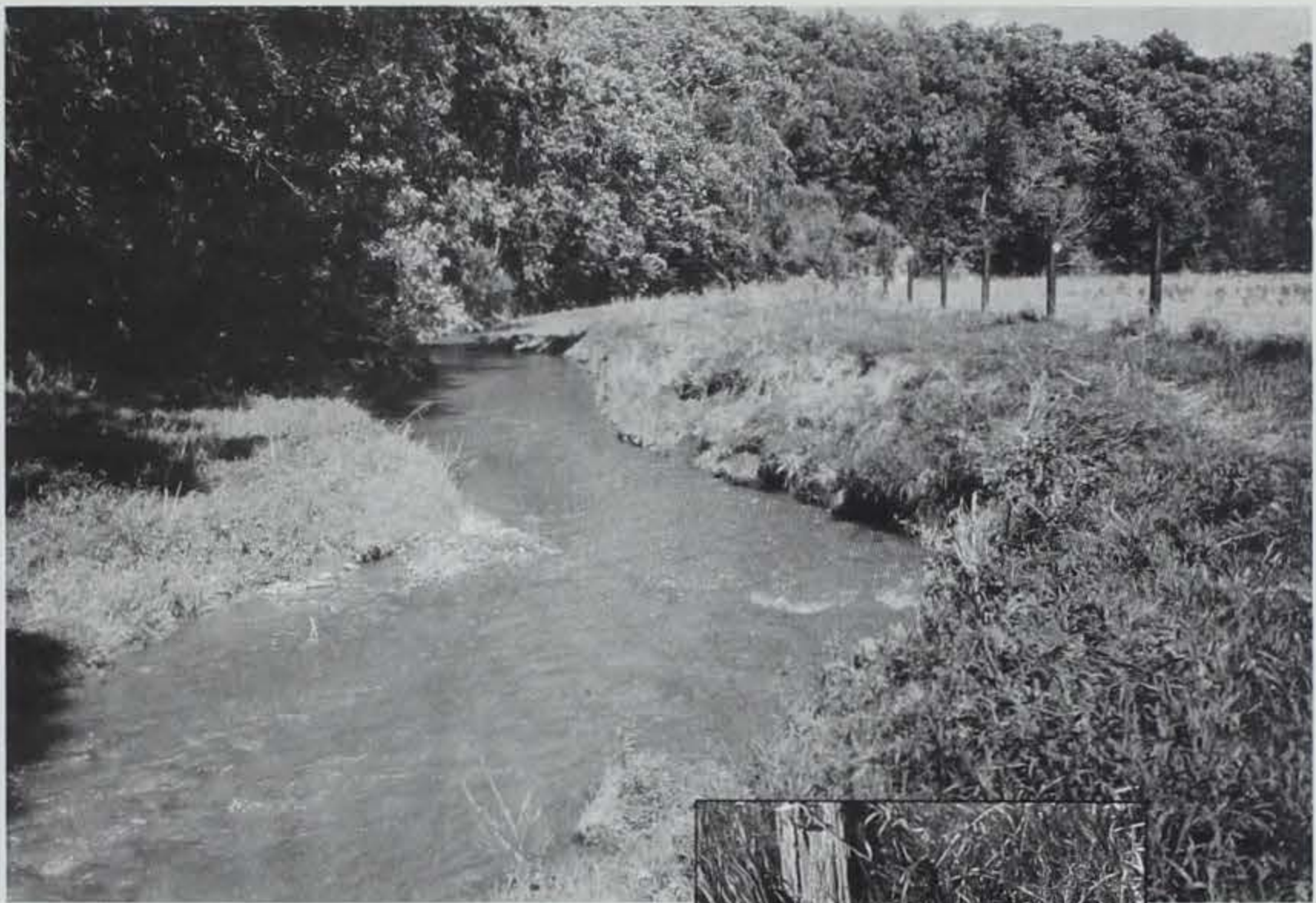
In New Zealand, pasture performance has been a priority for decades and their management of grasslands is among the best in the world. Many of their management ideas are being applied as demonstrations in Iowa.

"There is a lot of land in Iowa that can be better used as pasture rather than row crops," says Dennis Leith



Tom Wilton, DNR

Lynn Betts, NRCS



Ron Johnson

▲ **Livestock learn to use a nose pump for their drinking water.**

from his Three-mile Water Quality Project in Union and Adair counties.

Soil loss on comparable land that is row cropped may exceed ten tons per acre per year, but with a well managed pasture, soil loss is reduced to less than one ton. He, too, keeps livestock from the stream. Using piped water flowing by gravity to the waterers from a spring-fed buried tank, he makes water available in every paddock.

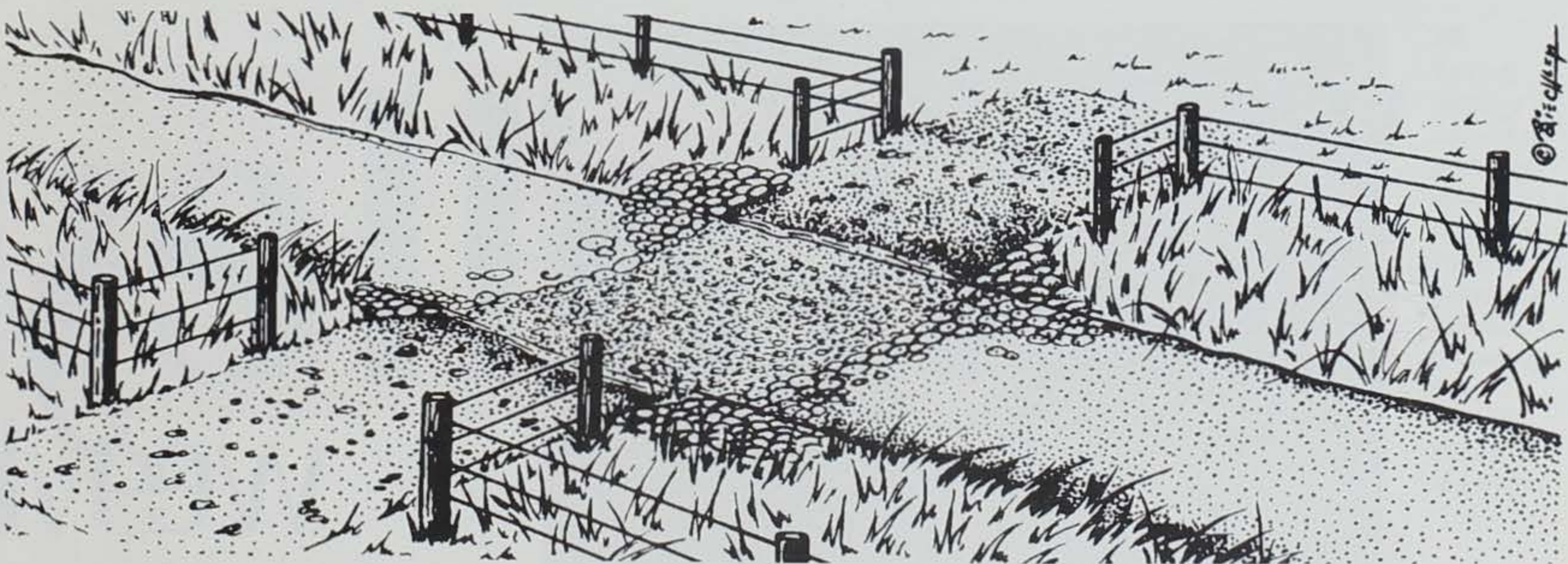
As the success of these and other water quality demonstrations becomes more evident, hopefully more farmers will find value in managing their

pastures for better profit and better water quality. All of us can benefit from farm operations that keep more soil on the land instead of in our waterways. If it puts more money in the farmer's pocket, so much the better.

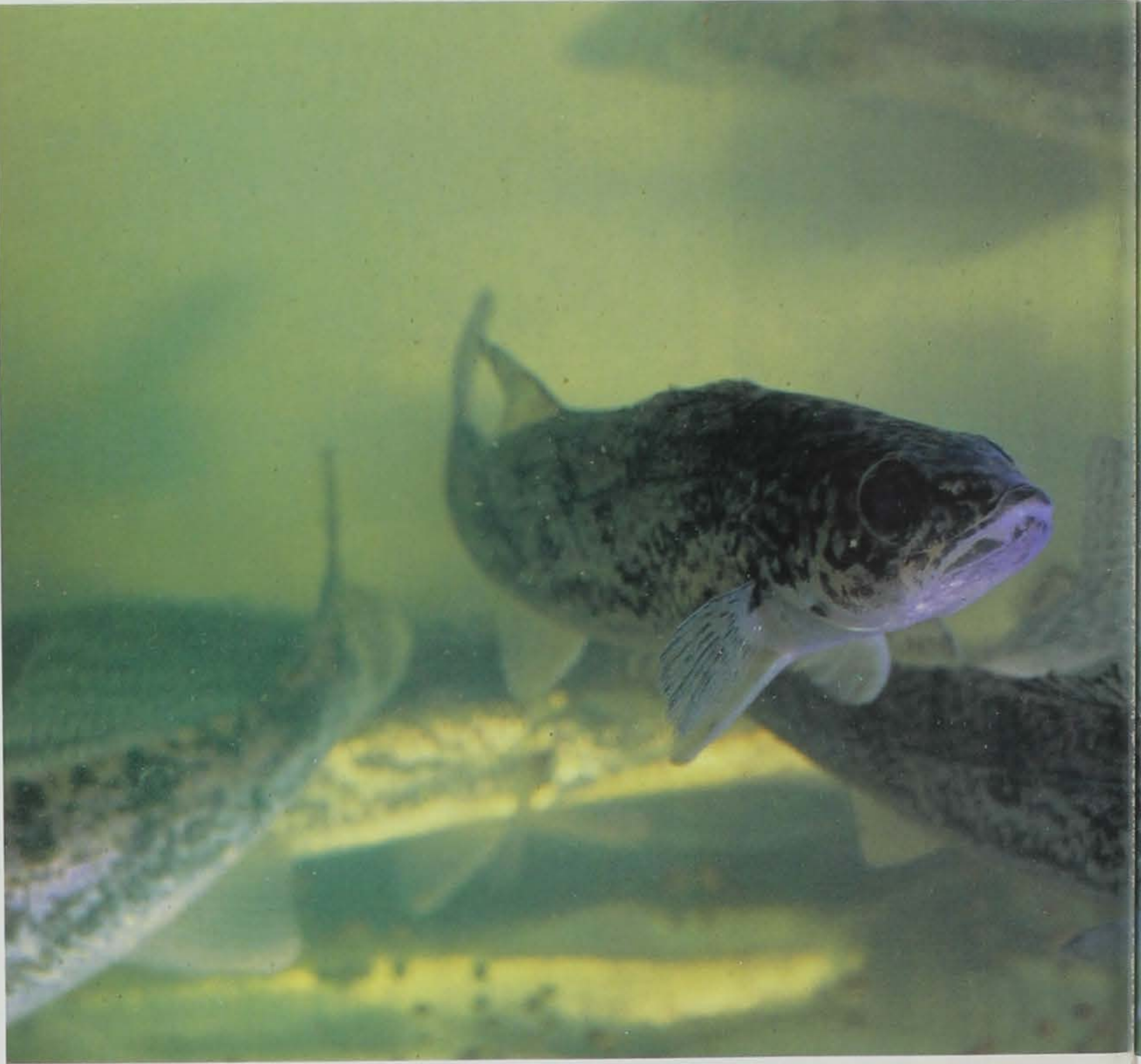
*Ross Harrison is the bureau chief for the departments information and education bureau.*

*Kimberly K. Coulter is the nonpoint source information specialist for the department through Section 319 grant of the Clean Water Act.*

▲ **Fencing in stream cooridors can provide better habitat for wildlife and birds. Water quality and livestock also can benefit from improved pasture management.**



DNR



What  
**BIG**

**walleye**

by Dean Roush and Karen Aulwes

we have

yes  
have



Walleye rearing in the 90s will mean new methods, heartier fish and happier Iowa anglers.

**R**earing walleyes has changed considerably since the 1980s. Techniques to improve fertilization and the ability to preserve or extend semen viability for up to ten days have greatly increased the numbers of walleyes produced. Extending semen's "shelf-life" has eliminated the need to hold large numbers of males for fertilization of the eggs taken from the females. This also means fewer males are taken from the lakes and assures their immediate release back into the water. Advancements in developing commercial diets have enabled Iowa hatcheries to produce larger numbers and larger sizes of viable walleyes for fingerling stocking into Iowa waters.

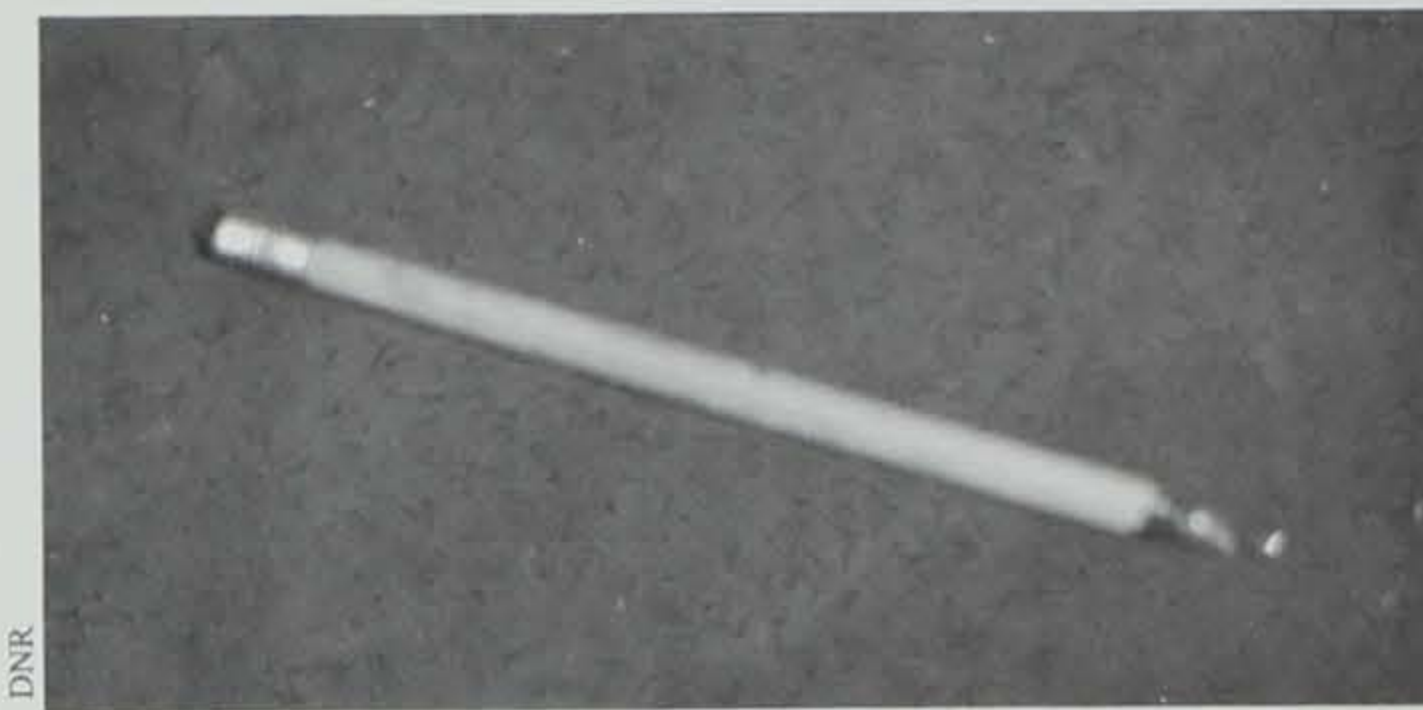
Prior to 1985, walleye fingerlings were raised exclusively at the Spirit Lake Fish Hatchery where several shallow nursery lakes were used to rear walleye fingerlings on natural diets of zooplankton, insects and minnows.



◀ Taking walleye semen in advance and mixing it with an extender solution preserves the semen for up to ten days.

DNR

**Studies done by the Chariton fisheries research station have shown that the walleyes reared on dry feed are superior to the nursery-reared fish in survivability, size and body condition.**



DNR

◀ **Three-day-old fry are ready to be sent to nursery ponds to be reared to lengths of about one and a half inches.**

It is often hard to predict the number of fish that survive in a nursery lake. Depending on their availability, minnows often need to be purchased, adding to overall expenses. And, since it is so difficult to determine the number of fish in the nursery lakes, it is also difficult to feed them the proper amount of minnows. Studies done by the Chariton fisheries research station have shown that the walleyes reared on dry feed (intensively reared) are superior to

the nursery-reared fish in survivability, size and body condition.

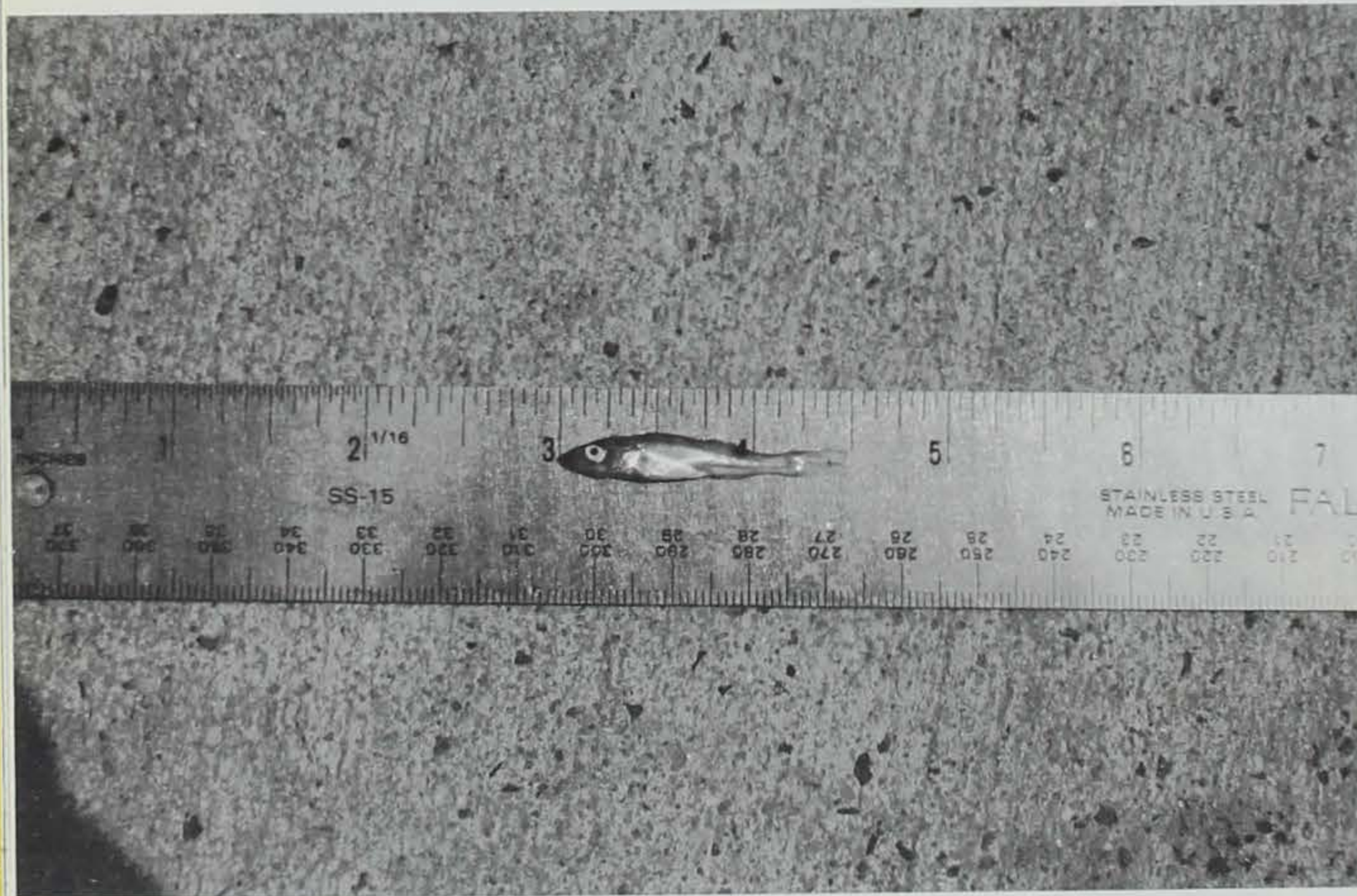
Due to the increasing demand for larger fingerlings and the unpredictability of the nursery lakes, the Spirit Lake and Rathbun hatcheries began raising walleye fingerlings in indoor rearing tanks, in 1985, using formulated dry diets. Using this method of intensive rearing, newly hatched fry are raised in nursery ponds or lakes for the first four to six weeks.

During this time, the young fry grow to approximately one and a half inches and are then returned to the Rathbun Hatchery to be raised on dry feed.

The transition from zooplankton to dry diet is a critical step to minimize starvation and cannibalism. A large number of fish can be lost if they fail to make the transition to the dry diet. Lack of tank room space and overcrowding may contribute to increased disease problems. Since 1990, a portion of the fingerlings are now moved to outdoor circular ponds once they reach about three inches in length to avoid overcrowding.

The fingerlings are placed into a temporary pen inside the circular pond to confine them to the feeding area. Once the fish have located the feed (usually after a week), the pen is removed and the fish have free range of the pond.

The fish do well in the outdoor environment due to higher water flow rates and lower population densities than in indoor raceways. Raising walleyes in the outdoor ponds is also less labor intensive, and diseases are less of a problem due to reduced overcrowding. In addition, the fish raised in the outdoor



DNR

▲ **Fingerlings taken from nursery ponds after four weeks are brought back to the hatchery to be raised on dry feed.**



▼  
 After six weeks of training on dry feed indoors, the fry are moved to outdoor concrete circular ponds. A temporary pen confines them to the feeding area for one week.



DNR



DNR

▲  
 After about 13 weeks in the outdoor ponds, the fingerlings reach eight-inch lengths and are stocked into Iowa lakes.

with great success.

In 1994, a total of 75,000 intensively reared, eight-inch fingerlings were produced, and the stocking request for 1995 will remain about the same. The 1996 production request for intensively reared walleye fingerlings will be well over 100,000. Space is still a limiting factor in raising greater

ponds attained a larger size than those reared inside the hatchery. Since 1991, 80 percent of the fingerling rearing at the Rathbun Hatchery has been done in the outdoor ponds

numbers of fingerlings intensively, so nursery lakes are still used for 80 percent of the total walleye fingerling production.

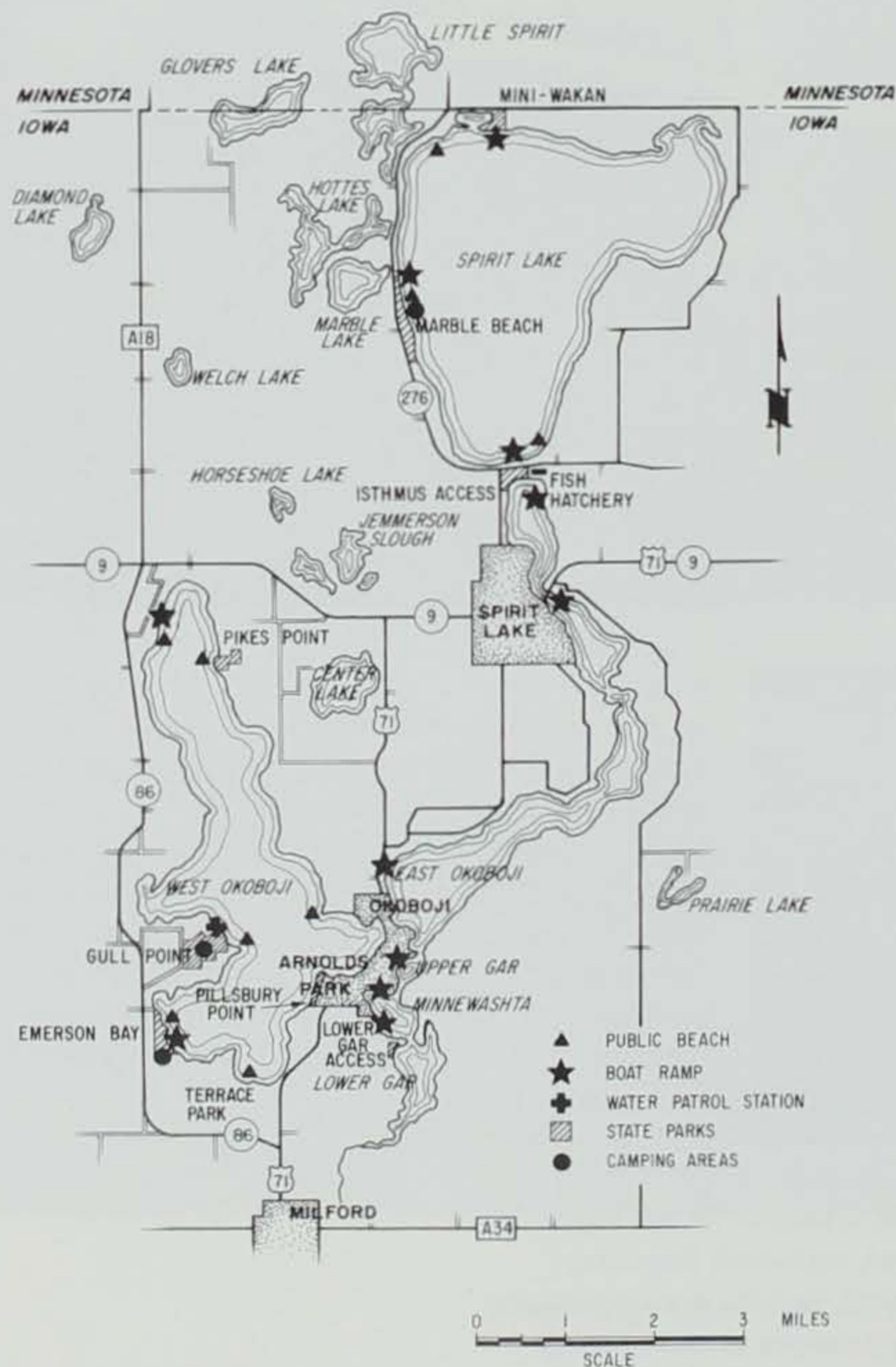
These new techniques used in walleye production will enable the state fish hatcheries to produce more and larger walleyes at reduced costs. And this translates to greatly improved fishing for Iowa's walleye anglers.

*Dean Roush and Karen Aulwes are natural resource technicians at the Rathbun Fish Hatchery.*

# THE IOWA GREAT LAKES REGION

AN AREA RICH IN IOWA HISTORY

by David L. Stoever



▲ During the last 140 years, the Iowa Great Lakes, an area rich in Iowa history, have evolved into one of Iowa's premier vacation spots.

Approximately 14,000 years ago, the Wisconsin glacier carved out deep depressions in many parts of Iowa, and following its retreat, filled the depressions with melt waters, forming several lakes -- most notably the Great Lakes region of northwest Iowa. For many people in Iowa and surrounding states the mention of the Okobojis or Spirit Lake conjures up images of warm summer days spent boating, swimming or fishing, and nights devoted to the pursuit of fun at the amusement park or any of the many other popular night spots. To other people the area is a place to get away from the grind of daily life and a chance to relax. Over the last 140 years, the Iowa Great Lakes have evolved into one of Iowa's premier vacation spots and an area rich in Iowa history.

The earliest Europeans on the scene, French explorers of the 1700s, found Dakota Sioux Indians living in the region. Their name for the lakes, *mini-wakan*, means "spirit water," and gives credence to the legend that the Indians regarded the region with reverential awe. Originally, the entire region was known to the early pioneers as Spirit Lake. Later, the name was given to one lake in the region. At 5,684 acres, Spirit Lake is the largest natural lake in Iowa.

The origin of the word *okoboji*, the name of the next two largest lakes in the area, is not clearly understood. At one time, residents of the area used to tell visitors that Okoboji was a great Indian chief, often showing the visitors grave sites said to contain his body. No Chief Okoboji existed as far as can be determined, and today the word *okoboji* is believed to be a variation of the Dakota Sioux word *okoboozhy*, presumed to mean "reeds or rushes." This name was first attached to East Okoboji which was originally surrounded by these plants.

West Okoboji was known to the Dakota Sioux as Minnetonka meaning "great waters." For some unknown reason, early settlers in the area decided to use the word *okoboji* to describe this lake too, creating two Okobojs, East and West.

Three smaller lakes in the region were named Upper, Middle and Lower

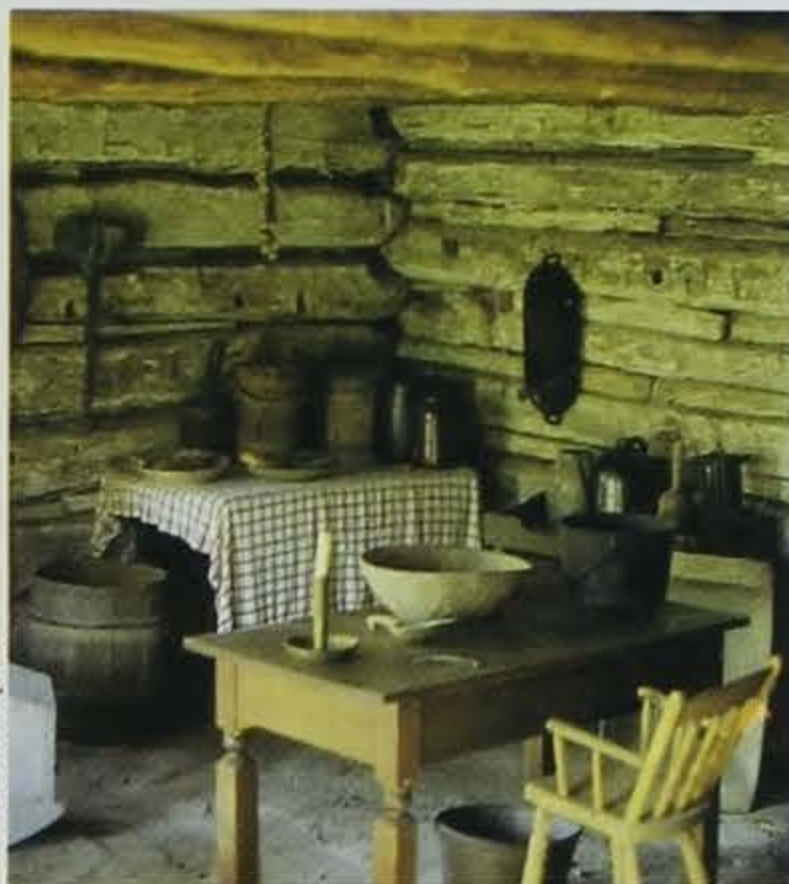
Gar after the fish which inhabited their waters. Later the name of Middle Gar was changed to Lake Miniwashta by Abigail Gardner Sharp, a survivor of the Spirit Lake Massacre, in honor of the Indian brave, Hoton-ho-Washta, who rescued her from captivity.

Probably the most recounted piece of history from the Great Lakes region is the Spirit Lake Massacre. During the summer of 1856, European settlers arrived at the Iowa Great Lakes region and constructed six log cabins. In March 1857, a tribe of Wahpekute Sioux Indians, lead by Inkpaduta, ravaged the settlement and killed 34 residents of the area. Four women were taken captive, two were later killed and two, Abigail Gardner and Margaret Ann Marble were later released. It is believed that Inkpaduta was taking revenge on the European settlers for the murder of his brother and his brother's family two years earlier by other settlers. Abigail Gardner later married and returned to the area. She repurchased her family's log cabin and ran a small museum in the cabin that told the story of the Spirit Lake Massacre. On July 25, 1895, a monument was erected in memory of victims of the massacre. A 100-year anniversary rededication of the memorial is being planned for this July 25. The Gardner Cabin, a state historical site, is managed by the State Historical Society in cooperation with the Department of Natural Resources which maintains the site's grounds.

During the spring of 1917, the Iowa General Assembly passed an act to establish a system of state parks in Iowa. A number of parks were developed over the next several years, but it took an unrelated event in history -- the Great Depression of the 1930s -- for the Iowa park system to really become established.

During this time, the Civilian Conservation Corps, a program established by the federal government, put young unemployed men to work on all types of conservation projects. Among such projects in Iowa was the establishment of new parks and the construction of facilities in these parks.

On June 1, 1933, the area's first CCC camp arrived in Spencer and pitched their tents. Several projects



Jerome Thompson

▲ **The Gardner Cabin, one of Iowa's first tourist attractions, survives as a reminder of one of Iowa's tragic frontier events. A 100-year anniversary rededication of the memorial to the victims of the attack is being planned for this July 25.**

▶ **Abbie Gardner Sharp (above) renamed Middle Gar Lake, Minniwashta, after Hoton-ho-Washta (right), who rescued her from captivity.**



benefiting or establishing state parks within a 50 mile radius of Spencer where begun.

During the first summer, surveys were completed at Pillsbury Point, Sunset Beach and Mini-Wakan. Stone steps were constructed at Sunset Beach and the canal entrance near Crescent Beach Hotel on Lake West Okoboji was dredged. At Silver Lake, near Lake Park, a new park was developed by building a road, vehicle bridge and extensive shoreline riprapping. At Mini-Wakan, a whole new tract was developed into a park with parking areas and adjacent nursery. The camp enrollees also helped gravel the newly constructed "grade road" leading to the park and put extensive riprapping along the shoreline facing Spirit Lake.

During the 1934, construction season, improvements at Mini-Wakan State Park included building of a foot bridge approximately 40 feet long by 4-1/2 feet wide. About one mile of trail

was blazed, graded and graveled. Several thousand shrubs were planted and 3,000 yards of riprap were placed along the grade road. A stone shelter house of 2,400 square feet and two sanitary latrines were also constructed.

At Pikes Point State Park a double shelter house of faced field stone with two fireplaces was constructed. At the same time, an open shelter house of 720 square feet was completed at Silver Lake State Park (later changed to Trapper's Bay State Park). At Pillsbury Point State Park a trail system, stone steps and seven stone seats were constructed to accommodate the public.

Also during 1934, work started on facility development at Gull Point. At the same time, efforts were made to add to the original land acquisitions. By 1935, land purchases and the CCC construction of park facilities at Gull Point were completed. Buildings constructed included a stone lodge,



Ken Formanek

◀ **Sailboating, fishing and all varieties of water recreation abound in the area.**

boathouse, two stone latrines, service-office building and a park residence.

O.L. "Ott"

Fulton was appointed the first park ranger at Gull Point. He had served as the leader of a camp of 100 CCC employees at Peterson. At that time, one of the rules the ranger enforced was a ban on dancing at the lodge.

Rules also precluded the reservation of the lodge on Sundays and holidays.

By 1935, the work on state parks in the Iowa Great Lakes region was essentially completed. On July 3, 1935, the newly formed Conservation Commission held a meeting at the new Gull Point State Park lodge. They spent most of their meeting touring the new state parks in the Iowa Great Lakes region.

In 1936, a CCC camp from Guthrie Center moved to Milford to begin work on the Lakeside Laboratory. They were responsible for the construction of the stone structures which are



Ken Formanek

Residents and visitors to the Iowa Great Lakes region owe a debt of gratitude to those early conservationists who had the foresight to preserve natural areas around the region and were willing to spend the money necessary to develop those areas so they can be enjoyed today.

*David L. Stoeber is a park ranger for the department at Gull Point State Park.*

◀ **There has been tremendous growth in the area. Today, there are more than 20 separate parks in the area. Jet skiers now mix with anglers and sailboaters on the region's many lakes.**

▼ **While the 40-foot-long by 4-1/2-foot-wide CCC bridge no longer exists, the area at Mini-Wakan is still known as "the footbridge."**

DNR





DNR

"HOWARD COUNTY No. 1 LIME SPRINGS PRAIRIE . . . Gently rolling with drainageways which afford some types of wet meadow flora. Tall grass prairie. Tall bluestem *Andropogon furcatus* is dominant. . . . Flora typical of northeastern Iowa. Birdfoot violet (*Viola pedata*) and shooting stars (*Dodecatheon meadii*) are abundant in spring. In the gully aspect, blazing star (*Liatris pycnostachya*), smooth goldenrod (*Solidago glaberrima*), wild tiger lily (*Lilium michiganense*), Indian plantain (*Cacalia tuberosa*) and rattlesnake master (*Eryngium yuccifolium*) are abundant. Virgin. In excellent condition. . . . An impressive sweep of rolling country may be seen. A colorful panorama of flowering plants occurs throughout the growing season."

--Ada Hayden, 1946

"A Progress Report on the Preservation of Prairie,"  
*Iowa Academy of Science*

Color photo by Bill Witt



# SPECIAL OFFER!

Supply the envelope and stamp  
to mail this order and  
we'll supply a subscription to a friend . . .

**FREE!**



***Iowa Conservationist Magazine***

**Renew** *OR*  
 **Add one year to my present subscription. (Attached current label, if possible.)**  
*OR*  
 **Make me a new subscriber to the *Iowa Conservationist*.**

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone ( \_\_\_\_\_ ) \_\_\_\_\_

Other side must be filled out to take advantage of this offer.

Please mail to:

**Iowa Conservationist,**

**Iowa Department of Natural Resources,**

**Wallace Building, Des Moines, IA 50319-0034**

or call **515-281-3887** for VISA and MasterCard orders.

Check enclosed for \$9.97

---

***Give the Iowa Conservationist  
to a Friend -- FREE!***

Give a gift subscription to the *Iowa Conservationist* FREE, by simply subscribing yourself or renewing\* your present subscription for one year.

**Save \$9.97**

By paying \$9.97 for a year of the *Iowa Conservationist*,  
get a free subscription to give as a gift.  
Simply fill out the card above (*both sides*).

**Credit card orders call  
515-281-3887**

**Only one offer per subscriber. No multiple-year orders.  
Offer expires December 31, 1995.**

*\*Current subscribers not up for renewal may take advantage of this offer by simply adding a year to their present subscription.*

515-281-3887

**SPECIAL OFFER!**

*Iowa Conservationist Magazine*

**Send a subscription to:**

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Donor's name (if different from top address) \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Mail to: Iowa Conservationist, Iowa Department of Natural Resources, Wallace Building,  
Des Moines, IA 50319-0034 or call 515-281-3887 for VISA and MasterCard orders.

**See Other Side  
for a Great Offer!**



# Hayden Prairie

CELEBRATING 50 YEARS



"HOWARD COUNTY No. 1 LIME SPRINGS PRAIRIE . . . Gently rolling with drainageways which afford some types of wet meadow flora. Tall grass prairie. Tall bluestem *Andropogon furcatus* is dominant. . . . Flora typical of northeastern Iowa. Birdfoot violet (*Viola pedata*) and shooting stars (*Dodecatheon meadii*) are abundant in spring. In the gully aspect, blazing star (*Liatris pycnostachya*), smooth goldenrod (*Solidago glaberrima*), wild tiger lily (*Lilium michiganense*), Indian plantain (*Cacalia tuberosa*) and rattlesnake master (*Eryngium yuccifolium*) are abundant. Virgin. In excellent condition. . . . An impressive sweep of rolling country may be seen. A colorful panorama of flowering plants occurs throughout the growing season."

--Ada Hayden, 1946  
 "A Progress Report on the Preservation of Prairie,"  
 Iowa Academy of Science

Color photo by Bill Witt



"Mr. Stiles explained that Dr. Ada Hayden, now deceased, who was formerly associated with the Botany Department of the Iowa State College, had started the movement to acquire virgin prairies for preservation and study. . . . Mr. Stiles recommended that the Howard County 240-acre prairie tract, which she was instrumental in acquiring for preservation by the State, be named in her honor. . . . It was moved and seconded that the Howard County 240-acre prairie tract be named the "Hayden Prairie" in commemoration of her services in the preservation and acquisition of this and other prairie tracts. . . . Motion carried."

--Minutes of the  
 Iowa Conservation Commission, 1950

"Hayden grew up with access to native prairie, fell in love with it, and was faithful to it to the end of her days. . . . the preservation of prairie areas in Howard and Pocahontas counties in the early 1940s, . . . was credited to her. . . . These first two preserves were later named the Hayden and Kalsow prairies."

--Duane Isely, 1989  
 "Ada Hayden: A Tribute," Iowa Academy of Science

The year 1995 will mark the 50th year that Hayden Prairie State Preserve has been protected by the State of Iowa. Because Hayden Prairie was the first project of its kind, the golden anniversary of Hayden Prairie also marks a half-century of prairie preservation in Iowa. In commemoration of this landmark event, this poster is dedicated to Hayden Prairie State Preserve and to Dr. Ada Hayden, after whom the area was named following her death in 1950. Dr. Hayden was a dedicated conservationist whose writings and activism first brought the subject of "prairie preservation" to light in Iowa.



▲ Birdfoot violet

This poster contains many historical quotations about Hayden Prairie garnered from diverse reports, letters, articles and notes inhabiting the "Hayden Prairie" file of the DNR's Natural Areas Inventory. Due to space limitations, only a few quotations could be selected for this poster, but they convey some of the events and emotions that shape the history and appeal of this beautiful prairie remnant.

The photographs comprising this poster were submitted by some of Iowa's finest nature photographers: Bill Witt is a state representative from Cedar Falls and a longtime supporter of prairie preservation; Carl Kurtz is a naturalist and farmer from Marshall County with a keen interest in all aspects of prairie preservation, management and restoration; Tom Rosburg is recently graduated from Iowa State University where he earned his doctorate degree studying prairie ecology of the Loess Hills; Larry Stone is an outdoor writer for the *Des Moines Register*, where his regular "In the Open" column appears each Sunday; Mark Leoschke is a professional botanist with extensive experience in natural areas inventories in Iowa, Minnesota and South Dakota.

*Special note: The 50th anniversary of Hayden Prairie will be commemorated with a special, public ceremony by the State Preserves Advisory Board and the Iowa Department of Natural Resources at 2 p.m. on Friday, September 8, 1995 at the north entrance to Hayden Prairie State Preserve.*



◀ Wild tiger lily



▼ Shooting star



▲ (top left, clockwise) Big bluestem, blazing star, smooth goldenrod and rattlesnake master

"According to Miss Hayden's very fine prairie survey, there are now very few native prairie areas, unplowed and ungrazed . . . (like) the Howard County area, the State's first purchase. . . . The land is quite level. . . . Also, there are few trees nearby so that one has a free perspective of the distant horizon. . . . In a beautiful prairie area like the one in Howard County, one may recapture something of the past. It is hoped that this may be the beginning of a comprehensive statewide prairie acquisition program."

—Mrs. Addison Parker, Iowa Conservation Commissioner, 1946 Dedication speech, "Iowa's First Prairie Preserve," Iowa Academy of Science

Bobolink ▶



"(The) bobolink (is an) . . . abundant breeder (and) one of the most conspicuous prairie birds . . . found in all prairie vegetation except extremely wet or tall grass or bushes. . . . (its) territories are almost always associated with the prairie border or wet areas."

—Joseph Schaufenbuel, 1984 "Birds of Hayden Prairie," Report to Iowa Conservation Commission



▲ Shooting star

"Hayden Prairie is perhaps at its most spectacular in late May, when shooting stars and prairie smoke cast a pink haze over the entire prairie. . . . On a brilliantly clear July afternoon, the bluestem is shoulder high. . . . In all, nearly 200 species of native plants are known from Hayden Prairie."

—Mark Leoschke and Kay Kiler, 1990 "Hayden Prairie: An Iowa Jewel," Iowa Conservationist



▲▲ Controlled burning produces a more vigorous growth of vegetation. Left, three shots of Hayden Prairie one month, two months and five months after a burn in 1972.

"The wind suddenly changed directions at about the time one of the fire pumps ran out of water. The beaters were unable to extinguish the fire fast enough, and it crossed the fire lane and got into the heavy vegetation on the north side of the segment. Additional help was called in from the other fire crew, and the fire was extinguished after it reached a fence line and came up against a plowed field on adjacent land. The uncontrolled fire had burned approximately two acres by the time we were able to stop it. The incident provided a good lesson, and made everyone more cautious the remainder of the day . . ."

—Dean Dalziel, Unit Manager, 1971 Report on First Controlled Burning of Hayden Prairie

"Wildlife species and population levels as well as their response to controlled burning have been observed over a ten-year period. . . . Adverse effects appear to have been minimized due to the early burning period in advance of nesting (and) the relatively small units being burned at any one time. . . . Since 1971, we have burned over 1,000 acres with the only known loss of three early pheasant nests and death or injury to a small number of garter snakes. We have walked the burned area many times and have observed short-eared owls hunting as soon as the smoke clears, and we have concluded that most small mammals are not directly affected by the burning."

—Jim Ripple, Area Manager, 1981 Notes on Hayden Prairie

"Although the evening light was reduced, we sighted almost immediately several marsh hawks hunting in the central portion of the tract. . . . In the waning light, we now noted the deeper wing-strokes and tilting flight of three short-eared owls. . . . Dr. Vane called attention to three whistling swans flying westward. My Iowa sight records of swans are rare, but it somehow seemed appropriate that this large white bird should be glimpsed from the little section of virgin prairie. . . . We left Hayden Prairie well satisfied with the time spent."

—J. Harold Ennis, 1990 "The Hayden Prairie Revisited," Iowa Bird Life

"My husband and I visited our first prairie on June 10, 1989. We were flabbergasted. Because it was a day of such pleasure, I committed it to memory. Long before stepping foot on a real prairie, we had recognized, like the good ecocitizens we are, that North America's grasslands are critical habitats worthy of preservation. We lamented that hardly any of this native turf is left. But, frankly, prairies had always looked dull to us. We weren't expecting to fall flat on our faces in love with them. . . . As we stood there on our first prairie -- it was Hayden Prairie, a 240-acre preserve in northeastern Iowa just west of Chester -- we were reminded of the flaw of passing judgment, whether on a face or a landscape, based on a fleeting view. For generations of Americans brought up on vistas of tidy lawns and geometric fields of amber grain, prairies as seen from the window of a car appear to be a little trowsy. They look abandoned. They haven't been abandoned, of course. Rather, they have somehow managed to escape the attention of *Homo sapiens*."

—Suzanne Winkler, 1990 "Prairie Landscapes Preserved," New York Times

During the mid-70s I was on hand for a burn in which the north 100 acres were burned. Later that spring, I went back (to photograph) the shooting stars in late May. There were a few small quaking aspens present in the foreground of the photos, but for the most part there were no aspens as far as the eye could see. If one had not seen the area (change) in the intervening years you would not believe you were in the same place. From the access on the north side of the preserve, one can now see clones of aspen over most of the north 160 acres. They have grown in diameter and height since we viewed them two years ago. . . . We realize that state budgets are tight and that the preserves board staff is stretched to the limit, however, we must take a creative and aggressive approach to prairie management or we will lose the resource."

—Carl Kurtz, 1994 Letter to Director of Department of Natural Resources and Chair of the State Preserves Advisory Board

" . . . staff worked at Hayden Prairie along with some excellent volunteer help . . . from the Prairie Network. . . . several clones of aspen were cleared out. . . . with the help of some Wildlife Bureau staff, several work days were spent on brush control at Hayden Prairie. . . . work days have made a major impact on aspen encroachment over the last two years."

—John Pearson, 1994 Minutes of State Preserves Advisory Board



Larry Stone



Larry Stone

"A battle is raging on some of Iowa's prairie preserves. . . . With power saws, tractor mowers, herbicides -- even hammers and wrecking bars -- biologists are fighting an invasion of trees that could threaten the prairie communities. . . . Can mowers, chemicals and careful burning preserve those bits of heritage? Or will the natural areas go the way of the bison, elk and the uncontrolled prairie fire?"

—Larry Stone, 1994 "In the Open" column, Des Moines Register



Larry Stone

▲ (top left, clockwise) Controlling aspen by girdling, mowing and use of herbicides



▲ Aspen invading Hayden Prairie

# Creating A BUFFER

Article by Joe Colletti, Dick Schultz, Rich Faltonson and Tom Isenhart  
Photos by Dick Schultz



Ron walks along the lane leading from his farmstead to his fields. It's 6 a.m. and the cool breath of the summer morning feels fresh and stimulating. Ron and his sleepy-eyed grandson, hitchhiking on his "grampa's" shoulders, are scouting for wildlife as they approach their farm stream. Just the day before they had seen a doe and her two fawns, six mallard ducks and four pheasants. Other birds and small animals were mentally added to their early morning "game of wildlife inventory." A game of life and enjoyment they would not have been able to play if Ron had not been receptive to change. Ron walks to the edge of his northern most cornfield. He turns south, visually inspecting the habitat of trees, shrubs and native prairie grasses along his stretch of Bear Creek. Just a

short time ago this same view looked very different. Ron is very pleased with what he sees and knows that his bufferstrip system is helping to prevent soil erosion and excess fertilizer and pesticides from polluting Bear Creek and affecting his downstream neighbors. Ron and his grandson enjoy their walks mostly because they enjoy the wildlife, the many sights, sounds and colors of their bufferstrip, and a revitalized Bear Creek.

The land along a stream that floods annually or periodically is known as the floodplain or riparian zone. Under natural conditions this land and the "natural" vegetation growing on it acts as a buffer to trap sediments from any upslope erosion. For streams associated with most agricultural land it also serves

to filter and buffer fertilizers and pesticides. A mixture of plants provide a "textured surface" to slow down surface runoff causing the soil to be trapped in the vegetation and the water to soak into the soil. Once the water enters into the soil, nutrients from fertilizers and pesticide residues in the water are taken up by the plants or broken down by soil organisms. Thus, these natural plants and the soil act as a "living filter" to clean potential pollutants from the water before they reach the stream, and to stop eroded soil from entering the stream. These streamside riparian buffers also provide valuable wildlife habitat. Twigs and leaves, as they decompose, provide nutrients to minute aquatic organisms important as food for larger aquatic species. Branches from fallen trees and exposed



▲►  
**Is the bufferstrip system working? In a word, Yes!** Rapid change in vegetation, appearance and aesthetics that the Risdal project site has undergone since planting in the spring of 1990 is evident by the comparison shots taken in 1990 and 1994. The trees, shrubs and switchgrass are growing well. The whole system has literally "jumped" out of the ground and is functioning like nature's filter.

roots provide necessary habitat. Shade from streamside trees and shrubs help keep the waters cool for a healthy in-stream environment.

In Iowa, as throughout the Midwest, farmers have cleared many of these naturally vegetated riparian areas for crop production. They have also used the land along the stream for grazing by fencing livestock into these areas. Stream channels have been straightened and crop fields drained by tiles. These practices have bypassed the living filter and increased the flow of streams causing accelerated bank erosion. With this land use for crops and livestock production have come the benefits of plentiful and inexpensive food. However, there have been unintended "costs" to the environment that threaten the public via polluted

water and clogged flood-control structures.

Removal of the riparian vegetation has reduced the natural function of this "buffer zone" to trap sediment, and to reduce or stop fertilizer, manure and agricultural chemicals from entering the surface water of our streams, or more importantly, from entering our groundwater.

Based on many discussions with farmers, it is clear that the Iowa farmer and the agricultural sector recognize and accept the responsibility of land stewardship. They are actively involved in actions to minimize unintended environmental impacts such as non-point source (NPS) pollution while maintaining (or enhancing) farm profitability. Iowa farmers have taken many positive steps toward effectively reducing soil erosion, and controlling the inputs of nitrogen, manure and pesticides to *agronomic* crops. Farming practices such as minimum tillage, conservation tillage, use of grassed waterways and terraces reduce soil erosion and other NPS pollutants.

Upland conservation practices and riparian bufferstrips are complementary. If upland conservation practices are not employed, then a buffer strip system may not be enough to keep agricultural-based non-point source pollutants from the stream.

### Helping Nature Recreate a Natural Buffer Zone

Based on experience and guided by the results of others, we recommend a system that consists of three components: a planted strip of trees, shrubs and grasses on the bank of a stream (the field-edge-stream connection); streambank stabilization (bioengineering) units installed down the bank edge and into the water; and small constructed wetlands which intercept tile flow from adjoining crop fields.

### The Tree, Shrub and Grass Component

Combinations of trees, shrubs and grass vegetation offer the greatest protection for the stream and encourage natural processes that remove NPS pollutants before they can enter the stream. The width of this vegetation along the bank can vary from perhaps as narrow as 33 feet to

as wide as 100 feet. The rule is -- the greater the slope of the adjacent cropland, the wider the strip needs to be to function properly. Also, certain sandy soil types, regardless of slope, need wider buffers. A bufferstrip, adjacent to pastureland, can be narrower where the major function is bank stabilization.

The central Iowa model, for which there is real data on its effectiveness, has a total width of 66 feet. It has five rows of trees planted next to the creek with four feet between trees and six feet between rows. The model can be adapted by dropping a row of trees and increasing the width of shrubs or grasses. By using a mixture of fast-growing species such as silver maple, cottonwood hybrids, willow and green ash, any stream in need can quickly be revegetated. To promote biodiversity, two shrub rows next to the rows of trees are recommended. Red-osier dogwood, ninebark, Nanking cherry, and nannyberry are several that have worked well in the model. A 24-foot-wide strip of switchgrass -- a deep-rooted perennial "prairie grass" -- should be planted next to the shrubs and adjacent to the crop fields. A mixture of warm-season prairie grasses also can be used.

### Streambank Stabilization

As much as 50 percent of the soil sediment carried in our Iowa rivers comes from streambank collapse. Soil bioengineering involves using live plant material (typically willow) placed into the streambed and bank, and bundles of trees as "revetments" anchored at the toe of the bank in the water. The bundled trees (Eastern redcedar works great) absorb energy from the fast-flowing water,

physically trap debris and soil, and allow the willows to be placed through the bundles to help anchor both into the streambank. Soil bioengineering should be applied on the inside bends of severely eroding stream banks. If the bank height is more than 12 to 15 feet tall, the bank needs to be reshaped to reduce the vertical drop. Bundled dead silver maple and tree willows have been used successfully on several hundred feet of previously eroding streambank in Bear Creek. (See "Streambank Stabilization Success -- Willow Posts" by Kimberly K. Coulter in the May/June 1995 issue of the *Iowa Conservationist*.)

### Constructed Wetland

The third component of the bufferstrip system involves creation of small wetlands. The idea is to use the natural water "purification" processes of a wetland. Basically the wetland works by providing annual organic matter (cattails) for millions of microbes to live -- consuming the nitrogen entering with the tile water. Based on wetland research from Iowa State University, the rule of thumb for sizing a constructed wetland is one acre of wetland for every 100 acres of row crop ground drained by the tile line.

We recognize that it may not be possible nor prudent to develop a small wetland association with every tile line entering a stream. But there are opportunities to place many along our small Iowa streams.

### Making It Happen in Iowa

Just a few miles north of the central Iowa town of Roland a 3/5-mile stretch

of Bear Creek is being revegetated with an innovative combination of trees, shrubs and warm-season grasses. It is stabilized by streambank bioengineering, and with a small constructed wetland is protected from tile water laden with excess nitrogen and atrazine. All of this is being developed and studied on the Ron Risdal farm by a group of Iowa State University researchers. The project was first funded in 1990 by the Leopold Center for Sustainable Agriculture, and more recently by the Iowa DNR (EPA 319 non-point pollution control money) and the USDA.

The Bear Creek watershed is located mostly in Story County and totals about 17,700 acres. This watershed is drained by Bear Creek, which flows south from the headwaters in Hamilton County for 22 miles before it empties into the Skunk River several miles south of Story City. Bear Creek also has more than 17 miles of major tributaries, which drain hilly to level corn and soybean fields.

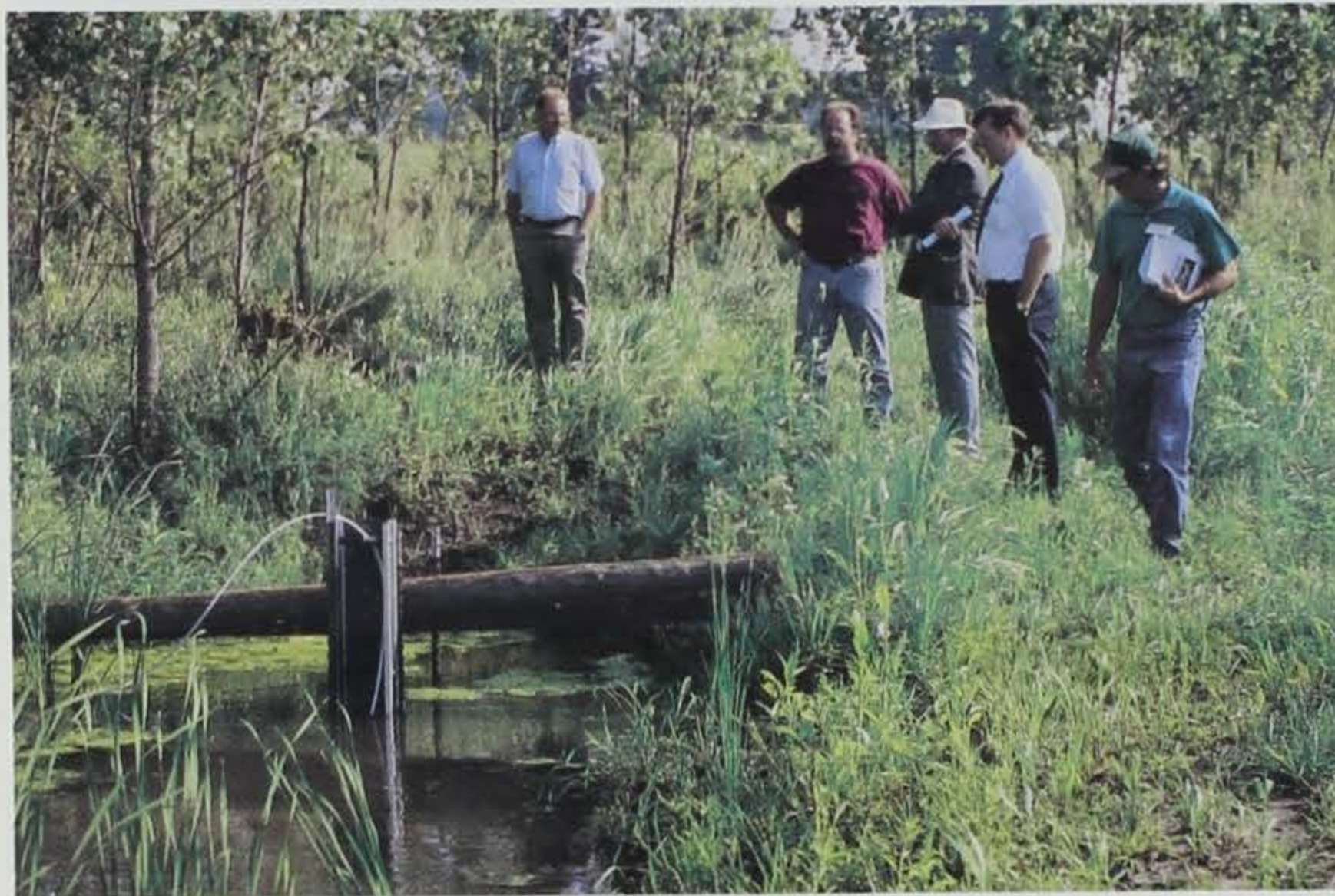
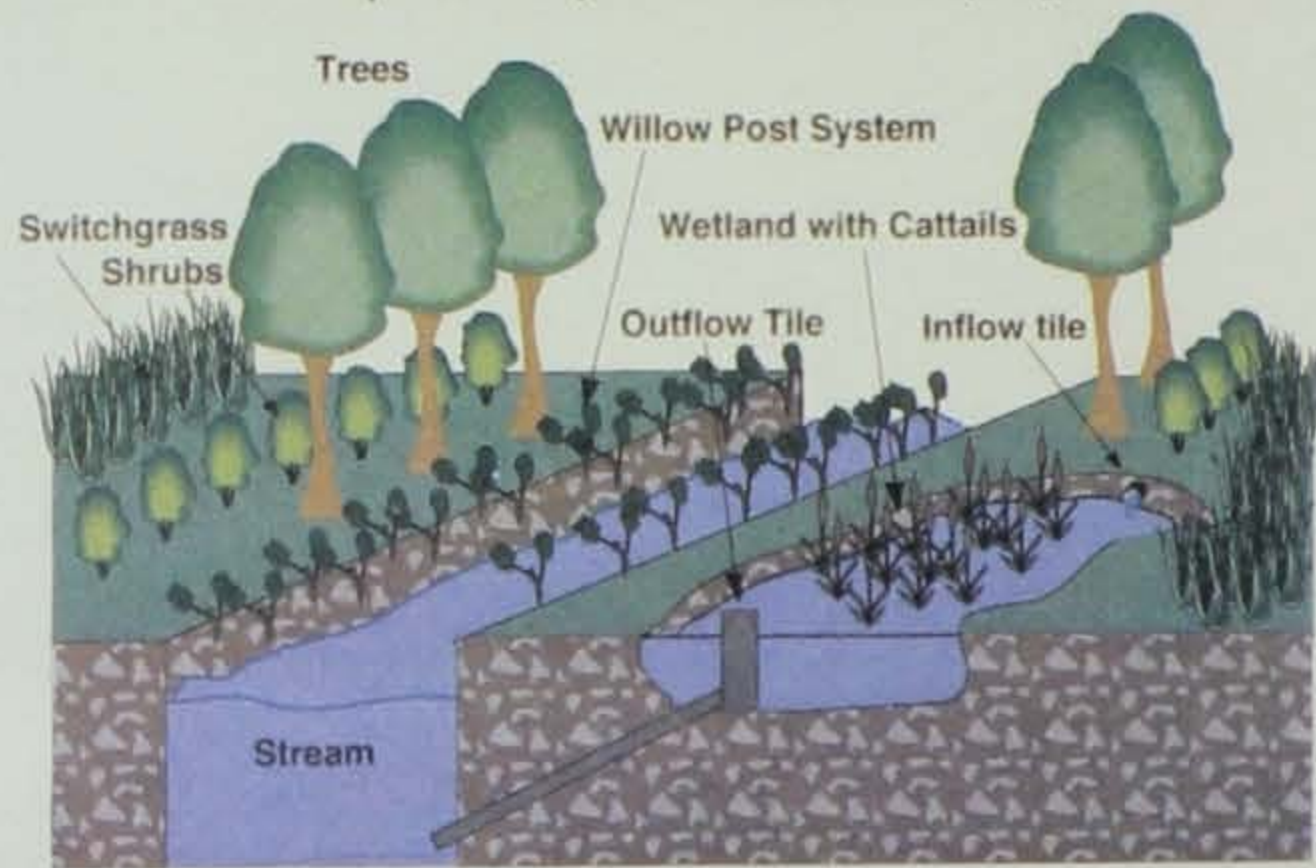
Another mile of this bufferstrip system has been installed on the Lon Strum farm just upstream from the Risdal farm. Another half-mile stretch being installed on farmland owned by Jordan Larson. This bufferstrip system is being adopted by other farmers in this watershed and throughout the Midwest.

### Infiltration and Roots

The proper functioning of the system depends on many things below ground. We have documented that within just three years after establishment, the infiltration rate in the switch-



### Multi-Species Riparian Buffer Strip System



▲ The third component of the bufferstrip system involves creation of small wetlands and use of their natural purification process.

grass, shrubs and trees was four to five times greater than in the corn/soybean field immediately adjacent. In other words, water soaks into the soil of the bufferstrip at rates of four to five inches per hour while only soaking in at one to one and one half inches per hour in a cultivated field.

The quantity and distribution of roots beneath the bufferstrip was compared to that beneath the corn and soybean fields. Under the corn and soybean fields down to about four feet, less than 400 pounds (dry weight) of roots per acre were found. Compare that to the roots under switchgrass and

willow of nearly 14,000 and 18,000 dry pounds per acre, respectively. There were 10,000 pounds under silver maple and 8,000 pounds under the cottonwood hybrid. Even the shrub species (ninebark and red osier dogwood) had more than 4,000 pounds per acre of root biomass. In contrast, root biomass below typical cool season grasses such as brome and fescue had just more than 2,000 pounds of roots. All of this root biomass is very important in increasing infiltration and acting as "action sites" where microbes, soil particles and pollutants in the soil water "get together" and the pollutants are made "user friendly."

### Water Quality

Changes in water quality below the bufferstrip and in the stream are being measured by more than 80 wells from 16 inches deep to 300 feet deep. Concentrations of nitrate-nitrogen and atrazine in the crop fields and under the bufferstrip have been closely monitored. The results reveal the bufferstrip is functioning as expected. High nitrate-nitrogen levels that exceed the EPA's safe drinking water standard of 10 parts per million (ppm) have been found in the soil water below corn and by the time the water is sampled below the bufferstrip the levels are typically near two ppm. The same reductions occur for atrazine.

### Wildlife

Wildlife is important to the Risdals and to us. Wildlife represents an added benefit from this system, one with great value in a highly modified agricultural landscape. In 1994 bird species were studied using the project site, a channalized portion along Bear Creek with a narrow strip of reed canarygrass and brome, and a one-year old riparian bufferstrip further upstream on Bear Creek. The results were exciting. A total of only eight bird species were observed during the study period last summer in the channalized section. Within the newly planted riparian bufferstrip system upstream, the number of species increased to 24, and within the four-year old Risdal bufferstrip the

total was 30. The species diversity has increased dramatically. Additional sightings of shorebirds and waterfowl are occurring along Bear Creek and in the wetland.

### Soil Bioengineering

The streambanks where the revetment material was placed and the tree willow posts planted are being stabilized. These sites have withstood the 1993 floods without additional movement of Bear Creek into the bufferstrip. The use of live and dead plant material to help "control" bank collapse is a relatively low cost (\$5 to \$7 per linear foot), effective alternative for landowners to consider. One word of caution -- do check with the Iowa Department of Natural Resources (phone: 515/281-6615) and the Rock Island District of the US Army Corps of Engineers (phone: 309/794-5367) for a permit to install this component. It is easy to get the permit, just don't forget to ask for it prior to stabilizing your streambank.

### Wetland Functioning

Even within the first year of establishment, the constructed wetland has demonstrated its considerable potential as a "sink" for NPS nitrate in agricultural ecosystems. Except during high flows and during cold seasons, much of the nitrate entering the wetland was removed before the water entered Bear Creek. Bacteria within the wetland sediments and attached to live and dead plant material transform this nitrate into harmless nitrogen gas through a process called denitrification. It is expected that the wetland will get even better at removing nitrate and other agricultural chemicals as dead plant material builds up. The wetland will continue to be monitored and measured for its effectiveness.

### Costs and Management

It costs between \$350 and \$400 per acre to install the bufferstrip component. To help reduce the initial cost there are currently two sources of cost-share money. The Stewardship Incentive Program administered by the Forestry

Division of the Iowa DNR can cost share 75 percent, up to \$315 per acre. In Story County, Pheasants Forever cost-shares an additional 15 percent. You may wish to contact your district forester and local chapter of Pheasants Forever to see if assistance can be given.

We estimated \$20 per acre per year needs to be spent on upkeep. Weeds can be controlled by mowing the area between the tree and shrub rows for the first two or three years. The prairie grasses (switchgrass) will have to be removed or burned on a two or three year rotation. You may want to stagger the burning of each side of your bufferstrip so there will always be wildlife cover on at least one-half of the buffer. Depending on the tree species planted and your goals beyond water quality improvement, you may want to harvest trees for on-farm biomass for energy or grow high quality hardwoods such as oaks and black walnut for your heirs.

The soil bioengineering component costs around \$7 per linear foot, if you have an available source of revetment tree material, use small diameter willow posts and don't have to shape the bank. It will cost more, perhaps double, if not.

The riparian zone is the last area for intercepting and processing non-point source pollutants before they enter a stream. One of the best management techniques for the riparian zone is to maintain a vegetative cover that has an extensive and dynamic root system and is capable of processing large quantities of water and agricultural chemicals, while also trapping sediments moving from adjacent crop fields. Trees, shrubs, and grasses, often the vegetation that was originally cleared from the riparian zone, provide such a cover. Tree-shrub-grass bufferstrips improve the in-stream environment and provide wildlife habitat, as well as an aesthetically pleasing diversity in the landscape.

Soil bioengineering can stabilize streambanks that otherwise continually erode into highly productive crop fields. Trees are able to reduce the rate of stream bank collapse because their permanent roots extend into the soil and

their stems provide increased frictional surface during flood flows. Additionally, trees reduce in-stream sediment load and water temperatures, while providing organic debris that is a food source for aquatic organisms.

Small constructed wetlands offer an important extra dimension of protection of a stream by removing nitrate and other agricultural chemicals from tile inflows. They also provide additional wildlife habitat that enhances biodiversity and aesthetics of the agro-ecosystem.

Mixtures of trees, shrubs and grasses provide good habitat for wildlife which may be desired by the landowner and the public. Most of Iowa's forests, prairies and wetlands were cleared for agricultural purposes. What is left, for the most part, are small, fragmented and isolated ecosystems. Movement of wildlife between these systems is difficult because of the wide open crop spaces that provide little cover. The use of mixed tree-shrub-grass buffer strips along streams can provide corridors of cover and habitat for wildlife movement. And, the use of a variety of vegetation provides diversity for wildlife use.

The bufferstrip system also holds large quantities of carbon dioxide that should help stabilize the global warming phenomenon. For example, wood is about 50 percent carbon. This carbon is stored in the stems of trees in the plantations until the wood is decomposed or burned. Compared with annual crops, this carbon storage is long-term. Such long-term storage reduces carbon dioxide in the air, thus reducing the greenhouse effect.

Riparian bufferstrip systems can provide many products while protecting Iowa's streams and providing diverse landscapes where people like Ron and his grandson can enjoy the beauty and solitude of a cool summer morning.

---

*Joe Colletti, Dick Schultz and Rich Faltonson are forestry researchers/educators with Iowa State University. Tom Isenhart is an aquatic ecologist/educator at ISU.*

# Lake Odessa and the FLOOD of '93

▼ Inlet structure to Odessa before (top) and during the 1993 flood. Replacement of the inlet and outlet structures are by far the most complex and expensive flood repairs to be made.



Lake Odessa is a 6,800-acre wetland complex located on the floodplain of the Mississippi River immediately above the mouth of the Iowa River in Louisa County. About 3,000 acres are managed by the U.S. Fish and Wildlife Service (USFWS) as part of the Mark Twain National Wildlife Refuge, and the remaining 3,800 acres are managed by the Iowa DNR as the Odessa Wildlife Management Area.

A levee separates Lake Odessa from the Mississippi and Iowa rivers, and along with massive inlet and outlet structures, allows manipulation of the Odessa water level for wildlife benefits. It is probably best known for migratory waterfowl concentrations which have numbered as high as 120,000 ducks and 5,000 geese in recent years. Odessa's mixture of large shallow lakes, isolated ponds, marsh and forest provides habitat for a vast array of fish and other wildlife species. Prothonotary warblers, pileated



Article by Don Cummings and Bill Ohde  
Photos by Bill Ohde



woodpeckers and red-shouldered hawks nest here. Bald eagles, ospreys and white pelicans are common migrants. White-tailed deer, wild turkeys, small-mouthed salamanders, and yellow-bellied water snakes share these bottoms. The shallow waters teem with crappies, largemouth bass, bowfin, bluegills, carp, buffalo and channel catfish.

Odessa's abundant fish and wildlife resources have also made it one of southeast Iowa's most popular destinations for outdoor enthusiasts. There are several public access roads, parking lots, and boat ramps providing access to Lake Odessa and also to the Mississippi River, both above and below Lock and Dam 17. A popular campground managed by the Louisa County Conservation Board hugs the shoreline of Lake Odessa. Special controlled hunting regulations for waterfowl have been in effect for more than 30 years because of high hunter numbers.

▼  
Odessa is probably best known for migratory waterfowl concentrations. However, levee breaks and silt deposits following the flood, left only mudflats in areas normally used by waterfowl. Conditions were so poor, controlled hunting was discontinued at Odessa in 1993 and 1994.



Ken Formanek



### Flood Impacts

The flood of 1993 had major impacts on Lake Odessa. A flood crest on the Iowa River in April caused two large levee breaks which flooded the entire area. The "big one" came in early July, however, with simultaneous record flood crests on both the Iowa and Mississippi rivers. Odessa raised five feet higher than it had in April -- higher than any previous records. Even more

unusual and damaging than the height of the 1993 flood was the duration. Odessa was flooded for nearly five months, essentially the entire growing season.

When the floodwaters receded, the structural damage was obvious. The levee was washed out in several locations, adding up to nearly one-half mile in total breaks. The huge inlet and outlet structures, which had been in operation for 40 years, were rendered useless. The

channels that carry water from the inlet to the lake and the various refuge segments were plugged with sand. Access roads and parking lots were cut to ribbons in some places and covered with up to six inches of silt in others. Both boat ramps and parking lots on the Mississippi River were severed from use by major levee breaks where the access roads crossed the levee.

The levee break located at the outlet for Lake Odessa left

a critical water level problem. Water drains out whenever the Mississippi River drops and surges back in whenever the Mississippi raises. Fluctuations are not all bad, but low levels during the falls of 1993 and 1994 left only mudflats in most areas normally used by waterfowl. Conditions were so poor that the controlled waterfowl hunting operation was discontinued in both years.

The great flood also had an enormous impact on the vegetative communities at Odessa. The largest initial impact was a complete lack of any plant growth lower than about eight feet off the ground in 1993. Flood waters had smothered all growth below that height, including all annual vegetation, marsh perennials (like cattails), shrubs, sapling trees and even lower branches on mature trees. Even the water-loving buttonbush shrub, a major habitat component on

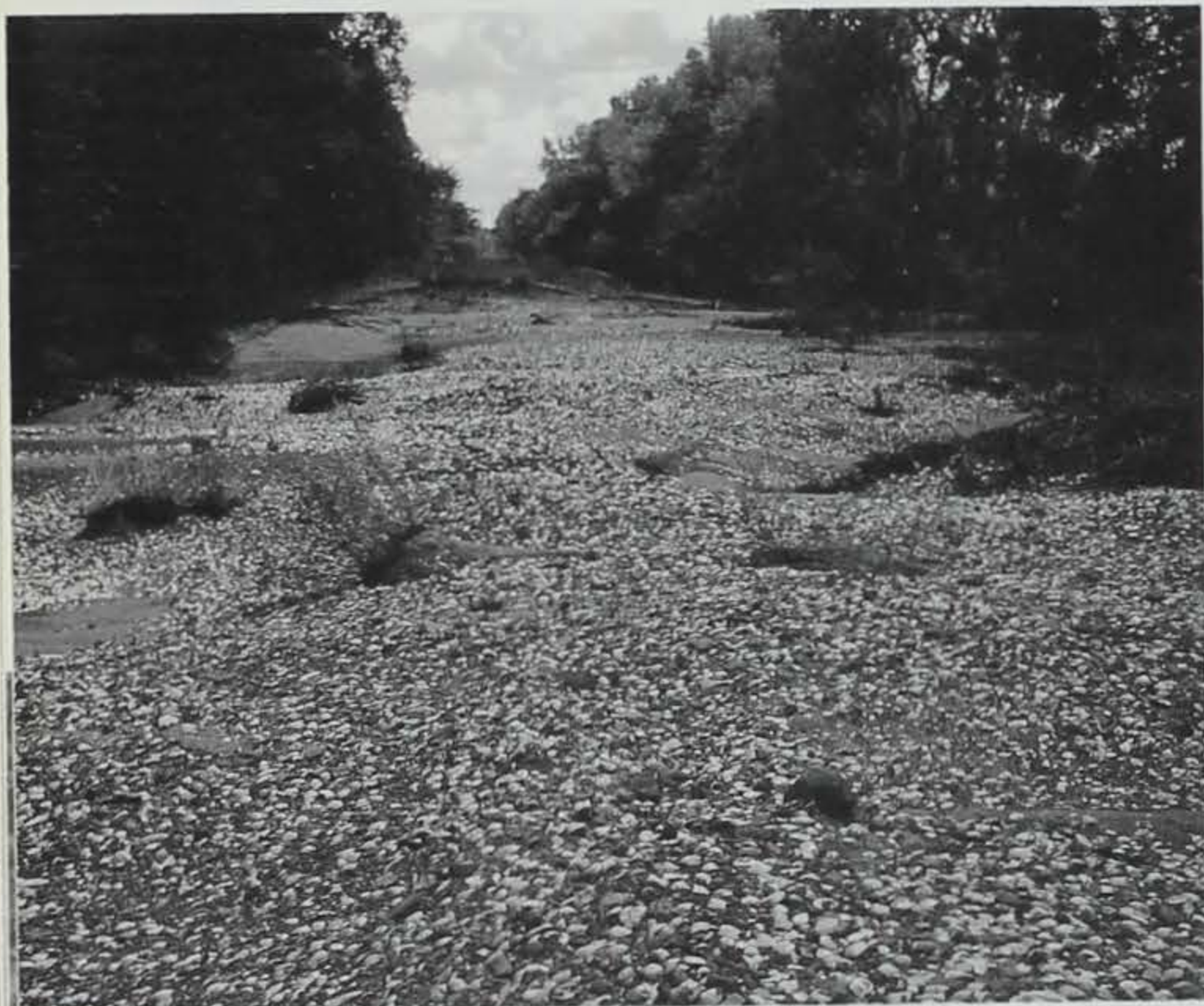
Odessa, suffered almost complete die-back. Timber was also heavily impacted, although some didn't show the effects until 1994. Field sampling revealed about a quarter of the bur oaks, more than a third of the pin oaks and nearly all of the hackberries died after the flood.

### Repairs and Recovery

The first repairs were made by the DNR during fall 1993 to get some of the access roads cleared of flood debris and silt, then re-rocked so people could at least get into Lake Odessa. Major repairs started in 1994 with the USFWS using special flood repair funds to clean out the water delivery ditches and repair dikes used to manipulate individual segments in the refuge. Later in the year the DNR repaired holes in the Iowa River levee with cost-sharing through the Federal Emergency Management Agency (FEMA). The U.S. Army Corps of Engineers then made a stop on the Mississippi River with their channel maintenance dredge and repaired a section of the Odessa levee adjacent to the inlet. That work prevented a possible bypass of Lock and Dam 17 which would cause a loss of that navigation pool. It also prevented damage to repairs already made in the refuge. The USFWS made additional major repairs to the Mississippi River levee with their own equipment and personnel, some borrowed from another refuge in Illinois.

The repairs that have not yet been done -- replacement of the inlet and outlet structures -- are by far the most complex and expensive. The USFWS has been involved in the lengthy process of survey and design, and awarded a contract for the repair work in May, again using special flood repair funds. The DNR will provide funding with FEMA cost-share for the associated levee repairs at the outlet. After inlet and outlet structure repairs are complete, the remaining access roads and parking lots to the Mississippi River boat ramps can be repaired and opened. Even with favorable river levels, that may not be until 1996.

Habitat recovery will be slower still. Some plants, like the buttonbush,



▲ Odessa's levee along the Mississippi was washed out in several locations.

responded quickly to low water levels in 1994, and re-sprouted from the roots. Other hopeful signs in 1994 were scattered patches of cattail and bulrush springing up from mudflats. Even some of the sapling pin oaks that had appeared to be dead early in the year were re-sprouting from roots. Much of the more mature timber, however, appeared ghostly because of the large number of dead trees throughout the stands. Large areas no longer shaded by the forest canopy immediately grew "forests" of annual weeds in 1994. Although the flood of 1993 had dramatic and lasting impacts, the floodplain has always been a dynamic system shaped by the periodic pulses of the river. With time, new forest stands will become established and no doubt be affected by future floods at Lake Odessa.

The flood at Lake Odessa is just one example of what took place on Iowa's wildlife lands during the floods

The cost of destruction caused by the disastrous flood is well over a million dollars. Forty miles of levees, 90 miles of roads, 325 parking lots, 109 boat ramps were damaged; and eight miles of drainage channels were filled with sediment. Obviously, most of these areas were virtually useless to hunters and anglers in 1993 and part of 1994.

Many acres of wildlife habitat were also destroyed. Approximately 306 miles of streams flow through wildlife management areas. And, when these streams overflowed the floodplains, tons of sediment filled marshes, backwaters and shallow impoundments. Many acres of aquatic habitat were quickly changed to terrestrial habitat. Much of the appeal of these bottomlands was lost.

Thousands of acres of riparian forests were lost on wildlife areas. Biologists manage 36,500 acres of forests growing along warm-water streams. The impacts of long-term flooding were not realized

animals such as deer and turkey these floodplain forests are high-quality habitat. Riparian hardwoods form a protective corridor for many of these species; without it, they become very vulnerable.

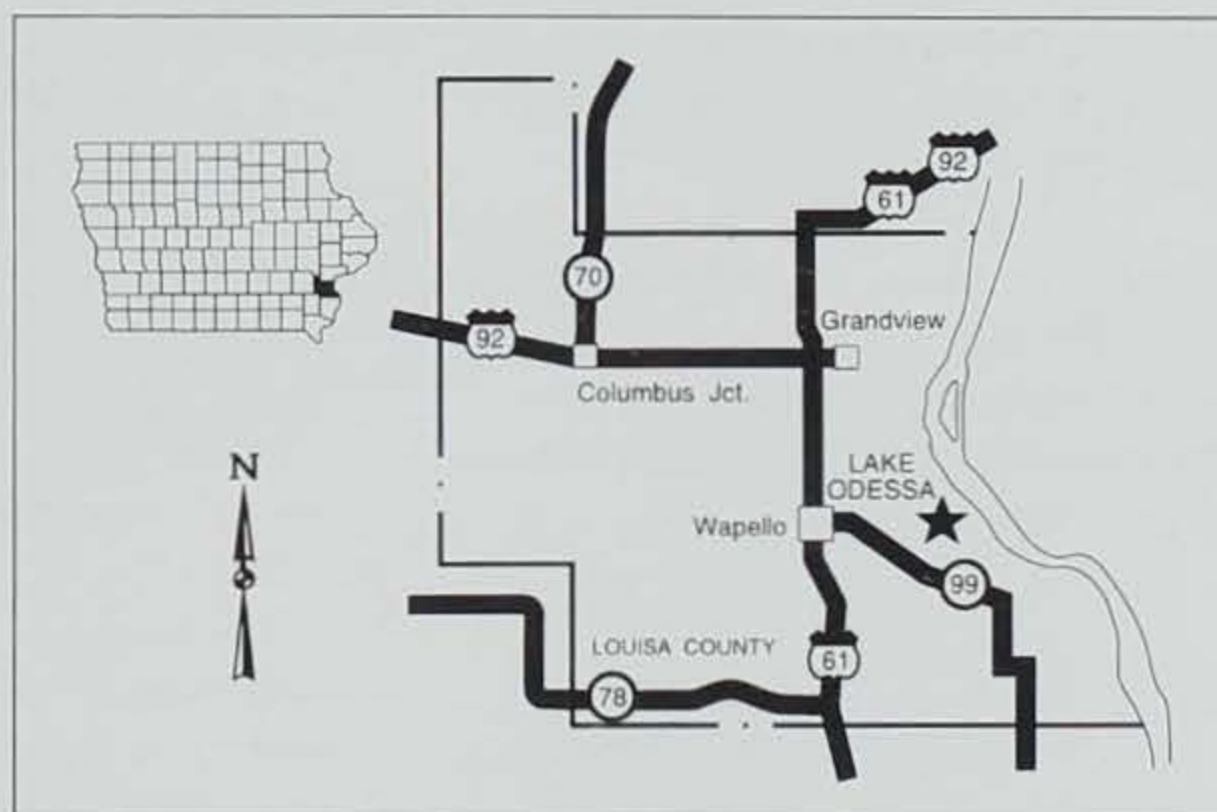
The repairs to facilities on wildlife management areas are nearly complete. Work at Lake Odessa, Riverton, Red Rock and Coralville wildlife management areas has yet to be completed. This work is scheduled for this summer and fall. Damage to wildlife habitat will take some time to recover, but our riparian forests will regenerate and other floods will create new wetlands. Nature just can't be hurried.

*Don Cummings is the department's wildlife management supervisor.*

*Bill Ohde is the biologist for the Odessa Wildlife Management Area.*



Robert G. Sheets



Swollen streams and rivers spilled out over floodplains and ripped through not only Odessa, but 110 wildlife management areas. Green Island WMA located on the Mississippi in Jackson County was hit hard by the floods.

of 1993. The swollen streams and rivers spilled out over floodplains and ripped through 110 wildlife management areas -- one-third of all state-owned lands managed for fish and wildlife. (The DNR's wildlife bureau manages 340 areas totaling 270,000 acres.)

Those areas nearest to river corridors took the biggest hit. Facilities such as boat ramps, roads, parking lots and levees were especially vulnerable.

until 1994. Bottomland species that had high mortality included black walnut, hackberry, cottonwood and silver maple. (See March/April 1995 *Iowa Conservationist*, "Floods of 93: Impacts on Our Forests.")

Impacts on wildlife species are immeasurable in this damaged riparian habitat. Small mammals are limited in this environment, but for birds, and for some amphibians and more mobile

---

A Lake  
Is A

# Reflection of its Watershed

*"These bluegill all seem to be the same size, year after year — small to smaller. We've got to catch a dozen or more of these little ones before we get a keeper. The lake we fished last week has a lot bigger fish. I wonder what makes the difference?"*

I overheard these comments from a couple of anglers, just this past summer. Such frustration is not unusual for anglers in Iowa. Questions similar to these are answered by fisheries personnel throughout the state.

## What Went Wrong?

What is the difference between "good" bluegill lakes and "poor" bluegill lakes? The answer is not simple, but we do know some of the components responsible for good bluegill populations. One of these very important components is the watershed, which in simple terms is the catch basin for all rainfall that runs into the lake. In other words, it's all the land surrounding a lake that delivers water to it. Sometimes this will include land many miles from the lake. The watershed is often overlooked as a very important part of the lake's water quality and the sport fishery.

A good lake that has good water quality and supports quality angling has a watershed that is 1) small and 2) has little soil erosion. A lake receiving water from a large watershed with excessive soil erosion will have a muddy appearance and poor fishing. This is not surprising. A casual observer can see rain water easily moves exposed soils and deposits them in nearby bodies of water. Gully and sheet erosion is all too common on poorly managed land. Soils are protected from erosion in well-managed watersheds, where much of the rain water soaks into the soil while the remaining runoff water and soil stays trapped in the watershed, not deposited in the lake. Management practices, such as terraces, grass waterways, contour strip crops, erosion control ponds, no till and minimum till are vital to good soil conservation as well as good water quality.

To exist, lakes need the water draining from the watershed, but the key factor separating good fishing lakes from poor fishing lakes is the quality of the water entering a lake. The muddier the lake water, the higher the soil erosion in the watershed and the poorer the angling. The less silt, fertilizers and farm chemicals, the better the lake and



Lynn Betts, Natural Resource Conservation Service

the fishing. The principle is simple, yet the relationship between watersheds, water quality and angling is more complex.

The best way to illustrate the importance of watersheds and the effect of watershed runoff on a sportfishery is to use an example. Fish in Red Haw Lake and Miami Lake are sampled regularly and contain similar kinds of fish. The most important sportfish are bluegills, largemouth bass, crappies and channel catfish. Less numerous sportfish are redear sunfish, green sunfish and bullheads.

---

by Larry Mitzner



### Watershed Size

But that's where the similarities end. The lakes' sizes and watersheds are very different. For example, Red Haw Lake contains 64 acres, while Lake Miami is 140 acres. Watershed size is also quite different. Red Haw has an 898-acre watershed, while Miami has a 3,735-acre watershed.

Now, for comparative purposes, let's put these numbers in terms of ratios. At Red Haw Lake there are 14 acres of watershed for each acre of water in the lake. That yields a lake area to water-

### ▲ Prairie Rose Lake in Shelby County

**... terraces, grass waterways, contour strip crops, erosion control ponds, no till and minimum till are vital to good soil conservation as well as good water quality.**

shed area ratio of 1:14. The ratio at Miami is 1:27, almost twice that of Red Haw. By using this system of lake area to watershed area ratio it's much easier to compare lakes.

### Land Use and Water Quality

Not only do Red Haw and Miami differ in relative watershed size, but the land use is quite different. Red Haw Lake has about 30 percent of its watershed in corn and beans compared to 40 percent at Miami. Twenty percent of the Red Haw watershed is in the Conservation Reserve Program (CRP), while only 10 percent of Lake Miami's is in CRP. Red Haw has 33 percent of its watershed in park/wildlife use, while Miami has 15 percent of its watershed in park/wildlife use.

How do these land use practices relate to runoff and water quality in the lakes? A water quality inventory was taken at both lakes in 1991. During that year, the water was about six times clearer at Red Haw than it was at

Miami. Also, phosphorus levels at Miami were 2.7 times greater than at Red Haw.

So, there are differences in relative watershed size and land use which, in turn, have an influence on water quality. How do these differences relate to fish populations? This question takes us directly back to the frustrated anglers at the beginning of the story. Why do some lakes seem to have consistently excellent bluegill populations, while others are much less desirable?

### What About Bluegills?

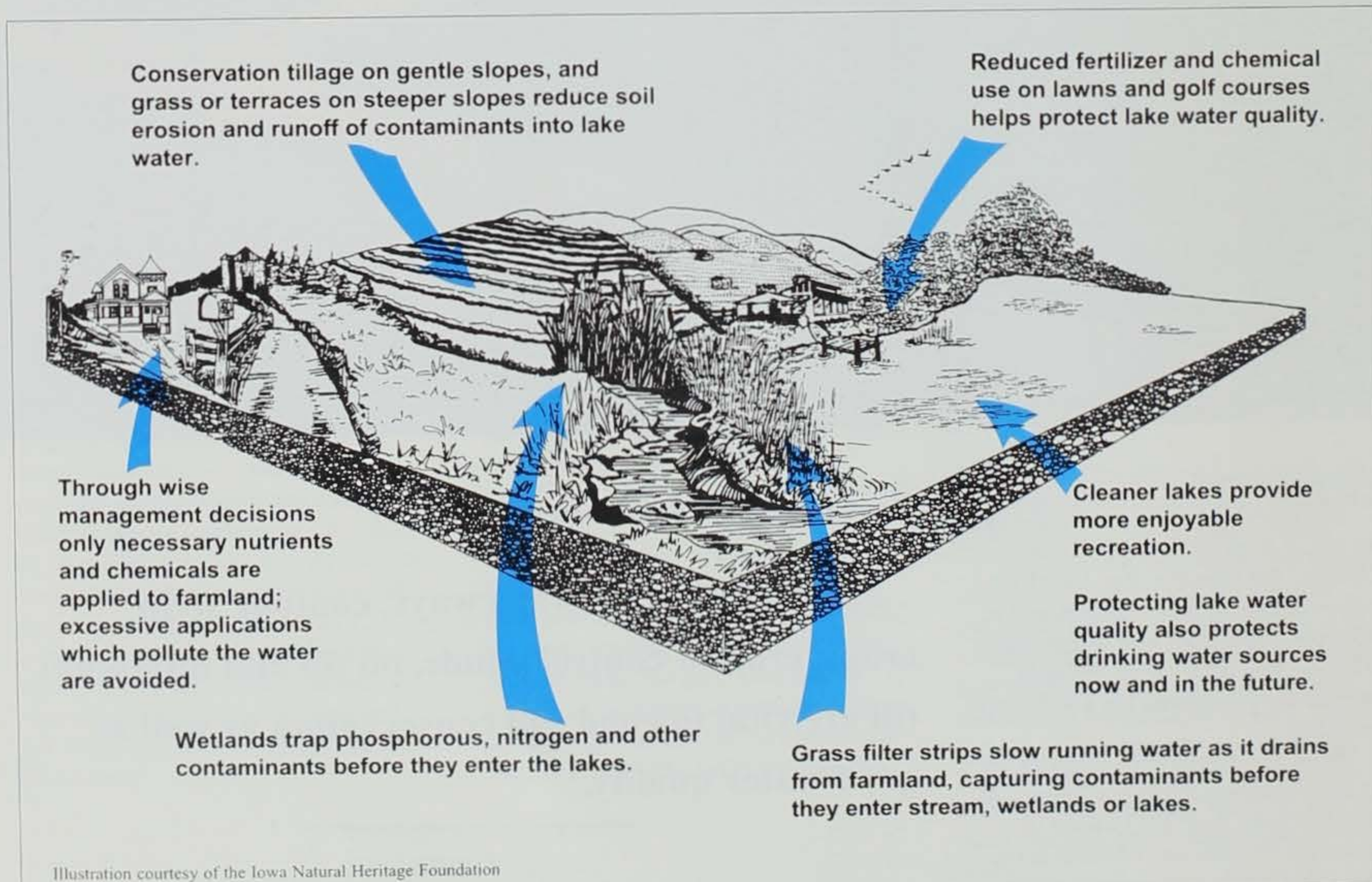
Bluegill populations at Red Haw and Miami lakes are very different, just as the watersheds and water quality are very different. For example, bluegills grow more rapidly at Red Haw Lake than they do at Miami Lake. On the average, four-year-old Red Haw bluegills can be expected to measure about 7.5 inches compared to about 6.5 inches for similar-age fish at Miami. Bluegills at Red Haw also run a bit plumper than those at Miami. Generally, Red Haw bluegills

weigh 13 percent more than Miami bluegills of the same size.

Most importantly, the sizes of bluegills vary considerably between the two lakes. Fisheries surveys, over the years, have shown about two percent of the bluegills at Miami are more than eight inches, while 15 percent of the bluegills at Red Haw Lake are more than eight inches. In fact, one year nearly 40 percent of the bluegills at Red Haw were more than eight inches.

This difference in size is certainly noticed by dyed-in-the-wool bluegill anglers. Surveys at both lakes showed more bluegills were harvested by anglers at Red Haw Lake than at Miami Lake. On the average, about 200 bluegills per acre were taken from Red Haw, while harvest at Miami was 120 bluegills per acre.

There are certainly other things that may influence bluegill size, growth and body condition, such as lake depth, size and bottom slope. However, watershed has a major influence on fish populations.



## What to do?

First, lake planning is important. When a new lake is "on the drawing board," its watershed and land use are carefully considered. It is at this stage that the future quality of the fishing lake is determined. The DNR's fisheries bureau certainly recognizes this and watershed evaluations are important criteria at all new lake sites.

It is different for lakes that have been around for a long time. Nevertheless, examination of the watershed is important and can provide fisheries biologists with clues on the lake's potential to provide angling. Perhaps the watershed is large and heavily row-cropped. Such a lake may provide some good bluegill fishing from time to time, but can never be expected to be a trophy bluegill lake. On the other hand, this type of lake may be more productive for channel catfish and should, therefore, be managed to promote channel catfish fishing.

Many watersheds can be rehabilitated or cleaned up to yield better water quality and less erosion. Some lakes that have had extensive work in their watersheds include Green Valley Lake, Union Grove Lake and Lake Ahquabi.

This is where cooperative efforts between landowners, the DNR and soil conservation agencies are vital. Terraces, grass waterways, contour strip farming, erosion control ponds, no till, minimum till and the Conservation Reserve Program are all part of the total plan for good watershed management. The bottom line is -- good soil conservation in a watershed means good water quality and fish. And it follows, what is good for fish populations is good for the Iowa angler.

*Larry Mitzner is a fisheries research biologist for the department at Chariton.*

▼ The less silt, fertilizers and farm chemicals draining into a lake, the better the water quality and consequently the fishing.



Ken Formanek

## Watershed Comparison

	RED HAW	MIAMI
Lake Area (Acres)	64	140
Watershed Area (Acres)	898	3,735
Lake: Watershed Ratio	1:14	1:27
Land Use (%)		
Crop	29	41
CRP	20	10
Pasture	2	13
Idle	5	16
Park/Wildlife	33	15
Farmsteads	3	1
Water	4	8
Water Quality		
Phosphorus (PPM)	0.046	0.125
Water Clarity (Feet)	12	2
Bluegill Statistics		
Length at Age 4	7.3	6.4
Body Condition	Excellent	Fair
% Over 8 Inches	15	2
Angler Harvest/Acre	201	119

## THE PRACTICAL CONSERVATIONIST

### Iowa's Hunter Education Program -- Promoting Safe Hunting Now *And* In the Future

Every year new hunters take to the woods and fields to enjoy the outdoors and experience that combination of country, open sky, trees, water and wild game that hunting provides. With the thrill of the hunt comes responsibility -- the responsibility to hunt safely and make a safe, active, hands-on sport even safer. (See related article on page 54.)

Hunter education classes are designed to bring that about. According to Sonny Satre, DNR recreational safety education coordinator, hunting accidents have decreased in Iowa, as well as nationwide, because of successful hunter education programs. Every state and Canadian province has hunter education programs and they are mandatory to buy a license in all but three states (Alaska, Massachusetts and South Carolina) and four Canadian provinces.

One of the main goals of hunter education is to mold more responsible and ethical hunters. Ethical hunting is an important part of hunting safely and is essential in ensuring that the sport of hunting continue for years to come. The hunter education program is designed to benefit inexperienced and experienced hunters regardless of age, and is an excellent refresher course for anyone who enjoys hunting.

In Iowa, anyone born after Jan. 1, 1967 must enroll and successfully complete a minimum 10-hour, DNR hunter education course before they can legally purchase an Iowa hunting license.

The minimum age for certification is 12 years, although 11-year-olds are permitted to take the course but do

**"I pledge to be a responsible hunter, with an awareness of my many responsibilities; an attitude of respect towards our environment, our wildlife and other people; the ability to hunt responsibly, safely and successfully; the willingness to take action to improve hunter behavior and the future of hunting; and dedicated to promoting true hunting achievement."**

from the *Code of the Responsible Hunter*

not receive their certification card until they become 12. Although the majority of Iowa's hunter education students are between the ages of 12 and 16, a number of adults also enroll in the course. In fact, completing the course is a necessity if they wish to hunt in states such as Colorado, where anyone born after Jan. 1, 1949 must have a hunter education certificate.

In 1994, more than 14,000 students were certified statewide. Since 1960, when the program began, Iowa has certified more than 340,000 students. The program became mandatory July 1, 1983.

Iowa's hunter education course covers a number of subjects such as wildlife management, wildlife identification, hunting ethics and responsibility, first aid and survival, and of course, safe gun handling techniques. The course also acquaints each student with various types of firearms used while hunting and the basics of bow hunting.

In 65 percent of the hunter education classes, students actually fire either a shotgun, .22-caliber rifle, black powder muzzleloader, bow or air rifle. The program's goal is to

have live firing in all classes, but sometimes weather conditions or lack of a shooting area, prohibit it.

Hunter education courses are taught by volunteer instructors from around the state. Approximately 1,700 volunteer instructors donated more than 17,000 hours of teaching, class preparation, live firing, administrative work, travel and training workshops in 1994. Without these dedicated individuals, this program would not be possible.

These volunteers convey a wealth of information and ethical hunting is at the core of *all* hunter education courses they teach. Responsible, ethical conduct by all hunters is essential to the future of hunting. Course attendees learn that nonhunters as well as other hunters observe their behavior.

Course materials and activities stress the basis of ethical hunting -- showing concern through responsible behavior for other people, wildlife and private property.

Students learn that hunting is a privilege and that they must go beyond obeying hunting laws and practicing safety to maintain that privilege. They must plan the hunt,



and not only gain landowners' permission before hunting but explore the area and learn property boundaries. They must not enter other land "just for a minute" without prior approval. Students learn responsible hunting means not just knowing the laws and the seasons, hours and limits for each animal, but not being greedy and taking an irresponsible shot to "get a limit." It means learning that if no game is bagged everyone can still enjoy the day and there will be other times to try again. Responsible hunters properly transport and care for their game and process it quickly so it will not spoil. They also do not display game openly or disrespectfully in ways that may offend other people -- hunters and nonhunters alike.

In short, responsible hunting means integrating all the facets of hunter education -- history, firearm safety, hunter responsibility, wildlife identification, conservation and management, game care, survival techniques and first aid -- into a pattern of behavior that ensures not only survival of the hunter, but that of their



DNR

▲ Iowa's hunter education course covers a number of subjects such as wildlife management, wildlife identification, hunting ethics and responsibility, first aid and survival, and of course, safe gun handling techniques.

party and the resource as a whole.

Hunter education courses are offered across the state throughout the year, though most are offered prior to

the fall hunting season so that students can be well prepared to take to the field. The DNR also offers an advanced bow hunting course based on the International Bowhunter Education Program. Although the bowhunter education course is not mandatory in Iowa at this time, several states, such as Nebraska, South Dakota and Montana, require the completion of a bow hunting course prior to obtaining an archery license. Approximately 1,000 students will complete the course in Iowa this year.

If you or someone you know is interested in attending a hunter education course, you can find the course nearest to you by calling the DNR at (515)281-5918 during normal business hours or by contacting your local conservation or recreational safety officer. If you are interested in finding out more about hunter education and its benefits, wish to learn how to be an instructor, or would like to sign up for the advanced bow hunter education course call Sonny Satre at (515)281-8652.



DNR

▲ In 65 percent of the hunter education classes, students actually fire either a shotgun, .22-caliber rifle, black powder muzzleloader, bow or air rifle.

## CONSERVATION UPDATE

### DNR Attempts to Restore Sharp-tailed Grouse to Western Iowa

article and photos by Lowell Washburn

The DNR has launched a project aimed at restoring the vanished sharp-tailed grouse to a portion of its historic range in western Iowa.

In late March, biologists released a total of 69 grouse in the rugged loess hills in Monona County. According to Ed Weiner, biologist from the DNR's Missouri River Wildlife Unit, the sharptails were trapped in southwestern South Dakota during January and are the first installment of a planned two-year release effort involving 150 birds. As payment for the grouse, South Dakota received 20 wild turkeys from Iowa.



▲ Ed Weiner (left), DNR wildlife biologist, and John Strain, DNR wildlife technician, band a grouse. To minimize stress, the birds were banded at night and placed into release boxes where they were held until dawn. The birds were allowed to exit the boxes to an area made to resemble a natural "booming ground."



◀ Biologists released a total of 69 grouse in the rugged loess hills in Monona County, as part of the DNR effort to restore the sharp-tailed grouse to a portion of its historic range in western Iowa.

"Restoring prairie grouse to Iowa represents a very challenging project," said Weiner. "Typically, good sharp-tailed grouse habitat consists of a mix of 70 percent permanent grassland and 30 percent brush." Biologists feel that the rugged hill country near the Missouri River floodplain represents the best opportunity to establish a modern-day grouse population in Iowa.

"We have put birds into what we think is the best territory that the state has to offer," said Weiner. "But in reality, it is the grouse themselves that will decide where they want to go. One



◀ John Strain, wildlife technician, places grouse decoys on an artificial booming ground.

▶ A sharp-tailed grouse checks out its new surroundings in Monona County.



of the initial obstacles to the projects' success focused on preventing the flock from straying from the release area."

To keep the grouse in the immediate vicinity, the DNR created an artificial breeding area designed to replicate a natural grouse lek. Often referred to as booming grounds, male sharp-tailed grouse concentrate on leks, where they fight, dance and vocalize in hopes of attracting adult females.

"Our lek was constructed on a hilltop that represents a very prominent feature of the local landscape," said Weiner.

Decoys of sparring or dancing grouse were scattered across the lek and each morning, beginning an hour before sunrise, strategically placed loudspeakers played recordings of sounds gathered from a real sharptail booming ground. "The decoys showed the new birds where they ought to be and

the recordings further acclimated the flock to the lek," said Weiner.

"A lot of our success may hinge on what happens to the Conservation Reserve Program," said Weiner. (In Iowa, the CRP has established approximately 2½ million acres of grassland across the state. The future of the program is currently under debate.)

"The way our habitat looks now is pretty positive," said Weiner. "But if CRP goes, a lot of this area will return to row crop or heavy grazing. If the grasslands go, this project could fail," he added. "But I guess that's pretty much the story for all upland wildlife in Iowa."

The DNR monitored grouse activity through early May. Weiner reported that the decoys and tape recordings seemed to be doing the job. Sharptails were repeatedly seen on the lek.



USFWS

▲ Benjamin Lake, a high school senior from Abraham Lincoln High School in Council Bluffs, won the "best of show" in Iowa's first Federal Junior Duck Stamp competition.

Lake's watercolor of a pair of canvasback ducks will compete against entries from 47 other states in the national contest.

Forty-six Iowa schools submitted works that were judged in four age groups and more than 90 winning entries were selected from the 450 wildlife art works.

The Junior Duck Stamp program has expanded rapidly since it began five years ago as a pilot program at a Florida elementary school. This year, 48 states will participate.

# CONSERVATION UPDATE

## Statistics Show Hunting the Safest of the Outdoor Sports

Hunting has, by far, the lowest number of outdoor recreation-related injuries, according to the National Safety Council.

The council's report, based on injuries requiring hospital emergency room treatment, lists injuries by types of outdoor recreation.

Hunting had only eight injuries per 100,000 participants. With 18.5 million participants in the U.S., hunting had only 1,475 injuries during the year.

According to Sonny Satre, DNR recreational safety education coordinator, hunting accidents have decreased in Iowa, as well as nationwide, because of the success of the hunter education programs. Every state has hunter education programs and all but three (Alaska, Massachusetts and South Carolina) are mandatory to purchase a license.

In Iowa, anyone born after January 1, 1967 must enroll and successfully complete a minimum 10-hour, DNR hunter education course before they can legally purchase an Iowa hunting license. The DNR also offers an advanced bow hunting course.

To find out the course nearest you, call the DNR at (515)281-5918 or contact your local conservation or recreational safety officer. (See the related article on page 50.)

Sport	Million		
	Participants	Injuries	Rate*
Football	14.7	319,157	2,171
Baseball	15.4	321,806	2,089
Soccer	11.2	101,946	910
Bicycling	56.8	514,73	905
Skateboarding	7.5	65,819	869
Horseback riding	10.1	46,928	465
Ice skating	7	23,44	335
Fishing	46.5	65,677	141
Tennis	18.8	22,507	120
Golf	23.2	24,224	104
Swimming	70.5	65,757	93
Hunting	18.5	1,475	8

\*Injuries Per 100,000 participants

## Outdoor Adventure Guide Available

The Iowa Association of County Conservation Boards has compiled an outdoor adventure guide with information on 1,398 county conservation areas. The 68-page guide contains maps of each county showing the location of all county parks.

The guide lists information on the areas' facilities including boat accesses, trails, camping, swimming, fishing, hunting and boating areas, sport facilities, nature centers, historic sites and wildlife exhibits.

To order the guide send \$5 to IACCB, Box 79, Elkhart IA 50073 or call (515)367-4000.



DNR

▲ James H. Smith of Iowa City was recently named Iowa 1994 Outstanding Hunter Educator of the year and awarded a gold game coin watch by Game Conservation International. Recreational safety officer Craig Jackson presented the award to Smith. Smith serves as chief instructor in Johnson County where he coordinates seven to eight classes annually.

## Two State Fair Grand Prizes at the 1995 Parks, Recreation and Preserves Display

Visitors to the 1995 Parks, Recreation and Preserves exhibit at the DNR Building will be able to register for two grand prizes. Once again, Jeff Holmes of CanoeSport Outfitters in Indianola is donating an Old Town Otter one-person canoe. In addition, Chuck Irvine Jr. of Boulevard Sports in Des Moines is providing an Ocean Kayak Inc. Scrambler XT kayak. Other prizes include camping coupon books -- providing 14 nights of free camping -- and a week of free family cabin rental in 1996. Ten Iowa state parks offer cabin opportunities, some year-round.

The Parks Division is highlighting the 75th anniversary of Iowa state parks at its DNR Building display, as well as its booth in the Tourism Building, on the west side of the fairgrounds south of the Grand Concourse. One of the grand prize "vessels" will be on display at each location. The fair display helps highlight a year-long celebration of Iowa state parks -- past, present and future.

## Captain John Henry Weber Rendezvous Dates July 22 and 23

The correct dates for the Captain John Henry Weber Rendezvous at Bellevue State Park are July 22 and 23. For information about the rendezvous call the park office at (319)872-4019.



◀ Iowa Gov. Terry Branstad, Wisconsin Gov. Tommy Thompson, Dennis Minano, GM vice-president of environment and energy staff, Dale Schnadt, Chair of the Iowa Corn Promotion Board and Jim Thomas - regional vice-president for Coastal Mart, Inc. introduced ethanol developments in a special event in Des Moines.

## Ethanol Developments Announced at Special Event

On May 11, Iowa Gov. Terry Branstad and Wisconsin Gov. Tommy Thompson introduced new developments in ethanol, particularly the 85 percent ethanol (E-85) market. The new projects will spur the further development of a regional network of E-85 fleets and refueling sites, making high-blend ethanol a more viable fuel choice for government, businesses and consumers.

The developments were announced at a special event at Nollen Plaza in Des Moines which featured different ethanol-powered vehicles including buses, a motorcycle, a sprint car and State of Iowa passenger cars.

New ethanol developments include:

- The expansion of the

midwestern E-85 infrastructure. Currently E-85 refueling sites are operating in nine midwestern states, including six sites in Iowa (Des Moines, Cedar Falls, Iowa City Ames, Waukee and Sioux City). Gov. Thompson announced a \$1 million effort to establish 40 additional sites, primarily located at commercial stations.

- The presentation of a \$20,000 check to the Coastal Corporation by the National Ethanol Vehicle Coalition. The funding will be used by Coastal to open one of the first commercial E-85 refueling sites.
- The announcement by the General Motors Corporation of the largest single-model alternative fuel vehicle production program of any manufacturer. All

of GM's 1997 four-cylinder light-duty pickup trucks will be flexible fueled to allow them to run on up to 85 percent ethanol.

- A commitment by the U.S. Department of Energy of \$6.5 million for the purchase of E-85 vehicles for the federal fleet.
- The award of a \$75,000 grant by the Urban Consortium Energy Task Force for three E-85 refueling sites, in Des Moines, Minneapolis and Indianapolis.

According to Gov. Branstad, these new developments will "greatly expand the use of ethanol, protecting our environment and providing a much-needed boost to our agricultural economy."

The display drew a crowd of persons interested

in the variety of ethanol-powered vehicles.

Iowa vehicles on display were a Harley-Davidson police special motorcycle used for traffic patrol in Sioux City. It runs on E-85 fuel and last year competed in ENER\*RUN III, a cross-country road rally featuring alternatively fueled vehicles. The cycle took first prize in the race for scoring the lowest fuel costs per mile. Also on display were two of more than 100, E-85 flex-fuel, vehicles owned and operated by the state. These cars contain a computer chip allowing them to run on any blend of gasoline and ethanol up to an 85 percent blend (E-85).

A Des Moines Metro bus that injects ethanol along with diesel fuel for cleaner operation was the fourth Iowa vehicle. This bus uses a blend of ethanol and deionized water during acceleration to reduce black smoke and increase fuel efficiency.

Two other crowd-pleasers were the *Corn Bus*, a Peoria, Illinois bus, decorated as an ear of corn, which burns 93 percent ethanol, and the *Ethanol Express*, a Minnesota sprint car that races on 95 percent ethanol. The car can cover the quarter mile in 8.5 seconds and reach speeds in excess of 160 miles an hour.

## 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.

#### Natural Resource Commission:

- July, no meeting
- August 10, Iowa City
- September 7, Brushy Creek Area
- October 12, Onawa

#### Environmental Protection Commission:

- July 17, Des Moines
- August 21, Des Moines
- September 18, Des Moines

#### State Preserves Advisory Board:

- September 8, Howard County



DNR

▲ Conservation officer Joli Vollers demonstrates muzzleloader rifle technique at 1994's *Becoming An Outdoors Woman* workshop.

### Becoming An Outdoors-Woman

In 1994, more than 100 women from across Iowa attended the *Becoming An Outdoors-Woman* workshop held at the DNR's Springbrook Conservation Education Center near Guthrie Center. Who are these women and why did they want to learn more about hunting, fishing and the outdoors?

Some were single, some married to an "outdoor enthusiast" and others single mothers with children. They had skill levels that varied from novice to average experience. They ranged in age from 18 to 65. They came from a wide variety of vocational and personal walks of life.

One of the most important things learned from this first audience is that there are women out there who want to join in all facets of the outdoor experience. They are enthusiastic and interested.

They devoured the knowledge that was presented at the workshop, were grateful to get it and anxious for more.

The *Becoming An Outdoors-Woman* workshop is the result of a workshop held in 1990 at the University of Wisconsin--Stevens Point. "Breaking Down the Barriers to Participation of Women in Angling and Hunting" was planned to bring natural resource agency and conservation club leaders together from around the country to examine the reasons why participation of women in these activities is low.

Twenty-one barriers were identified. Of these, 14 were directly or indirectly related to the fact that women have less opportunity to learn about outdoor recreation as children and are often isolated if they do participate in outdoor skill activities. Women are not getting the opportunity to learn the skills and traditions

of hunting and fishing, during childhood, to the same degree as their male counterparts.

Iowa is again planning to host a *Becoming An Outdoors-Woman* workshop this year on Sept. 22, 23 and 24. Iowa will be one of 35 states to join this rapidly growing program across the country.

The workshop targets a variety of outdoor activities to pursue. A few of the items scheduled for this year include: introduction to firearm safety, archery, furharvesting, canoeing, orienteering, turkey hunting, fly fishing, backpacking, nature photography, duck hunting, river fishing, shotgun shooting, identification of habitat/game, hunting dog selection and training, stream ecology and outdoor cooking.

With the tremendous success and response to Iowa's first program the possibility of expanding the program across the state is being evaluated. Plans are in progress to host three target-specific weekends in 1996, one on fishing, another on small game hunting and the third on canoeing/camping/backpacking. Details will be available on these programs later this year.

Registration material will be available in July for the September workshop. Cost for the weekend program is \$100. To receive information please send your name and address to: Gloria Baker, Conservation Education Center, 2473 160th Road, Guthrie Center, IA 50115.

# CLASSROOM CORNER

by Bob Rye

## Who Goes There?

Many animals are active at night and are not readily visible during the day. For example, except for chipmunks and some squirrels, most small mammals are creatures of the night. We do not see them, but there is evidence of their presence -- footprints, missing cookies and noises in the night. You can expose these creatures on this activity. The activity is adapted from the *Outdoor Biology Instructional Strategies* materials.

### Background:

This activity provides an interesting method of tracking animals at night, using harmless phosphorescent powder. This activity can be used for many different animals -- birds, mice, chipmunks, rabbits, foxes and even deer.

Animal droppings are another type of evidence left by animals living in an area. Animals frequently defecate and urinate on their trails to mark their home range. Different kinds of animals can be identified by the shape and size of their droppings. In this activity, it is not necessary to handle animal droppings, but simply to locate and record them.



▲ Birds, mice, chipmunks, rabbits, foxes and even deer are creatures of the night and can be tracked using this activity. (See key to prints at right.)

### Age:

Grades 5-12

### Group size:

20-25 group total where there are two to three students per light and one to two lights per bait station.

### Objectives:

Without seeing or capturing animals, students will find evidence of animals not usually do seen during the day.

### Materials:

1. Blacklights (any of those that use a fluorescent bulb.) Replace the bulb with a long-wave blacklight bulb. These are safe, but children should be told not to look directly into the light.
2. Blacklight fluorescent tracing powder.
3. Bird feed.
4. Outdoor site where the animals could exist.

### Additional Materials:

*A Field Guide to Animal Tracks* by Olaus L. Murie Houghton Mifflin Co. Boston 1975.

*Outdoor Biology Instructional Strategies*, Delta Education, PO Box 915, Hudson, NH. 03051. 1/800/258-1302.

Blaze orange fluorescent pigment A - 15 - N, Day Glo Color Corp., 4515 Saint Clair Avenue, Cleveland, Ohio 44103.

Key  
a. opossum  
b. coyote  
c. red fox  
d. woodchuck  
e. raccoon  
f. whitetail deer

## Extensions:

Place bait in two distinct vegetation areas (meadow, forest, shrubs, etc.). Which areas seem to have more mammal activity around the bait stations? What could be some of the reasons for a greater number of mammals in one area than another?

## Procedure:

This activity can be successful in rain and snow, as well as fair weather.

1. Treat the bait by mixing the fluorescent powder and the bait.
2. Select the bait stations.
3. Pour a cup of bait at each site.
4. After dark, with the aid of the blacklight, follow the fluorescent powder trails from the animal's feet.

## Evaluation:

Ask the students, "What do you think?"

1. How can you determine if the evidence you found was made only by nighttime animals?
2. How many kinds of animals came to the bait stations? How do you determine the number of kinds?
3. Is one kind of animal more abundant?
4. Where are the favorite trails of the animals in your area?
5. What were the animals doing?
6. What influence do you have on the animals of the area when you set up bait stations?



Bob Rye



Bob Rye



Bob Rye

▲ After dark the blacklight (like the one above) shows if the bait has been disturbed. Animal tracks may be visible even without the blacklight, but as the picture at the far right demonstrates the tracks show very well under the blacklight. It is easy to tell if the bait has been disturbed and what animals visited the site.

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



# Conservation and Environmental Organizations Abound

Get Involved!

Landing a five-pound rainbow, barbecuing a fillet of a corn-fed whitetail, sighting a pileated woodpecker in a sunrise forest all are thrilling uses of Iowa's natural resources.

But, beyond the actual use of the resource, there is a large arena of activities open to all who enjoy the feeling of "putting something back," of investing their time and/or money in efforts to help the resource, itself, which gives us so much enjoyment.

Certainly, the DNR has a staff and budget to do just that -- to manage natural resources for the benefit of all. But in the history of the conservation movement, one learned lesson is that government cannot do it all. When it comes to conservation, much of the success we enjoy today has come from partners working with government, or on their own, on behalf of the

resource. Among the most successful are efforts that come from clubs, groups and organizations dedicated to the conservation of our resources.

In Iowa and throughout the country, there is a wide diversity of such groups. Most are eager for new members, new challenges and financial support. The following list represents most of the statewide groups that have their stake in conservation. There are many, many more local or regional groups you can find by asking around your community.

This list is offered to you as a starting point to consider where you might enjoy a natural resource experience in the off-season, or in any season . . . an experience that may be as or more rewarding than the hunt, the catch, or the photo you were lucky enough to take the last time afield.

# Conservation Group/Directory Update '95

## Ducks Unlimited

Northern Region: Rock Bridges 515/592-3600  
 Southwest Region: Tom Putnam 515/432-1942  
 Southeast Region: Greg Jones 319/668-2900

## Fur Takers of America, Iowa Chapter 16

President: Kevin Gravel 319/921-2700

## Hawkeye Fly Fishing Association

President: Nat Hopkins 319/338-8262  
 or Denny Redmond 319/366-2163

## Iowa Audubon Council

President: Sherry Dragula 515/233-1532  
 or Cindy Hildebrand 515/232-3807

## Iowa Conservation Education Council

Chair: Stacy Snyder-Newbrough 712/359-2271

## Iowa Environmental Council

Executive Director: Linda Appelgate 515/237-5321

## Iowa Natural Heritage Foundation

President: Mark Ackelson 515/288-1846

## Iowa Ornithologists Union

President: Carol Thompson 319/335-1581

## Iowa Sportsmen's Federation

President: Bob Anderson 515/277-0936

## Iowa Trappers Association

President: Joe George 712/464-8033  
 Treasurer: Anna Marie Scalf 515/682-3937

## Iowa Wild Turkey Federation

President: Sam Richmond 319/235-9705



Ducks Unlimited



Bill Kalishek



Whether creating improved habitat as Ducks Unlimited did at Thompson Marsh (above), creating fish habitat at George Wyth Lake from discarded Christmas trees as Cedar Valley Bass Masters did, or placing lunger hides at Ensign Hollow like the Hawkeye Fly Fishing Association members did (page 59 and at right), members of conservation organizations make a difference.

Bill Kalishek



Pheasants Forever

**Iowa Wildlife Federation**

President: Joe Wilkinson 515/279-0655  
or Administrative. Asst.: Suzanne Blue 515/279-0655

**Iowa Women in Natural Resources**

President: Gloria Baker\* 515/747-8383  
\*Term expires in June '95

**Iowans for Better Fisheries**

Chair: Marty Lambeti 515/967-5261

**Izaak Walton League of America - Iowa Division**

President: Don Passmore 319/649-2288  
or Executive Secretary: Robert Twedt 319/355-0512

**Pheasants Forever**

Southern Region: James Wooley Jr. 515/774-2238  
Northern Region: Matt O'Connor 319/352-0318

**Quail Unlimited**

Greg Spencer 712/328-3467

**Safari International - Iowa Division**

Steve Skold 515/264-8420

**Sierra Club - Iowa Chapter**

Chapter Office 515/277-8868  
State Chair: Wallace Taylor 319/377-2842

**Smallmouth Alliance - Iowa Chapter**

President: Layne McDowell 319/364-3383

**The Nature Conservancy - Iowa Chapter**

State Director: Gary Reiners 515/244-5044

**Trees Forever**

President, CEO: Shannon Ramsay 319/373-0650

**Turn In Poachers (TIP)**

Executive Director: Steve Derman 515/281-4515

**Whitetails Unlimited**

Iowa Field Director: Timothy Powers 319/488-2247  
National Headquarters 800/274-5471

**Waterfowl USA**

Mike Schrimper 319/362-5371

**Note: many of these numbers are the parties' home numbers and may need to be called during the early evening hours.**



Ducks Unlimited



Matt O'Connor



Pheasants Forever



Conservation organization members may raise money for habitat as at this DU fund raising auction, plant pines in a farmstead shelterbelt, or participate in a larger tree-planting project like the PF project in Winnebago County (lower left),

## WARDEN'S DIARY

by Chuck Humeston

## "More Wildlife Problems"

As I've told you before, wildlife calls always make for *memorable* times. The something-is-digging-under-my-house call for example. The caller is usually looking for help, and we try to give them advice.

Sometimes the caller overlooks the obvious. Very often we get calls saying, "There's a sick raccoon in my yard!"

We may answer, "How do you know the raccoon is sick?"

"Because it's walking in my yard!"

Hmmmmmm . . . Well, the problem is animals are like people, to get from Point A to Point B they usually have to walk, just like us.

Anyway, skunk calls stick out in my nightmares . . . I mean, my memory.

They usually start out like one of those horror films -- happy home, normal daily life and then . . . the phone rings. (*Close-up shot of the phone, background Psycho music.*) The caller, has . . . a skunk in their yard.

I respond with my usual professional demeanor, "Well, we have Plan A, Plan B and Plan C. Plan A is leave it alone, and it will go away. Call me if this doesn't work."

(*A few days later. Riiing.*)  
"Hello?"

"Your Plan A isn't working. Now, not only is it **still here**, I think it's going **under the house!**"

Okay, Plan B. "Take some rags and soak them in household ammonia, throw them in the hole where it's going in and out. Spray some ammonia liberally in the hole. Put a pan of ammonia in front of the hole so the air currents carry the fumes into the hole. More is better. No kidding, I learned this from a sage, retired game warden, and it works. Call me if this doesn't work."

(*A few days later. Riiing.*)  
"Hello?"

"Your Plan B isn't working!! I WANT THIS SKUNK OUT OF HERE!"

"Okay, we go to Plan C." (I hate Plan C. No, I *loathe* Plan C.)

"What's that?"

"We put out a live-trap and bait it with various vegetables. We make the skunk a salad. We tie a rope, preferably long, to the trap to drag the trap away from the house when we catch the skunk. Then we place a LARGE-size garbage bag over the trap, and move the skunk elsewhere to release it."

"Won't you get sprayed?" the incredulous caller asked.

"Not if we (*we usually translates to mean me*) approach slowly. The skunk doesn't like the smell any more than we do. No really, I've done this before. I've yet to be sprayed. A sage wildlife rehabilitator showed me this technique."

"It sounds difficult."

"It is, but the 'difficult' we do every day. The 'impossible' takes two game wardens!"

So, I set up the equipment for Plan C, the whole time muttering to myself why I didn't go into newspaper reporting as I had planned in college. "Call me when you catch something," I tell the homeowner.

(*Next morning. Riiing.*)

"Hello?"

"There's a skunk in the trap!"

Sure enough, Plan C has succeeded. Upon my arrival I put on a pair of gloves and get out the garbage bag. I approach slowly and carefully. That sage wildlife rehabber had told me to watch for 1) the skunk pounding its front feet on the ground, and, 2) the skunk, if facing west, turning its east side to me and raising its tail. "Then you run, *fast!*" he said. (I consider

"sage" to mean "smart enough not to do this, just give advice.")

I approach. The skunk pounds its front feet. I approach, it turns, tail up. Time to go! I try several times. Same result each time.

"What do we do?" the homeowner asks.

Yeah, right. *We meaning me* again. Well, *we* call for help. I get on the radio and a police officer arrives. We consider shooting the skunk. Nope, the area is too residential. So, we decide to take a plastic tarp, hold it in front of us, approach the trap, throw the tarp over the trap, put the trap in my pickup and move it to the release site. We look around and find a large plastic sheet.

We approach. The skunk pounds its front feet. We approach holding the plastic higher in front of us. The skunk turns, tail up.

Did I mention the wind is really blowing?

At the moment the skunk turns, a gust of wind comes up. Of course, this gust catches the plastic we're holding. Of course, the plastic blows straight up. We are still *some* distance from the skunk . . . but not *enough* distance. I look at the police officer and notice the few green drops on his uniform pants. Few, but enough. Direct hit!

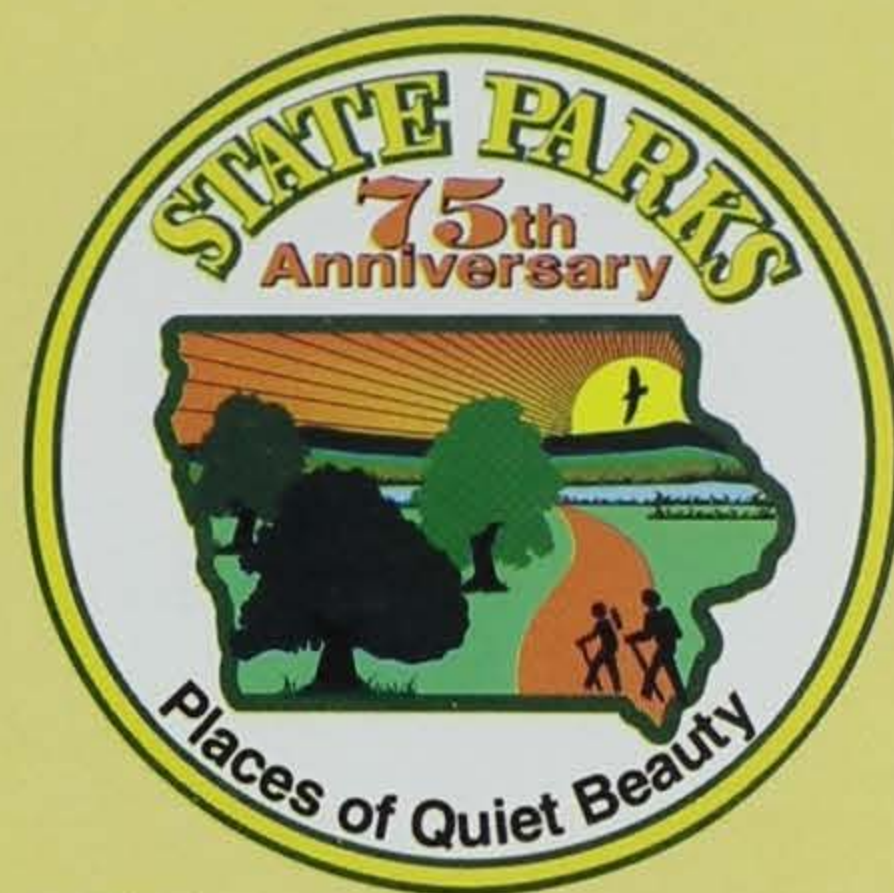
"You have to dry clean those don't you?" I ask. I am afraid now I will be shot! I look down at my pants. "Heh, heh, missed me!" I look at my boots. Direct hit! I swear the skunk is grinning.

With nothing left to lose, we charge. The plastic goes over the trap. The trap goes in the pickup. The skunk is released. We go home to change uniforms. I marvel every day the officer will still speak to me.

I hate Plan C. I've retired Plan C. Don't worry though, there are more skunk nightmares to come!

# STATE PARKS

## 1995 CALENDAR



### JULY

- 4 FIREWORKS DISPLAY -  
LAKE MANAWA
- 4 ANTIQUE CAR SHOW  
AND FIREWORKS -  
LAKE OF THREE FIRES
- 8 VOLKSSPORT WALK -  
MAQUOKETA CAVES
- 22 - 23 JOHN HENRY WEBER  
RENDEZVOUS -  
BELLEVUE STATE PARK



▲ Fort Atkinson Rendezvous gives a glimpse into the past.

### AUGUST

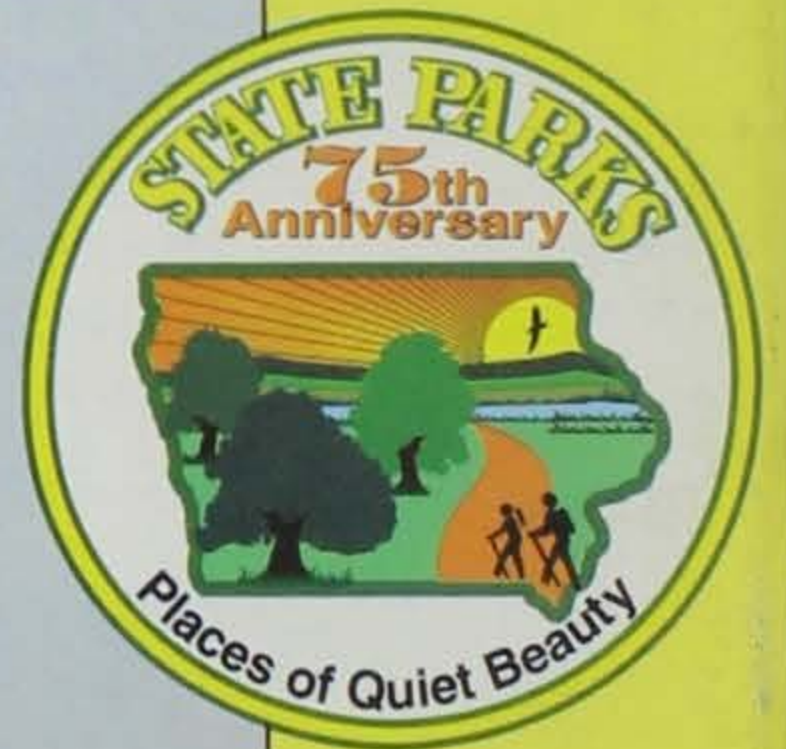
- 12 WHALETOWN TRIATHALON -  
LAKE ANITA
- 19 VOLKSSPORT WALK -  
LAKE ANITA AND  
SPRINGBROOK
- 19 15TH ANNUAL BIG CREEK  
TRIATHALON

### SEPTEMBER

- 16 VOLKSSPORT WALK -  
LAKE OF THREE FIRES  
AND NINE EAGLES
- 23 - 24 FORT ATKINSON  
RENDEZVOUS
- 29 NISHNA VALLEY BIKE  
TRAIL RIDE -  
LAKE ANITA
- 30 VOLKSSPORT WALK -  
BRUSHY CREEK AND  
DOLLIVER

### OCTOBER

- 7 ANNUAL GREAT RIVER  
ROAD - PIKES PEAK RACE
- 13 - 14, 20 - 21, 26 - 30  
HAUNTED FOREST WALK -  
WALNUT WOODS
- 14 - 15 FOREST CRAFT FESTIVAL -  
LACEY - KEOSAUQUA



To help celebrate the 75th anniversary of Iowa's state parks, for a limited time, this replica state park truck is available for \$24.95 by contacting the

Toy Collector Club  
P.O. Box 302  
Dyersville, Iowa 52040  
FAX 319-875-2455  
Phone Orders 1-800-452-3303

*Toy Collector Club*

*1-800-452-3303*