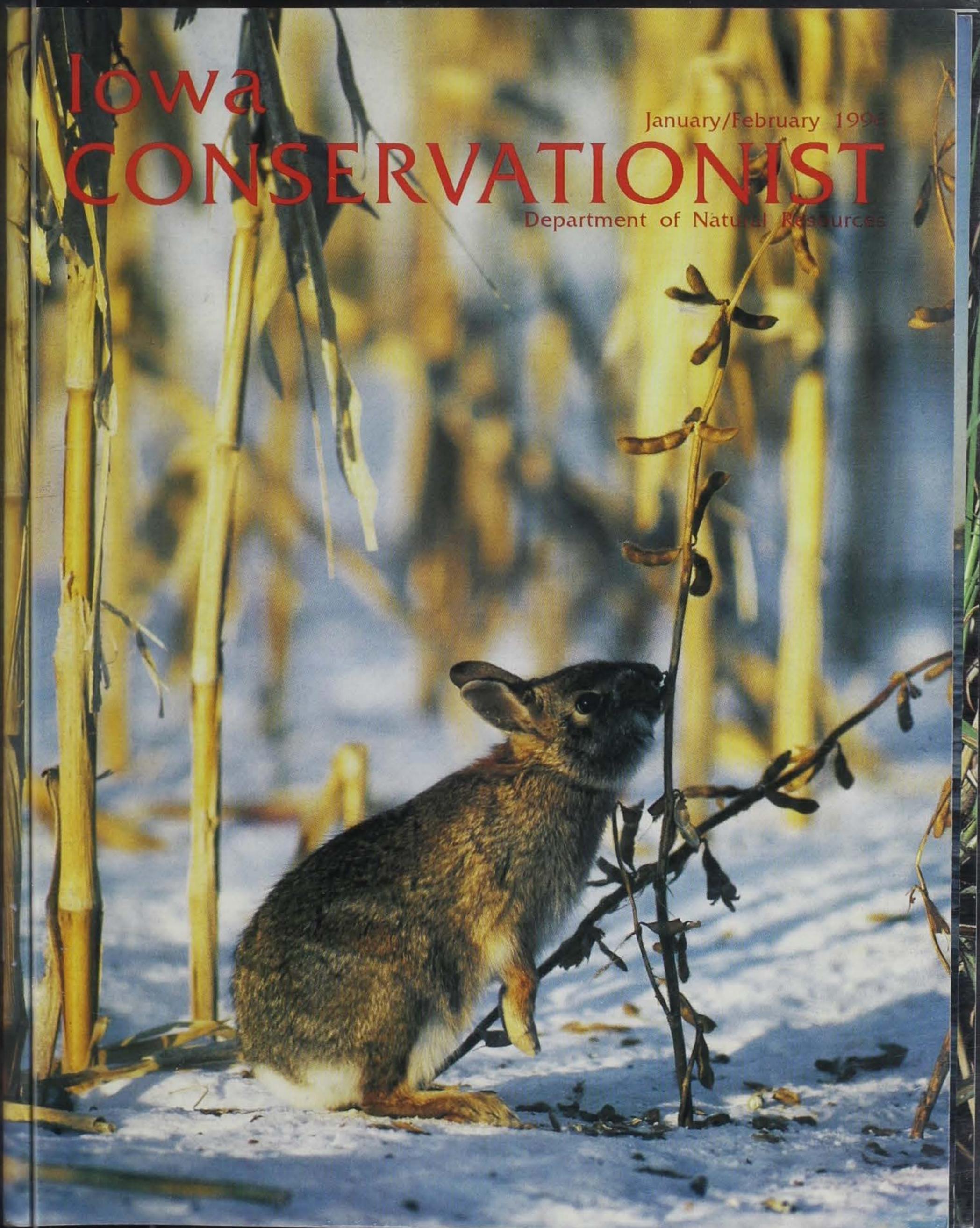


Iowa

January/February 1996

CONSERVATIONIST

Department of Natural Resources





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January/February
Volume 55, Number 1

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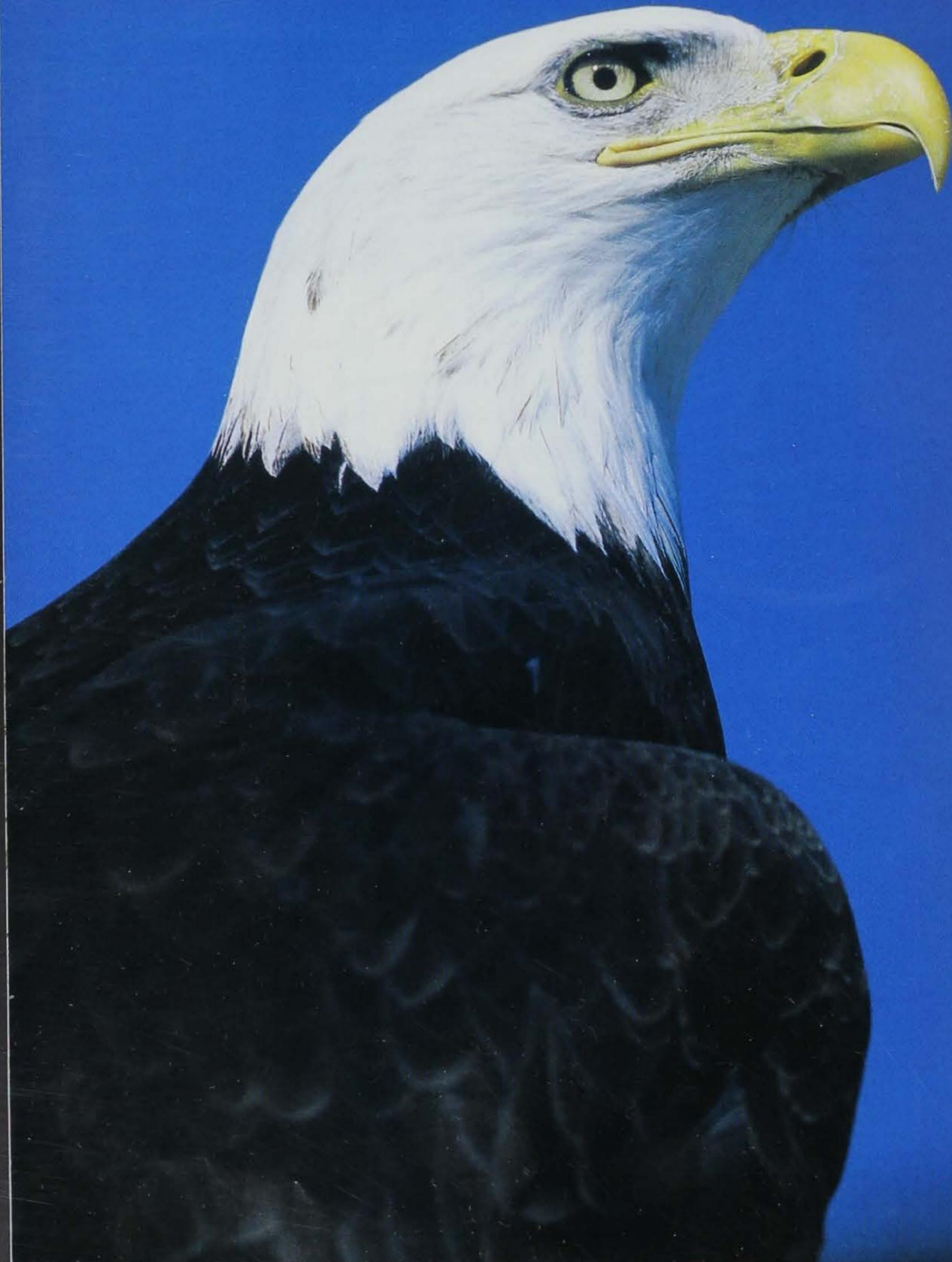
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Ty Smedes

UnEndangered?

by Bruce Ehresman

Known for its power and grace in flight, its loyalty to its mate, and its ability to protect its family at the nest site against intruders, the bald eagle exemplifies, to many of us, the spirit of wildness and freedom. For this reason, it is fitting this bird has been the symbol of this nation since 1782. It is also a tribute to the eagle's character, despite several centuries of human abuse, this magnificent species is presently staging a comeback from near extinction.

A few hundred years ago, when Euro-Americans began resettling this country, there were about 100,000 bald eagles residing in what is now the lower 48 states. In Iowa, historical records of the bald eagle do not give us a good idea of how many birds once nested here, but we do know that they were found throughout the state when settlers first arrived. Names such as Eagle Lake (Hancock County), Eagle Grove (Wright County), Eagle Point (Dubuque County) and Eagle City (Hardin County) indicate eagles were once more widespread than they are now. Early records also indicate why eagle numbers declined, because most reports are of eagles shot or of nests raided by egg collectors. The cutting of the majority of the old forests for lumber and fuel eliminated nest areas and further led to the loss of the bald eagle as an Iowa nesting species by the early 1900s. At that time, the last nest records noted were near Kellogg (Jasper County), where young were stolen from a nest atop a bluff in 1905, and in Hardin County where one of two eggs was collected from a nest in 1907.

The same factors that led to the disappearance of nesting bald eagles in Iowa were drastically reducing numbers of these birds across the country. To

prevent the extinction of this species, the Bald Eagle Protection Act was passed in 1940. This act made it illegal to possess, kill or disturb an eagle or its nest without a special permit. The act, along with increased public awareness of the bald eagle, started to aid this species in its recovery. But a major setback was yet to occur.

Beginning in the late 1940s, widespread use of insecticides, including DDT and other organochlorine compounds, nearly caused the demise of the bald eagle. As eagles fed on poisoned prey such as fish, high concentrations of DDE (a form of DDT) built up in the eagles' bodies. The accumulated toxin caused the formation of thin-shelled eggs which were easily broken in their nests. This resulted in the hatching of very few eaglets and a consequent severe decline in the eagle

population. By 1963, according to a National Audubon Society survey, only 417 active bald eagle nests remained in the continental United States.

In an effort to keep the bald eagle from going the way of the now extinct passenger pigeon, in 1967, the Secretary of the Interior listed the bald eagle, south of the 40th parallel (roughly northern Missouri), endangered under the Endangered Species Preservation Act of 1966. Of more importance to the eagle's survival was the ban on use of DDT and other organochlorine pesticides in the United States in 1972. Protection of eagles was further strengthened in 1978 through the Endangered Species Act, when the U. S. Fish and Wildlife Service listed the bald eagle as endangered in 43 of the lower 48 states and threatened in five states.



Roger A. Hill

Juvenile birds are typically dark with various amounts of white mottling. They usually don't acquire the white head and tail feathers until they reach sexual maturity at four or five years of age.

great opportunity to view eagles and to learn more about their natural history.

For those of us who enjoy watching bald eagles, it is especially important that we follow eagle viewing etiquette. Eagles are deserving of our respect, and they should be viewed with the aid of binoculars or a spotting scope from a distance of at least 400 yards (four football fields). By spooking an eagle unnecessarily, we can cause it to burn up valuable energy that it needs to survive the cold winter weather. Frightening eagles at a nest site,

on the other hand, could cause the eagles to abandon the nest. There are a couple of instances in Iowa where it appears this has already happened. If we are in sight of an eagle and in a vehicle, we should remain inside the vehicle and use it as a viewing blind. Once we get out of the vehicle, the eagle is much more prone to fly away. If an occupied eagle nest is discovered while canoeing or boating, please stay in the craft and give the eagles as wide a berth as possible.

Please also contact one of your local DNR wildlife personnel with information about the location of the nest. This will allow the nesting eagles the opportunity to receive the protection that state and federal laws afford them.

In Iowa, bald eagles sometimes begin nest building in November or December, and in mild winters they may be incubating their one to three eggs by mid- to late February. Both adults share in the egg-sitting chore, which lasts for 35-40 days until youngsters hatch. Parents care for their young even after they begin flying at 10 to 12 weeks of age, and it is not unusual to see the

family in the vicinity of the nest as late as early September. The same eagle pair is likely to return to the same nest site each year, and because new material is added to the nest each season, nests can easily become six to seven feet across and equally as deep. Eagles have plenty of time to develop their nest-building skills, since they have been known to live up to 30 years in the wild.

It is good to know that protective laws and an increased awareness and concern for the bald eagle are leading to its recovery. Populations have increased enough that on August 11, 1995, the bald eagle was officially reclassified from an endangered to threatened status throughout the lower 48 states by the U.S. Fish and Wildlife Service. Although numbers are still low compared to the approximately 20,000 nesting pairs that were here historically, this recovery adds credence to the importance of such laws as the Endangered Species Act. It is crucial that this effective tool for aiding species recovery not be weakened or dismantled.

In Iowa, our recovery goal (to reduce the bald eagle from endangered to threatened status) was to have 10 nesting pairs of bald eagles by the year 2000. With 38 active nests in 1995, the outlook for this native species looks pretty good. Unfortunately, we are unlikely to have the number of eagles nest here that once did. We have already lost about six of the original seven million acres of forest that once covered Iowa. For a species that is so dependent on large trees for nesting, roosting and hunting perch sites, perhaps the greatest threat facing its existence is the continued destruction of woodland habitat along our rivers and streams. It is crucial that we act as responsible stewards and do what we can to protect and preserve the habitats needed for the survival of this noble species.

To most of us, the bald eagle represents freedom. To Native Americans, such as the Sioux, an eagle feather attached to a ceremonial pipe represents the Great Spirit and is a reminder that the thoughts of humans should rise as high as the eagle flies. The next time an eagle soars above your head, think about that reminder and how important it is that we do not lose it.

Bruce Ehresman is a wildlife diversity technician for the department in Boone.

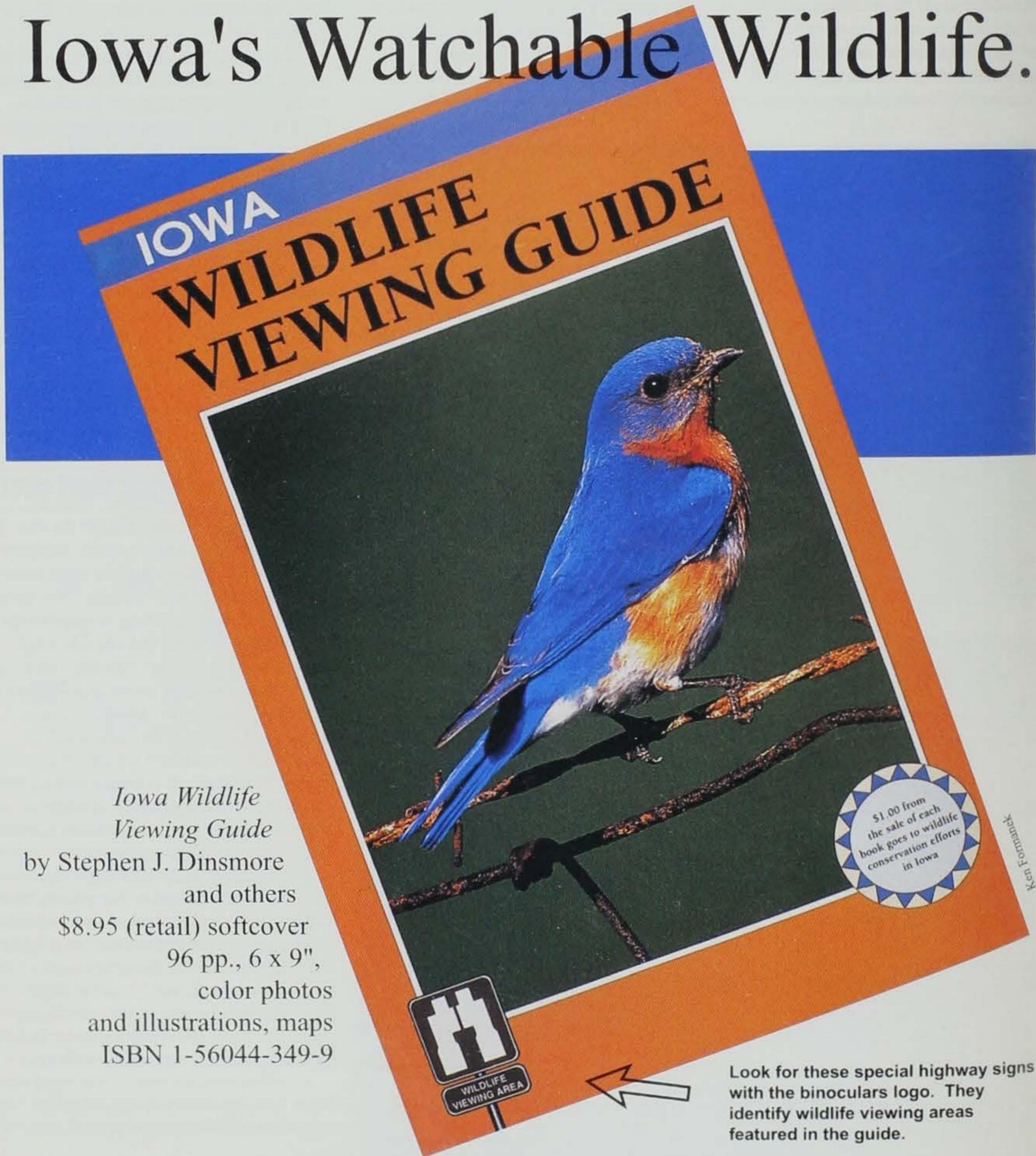


An eagle pair is likely to return to the same nest site each year, and because new material is added to the nest each season, nests can easily become six to seven feet across and equally as deep. The nest replica above is used at Bald Eagle Days events.

Ron Johnson

It's Here!

Take a Closer Look at Iowa's Watchable Wildlife.



*Iowa Wildlife
Viewing Guide*
by Stephen J. Dinsmore
and others
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and illustrations, maps
ISBN 1-56044-349-9



Look for these special highway signs with the binoculars logo. They identify wildlife viewing areas featured in the guide.



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areas: the Loes
Pothole region,
Plateau, and the



Ron Johnson



Roger A. Hill



Roger A. Hill

▲
 (top left) During the winter, Iowa attracts some of the largest concentrations of bald eagles in the lower 48 states. Bald Eagle Days events are held at several locations to aid in viewing these magnificent birds.

▲ ◀
 From red foxes (above) to trumpeter swans, this book will guide you to some of the foremost locations to find these and other species.

After years of hard work, Iowa's Watchable Wildlife Viewing guide is available for purchase. This full-color, 95-page viewing guide features 77 of the best locations in the state to view wildlife. Whether you wish to view songbirds, eagles, waterfowl, deer, or butterflies, this book will guide you to some of the foremost locations to find these and other species. The guide also highlights tips for viewing wildlife, viewing ethics and amenities available at individual sites.

The guide is a useful text for describing the landscape and wildlife typical of Iowa's four main viewing areas: the Loess Hills, the Prairie Pothole region, the rugged Northeast Plateau, and the state's Heartland.

Wonderfully drawn artwork illustrates these major regions and some of the changes the state has undergone since settlement. Beautiful photographs depict the scenes and the species wildlife viewers are apt to observe. The book is also full of "fun facts" about Iowa's wildlife and natural features.

The durable, soft-bound book was produced by Falcon Press as part of the national wildlife viewing guide series. The books cost \$8.95. All proceeds from books sold by the Iowa Department of Natural Resources will be used to enhance wildlife diversity and viewing in the state. To order, send your name, address and phone number to the Iowa Department of Natural Resources, Wallace State Office Building, 902 E.

Grand Avenue, Des Moines, IA 50319-0034. Make checks or money orders payable to the Iowa Wildlife Diversity Program. Include \$8.95 for the book, plus \$2.00 for shipping and handling for each book. Books are also available from county conservation boards, local conservation groups, Iowa Welcome Centers and book stores. If you are unable to find copies of the book, contact the Wildlife Diversity Program, Iowa Department of Natural Resources, 1436 255th St., Boone, Iowa 50036 (phone 515/432-2823). Groups or individuals wishing to order bulk quantities can receive a \$2 discount per book with a minimum order of 25 copies. Call the Wildlife Diversity Program for additional information.

Iowa's 1995 Energy Leaders

Article by Troy Vitullo and P.S. Cale
Photos by P.S. Cale

Five Seasons Transportation and Parking

The bus garage at Cedar Rapids' Five Seasons Transportation and Parking seems like what you'd imagine a garage to be like. It's big, greasy and full of buses. But, appearances can be deceiving. A closer look shows small changes that add up to big differences—in air quality, community betterment and economic development.

The person behind these subtle changes is Bill Hoekstra, Director of Five Seasons, the City of Cedar Rapids' public transit and parking system. Hoekstra is committed to finding ways to run a bus system that helps both the community and the environment. Five Seasons forms partnerships with private companies all over Iowa and the country, and their cooperation has helped make the transit system a revolutionary example of the use of cleaner alternative fuels.

Five Seasons currently is using, demonstrating or experimenting with ethanol, biodiesel, compressed natural gas, alcohol, propane, hydrogen and electricity in its vehicles.

Five Seasons has 38 buses on fixed routes and 8 on paratransit routes. All of these buses have run on a combination of biodiesel, ethanol and diesel gasoline since 1993. The biodiesel runs cleaner than

normal diesel gas. Ethanol, injected into the engine during acceleration, cuts harmful emissions even more by countering what harmful fumes biodiesel does emit. Alternative fuel use, coupled with better engine technology, give Five Seasons' buses better mileage than they've ever had before.

A big reason behind the success of Five Seasons lies in partnerships with other Iowa companies and agencies. The Iowa Soybean Promotion Board helps the transportation company purchase biodiesel, allowing Five Seasons to demonstrate its viability and increase the market of the home-grown fuel.

Irel Corporation, based in Williamsburg, Iowa, helped Five Seasons put a revolutionary hydrogen-powered system on one of its transit vans. The system converts water into hydrogen to combust, along with either compressed natural gas or ethanol. The van uses about one gallon of water a week.

Larry Serbousek, Cedar Rapids'

Fosseen Manufacturing designed the engine system to cut emissions using alternative fuels. Fosseen staffer Bruce Burgeson demonstrates.



Transportation Director Bill Hoekstra has led the effort to use alternative fuels for cleaner air. This van offers fuel options for compressed natural gas, a gasoline-ethanol blend and hydrogen.

Mayor, sees a bright future for Cedar Rapids' transit system, based in part on Hoekstra's dedication to using clean alternative fuels. He says, "On a per vehicle basis, we really do have the lowest emissions per vehicle of any place in the country."

That does not mean that Hoekstra is finished making changes. Plans for Five Season's bus system now focus on the introduction of battery-powered buses. These buses can be charged before they go out, resulting in zero emissions and cutting down on urban pollution. In the future, Hoekstra plans on purchasing battery-powered buses with on-board diesel generators that charge the batteries as the buses run.

Hoekstra also makes sure the garage runs safely and efficiently. The building's heating, cooling and lighting are all computer controlled for optimum results and safety. The heater runs on waste oil, which burns 99% clean. Ventilation hoods in key locations cut fumes down to safe levels.

With the partnerships Five Seasons Transportation has developed, the Cedar Rapids bus company will be able to develop safe, efficient and cost effective transportation well into the 21st century.

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Hamilton County Conservation Board



Natural woods harvested from county forests highlight the Hamilton County Conservation Board's golf clubhouse.

There is only one thing that woodchips, kids, shower heads and plastic milk jugs all have in common: the Hamilton County Conservation Board (HCCB). By focusing on energy resources, the HCCB has come up with a number of unique programs that make it a leader in the field of energy and environmental education.

What would normally be a cry for help -SOS- the HCCB has turned into water and energy savings for Hamilton County. Energy SOS (Showers of Savings) showed how low flow shower heads, once installed, cut back on water use and cost without affecting the joy of a good shower. Jean Eells, the Environmental Education Coordinator for the HCCB, organized the project with the idea that the prospect of saving money would spur people to use the low flow shower heads. Dollar savings result from individuals saving hot water and from the community pumping and treating less water.

Pounds of Plastic, Unite Locally and Recycle, became a very POPULAR acronym in Hamilton County. As early as 1988, Eells helped organize a highly publicized campaign to recycle milk jugs. The campaign has grown as the markets for recycled items grow and now includes office and computer paper.

The recycling effort has fostered many successful spin-offs, including Waste Not, a project designed for young Girl Scouts and Boy Scouts. First and second-graders got to learn what to look for in

energy efficient facilities, such as properly used recycling bins and adequately insulated electric sockets. At the public library, for example, "We showed them that if you put your hand up to an electric socket - not right on it because then it doesn't work - and felt air, then it wasn't insulated well enough... and then we let them loose," said Eells. With these and other common sense ideas in mind, the young Scouts were able to measure a building's energy efficiency, give it a grade, and report their findings to facility operators.

The key to understanding energy efficiency, Eells says, is to give the children concrete examples of what it is. "Instead of just telling them about compact fluorescent light bulbs I let them hold one." The effort of educating them is centered not just on teaching kids science, but on building life skills that they will learn to use as they grow up.

One of the Conservation Board's office and maintenance facilities, located just outside Briggs Woods, shows that the board not only talks the talk, but walks the walk. Completed in 1987, the building is a testament to energy efficiency. The windows are triple-paned on the north and west sides for better insulation. The double-paned windows on the south and east side provide excellent passive solar heat in

the winter. A wide roof overhang shades the south windows in the summer when the sun is at a higher angle, keeping out the sun's heat when it isn't needed.

In addition to passive solar heating, the facility also benefits from a wood-

Waste wood is chipped and burned in a hot air furnace to heat offices and maintenance facilities.



burning furnace to keep the offices and maintenance shop toasty in the winter. Dave Takle, a mechanic in the shop, said, "You could find us when its twenty below outside working in the shop with the bay doors open in our shirt-sleeves." The fuel for the furnace comes from waste wood saved from forestry projects around the county. Due to the heat of combustion, emissions are minimal, and are mostly made up of steam from water in the wood.

Brian Holt, Executive Director of the HCCB, feels that the facility makes an excellent example for others. Since it was built as a working demonstration of energy conservation, every idea that the HCCB used in its construction can be applied to other facilities.

Forest management yields healthy forests and quality hardwoods. Scraps from county woodworking projects aren't wasted; they're burned in the furnace, providing a renewable energy source and replacing fossil fuels.



Iowa-Illinois Gas and Electric Co.

It takes dedication to help your clients use less of your own product, and a dedication to energy efficiency is exactly what Iowa-Illinois Gas and Electric Company has demonstrated.

Some of Iowa-Illinois' programs focus on the residential sector, specifically new homes. The utility company offers rebates for energy saving equipment installed in homes, including efficient furnaces, air conditioners, water heaters and clock thermostats.

More importantly, Iowa-Illinois is a leader in defining for new home builders exactly what is "efficient." Donald Otto, owner of DPO Construction, is known as one of the highest quality builders in the Iowa City area. He states that while anybody can call a home efficient, "It's nice to have a third party to tell you with objective numbers that the house really does meet a national criteria." The national criteria Iowa-Illinois uses is the Home Energy Rating System (HERS).

Iowa-Illinois collaborated with Mid-Iowa Community Action (MICA) to develop a standard rating of energy efficient homes for builders across Iowa



Energy-efficient houses can come in all shapes and sizes, including this 5-star home built by Don Otto in Iowa City. Lots of windows, sliding glass doors and northern exposures can still be included in an energy-conscious home. The builder's attention to detail makes the difference.

to use. The result is the Smart Energy Shell®, a program that has stimulated home builders to exceed building codes and differentiate their homes upon the basis of energy efficiency.

Otto's latest accomplishment, a Victorian-style mansion built in Iowa City, was given the highest HERS rating, five stars. The home is nearly air tight to control temperature and climate changes, and any fresh air brought in comes through air flow regulators. The tight seal on the home, coupled with its sealed ducts, basement insulation, programmable thermostats, energy efficient lighting and sealed combustion water heater and furnaces are all off-the-shelf technologies, and are supported by the Smart Energy Shell® program. The extra costs end up quickly paying for themselves in energy savings.

The cost effective nature of these energy saving additions is not lost on builders of less expensive homes. Bob Kvach, owner of Kvach Construction, has just built his third five-star rated house. Kvach, who specializes in affordable housing, will sell the Cedar Rapids duplex for less than \$80,000. Kvach took advantage of Iowa-Illinois' rebates to make the house as efficient to heat and cool as possible. Basement insulation, something overlooked by many builders not concerned with efficiency, was probably the most important step he took to ensure the home's energy efficiency. The result says Kvach, is that, "The house is maintenance free and energy efficient."

Dan Moeller, Marketing Analyst for Iowa-Illinois, feels that the Smart Energy Shell® is a good idea for homes in any price bracket. He says, "Consumers that can afford the very best invest in energy efficiency for its value, and customers like Bob Kvach's customers in Cedar Rapids, which are at the lower end of the scale...really can't afford not to invest in energy efficiency."



Ron Harris of Iowa-Illinois discusses his energy rating with Bob Kvach, a Cedar Rapids builder. This new duplex also received a 5-star rating.



Mid-Iowa Community Action (MICA) helps families in this, the organization's ability to provide shelter and other energy efficient techniques to lower one of MICA's housing affordable. There are many action agencies MICA strives to benefit from the The nonprofit constant effort families most h costs, and to de measures that d those costs. Lik state, MICA op of assistance programs. It is that examines th studies their eff techniques to im



Mid-Iowa Community Action, Inc.

Mid-Iowa Community Action (MICA) helps families thrive. To do this, the organization focuses on their ability to provide themselves with shelter and other needs. Developing energy efficient weatherization techniques to lower people's energy bills is one of MICA's key strategies to achieve housing affordability.

There are nineteen other community action agencies in Iowa, and with them MICA strives to achieve the greatest benefit from the programs it operates. The nonprofit organization puts forth a constant effort to select the houses with families most heavily affected by energy costs, and to deliver energy efficient measures that do the best job of cutting those costs. Like its partners across the state, MICA operates a broad spectrum of assistance and self-sufficiency programs. It is a learning organization that examines these programs and studies their effectiveness, adjusting its techniques to improve performance.

Weatherization efforts focus on everything from minor caulking jobs to major insulation, furnace replacement and duct sealing. To make sure its staff uses the best techniques possible, MICA formed partnerships with national experts in the field of weatherization from across the country to train its technicians to understand that no two houses are the same. Owen Heiserman, director of research and planning at MICA, says, "MICA staff understand that it is as important to know when and where to stop working on a house as it is to know where to start." The technicians arrive at the home they are weatherizing with everything they need on a bus, including insulation and equipment for efficiency testing. "It's like a mini-factory," says Claude Papesch, Iowa HERS Coordinator for MICA.

The organization uses a "whole house systems approach" to residential energy conservation that goes beyond weatherization techniques and state-of-



MICA has championed the use and evaluation of the blower door, which tests a home's airtightness.

the-art diagnostics. A home is summed up by the complex interactions between the structure, the mechanical systems and the occupants. Understanding this helps MICA reach its number one objective in home weatherization, which, according to Papesch, is the return on the investment. "Everything that we do has to pay itself back in energy savings in between seven and ten years," he says.

In an effort to measure this return, MICA began evaluating its weatherization programs back in 1981. This early evaluation effort gave MICA the drive to learn more about its techniques that culminated in the Statewide Low-Income Comprehensive Evaluation (SLICE) that took place in 1992 and 1993. SLICE showed that MICA's weatherization techniques were generating average energy savings in excess of 25%. MICA sticks with these methods today.

The impact of MICA's residential programs goes beyond energy and economics. On an individual level, occupants of weatherized homes have more disposable income, which enables them to focus on needs other than energy. People who are thriving, rather than just barely surviving, can become contributing members of their communities.



MICA's weatherization buses carry everything the technicians need to make a home more energy efficient and less costly for families. Weatherization makes housing safer and more affordable for low-income residents.





Schafer Systems, Inc.

A new landmark for western Iowa, Schafer Systems' wind turbine towers above Interstate 80 at Adair.

Schafer Systems, Inc. stays competitive by staying energy efficient. The plastics assembly plant takes advantage of renewable resources, recycling, efficient lighting, heating and air conditioning to keep ahead of its competition.

The Adair manufacturing plant gets much of its energy from a powerful wind turbine that satisfies between 40 and 100 percent of its energy needs, depending on the time of year and wind conditions. The turbine will pay for itself in cost savings in eight to ten years. Phil Littler, Schafer Systems' resident wind turbine expert, notes that for the wind turbine's estimated 25-year lifetime, "we're locked in at five and three quarter cents a kilowatt." That cost is currently about 2 1/2 cents cheaper per kilowatt than electricity from the utility company.

Schafer Systems installed the turbine only after studying the area's average wind speeds for more than a year and a half and then finding the right turbine for the job. According to Littler the Vestas V27-225 kW wind turbine he chose is suited well for parts of the Midwest, where winds can be moderate. The V27 is capable of generating 225 kilowatts of electricity. So far the one at Schafer Systems has put out an average of 50 kilowatts per hour. The machine has been remarkably reliable, producing power nearly constantly since it was installed in January of 1994.

All this energy is used to power lights, the building's HVAC system and an injection molding machine. The lights are fluorescents, chosen to save the maximum amount of energy. The

HVAC system is as efficient as possible, thanks to air flow studies done on the facility. The plant recycles 60% of its poly-carbonate scrap generated from



A new consumer product, the *Bass Baby*, will be sold at a sporting goods store located next to the Schafer Systems plant.

blemished molded parts. The regrind is used to produce two products made of 100% recycled polycarbonate. Schafer Systems expands its recycling efforts whenever it becomes profitable to do so. Currently the company recycles 78,000

pounds of cardboard every year, which cuts landfill costs considerably.

Chris Schafer, co-owner of Schafer Systems, plans to get more than energy out of his company's environmental attitude. The 132-foot tall wind turbine is positioned right next to I-80, making it a great attention-getter as well as a working testament to Schafer Systems' commitment to conservation. As Schafer expands production to include his own brand of fishing boat, the *Bass Baby*, he can depend on the V27 to help bring the first customers to the door.

Plastics manufacturing creates waste, but Schafer Systems reuses and recycles materials wherever it's possible and cost-effective.



The secret to making sure the s why it's important Ibarra, a science t Middle School, ap he teaches his stu energy conservati sustainability Ibarra's progr Environmental Sc Our Future, is de objectives in min to be a positive, a environment, and plays a part in the also learn more al process in generat behind their exper they get their resu educate the comm



Matt Teesdale ex analyzed their da and State Rep. D

One student p Cost of Lighting, c of incandescent lig cent bulbs, using a result of the find cent equals four in households have t installing fluoresce saved 15,068 kilov last year. The Linr funds this project e incoming West Br

West Branch Middle School

The secret to a good education is making sure the student understands why it's important to learn. Hector Ibarra, a science teacher at West Branch Middle School, applies this principle as he teaches his students the value of energy conservation and environmental sustainability.

Ibarra's program, called *Partners in Environmental Science: Investing in Our Future*, is designed with three objectives in mind. Students learn how to be a positive, active influence on our environment, and see how technology plays a part in their experience. They also learn more about the research process in general as they compile data behind their experiments. Then, once they get their results, the students help educate the community.



Matt Teesdale explains how students analyzed their data to State Sen. Jack Rife and State Rep. Dan Boddicker.

One student project, *The Hidden Cost of Lighting*, compared the expense of incandescent light bulbs to fluorescent bulbs, using an electrical meter. As a result of the findings that one fluorescent equals four incandescents, 184 households have taken the step of installing fluorescent lights. This has saved 15,068 kilowatts of energy in the last year. The Linn County REC now funds this project every year for incoming West Branch sixth-graders.

An outgrowth of the *Hidden Cost of Lighting* is another student project, the *High Efficiency Lighting Systems for Schools and Businesses*. With funding from the Iowa Energy Center (IEC), West Branch students set up an experiment comparing different fluorescent lamps in the computer and science rooms. When he saw the findings, which showed energy savings of 67% using T-8 lamps versus T-12s, Ed Larew of the West Branch State Bank agreed to finance a loan to retrofit the entire middle school. The loan will be paid back in just over four years with savings from lowered energy consumption. Jillian Arn, one of the students involved in the research, said, "All the money we get back we're going to put into our educational system." The study will soon be replicated at the West Branch State Bank building itself.

Measure that Watt was designed for students to measure the energy efficiency of household appliances. Students used direct wattage meters to measure the kilowatt hours of energy consumed, as well as the kilowatts being consumed at the moment. This helps students understand the impact of a variety of home appliances on the environment.

In *Showers of Savings*, originally funded by the Iowa Science Foundation, students measured the efficiency of their showers. Amanda Crowley, a student



Iris Caldwell, a West Branch student, performed research on the proper temperature for home water heaters. She found energy savings by turning down the temperature.

involved in the experiment, said, "You have to measure, see how much water comes out of the shower. Then you measure low flow ones and compare." By using low-flow showerheads, student calculated that the sixth, seventh and eighth-graders combined saved 39,885 gallons of water per week. The experiment is now funded for all incoming sixth-graders by the Linn County REC and IES Utilities.

On the Way to a More Efficient Flush showed students how to save additional water. Students measured their water usage before and after retrofitting toilets with water-saving devices and found that they could save as much as 11 gallons per day per toilet. This experiment is now funded for all incoming sixth-graders by Kemper Management Services.

Partners in Environmental Science combines the efforts of students, teachers, parents and community businesses. None of the experiments could have happened without the many different partnerships, and they wouldn't have succeeded without the enthusiasm of the students, the cooperation of their parents and, of course, the vision of Hector Ibarra himself.

The meter is running on a display contrasting energy use by incandescent versus fluorescent lights, as demonstrated by Jessica Middlemis-Brown.



1995 Iowa RECORD DEER RACKS

This is a list of deer racks scored between
October 1994 and July 1995.

SHOTGUN, TYPICAL

(Minimum Qualifying Score -- 150 points)

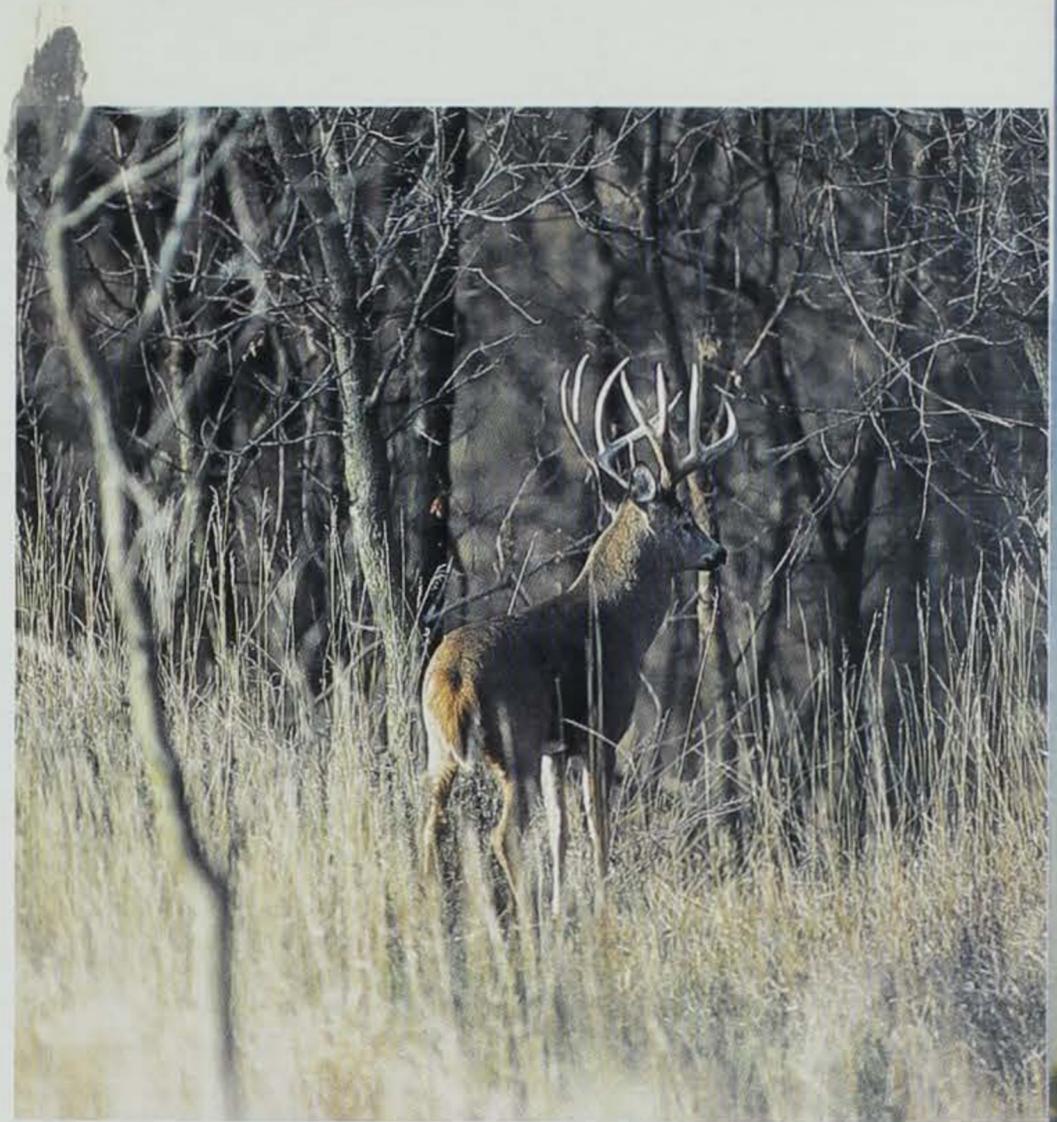
NAME	CITY	COUNTY TAKEN	YEAR	TOTAL SCORE
David Brinegar	Ottumwa	Wapello	1969	200-1/8
Merwin Koch	Maquoketa	Clinton	1994	186-7/8
Greg & Rick McCabe	Sioux City	Woodbury	1965	183-3/8
Craig Heaverlo	Cedar Rapids	Davis	1994	181-6/8
David Hill	McCallsburg	Story	1994	180-2/8
Glenn Farrington	Olin	Cedar	1994	179-6/8
Kendall Kipp	Yale	Guthrie	1985	179-2/8
Jim Brislaw	Burlington	Des Moines	1985	177-6/8
Randy Weinhold	Newell	Montgomery	1992	175-7/8
Lyle Bramely	Ute	Monona	1993	173-7/8
Bill Winn	Milton	Van Buren	1977	173-3/8
Charlie Dewey	Norwalk	Warren	1994	173-2/8
Todd Darling	Webster City	Hamilton	1994	172-5/8
Herbert Weigel	Norwalk	Ringold	1994	172-5/8
Perry Klages Jr.	Lacona	Lucas	1994	172-4/8
Steve Sonntag	Brayton	Audubon	1994	172-4/8
Kevin McKee	Monona	Allamakee	1994	170-6/8
John M. Aiello	Centerville	Appanoose	1994	170-4/8
Dennis R. Besick	Ottumwa	Van Buren	1994	170-2/8
Tony Boatwright	Montrose	Lee	1991	169-4/8
Patrick Willhoite	Muscatine	Scott	1994	169-2/8
Donnie Smith	Columbia	Marion	1994	168-3/8
Doug Spence	Marengo	Davis	1992	167-1/8
Bill Morgan	Albia	Monroe	1992	167-7/8
Jeff Madsen	Iowa City	Cedar	1994	167-6/8
James Finn	Council Bluffs	Pottawattamie	1994	167-5/8
Darin L. Stoll	Ames	Boone	1994	167-3/8
James J. Rossmanith	Churdan	Ringold	1994	166-3/8
Mike Flanigan	Mapelton	Monona	1985	166-0/8
Arthur Beek	Madrid	Boone	1994	166-0/8
Richard Graham	Indianola	Warren	1989	165-7/8
Randy Sams	Fremont	Wapello	1994	165-7/8

Mark Schonhoff	Dubuque	Van Buren	1994	165-7/8
Brian Clausen	Missouri Valley	Harrison	1991	165-3/8
Tom Kaasa	Davenport	Scott	1994	165-3/8
Bradley Rose	Mapelton	Monona	1994	165-2/8
Ben Wagner	Calmar	Winneshiek	1993	164-3/8
John F. Knoll	Dallas Center	Madison	1994	164-1/8
Jason Sullivan	Waukon	Allamakee	1994	163-2/8
Kenny Rave	Dundee	Clayton	1994	163-2/8
Dennis J. Hammes	Ollie	Keokuk	1994	163-2/8
Gerald Hopson	New London	Henry	1970	162-6/8
Craig D. Mayland	Swea City	Kossuth	1994	162-6/8
Paul M. Stajcar	Udell	Appanoose	1994	162-4/8
Jim H. Mathias	Birmingham	Van Buren	1993	162-1/8
John McCarty	Corydon	Wayne	1981	162-1/8
Richard D. Olmstead	Cedar Rapids	Linn	1994	161-7/8
Jim Burgin	Edgewood	Clayton	1993	161-5/8
Doug Weldon	Albia	Monroe	1991	161-5/8
Randy D. Buschmann	Sioux City	Monona	1994	161-4/8
Kerry Tysland	Waukon	Allamakee	1994	161-3/8
Jeff L. Spates	Sioux City	Monona	1994	161-1/8
Jay R. Simmons	Fairfield	Jefferson	1992	160-7/8
Keith C. Baker	Grand River	Decatur	1993	160-5/8
John Maynard	Castana	Monona	1993	160-4/8
Michael Ketcham	Corning	Montgomery	1994	160-2/8
Robert J. Weselmann	Northwood	Lucas	1993	160-1/8
Jim Nelson	Clinton	Fayette	1994	160-1/8
Tom Brimeyer	Bettendorf	Wapello	1989	159-2/8
Scott Starr	Wayland	Henry	1993	159-1/8
Dennis Furlin	Seymour	Wayne	1994	159-0/8
Thomas Gullion	Lovilla	Marion	1994	158-7/8
Jerry Stafford	Clear Lake	Clayton	1994	158-6/8
Martin Cason	Clearfield	Taylor	1993	158-5/8



Bruce Bryant
Lonnie Stringer
Vernon R. Brown
Randy Johnson
Kevin E. Carter
Jame Wilson
Tom Walker
Brian Leppert
Don Brubaker
Shannon Snyder
John Menhardt
Dave Grasty
Robert C. Anderson
Mike Morphew
Steve Wingert
John Tharp
Allen King
Jim Lanser
Becky Blakley
Brian Dickman
Jeffrey L. Clawson
Dean Lammers
Dean Wright
Mike Klabsen
Richard K. Hopson
Jim Shima
Barry Sullivan
Jeremy Hanson
Ron Cerwick
Robert Jensen
Scott Ingram
Richard D. White
Mike Scieszinski
Thor Iverson
David L. Hostert
Paul Snodgrass
Ronald C. Saltzman
Gary Lang
Mike Albertson
Gerald Edwards
Roger McVeigh
Roy Mikesell
Robert Walker
Dallas Davis
John Verdon
Gayle Heard
Roger Henze
Tim Juels
Jeromie Taylor
Jim Allen
Bill Durian
Donald Stoeckel
Kirk Ridout
Eric Frazier
James R. Perry
Jo Ann Provenzano
Darrell Mass
Jacob Ironside
Gregg Fisher
Scott Simmons
Melvin R. Steele
Shane Mitchell
Mike Hermann
Randy Hermann
Norman Dresselhaus
George Barellos
Jim Wilkins
Don Greiner
Don Nichols
Scott Carter
Scott Kesterson
Arnie Dahlen
Glen Bahr
Corky Read
Bob Martin
Paul S. Lyons
Floyd West
Ronald Travis
Greg Dumirik
Ronald Kirkland
Matt Speicher

Bruce Bryant	Glidden	Carroll	1994	158-5/8
Lonnie Stringer	Norwalk	Warren	1994	158-3/8
Vernon R. Brown	Seymour	Wayne	1994	158-3/8
Randy Johnson	Lehigh	Webster	1994	158-3/8
Kevin E. Carter	Muscatine	Muscatine	1993	158-2/8
Jamie Wilson	Lakeside	Buena Vista	1994	158-2/8
Tom Walker	Prairieburg	Linn	1993	158-1/8
Brian Leppert	Wauconda, IL	Keokuk	1994	158-1/8
Don Brubaker	Des Moines	Mills	1994	158-1/8
Shannon Snyder	Sidney	Fremont	1994	157-6/8
John Meinhardt	Farmington	Lee	1993	157-4/8
Dave Grasty	Greenfield	Adair	1994	157-3/8
Robert C. Anderson	Donnelson	Lee	1993	157-3/8
Mike Morphew	Madrid	Wright	1994	157-3/8
Steve Wingert	Logan	Harrison	1994	157-3/8
John Tharp	Marion	Clayton	1994	157-2/8
Allen King	Knoxville	Marion	1994	157-2/8
Jim Lanser	Dubuque	Van Buren	1987	157-0/8
Becky Blakley	Wellman	Washington	1994	157-0/8
Brian Dickman	Missouri Valley	Harrison	1994	157-0/8
Jeffrey L. Clawson	Ackley	Butler	1994	156-6/8
Dean Lammers	Corning		1994	156-6/8
Dean Wright	Guthrie Center	Guthrie	1985	156-5/8
Mike Klahsen	Aplington	Appanoose	1994	156-5/8
Richard K. Hopson	New London	Henry	1994	156-5/8
Jim Shima	Schaller	Guthrie	1993	156-3/8
Barry Sullivan	Des Moines	Decatur	1993	156-2/8
Jeremy Hanson	Evansdale	Lee	1994	156-0/8
Ron Cerwick	Westfield	Plymouth	1993	155-7/8
Robert Jensen	Moorhead	Monona	1992	155-7/8
Scott Ingram	Corydon	Wayne	1994	155-7/8
Richard D. White	Cedar Rapids	Allamakee	1994	155-6/8
Mike Scieszinski	Albia	Monroe	1994	155-2/8
Thor Iverson	Des Moines	Decatur	1995	155-2/8
David L. Hostert	Worthington	Dubuque	1994	155-2/8
Paul Snodgrass	Lansing	Allamakee	1994	155-1/8
Ronald C. Saltzman	Corning	Adams	1994	155-1/8
Gary Lang	Des Moines	Ringgold	1991	154-7/8
Mike Albertson	Council Bluffs	Guthrie	1994	154-6/8
Gerald Edwards	Clinton	Jackson	1991	154-5/8
Roger McVeigh	Numa	Appanoose	1993	154-5/8
Roy Mikesell	Des Moines	Madison	1992	154-3/8
Robert Walker	Morning Sun	Louisa	1988	154-3/8
Dallas Davis	Crawfordsville	Jefferson	1994	154-3/8
John Verdon	Waverly	Allamakee	1993	154-3/8
Gayle Heard	Villisca	Adams	1994	154-2/8
Roger Henze	Marshalltown	Hardin	1994	154-2/8
Tim Juels	West Branch	Johnson	1994	154-2/8
Jeromie Taylor	Camanche	Jackson	1994	154-1/8
Jim Allen	Knoxville	Marion	1994	154-0/8
Bill Durian	Oskaloosa	Monroe	1974	153-7/8
Donald Stoeckel	Urbandale	Marion	1994	153-6/8
Kirk Ridout	Tama	Tama	1994	153-4/8
Eric Frazier	Dunlap	Harrison	1994	153-3/8
James R. Perry	Dubuque	Clayton	1994	153-1/8
Jo Ann Provenzano	Lovilla	Monroe	1994	153-0/8
Darrell Mass	Crescent	Mills	1994	153-0/8
Jacob Ironside	Cedar Rapids	Davis	1994	153-0/8
Gregg Fisher	Keswick	Keokuk	1988	152-7/8
Scott Simmons	Oskaloosa	Mahaska	1994	152-7/8
Melvin R. Steele	Decorah	Winneshiek	1993	152-6/8
Shane Mitchell	Moville	Monona	1993	152-5/8
Mike Hermann	Blue Grass	Muscatine	1994	152-3/8
Randy Hermann	Blue Grass	Muscatine	1994	152-3/8
Norman Dresselhaus	New Albin	Allamakee	1975	152-3/8
George Barellos	Council Bluffs	Taylor	1994	152-1/8
Jim Wilkins	Pleasant Hill	Marion	1987	152-1/8
Don Greiner	Fairfield	Jefferson	1992	152-1/8
Don Nichols	Albia	Monroe	1994	152-1/8
Scott Carter	Albia	Monroe	1994	152-0/8
Scott Kesterson	Thurman	Fremont	1994	152-0/8
Arnie Dahlen	Decorah	Winneshiek	1994	151-7/8
Glen Bahr	Iowa Falls	Hardin	1994	151-6/8
Corky Read	Otho	Webster	1994	151-6/8
Bob Martin	Brighton	Jefferson	1994	151-4/8
Paul S. Lyons	Dubuque	Dubuque	1994	151-4/8
Floyd West	Brighton	Des Moines	1975	151-3/8
Ronald Travis	Lenox	Taylor	1993	151-3/8
Greg Duinink	Monroe	Marion	1990	151-2/8
Ronald Kirkland	Macksburg	Madison	1986	151-2/8
Matt Speicher	Cedar Rapids	Tama	1994	151-1/8



Kerry Tysland	Waukon	Allamakee	1993	150-7/8
Cory Bellman	Dubuque	Dubuque	1994	150-7/8
Dick Glosser	Unionville	Davis	1994	150-7/8
Doug Loeffler	Brighton	Jefferson	1993	150-7/8
Francis Engrav	Cedar Rapids	Allamakee	1994	150-7/8
Jerry Sheeley	Marion	Fayette	1994	150-5/8
George D. Schmid	Winterset	Montgomery	1994	150-5/8
Bill Morgan	Albia	Monroe	1985	150-5/8
Tad Doeding	West Point	Lee	1994	150-5/8
Mark A. Flint	Missouri Valley	Harrison	1994	150-4/8
Phil Endress	Centerville	Appanoose	1994	150-4/8
Vernon Bedford	Douds	Van Buren	1994	150-4/8
Patrick J. Ryan	Solon	Johnson	1993	150-3/8
David D. Eastman	Des Moines	Lucas	1994	150-3/8
Nick Votek	Sioux City	Mills	1994	150-2/8
Ed Walsh	Des Moines	Wayne	1994	150-1/8
Mark Hagedorn	Iona	Black Hawk	1989	150-1/8
Alan McGee	Chariton	Lucas	1994	150-1/8
Lonnie Tysland	Waukon	Allamakee	1993	150-1/8
John Linder	Harper	Keokuk	1994	150-0/8

SHOTGUN, NONTYPICAL

(Minimum Qualifying Score -- 170 points)

NAME	CITY	COUNTY TAKEN	YEAR	TOTAL SCORE
*Lyle Spitznogle	Wapello	Louisa	1982	258-2/8
Albert Wehrli	Missouri Valley	Harrison	1993	224-1/8
Rick Petersen	Wheatland	Clinton	1994	213-7/8
Rick Schiller	Donnellson	Lee	1987	211-2/8
Andy Ross	Des Moines	Madison	1994	210-1/8
Tim Miller	Montrose	Lee County	1994	207-7/8
David L. Johnson	New London	Davis	1994	207-0/8
Jim Long	Coon Rapids	Guthrie	1994	205-0/8
Ray Dawson	Winterset	Madison	1994	201-5/8
Randy Doty	Oskaloosa	Guthrie	1994	196-4/8
Frank Scovel	Monroe	Ringgold	1994	196-3/8
Philip Cronk	Keosauqua	Van Buren	1991	195-3/8
Wesley C. Martens	Cedar Rapids	Linn	1994	195-0/8
Chris Clingan	Fairfield	Jefferson	1994	193-6/8
Richard Kunze	Lewis	Cass	1994	191-5/8

Jim McGill	Maxwell	Polk	1994	189-5/8
Kean Rich	Mt. Pleasant	Henry	1994	188-4/8
Val Wathen	Ankeny	Ringgold	1994	188-2/8
Dale Byre	Mason City		1969	186-2/8
Luvem Stoner	Stratford	Hamilton	1957	186-1/8
Kevin J. Hinners	Exira	Aubudon	1994	184-4/8
Doug Fenton	Burlington	Des Moines	1994	184-3/8
James Carney	Parnell	Johnson	1994	184-0/8
John Stickle	Des Moines	Warren	1981	183-1/8
Ted A. Aicher	Fairfield	Henry	1994	183-0/8
Tony Woods	Missouri Valley	Harrison	1993	182-7/8
Lori Kinyon	Creston	Adams	1994	182-5/8
Boyd Davis	Maquoketa	Jackson	1994	182-3/8
Scott Ballard	Chariton	Lucas	1994	182-2/8
Steve Howell	Argyle	Lee	1992	181-3/8
Ted A. Aicher	Fairfield	Jefferson	1989	181-1/8
Dan Weitzenkamp	Plainfield	Winneshiek	1994	180-4/8
Doug Jenkins	Newton	Jasper	1994	180-4/8
Steve Gaer	West Des Moines	Van Buren	1994	180-3/8
Delbert Lemley	New London	Henry	1993	179-1/8
Chuck Countryman	Keosauqua	Van Buren	1994	178-5/8
Jeff Weber	Waterloo	Clayton	1994	178-4/8
Ronald Kirkland	Macksburg	Madison	1994	178-0/8
Jerry Williams	Corydon	Wayne	1994	177-7/8
Arlie Vander Hoch	Pella	Marion	1994	177-1/8
Tom Walleser	Lansing	Allamakee	1994	176-0/8
Mark McCarty	Albia	Monroe	1992	175-6/8
Raymond E. Horstman	Guttenberg	Clayton	1994	175-1/8
Dale Scearcy	Keosauqua	Van Buren	1980	172-1/8
Mark Galbreath	Storm Lake	Buena Vista	1965	171-1/8
Michael Brenden	Whiting	Monona	1994	171-7/8
Vernon Cox	Bedford	Taylor	1994	171-3/8
Scott Buckallew	Numa	Wayne	1994	171-0/8
Pete Ver Mulm	Sioux Center	Sioux	1994	170-6/8
Robert A. Brockert	Mediapolis	Louisa	1994	170-4/8

MUZZLELOADER, TYPICAL

(Minimum Qualifying Score -- 150 points)

NAME	CITY	COUNTY TAKEN	YEAR	TOTAL SCORE
*Bruce L. Hupke	Carlise	Warren	1994	170-3/8
*Chris Ruggeri	Ankeny	Polk	1994	165-1/8
Jeffrey Johnson	Indianola	Warren	1994	163-0/8
Dave Newton	Waudon	Allamakee	1994	162-5/8
Gerald Schumacher	Desoto	Allamakee	1995	156-7/8
Tim Baird	Ottumwa	Monroe	1994	156-3/8
Randy Carstens	Castana	Monona	1994	154-5/8
Bruce Heishman	Norway	Iowa	1991	153-4/8
Ramon Erdahl	Lake Mills	Worth	1988	151-6/8
Jerry Hebel	Manly	Worth	1994	151-1/8
Roger Miller	Clarinda	Page	1993	151-0/8
Mike Hornback	Hedrick	Keokuk	1993	150-6/8

MUZZLELOADER, NONTYPICAL

(Minimum Qualifying Score -- 170 points)

NAME	CITY	COUNTY TAKEN	YEAR	TOTAL SCORE
*Jeff Tussey	Creston	Union	1995	205-0/8
*Robert Jensen	Moorhead	Monona	1991	194-5/8
*Ed Banks	Letts	Muscatine	1994	194-1/8
*Ken Uhl	Sioux City	Woodbury	1994	192-2/8
Timm M. Banks	South Sioux City, NE	Plymouth	1991	176-2/8
Ron Dunlay	Fort Madison	Lee	1994	175-5/8
Virgil Kling	Kellogg	Jasper	1994	174-7/8

BOW, TYPICAL

(Minimum Qualifying Score -- 135 points)

NAME	CITY	COUNTY TAKEN	YEAR	TOTAL SCORE
*Steve E. Tyer	North Liberty	Johnson	1994	194-0/8
*Garry W. Rasmussen	Independence	Buchanan	1994	186-1/8
David Heck	Cedar Rapids	Linn	1994	176-4/8



Tommy G. Thompson	Bloomfield	Davis	1994	174-0/8
Henry Moore	Pella	Marion	1994	170-4/8
Scott Bunnell	Corydon	Wayne	1994	166-4/8
Dave Goetsch	Bettendorf	Scott	1994	165-5/8
Norman Stone	Wapello	Louisa	1994	165-0/8
Dick Paul	Red Oak	Montgomery	1994	164-2/8
Iner Joelson	Des Moines	Dallas	1994	164-0/8
Troy Matter	Fort Madison	Lee	1994	163-6/8
Regi Goodale	Des Moines	Guthrie	1994	163-4/8
Randy Gardner	Toddville	Linn	1994	163-2/8
John Shepherd	Clinton	Cedar	1994	162-6/8
Todd Melby	Castana	Monona	1991	162-2/8
James Ryant	Calmar	Winneshiek	1994	162-1/8
Dan A. Knaack	Vinton	Benton	1994	160-3/8
Jason Noiz	Manchester	Delaware	1994	160-3/8
Jeff Bartmann	Washington	Washington	1994	160-1/8
Gary White	Bloomfield		1994	160-0/8
Richard A. Stolfus	Lawler	Chickasaw	1986	159-0/8
David C. Horst	Camanche	Jackson	1994	158-2/8
Dan Brauns	Wapello	Louisa	1994	157-5/8
Randy R. Mack	Manchester	Clayton	1994	157-1/8
Barry Ledger	Richland	Keokuk	1994	157-0/8
Albert Selk	Missouri Valley	Harrison	1994	156-7/8
Scott Kesterson	Thurman	Fremont	1994	156-6/8
Mark G. Brackstrom	Woodburn	Clark	1992	156-4/8
Jerry Custer	Davenport	Allamakee	1994	156-2/8
Douglas Sweeney	Sioux City	Woodbury	1994	156-0/8
Scott Messamaker	Indianola	Warren	1994	155-7/8
Dan Andrews	Lisbon	Linn	1994	155-1/8
Mike V. Hagen	Newhall	Allamakee	1993	155-0/8
Dennis Vulgamott	Jewell	Webster	1994	154-7/8
David W. Schrody	Clinton	Jackson	1994	154-6/8
Richard Doll	Montezuma	Appanoose	1994	154-5/8
Jerry Ball	Indianola	Warren	1994	154-3/8
James Modrell	Moville	Monona	1994	154-6/8
Alan Kruthoff	Lake View	Sac	1969	154-2/8
Robin L. Geibel	Butler	Jefferson	1990	153-3/8
James Perkins	Boone	Boone	1994	153-2/8

Raymond Morris
 Tim Rowden
 Alan R. Hadden
 Darvin Dykes
 Allan T. Carmichael
 Dale L. Clark
 Richard D. Panke
 Thomas Jensen
 Dennis Welsh
 Philip Martin
 Randy Burmeister
 Ed McDaniel
 Bill Bolinger
 Buzz Dicks
 Jimmy Wages
 Randy Taylor
 Ed Tickle
 Jim Cluney
 Tau Vinchattle
 Jon T. Saunders
 Brian Dickman
 David C. Curnes
 Bob McDowell
 Dana Bourquin
 Stan Larson
 Joe Leib
 Forrest Brown
 Scott Schild
 James Modrell
 Dick Paul
 David Meyers
 Bryan Eckley
 Tracy Combs
 James Cates
 Mark Shamblen
 Mark R. Huntley
 Kenny Vaill
 Thomas Ray Gross
 Dale Clark
 Ron Johnson
 Douglas Johnston
 Larry Sparks
 Daniel C. Mehrl
 ***Rick Pustka
 Mike Dubberke
 Dennis M. Jones
 Ronald G. Hellweg
 Gary Kiefer
 Keven Gibson
 Mark Johnson
 Jim Wahl
 Mike Stolfus
 Chris E. Dodds
 James M. Engle
 David Bond
 Patrick J. Riley
 Doug Clayton
 Kody Kramer
 Tim M. Banks
 Timothy A. Heimer
 Chad Koehn
 Dennis L. Henningsen
 Travis Hever
 Mike Woolman
 Mark Treft
 Dave Rimathe
 Rodney Stahlnecker
 William L. Tuttle
 Greg Collins
 Ronald Ruth
 Steve Weber
 Duane R. Mabry
 Tom Walkup
 Dave Knotts
 Rick Mullen
 Scott Boylan
 Robin Mann
 Travis Gill
 Dan Hollingsworth
 David Ewing
 Dave Treft

Raymond Morris	Keosauqua	Washington	1993	152-2/8
Tim Rowden	Gladbrook	Tama	1994	152-2/8
Alan R. Hadden	Soldier	Monona	1993	152-1/8
Darvin Dykes	Bloomfield	Davis	1994	152-1/8
Allan T. Carmichael	Council Bluffs	Pottawattamie	1992	151-6/8
Dale L. Clark	Corydon	Ringgold	1989	151-5/8
Richard D. Panke	Neenah	Decatur	1994	151-4/8
Thomas Jensen	Oxford	Johnson	1994	151-3/8
Dennis Welsh	Oelwein	Fayette	1994	151-3/8
Philip Martin	Cumming	Warren	1993	151-2/8
Randy Burmeister	New Liberty	Cedar	1992	151-1/8
Ed McDaniel	Albia	Monroe	1994	151-1/8
Bill Bolinger	Creston	Union	1994	150-7/8
Buzz Dicks	Council Bluffs	Montgomery	1993	150-5/8
Jimmy Wages	West Point	Lee	1993	150-5/8
Randy Taylor	Reasoner	Jasper	1994	150-4/8
Ed Tickle	Allerton	Wayne	1993	150-3/8
Jim Cluney	Washington	Washington	1994	150-3/8
Tau Vinchattle	Boone	Webster	1992	150-2/8
Jon T. Saunders	Sioux City	Plymouth	1994	150-2/8
Brian Dickman	Missouri Valley	Harrison	1994	150-1/8
David C. Curnes	Osceola	Clarke	1994	149-7/8
Bob McDowell	Ottumwa	Monroe	1994	149-5/8
Dana Bourquin	Blue Grass	Muscatine	1994	149-5/8
Stan Larson	Lansing	Allamakee	1994	149-3/8
Joe Leib	Dubuque	Allamakee	1994	149-2/8
Forrest Brown	Council Bluffs	Pottawattamie	1994	149-1/8
Scott Schild	Belle Plaine	Benton	1994	149-0/8
James Modrell	Moville	Monona	1994	148-6/8
Dick Paul	Red Oak	Montgomery	1994	148-6/8
David Meyers	Ottumwa	Wapello	1994	148-5/8
Bryan Eckley	Cedar Rapids	Linn	1992	148-3/8
Tracy Combs	Sioux City	Plymouth	1994	148-3/8
Jamen Cates	Missouri Valley	Harrison	1993	147-6/8
Mark Shamblen	Council Bluffs	Harrison	1994	147-3/8
Mark R. Huntley	Sergeant Bluffs	Woodbury	1994	147-3/8
Kenny Vaill	Shenandoah	Adams	1993	146-6/8
Thomas Ray Gross	Greenville	Clay	1994	146-6/8
Dale Clark	Allerton	Wayne	1994	146-2/8
Ron Johnson	Durango	Dubuque	1994	146-1/8
Douglas Johnston	Blencoe	Monona	1994	146-1/8
Larry Sparks	Dow City	Crawford	1992	144-6/8
Daniel C. Mehrl	Dubuque	Dubuque	1994	144-6/8
***Rick Pustka	Runnells	Polk	1994	144-2/8
Mike Dubberke	Nevada	Story	1993	145-5/8
Dennis M. Jones	Des Moines	Wayne	1994	143-6/8
Ronald G. Hellweg	Clinton	Jackson	1994	143-4/8
Gary Kiefer	Davenport	Scott	1994	143-0/8
Keven Gibson	Montezuma	Poweshiek	1994	143-0/8
Mark Johnson	Manly	Worth	1994	142-7/8
Jim Wahl	Nevada	Boone	1993	142-7/8
Mike Stolfus	New Hampton	Chickasaw	1993	142-4/8
Chris E. Dodds	Iowa City	Jefferson	1994	142-2/8
James M. Engle	Waukeee	Warren	1994	142-2/8
David Bond	Arlington	Fayette	1994	142-1/8
Patrick J. Riley	West Des Moines	Dallas	1994	141-4/8
Doug Clayton	Council Bluffs	Pottawattamie	1994	141-3/8
Kody Kramer	Aplington	Butler	1993	141-3/8
Tim M. Banks	South Sioux City, NE	Plymouth	1989	141-1/8
Timothy A. Heiner	Sioux City	Woodbury	1994	141-0/8
Chad Koehn	Chariton	Lucas	1994	140-7/8
Dennis L. Henningsen	DeWitt	Clinton	1994	140-6/8
Travis Hever	Dundee	Delaware	1994	140-5/8
Mike Woolman	Des Moines	Warren	1993	140-5/8
Mark Treft	Sioux City	Woodbury	1994	140-5/8
Dave Rimathe	Slater	Boone	1994	140-5/8
Rodney Stahlnecker	Honey Creek	Pottawattamie	1994	139-5/8
William L. Tuttle	Des Moines	Clarke	1994	139-4/8
Greg Collins	Logan	Harrison	1994	139-3/8
Ronald Ruth	Iowa City		1994	139-2/8
Steve Weber	Waterloo	Winneshiek	1994	139-1/8
Duane R. Mabry	Davenport	Des Moines	1994	139-1/8
Tom Walkup	Lucas	Lucas	1994	139-0/8
Dave Knotts	Ottumwa	Wapello	1994	139-0/8
Rick Mullen	Mt. Pleasant	Henry	1993	138-5/8
Scott Boylan	LeMars	Ida	1993	138-4/8
Robin Mann	Gilman	Tama	1994	138-4/8
Travis Gill	New London	Henry	1994	138-3/8
Dan Hollingsworth	Denison	Crawford	1992	138-2/8
David Ewing	Unionville	Appanoose	1994	138-2/8
Dave Treft	Sioux City	Plymouth	1994	138-2/8

John R. Gegner	Hiawatha	Vanburen	1994	138-1/8
Steve Philby	Red Oak	Montgomery	1993	138-1/8
Bill Murray	Audubon	Audubon	1994	138-1/8
Terry Adams	Guthrie Center	Guthrie	1994	138-0/8
Bill Morgan	Albia	Monroe	1994	138-0/8
Casey Perry	Clinton	Jackson	1994	138-0/8
Harry Bries	Guttenburg	Clayton	1994	137-7/8
Randy Perry	Clinton	Jackson	1990	137-7/8
Dan Putz	Dyersville	Delaware	1994	137-5/8
Carol Mincks Jr	Decorah	Winneshiek	1994	137-4/8
Mark A. Haight	Manchester	Delaware	1994	137-3/8
Roy Ball	Boone	Monroe	1992	137-2/8
John R. Gegner	Hiawatha	Van Buren	1994	137-1/8
Wade Walker	Morning Sun	Louisa	1994	136-7/8
Bret Seufferer	Chariton	Lucas	1994	136-5/8
Corry Kreutz	Kalona	Johnson	1994	136-2/8
Don Morris	Sully	Jasper	1994	136-2/8
James J. Rossmanith	Churdan	Greene	1988	139-2/8
Brian Fisher	South English	Iowa	1993	136-0/8
Richard M. Bonneval	Winterset	Madison	1993	135-7/8
Brian Coenen	Harlan	Shelby	1994	135-6/8
Jeffrey J. Wuthrich	Bloomfield	Davis	1994	135-5/8
Kelly Kobold	Kirkman	Shelby	1994	135-3/8
Roy Turner	Bloomfield	Wapello	1994	135-3/8
William R. Larkin	Burlington	Des Moines	1993	135-1/8
Keith Johnson	Lake Mills	Worth	1994	135-1/8
John Cooke	Manchester	Delaware	1993	135-0/8

BOW, NONTYPICAL

(Minimum Qualifying Score -- 155 points)

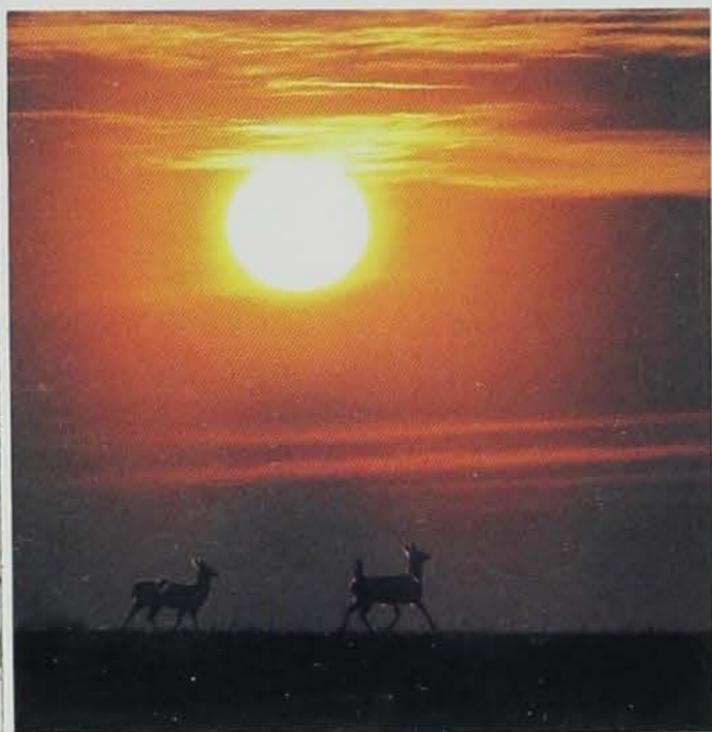
NAME	CITY	COUNTY TAKEN	YEAR	TOTAL SCORE
*Russ Clarcken	Desoto	Dallas	1994	236-7/8
*Bob Humpal	Crescent		1994	206-2/8
Steve A. Marsh	Earlham	Madison	1994	200-5/8
Gary L. Mezera	Harpers Ferry	Allamakee	1994	195-5/8
Tom O'Brien	Albia	Albia	1994	189-2/8
Mike Grube	Cresco	Howard	1994	189-1/8
Rick Felder	Guttenberg	Clayton	1994	187-0/8
Dennis Matthews	Churdan	Greene	1994	185-4/8
Steve Herold	Decorah	Winneshiek	1994	185-2/8
Chris Olson	St. Charles	Polk	1993	183-5/8
Rod Ellingson	Cresco	Howard	1993	181-4/8
Larry Hylar	Ankeny	Warren	1993	178-7/8
Dave Bremhorst	Middletown	Des Moines	1994	178-0/8
Jim Dyer	Cedar Rapids	Allamakee	1993	176-6/8
Gerald T. Dowell	Pella	Marion	1994	170-0/8
David Wolfkill	Indianola		1994	167-4/8
Greg Hellige	Fort Madison	Lee	1994	166-0/8
Scott Niederhuth	Stockport	Van Buren	1994	165-4/8
Trepp Nagel	Fort Dodge	Webster	1994	163-0/8
Shawn Bonnett	Bussey	Wapello	1994	162-6/8
Stan Larson	Lansing	Allamakee	1988	162-0/8
Jack J. Sines	West Branch	Cedar	1994	160-0/8
Carolyn Ekstrom	Fort Dodge	Webster	1994	159-7/8
Don Mealey	Norwalk	Clarke	1994	159-2/8
Tony Rebarcak	Lovilla	Monroe	1994	159-1/8
Russ Lawless	Waterloo	Bremer	1994	159-0/8
Randy R. Peitz	West Point	Van Buren	1993	158-2/8

* indicates a new entry into the All-Time Top 10 Racks.

*** Indicates a crossbow kill. Only physically disabled persons incapable of shooting a bow may obtain a permit to hunt deer with a crossbow.

All-Time Top 10 Racks were published in the November/December 1995 Calendar issue of the Iowa Conservationist.

How Many Are There?



Article by Willie Suchy
Photos by Roger A. Hill





One of the questions I am frequently asked is, "How many deer are there in Iowa?" Although I usually produce an answer, often I can tell my response leaves the questioner with more questions than answers. I believe this is because I try to answer in one or two sentences, when the question really deserves a couple of pages. So here is the detailed version of "How many deer are there?"

First, as most of you can imagine, counting white-tailed deer is an inexact science at best. By their nature, whitetails are secretive, hiding in some sort of cover most of their lives. Counting deer requires "seeing" through this cover or waiting until deer are out in the open. And, even if deer were easy to count, a complete census would be difficult to coordinate and expensive to conduct.

Instead of a complete census, the DNR relies on surveys of the deer population each year. These surveys are designed so results can be compared from year-to-year to see what "trends" have developed. Surveys are not used to directly estimate the total number of deer alive at any one time. Instead, they are used as an index to the population. By examining the results of the surveys, biologists can determine if the deer population appears to have increased or decreased through time.

We currently use three techniques to provide us with deer trend informa-

tion. One of the original sources of information used to keep track of deer populations is the number of deer killed on our highways. These numbers have been collected since 1951. A second survey was initiated in 1978. The spring spotlight survey is designed to give us a handle on changes in both raccoon and deer populations. The final technique is aerial counts of selected areas across the state following the hunting seasons. This survey was first flown in 1983.

All three surveys provide useful information. However, all have their weaknesses, too.

Roadkills

The number of deer killed on our highways theoretically should provide a good index to deer numbers. As the deer herd increases or decreases the number of deer hit should also increase or decrease. However, it is important to adjust the kill for the number of miles driven on the highways. Thus, kill per million vehicle miles provides a suitable index. One big advantage of this survey is the fact roads are well distributed throughout the state. This wide distribution along with year-round traffic should provide good coverage of the entire state. Also, roadkill information used to be readily available because DNR conservation officers were required to handle all dead deer. This worked well back in the 1950s and 60s, when a deer accident was rare. However, as the number of accidents increased, the burden placed upon our officers became too large. Beginning in 1985 the chore was

officially shared with the DOT. Conservation officers still handle a deer someone may want to salvage, but when the deer is left along the road, a DOT maintenance crew has to deal with it. They keep a separate set of records for these deer. The final tally for the year is made combining both sources of information.



Other factors probably affecting the roadkill numbers include extremes in weather such as the flood of 1993, changes in speed limits and changes in the landscape such as we've experienced with the CRP.

Spotlight Survey

This survey was evaluated during the 1970s for both deer and raccoon. It appeared to produce consistent results for raccoons, but was somewhat more variable for deer. In 1978, 87 routes were set up across the state. Each route is 25 miles long and follows gravel roads in some of the better deer habitat. Counts begin one hour after sunset in early April, with wildlife and enforce-





ment personnel working together to survey both sides of the road.

An advantage of this survey compared to roadkill numbers is it is an active survey. An attempt is made to count the number of deer along specific routes under comparable conditions each year. Because of this, trends should become evident over time. This survey tries to count deer when they are more likely to be out in the open.

As mentioned, the results from this survey seem to be a little more variable than we would like. The factor that seems to affect this survey the most is the stage of green-up when the routes are run. If green-up occurs early, the deer begin to disperse and are more difficult to spot due to the new leaves. If green-up is delayed the deer are more easily sighted. Green-up can occur pretty early in some years.

Aerial Counts

Aerial surveys for whitetails are used in a number of states in the Midwest. This survey is designed to try to "see" through cover by placing the observer above the deer, enabling them to look down and count the deer in an area. Complete snow cover is required for this survey, otherwise the deer do not stand out. Ideally, a fresh snow helps hide debris and old deer beds which tend to look remarkably like deer when you are travelling along at 70 miles per hour, 400 feet above the ground.

About 350 different areas are surveyed annually in the state when ideal conditions exist. Each area is mapped out and flown using small fixed-wing airplanes. Usually, two observers, a navigator and the pilot are in each plane. The navigator keeps the pilot on course and records information while the observers count the number of deer seen on their side of the plane. Each observer can survey one-eighth-mile-wide strip on each transect of area being surveyed. The plane turns and

keeps flying transects until the designated area is covered. In some cases the area being flown is simply one long transect along a creek or river.

Again, this is an active survey where results should be compared from year-to-year. The main advantage of this survey is that it provides information at a critical time of year. Surveys are flown just after the hunting season, so they should provide a good idea of how things went during the season. Factors affecting this survey are the amount of fresh snow, the amount of disturbance in the area being surveyed and the weather before and during the survey. Under good conditions, most deer are probably seen. However, if beds are present, or stumps are visible it can be difficult to see all the deer. If an area happens to have a bunch of snowmobiles using it or has someone cutting trees, the deer may have temporarily moved away from the area being surveyed. On the other hand, prolonged cold weather may bunch deer up in some of the better wintering areas. And, a rough flight due to windy conditions can make counting deer seem less of a priority than keeping one's stomach under control.

Probably the worst problem faced is that acceptable snow conditions may only occur one or two times all winter. Passing up a chance to complete the survey waiting for the "ideal" conditions may very well mean another chance doesn't come along. A less-than-ideal survey is better than no survey at all.

Population Estimates

Although we have talked about counting deer, we still haven't converted these survey results to estimates of the population. We don't do this directly, although we could produce an estimate for the spotlight and aerial surveys. Mathematically it is possible to extrapolate the number seen on the



areas surveyed to a total, based upon the total area for the state.

However, to do so we have to make a pretty strong assumption -- that *all* of the deer are counted on these surveys. We know that this is not true. One way around this would be to come up with a "correction" factor, but this would require we somehow count all the deer. And, if we could do that, why would we need any other survey technique. Likewise, you can also see that the roadkill information could not be converted in the same manner.

If we make a less stringent assumption, we can use all three surveys to detect a trend. That assumption being the proportion of deer seen on the surveys is about the same from year-to-year. Statistically, we can then analyze the data to detect "trends." This also allows us to put bounds on the level of variability in the data. It also allows the data to be compared with the results of population models. These models

provide the estimates for the deer population I usually give people when they ask "How many deer are there?"

How many are there?

I won't go into the details about how the computer model works to create these "cyber" deer. It basically attempts to mimic births and deaths in the population. If you look at the figure at the right you can see how the deer surveys have changed through time since 1980. You can also see that the "simulated" deer population does a reasonably good job of following the deer trends. In fact, the results from the model "explains" more than 85 percent of the variability in each of the surveys. Because of this we can use the model with a high degree of assurance that the model accurately reflects the real world. The model predicts that we will have slightly more than 200,000 deer, if the harvest in 1995 was a little higher than in 1994.

The future
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Willie Suchy is a
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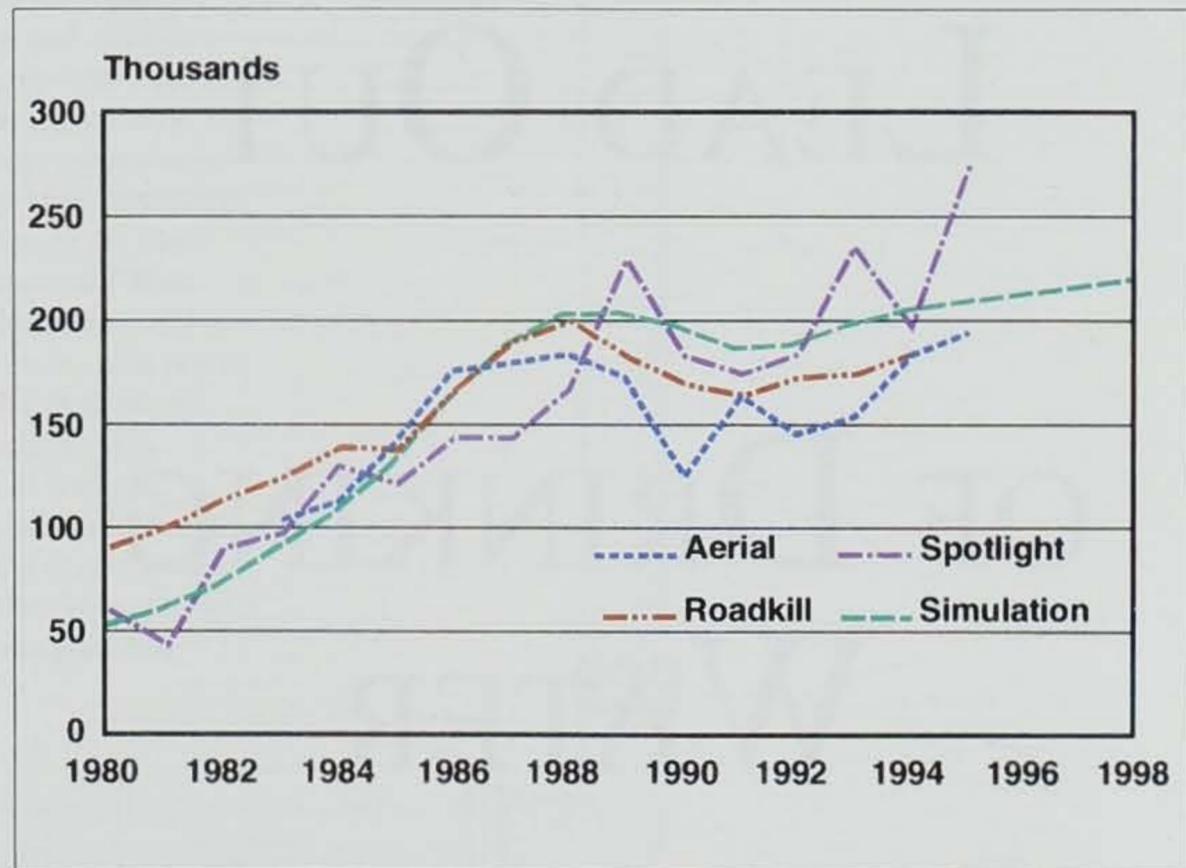
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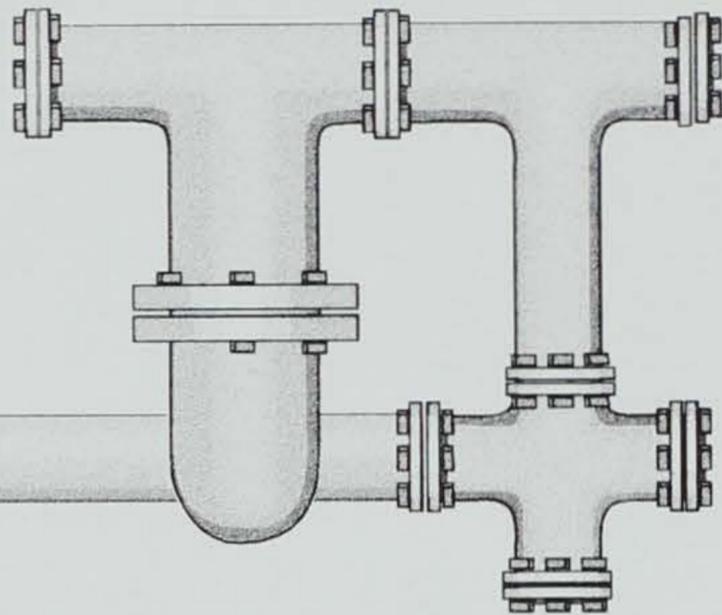


The future may hold much promise as we continually try to improve the surveys for deer. Geographic information systems (GIS) and land-use databases may allow us to make better use of our existing surveys by providing more detailed information on exactly what we are surveying. New technology including infrared aerial videography may provide much more precise counts. Maybe then I will be able to answer questions without these long, drawn-out explanations.

Willie Suchy is a wildlife research biologist for the department and is located in Chariton.

The results of the deer surveys compared with simulated deer numbers since 1980.





WORKING TO GET THE LEAD OUT OF DRINKING WATER

by Roy G. Ney

What is Lead?

Lead is a heavy, soft malleable metallic element. Some of the best-known uses of lead are batteries, soldering alloys, and paint and gasoline additives.

Lead played an important role in the early development of Iowa. In 1795, Julien Dubuque came to eastern Iowa to mine lead ore in the river bluffs around what is now the city of Dubuque. The shot tower at Dubuque was erected in 1856 and was used during the Civil War to make lead shot. When we hear the word *galena*, we typically think of a small city located in western Illinois, just east of Dubuque. Galena is also the name of the ore (lead sulfide), once commonly mined in the area.

Lead and the Automobile

Most baby boomers remember going to the gasoline station and having the attendant ask them "regular or ethyl?" Ethyl was the high-performance gasoline. The gasoline contained an additive, tetraethyl lead, to improve engine performance and reduce engine knock. As a result of the Clean Air Act of 1970, the catalytic converter was introduced into use in 1975, requiring unleaded fuel to function efficiently. By the early 1980s, all new cars had catalytic converters. By the early 1990s, gasoline manufacturers had eliminated lead in most gasoline consumed in the United States.

Lead and Paint

Red lead and white lead are both used in the manufacture of certain paints and dyes applied to bridges and other steel structures to prevent corrosion. The U.S. government restricted the amount of lead allowed in common interior and exterior household paints in the 1970s, when peeling paint of older buildings posed health threats to infants and children.

Lead and Drinking Water

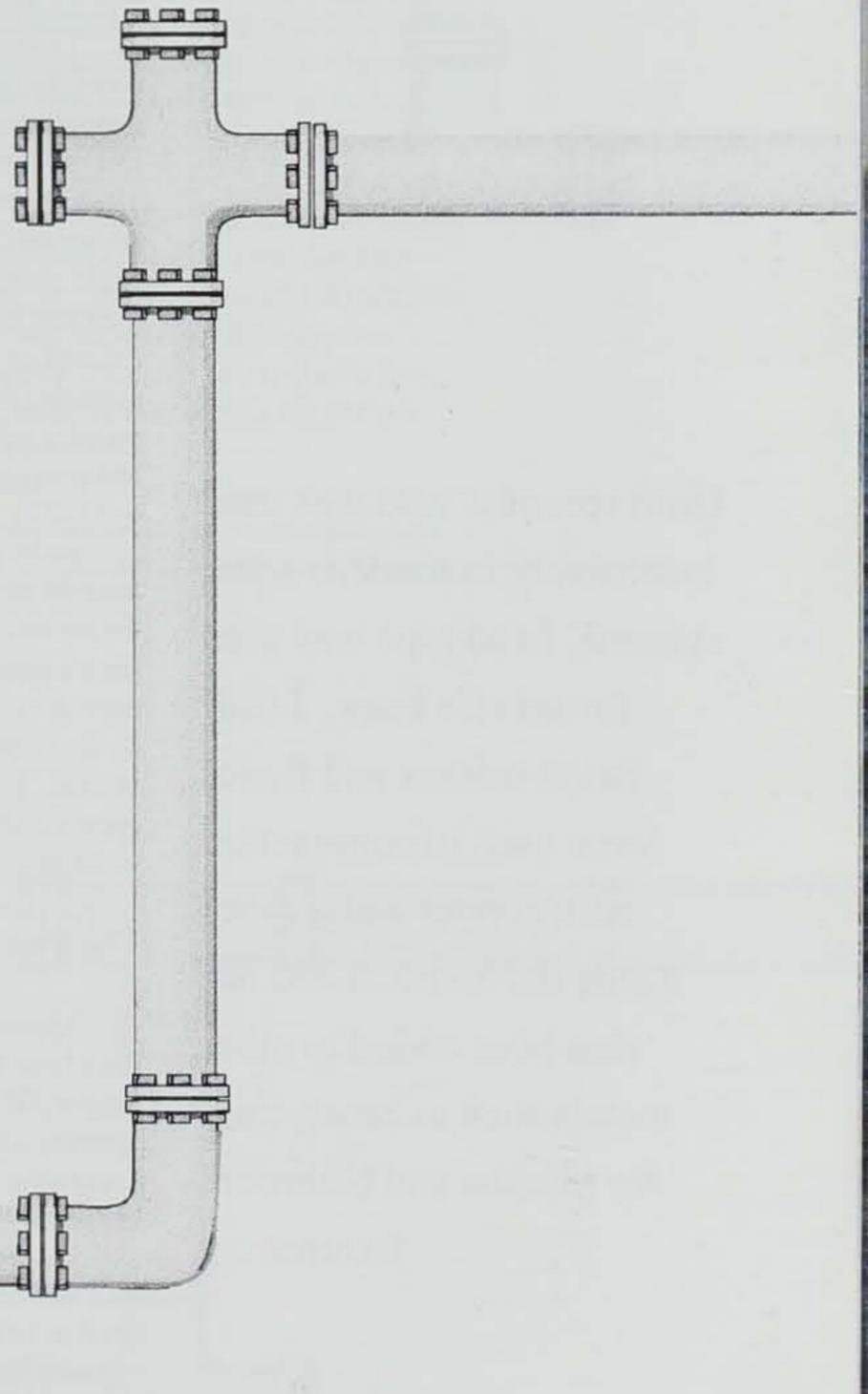
One of the most important applications of lead in ancient times was its use for water pipes. Romans manufactured lead pipe in 15 standard sizes in three-meter (approximately 10 feet) lengths. Almost perfectly preserved lead pipes have been found in Pompeii and Rome. The Romans were aware of lead poisoning, but continued to use lead because there were no other suitable materials. The Latin word for lead, *plumbum* explains the origin of the modern-day words *plumber* and *plumbing* and the atomic symbol for lead, Pb.

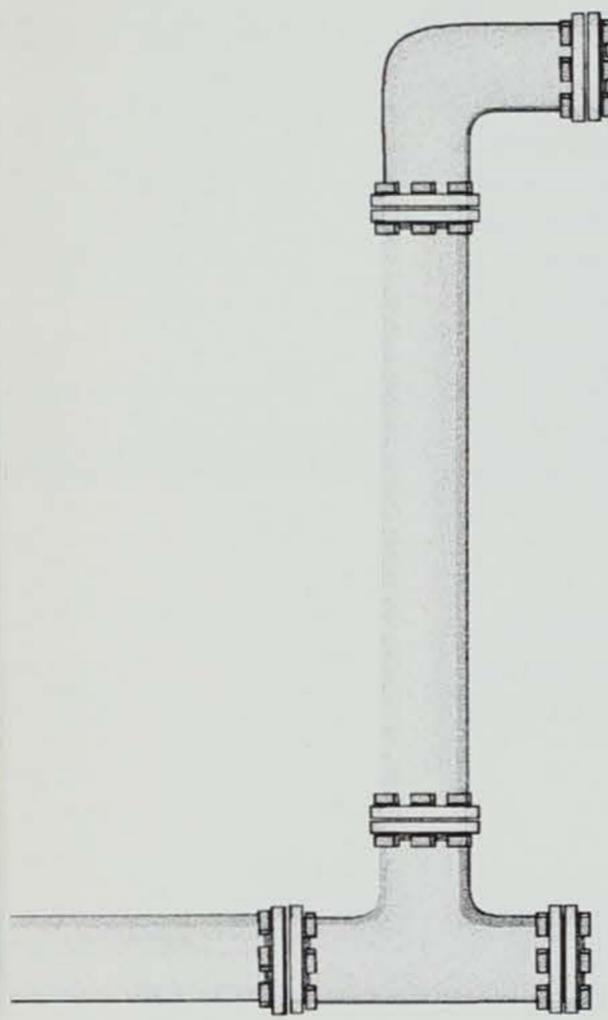
Until recently, lead was used extensively in modern water systems. Lead pipe was used for service lines. Lead-based solders and fluxes were used in conjunction with copper water pipes inside the home. Lead has also been added to other metals such as brass, used for kitchen and bathroom fixtures, improving the machinability of the metal.

In 1986, the Safe Drinking Water Act was amended and the Iowa DNR began an ambitious program to reduce human exposure to lead through drinking water. In 1986 and 1987, law was passed requiring only lead-free materials be used in the construction or repair of any public water system or in the plumbing in any building connected to a public water system. At the same time, the Iowa Department of Public Health adopted a similar amendment to the uniform plumbing code. As a result, the use of lead pipe, lead pipe fittings, lead solder, lead flux and fixtures containing high levels of lead was prohibited in Iowa. A label is required on any solder containing excess levels of lead warning the solder is not allowed for use on drinking water plumbing systems.

Testing for Lead

In 1992, the Iowa Department of Natural Resources initiated a program to test approximately 1,300 water systems for lead and copper. Although the main emphasis of the test program was directed at lead, water samples were also tested for copper. High levels of copper can be an indicator of a corrosive water, increasing the potential for high lead levels. Each water system was required to identify a specific number of high-risk houses within their system. Houses with lead service lines, lead plumbing or recently installed copper pipe with lead solder were determined to be at greatest risk of having elevated





Until recently, lead was used extensively in modern water systems. Lead pipe was used for service lines. Lead-based solders and fluxes were used in conjunction with copper water pipes inside the home. Lead has also been added to other metals such as brass, used for kitchen and bathroom fixtures . . .

levels of lead at the consumers tap. The number of sites required to be tested for lead and copper ranged from 100 sites for those systems serving more than 100,000 people, to five sites for those systems serving 100 people or less. A one-liter sample of water (approximately one quart) was collected at each site for testing. The water was required to have stood motionless in the plumbing pipes for at least six hours before collecting the water sample was taken. Samples were initially collected in two consecutive six-month periods.

The eight largest water systems in Iowa (those serving more than 50,000 people) were required to initiate their test program between January and June 1992. Additionally, 104 water systems (those serving between 50,000 and 3,301 people) were required to initiate their test program between July and December 1992. The remaining water systems (those serving 3,300 or fewer people) were required to initiate their test program between July and December 1993.

To be considered acceptable, at least 90 percent of the water samples, during any monitoring period, must have a lead level no greater than 15 parts per billion and must have a copper level no greater than 1.3 parts per million. Fifteen parts per billion is approximately equal to a quarter cup of water in a million-gallon reservoir.

The Test Results

Approximately 1,300 water systems have been tested to date for lead and copper. Of these, approximately 1,000 systems were determined to have acceptable levels of both lead and copper in their tap water samples. These systems are continuing to monitor for lead and copper, but have been authorized to reduce the amount of monitoring within the system. Elevated levels of lead were found in 173 systems and 144

systems have had elevated levels of copper in tap water samples. Approximately 30 systems have had elevated levels of both lead and copper.

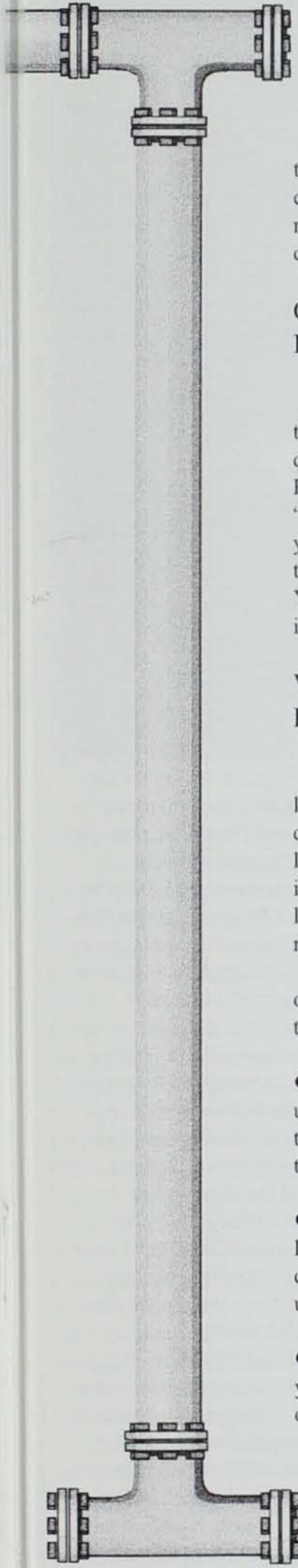
Getting the Lead Out

Any water system determined to have elevated levels of lead or copper at the consumer's tap is required to complete a study and submit recommendations to the DNR for the reduction of the lead or copper at the tap. Although there are other methods to control corrosion within the system, the two methods that are typically recommended in Iowa are to either raise the pH of the water using caustic soda or soda ash, or feed a phosphate base chemical to the water. To date, the DNR has received reports from approximately 170 water systems. These reports are reviewed by engineers and the recommendations are either approved or alternate treatment designated. The water system is then given 24 months to install the control treatment.

But Did We Really Get the Lead Out?

After the water system installs the necessary treatment to reduce the lead or copper, the water system must reinitiate the testing program. As with the initial program, the water system is required to collect water samples for lead and copper during each of two consecutive six-month periods. The number of samples and their locations are required to be identical to those used during the initial lead and copper testing program.

If both the lead and copper levels are at acceptable levels during each of these two rounds of testing, the system can reduce the amount of monitoring. If either the lead or copper levels remain elevated, additional operating conditions will be placed on that water system. To date, approximately 30 water systems



that initially exceeded either the lead or copper levels have completed retesting and now have acceptable levels of lead and copper.

Can I Get My Water Tested for Lead?

Many laboratories can test your water to see if there is a lead problem. Fees vary depending on the lab. Check the Yellow Pages of your telephone book under "Laboratories—Testing" or check with your water utility or health department for the name of an approved lab in your area. You should also ask your water utility for instructions on how to collect the sample.

What Can I Do to Reduce My Exposure to Lead?

Usually lead gets into water after it leaves the water treatment facility. Water can absorb lead from lead service lines, lead plumbing, lead solder in your plumbing as well as from brass fixtures. The longer water stands idle in your pipes, the more lead it can absorb.

If you think you have elevated levels of lead in your water there are several things you can do to reduce them.

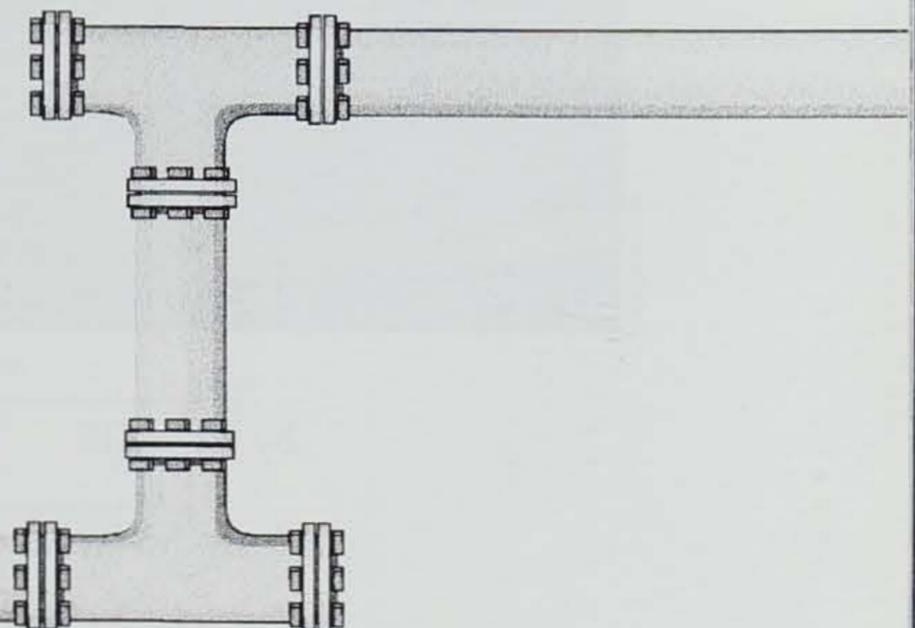
- Let the water run from the tap before using it for drinking or cooking any time the water sits in the pipes unused for more than six hours.
- Flush the water out of your pipes by letting the cold water faucet run until you can feel the water get noticeably colder, usually 15 to 30 seconds.
- If your house has a lead service line, you may have to flush the water for up to one minute.

Letting the water run will usually reduce lead to an acceptable level. The water you flush from your system does not have to be wasted. You can use it for washing dishes or watering plants. You may also want to keep a container of drinking water in your refrigerator so you do not have to flush the pipes every time you need water.

- Hot water dissolves lead more quickly than cold water. Therefore, do not use water from the hot water faucet for cooking or drinking. Take the water from the cold tap and heat it. Never use water from the hot water tap for making baby formula.

Some treatment devices can reduce the amount of lead in your drinking water. Reverse osmosis and distillation units can be used for this purpose. However, they can be expensive and they must be maintained regularly to work properly.

Roy G. Ney is an environmental engineer for the department's water quality bureau in Des Moines.



WALLEYE SAUGEYE

Which is Better?



Ken Formanek

by Kay Hill

Walleye are a preferred fish with Iowa anglers and some say the hybrid walleye/sauger is even better. Folks in other areas of the country feel these new fish, referred to as "saugeye," should be stocked in place of walleye.

We were interested in the potential of saugeye to provide angling in Iowa, but we were sceptical of the claim that the hybrid would outperform the walleye. Past experience has shown hybrid fish often don't live up to their original billing.

The argument will be settled with a five-year study, initiated in 1992. The study was designed to determine which fish, the walleye or saugeye, would provide the best fishing in Iowa's small artificial lakes. The two study lakes chosen were Lake Icaria, a 665-acre impoundment in Adams County, near Corning, and Twelve Mile Lake, a 640-acre impoundment in Union County, near Creston.

Saugeyes are produced by fertilizing walleye eggs with sauger sperm. The process has been perfected, but the cost to produce saugeye is much greater. Presently, it costs 27 cents to rear a walleye to a length of two inches, while the cost for a similar size saugeye is \$1.23 per fish. Most of the high cost is due to the additional expense in collecting sauger males from the Mississippi River, overwintering them in the hatchery and transporting the fish to Rathbun Hatchery to be spawned.

Initial stocking and evaluation of walleye and saugeye occurred from 1986 to 1991 and the results were conflicting. During the period both Twelve Mile Lake and Lake Icaria were stocked with equal numbers of small fingerling walleye and saugeye. Later sampling indicated walleye had survived better in Twelve Mile, while saugeye survival was superior in Icaria.

Our interest in the use of saugeye for small lake management was heightened by successes reported in Kansas and Ohio. Both states found that saugeyes survived in lakes where walleye stockings had failed. In other

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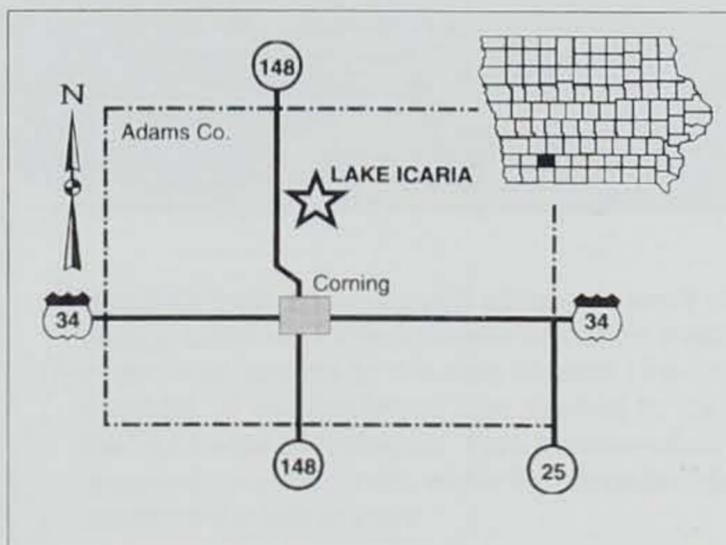
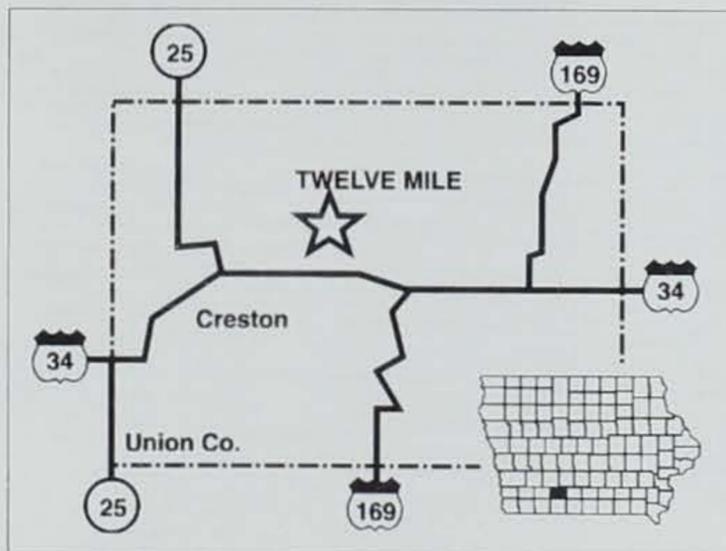


Mike McGee

Ohio lakes, however, saugeye stockings produced little fishing.

The saugeye resembles both parents, therefore correct identification is difficult. Because both fish were stocked into each study lake, a quick and accurate identification method was needed. Prior to stocking, a freeze brand was applied to the side of each two-inch fish. A vertical brand was applied to the left side of saugeyes and the right side of walleyes. Fish branded during even-numbered years received single brands, while fish branded during odd-numbered years received double brands. Each lake received 9,000 walleyes and 9,000 saugeyes, annually. The branding allowed accurate identification of the fish type and year stocked. These marks allowed our later identification of what fish survived in the lake and were caught by anglers.

A major factor influencing survival of stocked fish is the relative health of each fish when stocked. Naturally, fish in poorer health do not survive as well a fish in good health,



Saugeyes resemble both parents, therefore correct identification is difficult. The top fish in this picture is a walleye and the bottom a saugeye.

A sample of fish stocked into each lake was examined. Such an analysis was necessary to determine if both were in good health at the time of stocking.

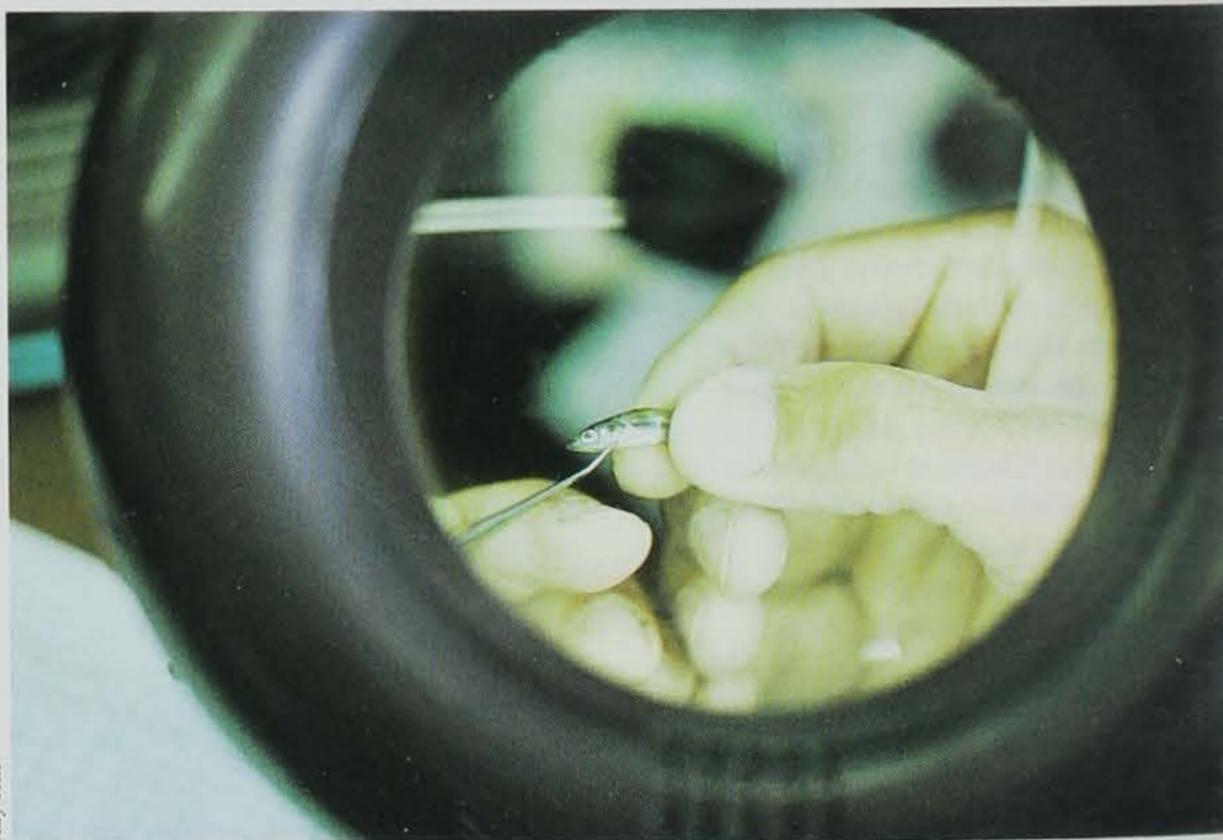
other factors being equal. To eliminate this variable, a sample of fish stocked into each lake was examined. Such an analysis was necessary to determine if both the walleye and saugeye were in good health at the time of stocking.

Each year, since 1992, the number of both walleye and saugeye in each lake was determined. From this information we determine which group of fish survive the best and which group would provide the best fishing.

Results indicated that both the walleye and saugeye were in good health at the time of stocking as well as during later years. Saugeyes grew significantly faster than walleyes the first summer, but the difference could not be detected one year later.

Sampling indicated saugeyes survived better than walleyes some years but the difference in survival was not great. Other years walleyes survived better than saugeyes. Also, the walleyes reproduced naturally. The findings of natural reproduction and at least equal survival of stocked walleye, when compared to saugeye, are important to anglers because the walleye is the least costly of the two fish to stock. Additional information will be collected this year, but it looks as if the use of saugeyes will be relegated to only a few lakes that require special management considerations. In this case, both fish provide angling, but the economics favored the walleye.

Kay Hill is a fisheries research biologist for the department at Lewis.



Kay Hill



Ron Johnson



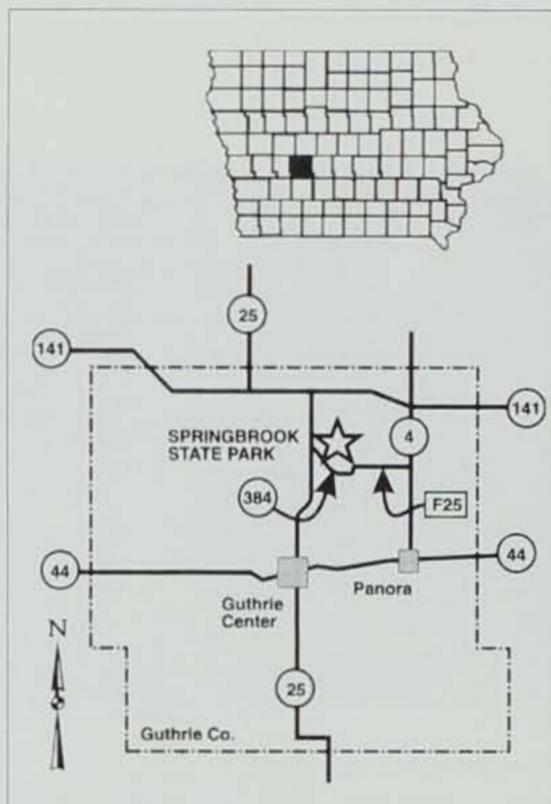
Kay Hill



Kay Hill

Because both walleyes and saugeyes were stocked into each study lake, a quick and accurate identification method was needed. A freeze brand was applied to the side of each two-inch fish before being stocked. A vertical brand was applied to the left side of saugeyes and the right side of walleyes. Fish branded during even-numbered years received single brands, while fish branded during odd-numbered years received double brands.

State Park Profile



SPRINGBROOK

Volunteers Make A Difference

by Tammy Domonoske

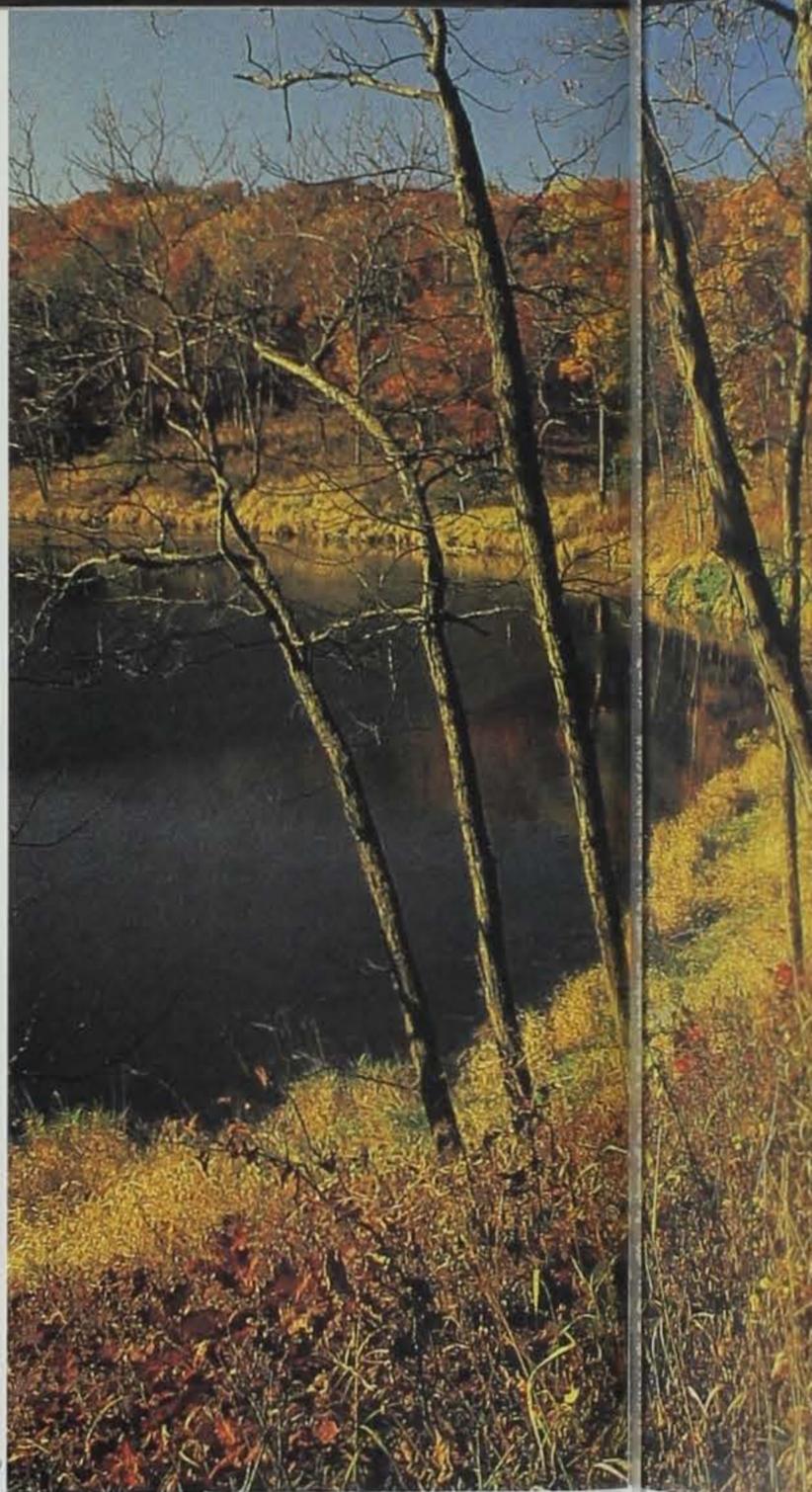
Springbrook Recreation Area encompasses 876 acres and is located eight miles north of Guthrie Center. This is a unique and diverse resource area established in 1926 as "King State Park." Most of the buildings were constructed by the Civilian Conservation Corps (CCC) in the 1930s. Those buildings include a group camp with cabins, dining hall/kitchen which in the 30s was the site of one of Iowa's CCC camps. Six family cabins overlook the 17-acre Springbrook Lake. Two hundred campsites, a picnic area, picnic shelter, beach and five miles of hiking trails are also available. Another unique feature of the park is the Conservation Education Center located within the boundaries. The center has three dormitories with 104 beds, a dining hall/kitchen, a classroom/office building and

shop complex. The Education Center concentrates on providing educators and students the opportunity to learn about our natural resources.

Red-winged blackbirds sing a familiar song to mark their wetland territory, a doe quietly leads her fawn off the trail and a beaver makes a hasty retreat to his watery home. Canada geese circle overhead while a great blue heron stands motionless among the cattails waiting to catch its prey. A walk along a trail at Springbrook offers sights and sounds of the wildlife that live here.

Springbrook boasts a diversity of habitats including wetlands, prairies, forest, lake, ponds and streams. It provides a unique opportunity for students, families and individuals to step out in to the natural world and examine life cycles, learn about resource issues

Roger A. Hill



Ken Formanek



Ken Formanick



Springbrook's diversity of habitats offers students, families and individuals the year-round opportunity to learn how human life-styles and the natural world are dependent upon each other.



DNR

and management, encourage stewardship and enjoy outdoor recreation -- piecing together knowledge of how human life-styles and the natural world are dependent upon each other.

Springbrook cannot be featured without mentioning the volunteer work vitally important to recreation area. Volunteers have given the Springbrook new life.

In the past year, scores of individual citizens, families and conservation groups have made a gift of time to Springbrook. The time and effort of individual volunteers really adds up. In just one year, more than 200 volunteers gave 1,600 hours to fill important conservation roles. Projects that have



Tammy Domonoske

(top) Tammy Domonoske, park attendant, Travis Hemmen, DNR aide and Jim Dickerson of the Iowa Student Environmental Coalition work together to construct the 700-foot handicapped trail at the Education Center.

Cass Pioneers 4-H Club of Yale paints the campground shower buildings.

been completed by volunteers at Springbrook include painting buildings, parking posts and picnic table legs; cleaning the spillway; handicap trail construction; trail maintenance; propagating prairie seeds; construction and installation of a kiosk; donations of funds, materials, refreshments and food; exotic species control on prairies, beautification of a butterfly and rock garden; completion of a handicap approach to the picnic shelter; interpretive programs; campground host;

picnic latrine renovation; litter patrol; ground maintenance and other less visible projects which make the area and facilities safer and more attractive for both humans and wildlife.

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Tammy Domonoske
Springbrook State



Do you have a favorite outdoor place? How can you become more involved? Do you have a special interest or talent that can be used by a park in your area? Conservationists of all ages make a difference. Springbrook volunteers range from three years old to happily retired. They work on projects that can be completed in one day to ones that are ongoing. Young or old, working or retired, we have something for you. With today's shrinking budgets and aging facilities, we appreciate every bit of volunteer commitment and enthusiasm at Springbrook, as well as other state parks and recreation areas.

Will DePage, Director of New Hampshire State Parks said it well

"A park's existence demonstrates that someone once cared. Its condition demonstrates that someone still does or does not. Its development demonstrates our sensitivity, our awareness and our credibility as environmental educators and resource stewards."

In short, every park is a classroom and perhaps a demonstration area for the way we should be caring for all the world's resources.

Tammy Domonoske is a park attendant at Springbrook State Recreation Area.

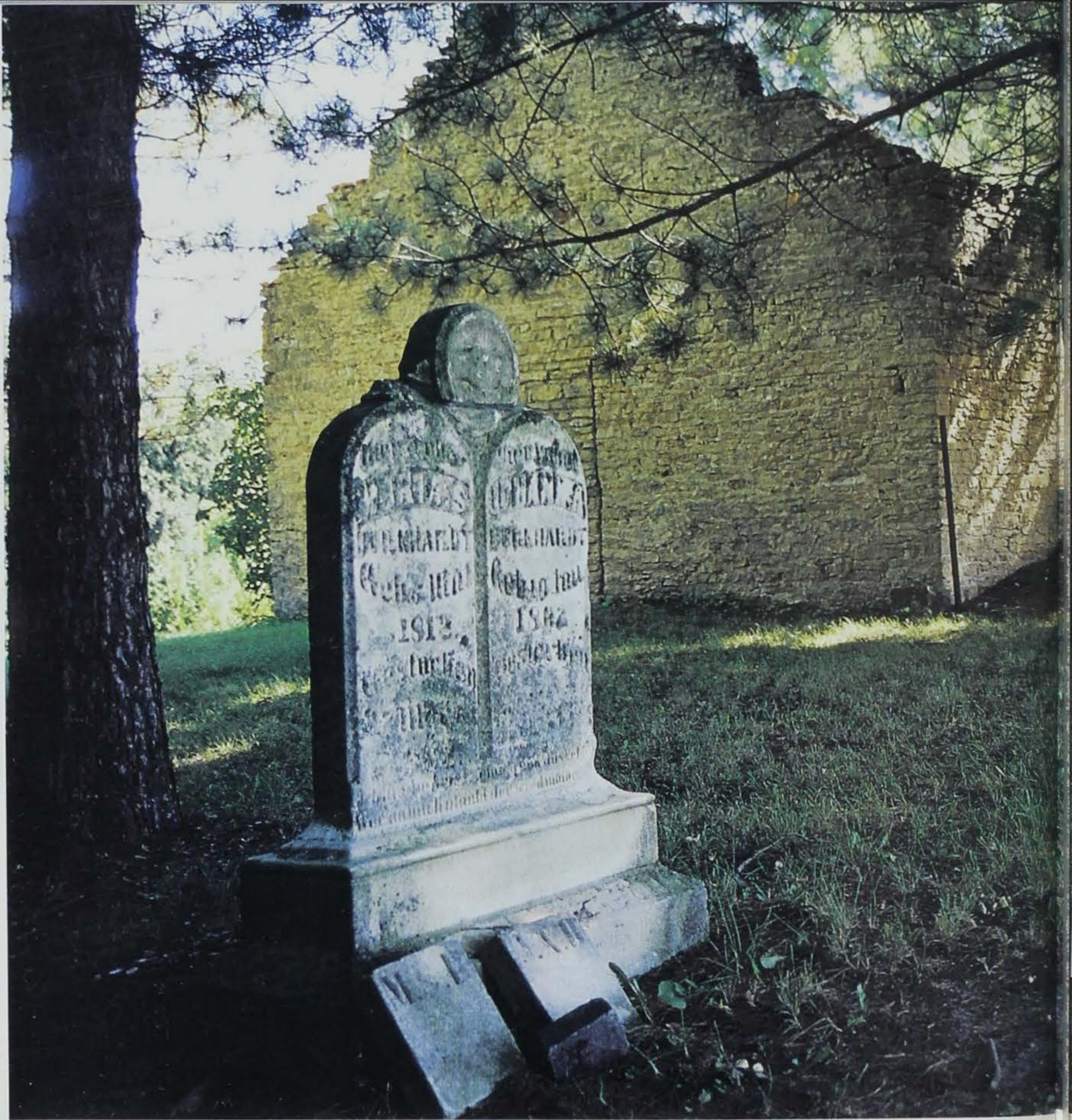
Tammy Domonoske



Tammy Domonoske

▲ Iowa Student Environmental Coalition doing prairie management.

◀ Cub Scout Pack 87 from Ankeny help prepare Springbrook's beach building for summer use.



A wooded knoll serving as a crucial navigational landmark by standing out above the vast sea of grass, an isolated limestone country church, a governor's baronial residence, lead mines where fortunes were made and lost, quarries whose stone helped create Iowa's first statehouse and cemeteries that mark heroic and perilous journeys through Iowa -- all of these historic treasures can be found within Iowa's State Preserves system. Historical

preserves include significant structures, objects or landmarks associated with the early Euro-American occupation of Iowa.

In contrast to the prehistoric archaeological preserves where time may be measured in thousand-year increments, historical preserve designation refers to the period beginning in 1673 when Marquette and Joliet traveled down the Mississippi River. The first settlers arrived in Iowa about 12,000 years ago and because human

use and settlement involve many of the same natural and geologic features -- streams, rivers, caves, areas of higher elevation, or (like quarries) raw material sources -- some of the historical preserves may have archaeological, geological, historical and even biological significance and thus multiple designations.

These slices of the past give a glimpse into earlier lives and times in Iowa. Now, safe within the State Preserve

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Treasures From The Past

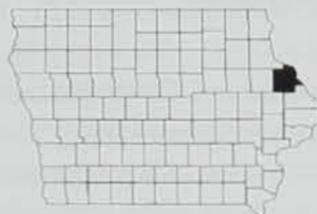
Article by Kathryn A. Stangl

Photos by Ken Formanek

system, they will not be lost to future generations of Iowans. They are nonrenewable historic resources kept in trust for all Iowans. They are bits and pieces of a mosaic that help flesh out Iowa's recent but already dimly remembered past.

Catfish Creek is one of the preserves with multiple designations. It has geological, archaeological and historical significance. While settlement goes back 8,000

years or more, the area has attracted leadminers at least since the time of Euro-American settlement. Marquette and Joliet's journal refers to the mineral riches in the area. French voyageurs traded furs on the site, and both mined and smelted lead. During



◀ **St. James Lutheran Church nestled among the trees in Winneshiek County.**

the Revolutionary War, the lead mines may have provided shot for the armies of George Washington. The only Revolutionary War battle in Iowa took place when an invading British force from the north, hoping to stop the lead supply, attacked and occupied the area. The British treated the captured miners as prisoners of war and counted it as a victory over the "rebellious colonists."

When Julien Dubuque opened his first mine in 1788 he came to an area already rich with a tradition of trading and settlement. The area around the mouth of Catfish Creek appears to have been Dubuque's mining headquarters. A Spanish land grant "awarded" the area to Dubuque in 1795, but he negotiated with the Native Americans for the mining rights. Near an existing Mesquakie village, he constructed a sawmill and trading post with a wharf, a blacksmith shop and forge, smelting equipment and housing for himself and several hundred "associates" who worked the mines. This enterprise was truly big business with Dubuque annually shipping hundreds of thousands of pounds of lead to St. Louis.

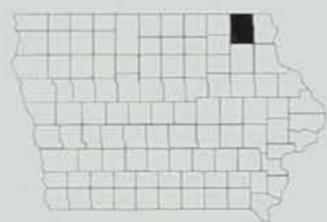
Dubuque died in 1810 and Native Americans again used the mining site until about 1830. After the 1832 Black Hawk Treaty officially opened the area for European settlement, lead mining increased and pit mines from this era are found across the preserve. As mining pressure intensified deeper shafts and adits (enlarged fissures) helped miners probe for the deeper deposits. The area continued to be mined for lead until the last mine closed in 1914. Today, Dubuque's grave site is safeguarded within the preserve.

The area was also heavily logged for lumber used in the construction of mines and buildings. Wood was also cut for fuel to fire the lead smelters and steamboats used to carry goods along the river. The years 1837 to 1880 marked the height of lumbering in the area as local development consumed large amounts of timber. Between 1837 and 1980 the forested areas of the region around Dubuque were reduced to 75 percent of their original size, even though logging had essentially ceased by the late 1880s. Today, the few remain-

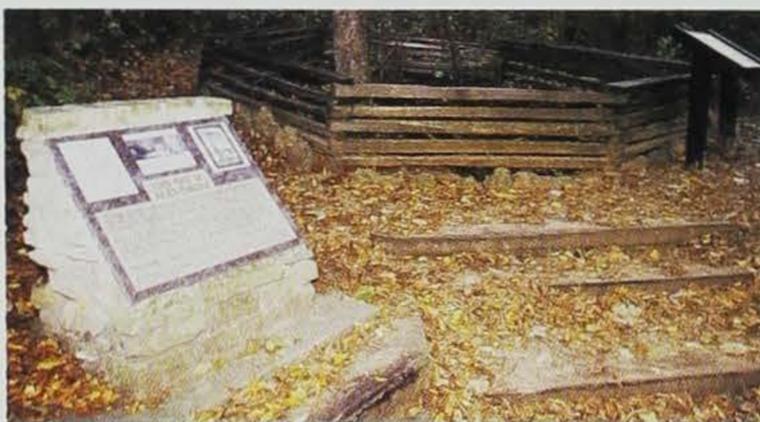
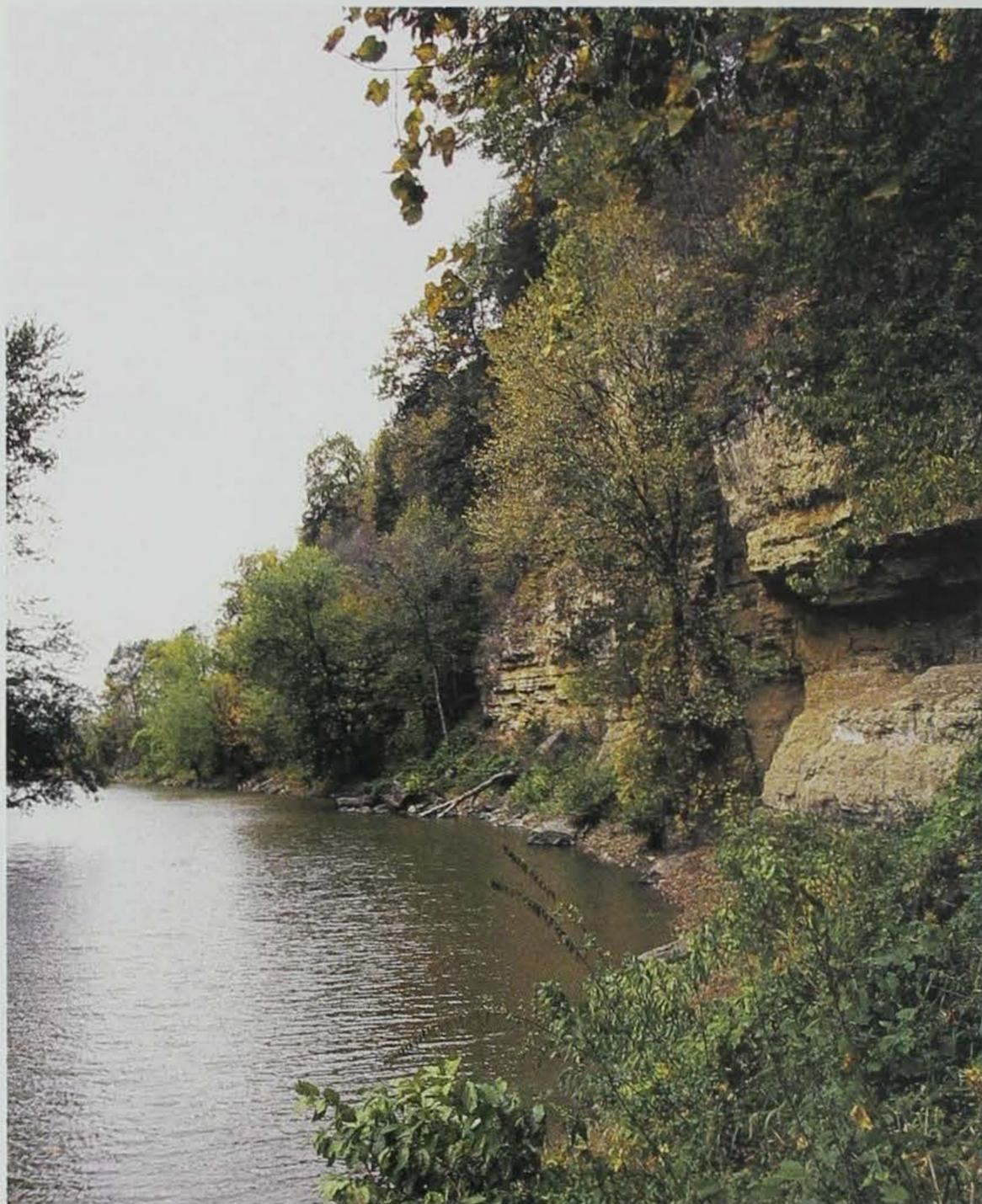
ing forested areas within the preserve attest to the demand for raw materials that settlement created.

The preserve occupies 600 acres in the northern half of the Mines of Spain Recreation Area near Dubuque. The preserve can be reached from the road to the Julien Dubuque Monument or the main park entrance road. For more information on Julien Dubuque, leadmining in the area or the history of the Dubuque vicinity, stop at the E. B. Lyons interpretive center just off of Hwy 52 South out of Dubuque.

The buildings at the five-acre *Fort Atkinson Preserve* in Winneshiek County date back to the 1840s. Fort Atkinson was a federal military post constructed to enforce an earlier treaty by protecting the Winnebagos from the Sioux, Sac and Mesquakie. Construction began on the fort in 1840 and was largely completed by 1842. While one of the purposes of Fort Atkinson was somewhat unusual -- to protect one group of Native Americans from another -- its design was like most of the U. S. Army's western frontier posts.



It was laid out on a simple plan, a rectangle enclosed by a wooden picket-stockade, with the parade ground at its center surrounded by the enlisted men's



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Catfish Creek preserve is an area rich in natural resources and history. Shown at left is one of the lead mines.

barracks, officers quarters, magazine and storehouses. Outside the picket-stockade, 14 additional buildings including the post's stables, granary, bakery, grocery and blacksmith shop, spread out in front of the fort. There was a blockhouse or cannon house in the northeast and southwest corners, the magazine was in the southeast corner, and the stockade and commissary were in the north-

west corner. Four main buildings, the blockhouses and powder magazine were constructed of limestone rubble (from the rock quarry west of the fort) or hewn logs with cut-pine shingle roofs. All of the buildings were constructed to military specifications.

The fort was abandoned in 1849 and was heavily vandalized over the next few years as settlers carried off great quantities of building

stone and oak beams for use on their homes and farms. The fort was auctioned to private owners in 1853 and on Feb. 17, 1921 the state acquired the first 2.8 acres of what was to become the Fort Atkinson State Preserve. Today, the site includes the parade ground, four restored or reconstructed buildings and the ruins of five others, as well as the reconstructed historic well, a guardhouse cell, wooden picket stockade, the stone quarry and modern rest rooms. A museum is located in the old barracks, and on the last full weekend each September, the preserve is the site of the Fort Atkinson Rendezvous. This celebration of past times includes many artisans, folk musicians and "recreators" who dress either as army troops performing the daily duties of that era or as trappers, traders or settlers.

The preserve is at Fort Atkinson, five miles southwest of Calmar on Iowa 24.

Near Fort Atkinson State Preserve, St. James Church in Winneshiek County. The church served as part of a sustaining hub -- the center of the German immigrant community. It was established in 1866 by the German Church Society and dedicated to the German Church in 1871. The church until recently was abandoned.

Today its location is found nestled at the base of the fort. Fort Atkinson, five miles southwest of Calmar on Iowa 24.

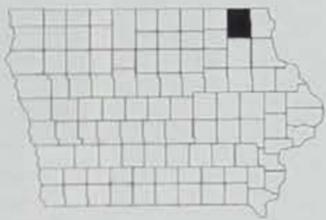
In Fayetteville, the past and experience are like for a late 19th century family of wealth and privilege.



◀ Fort Atkinson Preserve in Winneshiek County is familiar to many Iowans as the site of the annual September Rendezvous.

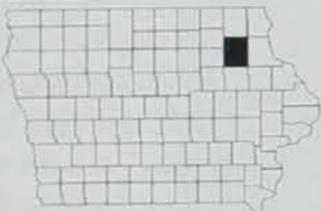
▼ The preserve has the parade ground, four restored or reconstructed buildings and the ruins of five others, as well as reconstructions of the historic well, a guardhouse cell, wooden picket stockade, the stone quarry and modern rest rooms.

Near Fort Atkinson is another small preserve, *St. James Lutheran Church*, also in Winneshiek County. The church served as part of a sustaining hub -- the center of the German immigrant community -- when it was established in the mid-1800s. The limestone church was built between 1840 and 1866 by the First Congregational Church Society of Fort Atkinson and sold to the German Evangelical Lutheran Church in 1871. This congregation used the church until 1894 when it was abandoned.



Today its limestone shell can still be found nestled at the northwest edge of Fort Atkinson, five miles southwest of Calmar on Iowa 24.

In Fayette County visitors can step into the past and experience what life was like for a late 19th century family of wealth and privilege.



William Larrabee, 12th governor of Iowa, built his home -- *Montauk* -- in 1874 and lived in it until his death in 1912. The vintage two-story brick and native limestone mansion, constructed in the Italianate style, was designed by architect E. Townsend Mix. Mix also designed the flamboyant *Villa Louis* in Prairie Du Chien, Wisconsin. *Montauk*, situated on the crest of a hill overlooking the Turkey River valley, was named after the Long

Island, New York lighthouse by the Governor's wife, Anna, whose east coast family had seafaring ties.

Constructed for \$20,000 by the two-term governor (1886 to 1890) when he was a successful young businessman, *Montauk* served as an active family home for Larrabee, his wife and seven children. The Larrabees were a family of great wealth with all the prerogatives for travel, entertainment and philanthropic ventures



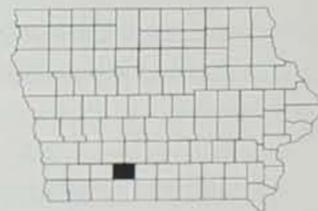
such wealth allowed. The mansion, furnishings and grounds give a glimpse into this glittering, forever-vanished, Victorian lifestyle. Touring Montauk today, furnished with the trappings and belongings of the Larrabee family along with the property's restored well house, creamery, icehouse, workshop and barn, visitors can view the history of a family and a lifestyle preserved much as it was then.

Larrabee's success in milling, banking and land investments as well as his

political success, make his life an embodiment of the "successful" American of the last half of the 19th century. Managed by the State Historical Society, the home has a fresh, almost still-occupied, lived-in atmosphere that conveys the mood and spirit of the times preserving this historic treasure for future Iowans.

Montauk, dedicated in 1984, is located near Clermont on Highway 18. This Iowa history treasure trove is also listed on the National Register of Historic Places.

The *Mount Pisgah Cemetery* in Union County commemorates the hundreds of individuals whose graves are scattered



throughout the area, Mormons who died on their trek westward. Thousands of Mormons passed through the area between 1846 and 1852 on their great migration west. A town arose as land was cleared for farms to feed the

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Montauk itself (far left) and the workshops (left), library (below) and the many other rooms preserved as they were in the late 1800s give a glimpse into a vanished lifestyle of Victorian wealth, privilege and civic involvement.

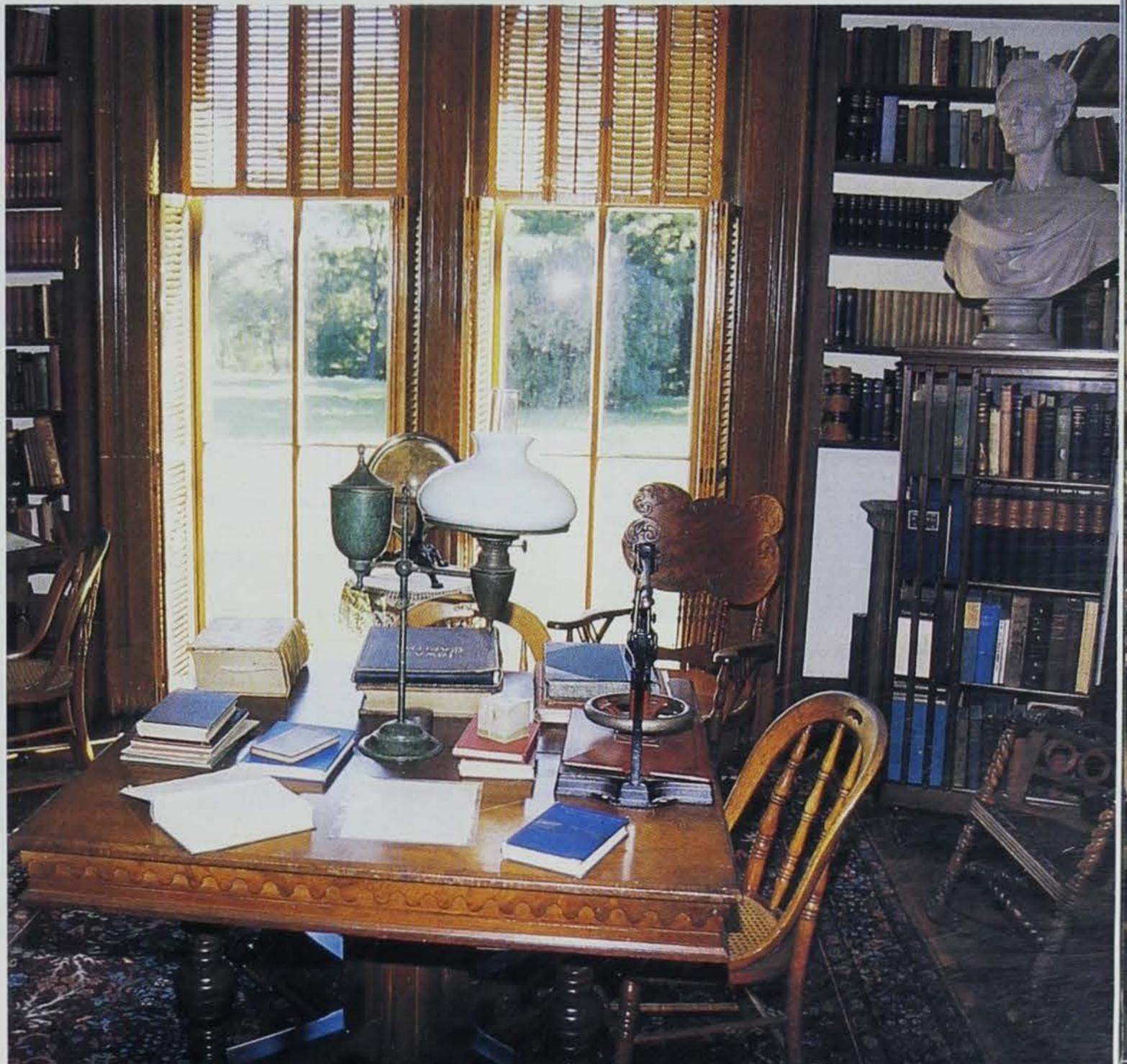
from their home in Michigan, he sought to be of assistance to the travelers. His quotation, listed on one of the several historical markers at the quiet site says, "We must help one another and the Great Spirit will help us both. Because one suffers and does not deserve it is no reason he shall suffer always. We may live to see it right yet. If we do not, our children will."

By 1852 the great migration was over and the last of the Mormons on the trek traveled on. This year of Iowa's sesquicentennial also marks the anniversary of the initial Mormon migration. More than 75,000 Mormon visitors are expected at the cemetery this summer and events and programs will mark the arrival of the early travelers. A recreation of the westward journey on the Mormon Trail is also scheduled for this summer. The Mormon Trail runs close to the preserve and an overnight stop is planned near Mount Pisgah.

travelers, shelters were built to house them and blacksmith shops constructed to repair the wagons.

The now-peaceful, pastoral spot does not, at first, seem the site of great deprivations where hundreds died, nor a settlement where at one time, more than 2,000 lived as they tried to gain strength to continue on their journey. However, historical markers and the many graves tell the tale of the harsh conditions as the travelers battled weather, fatigue, starvation and disease. The wooden markers that once marked the graves have long since disappeared but have been replaced by a monument honoring all who rest there.

Chief Pied Riche of the Pottawatamie came to meet the Mormons on their trek from Nauvoo. Feeling that the two groups had much in common, because his people had been driven



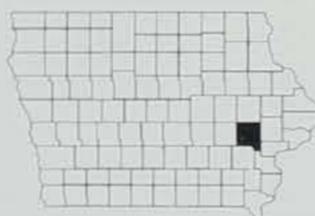


▲ **Mount Pisgah Cemetery (above) and the monument commemorate the hundreds of Mormons who perished near the site on their journey westward.**

For more information on the preserve, contact the Union County Conservation Board in Creston. Mount Pisgah can be reached from U. S. 34 by taking U.S. 169 North two miles and turning west on to gravel road H 29

for one mile and then one-half mile south to the cemetery which is on the west side of the road.

The *Old State Quarry* in Johnson County is accessible by boat from the Coralville Reservoir but it takes a more



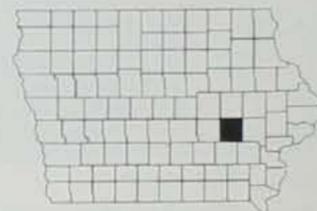
hardy soul to approach this historic quarry from land. Penn Quarry Co. and D. A. Schaeffer operated the quarry from 1844 until the turn of the century. It was one of a series of quarries opened in the area beginning in the 1830s.

The sheer cliffs on the north wall of the quarry still bear the remnants of more than century-old drill holes. Steel spikes were driven into the limestone to break loose huge blocks. These blocks provided limestone for both the Old Capitol in Iowa City as well as for the foundation of the present Capitol in Des Moines.

If not approaching by water from the

Coralville Reservoir, be prepared to scale some rough terrain. Take F28 north and east from North Liberty. Access is via the third private road (Rice Ridge) on the east side of the highway south of Mehaffey Bridge. Please respect private property especially if approaching by land.

Pilot Grove sits on a wooded knoll in the steeply rolling terrain of southern Iowa in Iowa County near Williamsburg.



Even through today's corn fields it is easy to imagine this knoll of oaks, hickory and walnut rising as a navigational landmark in a sea of prairie grass and rolling hills. The knoll helped give a sense of direction to pioneers on their way west and also served as a local landmark guiding the way to the county seat of Marengo. Patches of wildflowers and prairie are next to the knoll giving a small glimpse of the original vegetation which included wetland, prairie, savanna and woodland.

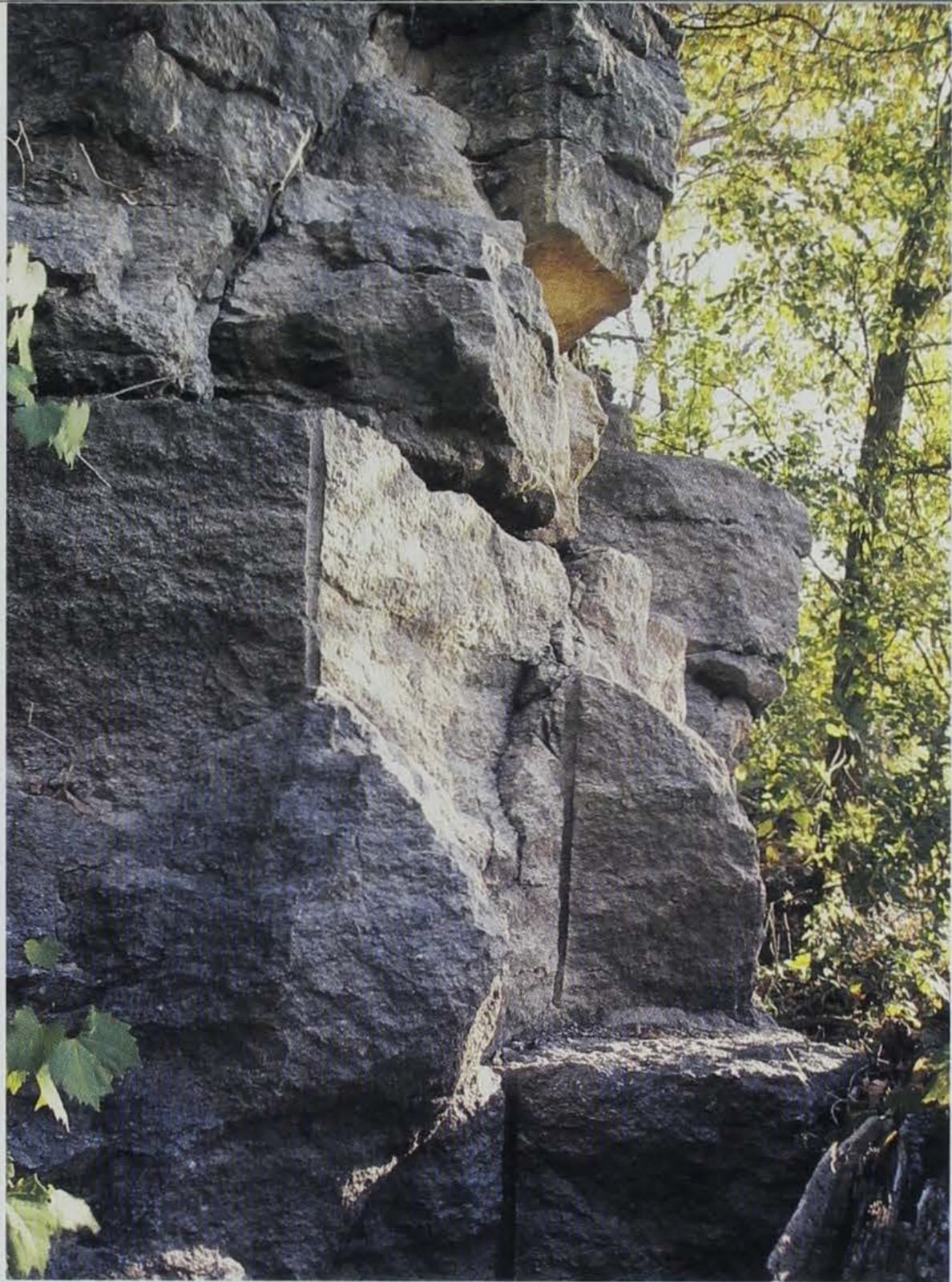
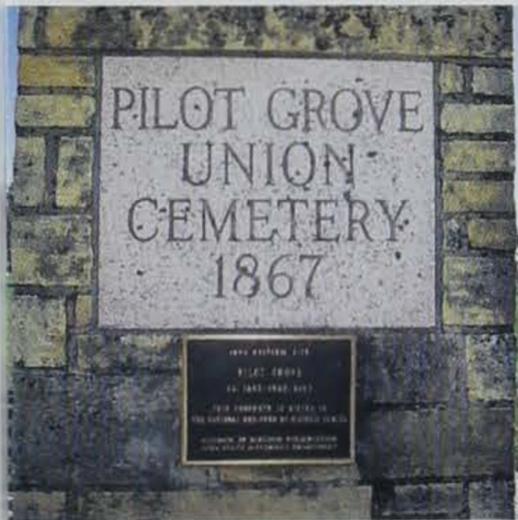
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▲ Pilot Grove tod cultivated fields

In 1870 a cemetery was established, and today the graves of many early settlers and area leaders can be found at the site. The cemetery is dedicated to the pioneer men and women of Pilot Township. Earlier burials made in the area and on local farmsteads were reburied in the nondenominational cemetery. Pilot Grove is another Iowa preserve on the National Register of Historic Places in Washington D. C.

For more information on Pilot Grove contact the Iowa County Conservation Board in Ladora. The preserve is situated between the North English River and Old Man's Creek in Iowa County. It can be reached from Interstate 80 and County V66, three miles west of Williamsburg. Take V66 south four miles and then travel three-quarters of a mile west on a gravel road to the preserve on the north side of the road.



▲ Pilot Grove today still stands out as a wooded knoll but now stands out from cultivated fields instead of an ocean of tall prairie grasses.

Like bits and pieces of a mosaic, these small segments of Iowa history are scattered across the state. Thanks to the preserve system, they remain in trust for all Iowans to help flesh out the story of Iowa's past as they keep irreplaceable locations from fading away or becoming the newest strip mall.

Kathryn A. Stangl is an information specialist with the department in Des Moines.

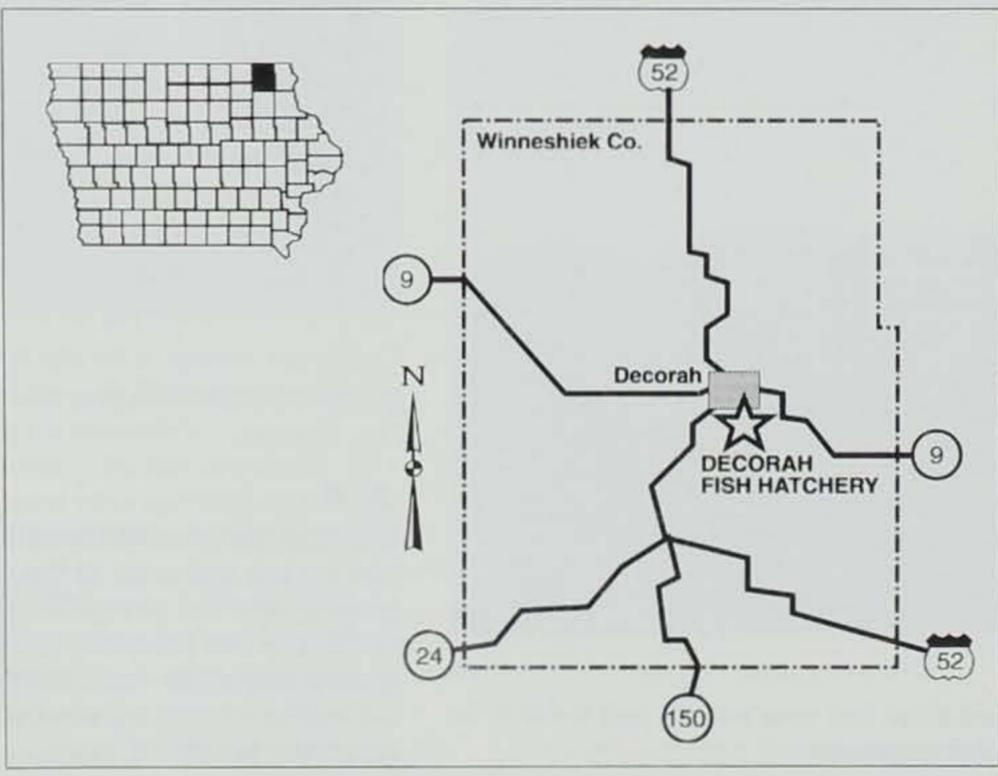


Different vistas, different pieces of history are captured at the Old Quarry (above) and the navigational landmark of Pilot Grove (above left). The old quarry bears the more than century-old marks of iron spikes used to pry loose the blocks of stone.



Unwelcomed Visitors

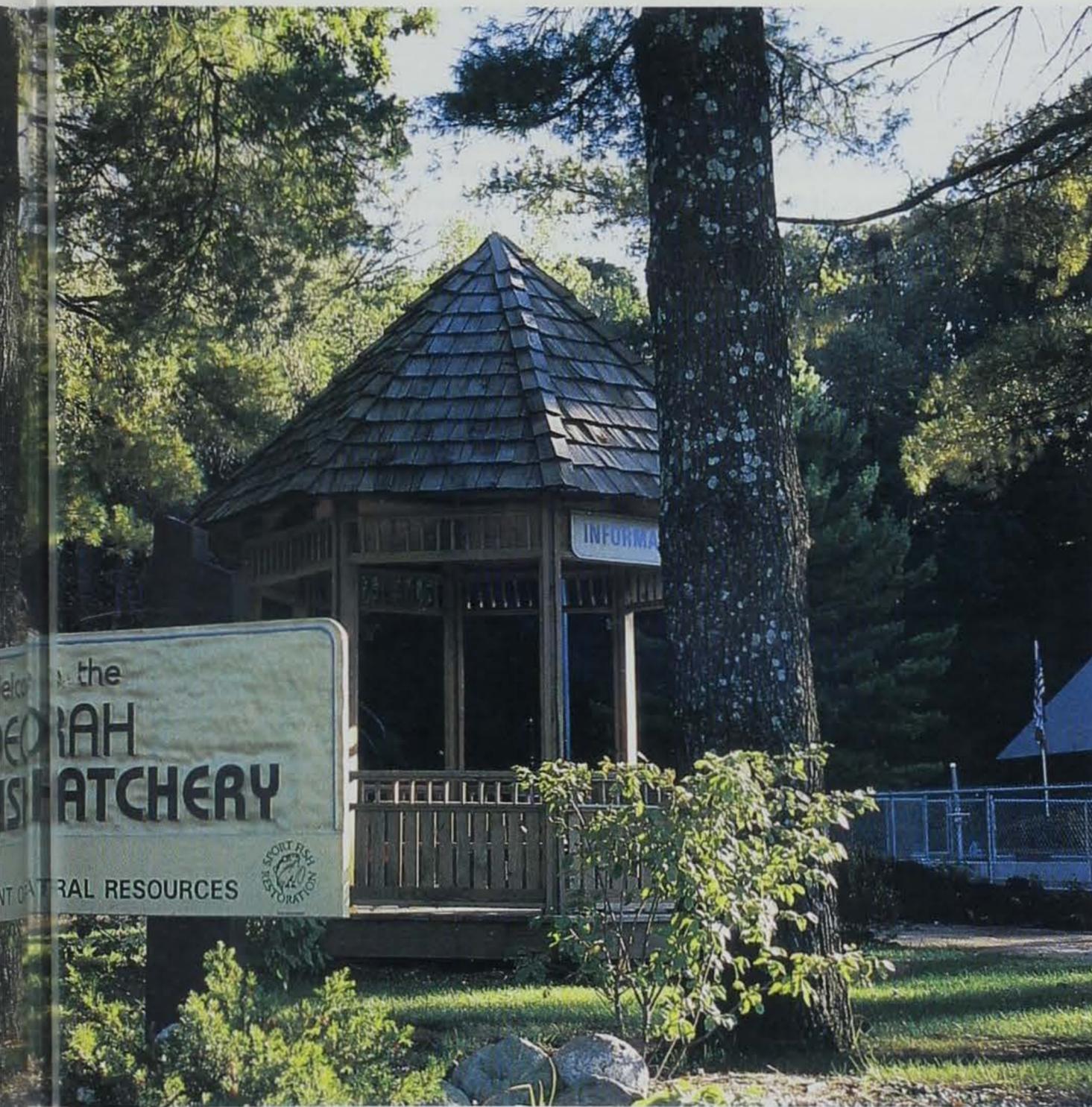
by Bruce Adair



The Decorah State Fish Hatchery, just south of Decorah, is a fascinating place to visit. Hardly a day passes, no matter what the weather, that we do not receive visitors. Our visitor list includes not only children of all ages, but also many nonchildren, nonhuman types who enjoy stopping by for a free meal, sometimes in the middle of the night. We certainly enjoy visitors, but some tend to present problems to our operation.

Those problem visitors include great blue herons, green herons, kingfishers, ospreys, bald eagles, raccoons and mink. Quite frankly, to them, this great mass of concrete, cast iron pipes and pools of water is a pretty wonderful setup, and a great spot to get

some fresh trout are not a serious trout under our and the mink kingfishers do fish soon outgr and the occasio stop by are qui and do only mi original list thi great blue her two species -- Our annual Decorah Hatch about 150 thou and brown trou over and eight- have more than hand at the hat



Ken Formanek

The Decorah Hatchery raises and stocks about 150 thousand, half-pound rainbow and brown trout annually into about 20 streams in northeast Iowa. Human visitors are always welcome at the hatchery, but visitors such as the great blue heron (far left) are unwelcomed.

some fresh trout. Some of these critters are not a serious problem to us or to the trout under our care. The green herons and the mink are pretty uncommon. The kingfishers do us a little damage, but our fish soon outgrow them. The ospreys and the occasional bald eagles which stop by are quite a thrill for us to watch and do only minor damage. From our original list this leaves only two -- the great blue heron and the raccoon. Only two species -- but they are dandies.

Our annual responsibility at the Decorah Hatchery is to raise and stock about 150 thousand, half-pound rainbow and brown trout into about 20 streams over an eight-month period. We often have more than 300 thousand trout on hand at the hatchery. It may seem

strange to think that a few skinny birds or fuzzy raccoons could do much damage with such big numbers of fish, but they do. Visits by these guys night after night really add up, not only in trout which are taken and eaten, but also the numbers which are injured later die. Our story here at Decorah is not uncommon. Only the names of the species change as you travel across the state or across the nation. I honestly doubt that there is a fish hatchery anywhere, public or private, that does not have a predation problem of some sort.

What can we do? Our situation at Decorah has been a challenge. Part of the problem has been fairly easy to correct, part of it continues to be tough.

The Decorah Hatchery is made up of 24 concrete raceways, each about 100 feet long and in pairs totalling about 16 feet across. Herons love to stand along the edge and spear trout. They are wary of humans so they typically wait until no one is in the area, usually during the middle of the night. This has been the easiest of our problems to solve. We covered the paired raceways with a plastic mesh, snapped it down with picnic table slips and presto -- no more heron problems in the raceways.

So much for the easy part. In addition to the concrete raceways, we have three earthen ponds. They are surrounded by concrete and are lined with a heavy plastic material, but they are basically ponds. The herons wade

Mr. Scary, the inflatable scarecrow.



Bruce Adair

and stalk along the edges in search of their next tasty meal, courtesy of your trout stamp. We usually hold 10 to 20 thousand browns in each pond, so feeding can be pretty simple. We have experimented with strobe lights, an inflatable scarecrow, and plastic wire stretched along the perimeters of the ponds. All these things work for a while. We are still a long way from total control, however.

The raccoon problem gets a little more hairy -- obviously. Other than live trapping, we have found few alternatives. Raccoons really have no respect for the mesh over the raceways, the wires along the ponds, and I suppose they enjoy the strobe lights. Anyone who has tried all the tricks to keep these pesky critters out of their sweet corn patch knows just how persistent they can be. Raccoons love our fresh trout nearly as much as sweet corn. Over the past year, during our stocking season, we livetrapped and transported away 55 raccoons. Observe the slalom course of dead raccoons on many of our state's highways early in the morning, and you'll get a good indication of the big numbers of raccoons in Iowa.

It is interesting to compare problems with other hatchery managers throughout the nation and hear their remedies. In relation to many, our situation at Decorah probably seems small and insignificant, especially because we are not attempting to run a money-making business. We are simply providing a service for individuals who enjoy trout fishing in Iowa. Those of us who provide this service in northeast Iowa are proud of our efforts. It is very disconcerting for us to harvest a trout pond and find our numbers 25 percent short for no reason other than predation. Those 25 percent are fish which will not be offered to my angling friends at North Bear Creek or Coon Creek or any of the other streams on our list. For this reason, we will certainly continue to battle these problems.

The reactions of our human visitors to Decorah Hatchery are interesting. Many people assume the reason for the nets covering the raceways is to keep the fish in, or possibly to keep the people out. This is not really the case, but they do help in both assumptions.

We do enjoy watching the people react to our inflatable scarecrow -- a guy

we call Mr. Scary. It really is a clever device and quite effective at times. Unsuspecting human visitors strolling along our hatchery grounds in the evening are immediately startled and then usually amused to watch Mr. Scary do his dance, with lights flashing and sirens blowing. He will inflate and deflate rapidly, and at varying intervals. If we continually change his location and dance schedule, he really does seem to help with both the herons and the raccoons. The people just stand and laugh at the big guy.

Although there are some unwelcome visitors at the Decorah Hatchery, we are a friendly crew and we really do enjoy human visitors. Come visit the hatchery the next time you visit this beautiful area. Stop in and say hello. If you have suggestions to our problems we will sure listen. Maybe something that worked in your backyard sweet corn patch would be just the ticket to save a few thousand trout.

Bruce Adair is the hatchery manager for the Decorah State Fish Hatchery.



Roger A. Hill

Raccoons seem to pose the biggest problem for the hatchery.



Each earthen pond at the hatchery usually holds 10 to 20 thousand brown trout. Plastic wire stretched along the perimeters of the ponds work for a while, but it's still a long way from total control.

Ken Formanek

THE PRACTICAL CONSERVATIONIST

THE PRACTICAL CONSERVATIONIST



Ken Formanek

1996 WINTER BIRD FEEDER SURVEY

SPONSORED BY
THE IOWA ORNITHOLOGIST'S UNION

AND THE IOWA DEPARTMENT OF NATURAL
RESOURCE'S WILDLIFE DIVERSITY PROGRAM

On two consecutive days during January 25-28, 1996 observe your feeder and using the form at right, describe your feeder and record the birds that visited you. In the space provided, list the highest number of each species that you saw together at any one time. For example, if you saw 10 juncos at 9 a.m., 11 at noon and seven at 4 p.m., the number you should record is 11. If males and females can be distinguished (cardinals, downy woodpecker, etc.) record the combined total. For example, if you saw three male cardinals at 11 a.m. then one male and two females at 2 p.m., record five cardinals -- the highest count for the males and the highest count for the females combined. Count only on the two consecutive days and record only the birds that you see at your feeder, under your feeder, or in the trees around your feeder. Do not count birds which just flew past your house and did not use your feeder area. We want information only about birds influenced by your feeders. If you cannot get an exact count, record your best estimate. An honest estimate is far more useful than "umpteen" or "too many to count."

Mail the completed form to me by February 11, 1996:

R. J. Hollis
3351 Lower West Branch Road
Iowa City, IA 52245

If you would like a personal reply, please send a stamped, self-addressed envelope and be patient; it may take 12 months for results to be tabulated. Look for results in the *Wildlife Diversity News* and the Iowa Ornithologists Union newsletter.

For information on birdfeeding see page 54 in this issue.

Please fill in
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BIRDFEEDER SURVEY JANUARY 25-28, 1996

Please fill out carefully. Feel free to copy the form for friends and patrons. Thank you and enjoy yourselves!

1. Name _____

2A. Address _____

2B. County _____ 2C. City _____ 2D. Zip _____

3. The feeder survey period this year runs from *Thursday, January 25th to Sunday, January 28th.*

Count birds on two consecutive days only. Please record which days you counted birds for us in the space below.

Check one: Thursday (1/25) and Friday (1/26),
 Friday (1/26) and Saturday (1/27), or
 Saturday (1/27) and Sunday (1/28).

4. Is your feeder in **Town** (including suburbs) or in the **Country**? Circle T or C.

5. Check the ONE description which best describes the area within a 2-block circle around your feeder:

- suburban, houses with shrubs and small trees but few trees wider than 20 inches.
- suburban bordered by: (circle 1) timber, grass, field or row crop.
- town, neighborhood has many mature shade and street trees.
- downtown with mostly buildings, sidewalks, roads, parking lots, high rises
- pasture
- row crop (corn, beans, etc.)
- timber
- farmstead with mature trees and shrubs around house.

6. Type and number of feeders: Thistle, Sunflower(only), Fruit, Safflower, Peanuts, Mixed seed,
 Peanut Butter, Suet, Cracked Sunflower, Corn, Millet(only), unfrozen water, other _____

7. On what date did you start feeding during 1994-95? About _____

8. Comments or additional description of your feeder or yard: _____

HIGHEST NUMBER SEEN FOR EACH SPECIES DURING TWO CONSECUTIVE DAYS

- | | |
|--|--|
| <input type="checkbox"/> Ring-necked Pheasant | <input type="checkbox"/> Tree Sparrow (American) |
| <input type="checkbox"/> Rock Dove (Common Pigeon) | <input type="checkbox"/> Song Sparrow |
| <input type="checkbox"/> Mourning Dove | <input type="checkbox"/> White-throated Sparrow |
| <input type="checkbox"/> Red-headed Woodpecker | <input type="checkbox"/> White-crowned Sparrow |
| <input type="checkbox"/> Red-bellied Woodpecker | <input type="checkbox"/> Harris' Sparrow |
| <input type="checkbox"/> Downy Woodpecker | <input type="checkbox"/> Dark-eyed Junco (All races) |
| <input type="checkbox"/> Hairy Woodpecker | <input type="checkbox"/> Red-winged Blackbird |
| <input type="checkbox"/> Flicker (All races) | <input type="checkbox"/> Grackle (Common) |
| <input type="checkbox"/> Blue Jay | <input type="checkbox"/> Brown-headed Cowbird |
| <input type="checkbox"/> Crow (American) | <input type="checkbox"/> Purple Finch |
| <input type="checkbox"/> Black-capped Chickadee | <input type="checkbox"/> Common Redpoll |
| <input type="checkbox"/> Tufted Titmouse | <input type="checkbox"/> Pine Siskin |
| <input type="checkbox"/> Red-breasted Nuthatch | <input type="checkbox"/> Goldfinch American |
| <input type="checkbox"/> White-breasted Nuthatch | <input type="checkbox"/> Evening Grosbeak |
| <input type="checkbox"/> Brown Creeper | <input type="checkbox"/> House (English) Sparrow |
| <input type="checkbox"/> Robin (American) | <input type="checkbox"/> House Finch |
| <input type="checkbox"/> Cedar Waxwing | <input type="checkbox"/> (other) _____ |
| <input type="checkbox"/> Starling (European) | <input type="checkbox"/> (other) _____ |
| <input type="checkbox"/> Cardinal (Northern) | <input type="checkbox"/> (other) _____ |

_____ TOTAL DIFFERENT SPECIES SEEN

- I want to receive the free *Wildlife Diversity News*. (NEW SUBSCRIBERS ONLY)
- I would like information about the Iowa Ornithologists Union which is a statewide bird organization.
- If you see a rare or unusual bird, please report it to the Iowa birdline 319-338-9881.

CONSERVATION UPDATE

CONSERVATION UPDATE

Renewable Energy in Iowa's Interest, DNR Says

Testifying at a legislative hearing in November, DNR Energy Administrator Larry Bean said that developing renewable energy is in Iowa's best interest. "Iowa has the best biofuel potential of any state, and has some of the best wind resources. Renewable energy offers an opportunity to create a value-added industry, producing a high value product using local resources," he said.

According to Bean, energy industry leaders project a \$900 billion market for renewable energy and energy efficiency products in the first half of the next century. "Where will Iowa's place be in that \$900 billion potential market? We should be developing the next Deere and Company of the renewable energy industry right here in Iowa," Bean said.

Bean and other energy experts testified before a legislative committee examining the requirements that utilities purchase electricity generated by alternative energy producers from renewable sources such as wind or biomass. Some utility companies



Ken Formanek

◀ ▼
A small wind farm (left and below) on land belonging to George Braaksma outside of Allendorf, Iowa, has operated since 1993.

are challenging the requirement, arguing that the short-term costs are too high and hinder their competitiveness.

"It's crucial for policy-makers to look beyond the immediate and set policies that will sustain Iowa well into the future," Bean urged the committee members. "We currently import 98 percent of the energy we use, so Iowa is especially

vulnerable to the economic effects of energy problems. Developing renewable resources provides us with home-grown strength and diversity in our energy economy, creating greater stability and sustainability."

The discussions of Iowa's future policies toward alternative energy are being held as Iowa is gaining recognition as a leader in wind energy development.

Several major grants from the U.S. Department of Energy (DOE) were provided to Iowa wind energy projects last fall.

Iowa's first major wind farm took another step toward reality with a \$5 million grant from DOE. The grant is just the first part of \$30 million the Zond Iowa Development Corporation of Storm Lake needs to build a thirty-megawatt (MW),

forty-wind-turbine
16 miles west of
Dodge. The wind
would provide
electricity to power
of nearly 20,000

"Wind is one of the
most environmentally
friendly energy
alternatives, and the fact
that wind conditions in
Iowa make this the
most promising area
for turning it into
energy," said Bean.
The \$30 million
area project is one of
five such projects
nation.

In addition to a
Iowa grant, two
wind projects were
selected by the
funding. Exact
will be determined
negotiations. Wind
Light and Power
\$240,000 to install
Zond turbines that
produce about 7
kilowatts of power.
The DNR and the
Energy Center at
State University
seeking \$290,000
data on wind
potential areas for
wind turbines.



forty-wind-turbine facility 16 miles west of Fort Dodge. The wind farm would provide enough electricity to power a town of nearly 20,000 residents.

"Wind is one of the most environmentally friendly energy alternatives, and the facts show that wind conditions in Iowa make this state one of the most promising areas for turning it into electricity," said Bean. He said the \$30 million Manson-area project is one of only five such projects in the nation.

In addition to the Zond Iowa grant, two other Iowa wind projects were selected by the DOE for funding. Exact amounts will be determined after negotiations. Waverly Light and Power is seeking \$240,000 to install two Zond turbines that will produce about 700 kilowatts of power each. The DNR and the Iowa Energy Center at Iowa State University are seeking \$290,000 to collect data on wind to locate potential areas for more wind turbines.



Ken Formanek



Snowmobile Safety Courses

Snowmobiling is a healthy and fun recreation for people of all ages, but with this activity comes rules for safety, operation, courtesy and respect for the environment. One snowmobile accident is too many and operators of all ages are urged to attend a snowmobile safety class. Persons 12-17 years of age must successfully complete a training course before operating a snowmobile on state land.

The DNR training course covers maintenance, safety tips, legal responsibilities, performance and operation ethics. All training materials are furnished, but a \$3 fee is charged for the safety certificate. Instructors may charge an additional fee to defray personal expenses such as building rental and refreshments.

For information on snowmobile courses in your area, call your local snowmobile or ATV club, state conservation officer or the DNR Des Moines office at 515-281-5918.

Key To Overwinter Catfish Survival Found

The catfish is an extremely important fish to Iowa anglers. A recently completed angler survey shows the catfish to be the most preferred fish, both for catching and eating. Although catfish are plentiful and can be found in most Iowa waters, stocking is necessary to meet public demand. This demand is partially met by the stocking of seven to eight-inch fingerling catfish in approximately 210 of Iowa's public lakes. The DNR's Rathbun Hatchery produces more than one million of these channel catfish annually and is the sole source of catfish for stocking in Iowa. Problems in overwintering catfish have made sufficient stocking especially difficult.

"To produce these larger fish for stocking requires two growing seasons," said DNR fisheries biologist Andy Moore, "so we must overwinter the hatchery's annual production. Since 1987, we have experienced serious losses with channel catfish kept over the winter. We had a total loss during the spring of 1987 and 1988, while 60 percent were lost in 1989. Although some adult brood stock were affected in 1987, wild, adult walleye held at the hatchery for spring spawning were unaffected."

According to Moore, limited efforts to diagnose the source of the problem failed and no cause or solution was identified. An extensive monitoring program was started to evaluate all areas

that could possibly affect the fish, including water quality, nutrition, disease and physical condition of the fish. It was found the problem originated with the water, though a combination of other factors contributed. When Rathbun's water levels were high and combined with a high rate of discharge, survival of channel catfish in the outside ponds greatly improved. He said final results indicated the best and most dependable way to insure overwinter channel catfish survival was to use inside holding tanks with filtered, treated water.

"Outside, concrete ponds can be used if a number of conditions are met," Moore said, "but because water for the ponds comes directly from Lake Rathbun, survival hinges entirely on the reservoir's water conditions. By moving the catfish to clean ponds in March, we improve sanitation and avoid the stress fish suffer when ponds are cleaned. We also found survival increased if the fish are somewhat larger. Lowering the number of fish held and using a low percentage salt solution also lowers the stress. Not surprisingly, the effects of nutrition on survival are extremely important in strengthening the fish's ability to withstand stress and disease."

"Results have been very encouraging," Moore said. "With these changes incorporated into how we manage overwintered channel catfish, production of large fingerlings will increase. The results will be even better channel catfish fishing for Iowa anglers."

CONSERVATION UPDATE

For the Birds

Although starting to feed birds in December or January is somewhat more difficult than in October, consider the following if you are just beginning. Feeders should be placed in an area that is protected from the wind and with shrubs nearby for the birds to use as perches.

To get birds to come to the feeder initially, scatter an assortment of seeds on top of the snow. This makes the seeds more visible to the birds than if just placed on a feeder. Sunflower seeds are the most popular, but use specialty seeds such as niger thistle for goldfinches or suet and peanuts for chickadees, nuthatches and a variety of woodpeckers.

A packet of general information on bird feeding is available from the DNR by calling or writing the Wildlife Diversity Program, 1436 255th St., Boone, IA 50036, (515) 432-2823.

The Wildlife Diversity Program also conducts a winter bird feeder survey each year. This year, the survey will run from January 25 to 28. (See pages 50 and 51 for the survey form.)



Ken Formanek

... and more

Plan Spring Habitat Planting Now

This winter, as you watch the birds and wildlife from the warmth and comfort of your home, you might wonder how they survive deep snow and brutal cold. The truth is, many will not make it through the winter. However, by planting habitat this spring you can provide the food and cover wildlife will need next winter, not only increasing their chances of survival but offering you the opportunity to observe wildlife all year long.

The benefits of trees and shrubs to wildlife cannot be overemphasized. Conservation plantings of more than a half-acre should use a diversity of trees and shrubs for maximum benefit. Trees, especially conifers and evergreens such as red,



Ron Johnson

white, jack and ponderosa pine, Norway spruce and red cedar, provide critical winter cover for much of Iowa's game and nongame wildlife. Densely planted conifers can greatly reduce wind chill temperatures and allow wildlife to conserve body heat. They offer food, browse and provide cover from predators.

According to Jim Bulman, DNR forestry bureau chief, the State Forest Nursery is now taking tree and shrub orders for spring delivery.

Conifer seedlings, such as pine and spruce, sell for \$14 per 100, while deciduous trees such as oak, ash and walnut are \$22 per 100. The minimum order is 500 seedlings in units of 100.

Tree and seedling stock must be planted and used for establishing or improving existing forest, erosion control, game or water conservation, and is

not to be used for a new windbreak, shade or ornamental purposes.

Bulman said the nursery also offers songbird and wildlife packets that are perfect for landowners wanting to provide additional wildlife habitat. The songbird packet, designed especially for urban landowners, contains 20 tree and shrub seedlings and sells for \$15. The wildlife packet, developed for rural landowners, contains 200 tree and shrub seedlings and sells for \$35.

To order, or for more information, call the State Forest Nursery at 1-800-865-2477, or (515) 233-1161. Orders can also be faxed to (515)233-1131. Orders can be charged to Visa or Mastercard. In April, your order will be delivered by refrigerated truck to a drop-off point in each county.

Newly Design
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Available

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Who is elig
resident spring
licenses?

• Reside

Newly Designed Spring Turkey License Applications Available

New application booklets for resident spring wild turkey hunting season licenses are available at DNR offices, county recorder offices and many hunting license outlets. For the first time, one application type will be used for all resident licenses -- combination gun/bow and archery only licenses -- whether they are paid or free. Resident applications for combination gun bow licenses must be postmarked by Feb. 2.

Who is eligible for resident spring turkey licenses?

- Residents of Iowa.

- Non-residents who are full-time students at an Iowa educational institution.

- Non-residents under the age of 18 whose parent is a resident of Iowa.

The application periods for resident combination gun/bow licenses (*paid* and *free*) are:

First Period -- Jan. 8 to Feb. 2.

Second Period -- March 11 to 15*

*Note: If all paid license quotas are filled after the first drawing, the second application period will **NOT** open for any application, paid or free, in any zone or season.

The resident archery-only license (*paid* and *free*) application period is

Jan. 8 to March 1.

Zone boundaries, license quotas, season dates and other details are printed on the applications.

Applications for non-resident licenses may be obtained by calling 515-281-4687, and must be received in the DNR office, 900 East Grand, Des Moines by 4:30 p.m. on Jan. 26.

The outlook for the 1996 season is excellent, according to Terry Little, wildlife research supervisor for the DNR. "The 1995 season was the second highest harvest with more than 10,000 gobblers taken," Little said. "Only bad weather during the season will keep hunters from matching 1995."

Spring '96 Toxic Cleanup Days

If you are inside on some of those cold, blustery days you may be cleaning out the garage, basement or workshop. Instead of throwing out those household materials you no longer need, set them aside for Toxic Cleanup Days.

Toxic Cleanup Days (TCD) allow Iowans to dispose of their household hazardous wastes and provide an opportunity for education on alternatives to disposal, or in some cases, proper disposal management in the home. If you are stumped about what to do with unusable chemicals in your home, call the DNR at (515)281-4367

Counties holding Spring '96 Toxic Cleanup Days (TCDs) and the scheduled dates are listed below. Watch local newspapers for phone numbers to call for appointments.

- ❖ **April 27**
Buena Vista County
Palo Alto County
- ❖ **May 4**
Pottawattamie County
Adair County
- ❖ **May 11**
Wapello County
Davis County
- ❖ **May 18**
Appanoose County
Wayne County

Ice Fishing Shelter Reminder

Shelters must be removed from all state-owned lands and waters by Feb. 20 or ice melt, whichever comes first, unless the deadline is extended.



Roger A. Hill

CONSERVATION UPDATE

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:

- No January meeting
- February 8, Des Moines
- March 14, Des Moines

Environmental Protection Commission:

- January 16, Des Moines
- February 19, Des Moines
- March 18, Des Moines

State Preserves Advisory Board:

- March 12

Telephoning the DNR Made Easier

With about 90,000 telephone calls a year placed to the DNR headquarters in Des Moines, a new system of automation has been developed for improved customer service, according to Ross Harrison, DNR's information chief.

"Most of the calls to the DNR deal with hunting, fishing, camping and forestry," said Harrison.

"We have developed a 24-hour-a-day, 7-days-a-week system on those topics with a goal of answering more than half of those calls with a taped message. If the taped message isn't enough, then callers can always access a real human."

"The value of this system is that people can call anytime, day or night. They are not restricted to 8 a.m. and 4:30 p.m., Monday through Friday," Harrison explained. "And because we can save labor in answering the phone, we have more funds for natural resource management."

Harrison said that persons wanting information on hunting should dial (515)281-HNTR (or 4687); for fishing (515)281-FISH (or 3474); for parks and camping (515)281-TENT (or 8368); and for forestry (515)281-TREE (or 8733). These taped messages answer the most frequently asked questions, and give persons the opportunity to order DNR publications or licenses.

For other DNR topics,

such as environmental pollution and waste management, Harrison said to call (515)281-IDNR (or 4367). Energy callers should dial (515)281-5918. He cautioned that these numbers are available only during normal business hours and weekdays.

"We will continue to monitor the system and fine-tune it to the customers' needs as much as possible," Harrison said.

WMAD Looks at Wood Waste

The total amount of wood waste produced in Iowa is approximately 270,000 tons per year, according to a 1994 University of Northern Iowa study. Relatively few options exist to recycle or reduce this waste. Because of the overwhelming amount of wood waste generated in Iowa, the Waste Management Assistance Division (WMAD) of the DNR has identified wood waste as a major component of Iowa's waste stream. Unfortunately, this waste stream is relatively unmonitored.

A WMAD task force has been formed to find alternatives to landfilling wood waste in Iowa. The task force has initiated several projects.

University of Iowa students from the graduate program in urban and regional planning will be studying Iowa's wood waste stream and surveying wood waste processors.

The study will generate current wood waste processing data and recommend technical and public outreach programs for landfill diversion of wood waste. A wood waste database will be created to store the collected information. After the study has been completed, the information will be available to the public.

A WMAD request for proposals has been advertised in many Iowa and national media outlets. The notice solicits proposals for a construction and demolition waste (including wood waste) recycler for central Iowa. The recycler will collect, process, and market construction and demolition waste in central Iowa.

A special issue of WMAD's quarterly newsletter, *Waste Matters* will be devoted to wood waste issues. *Wood Waste Matters* will be distributed in mid-July and will feature the wood waste study results as well as successful wood waste recycling and reduction projects and businesses in Iowa. If you would like to receive a copy of the special issue, please contact Julie Kjolhede at (515) 281-8946.

As it becomes available, the information generated by the wood waste task force will be distributed to the public.

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CLASSROOM CORNER

by Don Sievers

Historical Trees

The following activity is adapted from *Trees for Kids* published by the DNR. *Trees for Kids* and *Trees for Teens* are combination tree education and planting programs that target 5th through 12th grade students. The program's goals are to educate students about the value of trees and to encourage students to plant landscape-sized trees at their schools or other public places.

The programs are uniquely sponsored by the DNR Forestry Division, Iowa Nursery and Landscape Association, Iowa Bankers Association, Peoples Natural Gas, Midwest Gas, Trees Forever, Iowa Wood Industries Association and Iowa State University Extension Forestry.

During the 1994-1995 school year *Trees for Kids* and *Trees for Teens* involved more than 3,800 educators and more than 4,000 students. Students and teachers planted 83,136 trees or shrubs at a total value of \$824,979.

Background:

As the story goes, a farmer in Audubon County leaned his plow against a small tree and left to go fight in the Civil War. If you visit the Plow in the Oak Park, in Audubon County, you can see a portion of the plow protruding from a massive oak tree. With 1996 being Iowa's sesquicentennial, research into the importance of our natural resources for early settlers will provide interesting information about the state's development.

Early settlers named many of their communities and historical sites after the forest resources surrounding their settlements. Harold E. Dilts, in his book *FROM ACKLEY TO ZWINGLE: The Origins of Iowa Place Names*, provides references for the names of many of Iowa's communities. Check with your public or school library for a copy of the book.



DNR

▲ The colorful fall foliage at Ledges State Park near Boone is part of Iowa's tree "heritage."

Age:

Grades 4-6

Objectives:

Students will be able to:

1. use reference materials to identify origins of community names; and
2. identify important local forestry resources recognized by early settlers.

Materials:

1. Copy of worksheet;
2. a copy of Harold E. Dilts book *FROM ACKLEY TO ZWINGLE: The Origins of Iowa Place Names*.

Resource Materials:

Dilts, H.E. 1975. *FROM ACKLEY TO ZWINGLE: The Origins of Iowa Place Names*. Carter Press, Ames, Iowa, 128 pp.

Iowa DNR, 1995. *Trees for Kids*, 23 pp.

j, f, m, b, i, k, c, l, g, d, o, c, n, h, a, p
Answers:

Extensions:

1. Research your community's name to discover its origin.
2. Are there trees in your community or school district that have a historical significance?
3. What role did our forest resources play in the development of your community?



Jerry Leonard

▲
The oak is the state tree.

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

Procedure:

Using *FROM ACKLEY TO ZWINGLE: The Origins of Iowa Place Names* match the following community names with their origin.

- ___ Linn Grove
- ___ Forest City
- ___ Northwood
- ___ Teeds Grove
- ___ Linden
- ___ Magnolia
- ___ Charter Oak
- ___ Lone Tree
- ___ Garden Grove
- ___ Woodbine
- ___ Pilot Grove
- ___ Postville
- ___ Scotch Grove
- ___ Glenwood
- ___ Walnut
- ___ Red Oak

- a. Named for the high valued trees with rich brown lumber.
- b. Named after the owner of a local sawmill.
- c. Named after the landlord of a public house.
- d. Named after a woody vine found locally.
- e. Named after a famous tree in Connecticut.
- f. Named after the fine stands of timber in the area.
- g. Identified as one of the temporary stops along the Mormon Trail.
- h. Although originally named Coonville after Liberus T. Coon, it was renamed because of its woodland setting.
- i. Named from a tree with large heart-shaped leaves.
- j. Originally named Sweet's Mill, its name was changed because of its location in a grove of trees.
- k. Named after a large white elm on the open prairie.
- l. The state legislature named this community after a tree.
- m. Named because the post office was located in a grove of trees.
- n. First settled by emigrants from the Red River of the North.
- o. Named after a stand of trees which served as a landmark to travelers on the prairie.
- p. Named for the fine oak trees growing along the Nishnabotna River.

Stromatolites are extinct organisms. They consist of colonies of bacteria and lived in shallow water. They resemble coral and have branches. They were first discovered in the Floyd County area about 375 million years ago.



Fish jaw (a) is a two-to three-inch primitive fish. The plates that appear are 375 million years old. The specimen is a result from a fossil bone.

Fossils

Stromatoporoid (*below*): "Stroms" are extinct organisms related to sponges. They constructed skeletons of lime and lived in various shaped colonies that resembled layered mats, branches, and rounded masses. This Floyd County specimen, with its prominent nodes lived 370 million years ago (Devonian).



Fish jaw (*above*): This jaw belonged to a two- to three-foot long placoderm, a primitive fish partly covered by bony plates that gave it an armored appearance. The black color of this 375 million-year-old (Devonian) specimen from Black Hawk County results from mineralization of the fossil bone.



Brachiopods (*top*): These shells are among the most common fossils found in Iowa. Brachiopods lived inside the protective cover of two hinged shells, attached to the floor of warm, shallow seas that once covered the state. These eastern Iowa specimens are about 375 million years old (Devonian).

Gastropod (*above*): Shells of marine animals are often preserved as fossils. This coiled shell from Winneshiek County was inhabited by a snail. The sluggish, bottom-dwelling mollusk scavenged or grazed the ancient sea floor about 440 million years ago (Ordovician.) The snail moved on a flat muscular foot and could withdraw inside its shell for protection.

Reprinted from the 1993 issue of Iowa Geology. Photos by Paul VanDorpe. Photo setups by Patricia Lohmann.

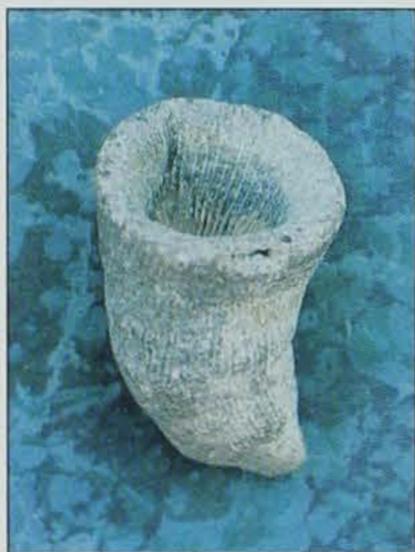
by Jean C. Prior

Many people have their beginning interest in geology stimulated by finding fossils. Holding the shell of a sea-dwelling organism found in an Iowa rock, far from the nearest ocean, makes us think about the vast changes that have occurred over the Earth's surface and the great length of geologic time that has passed. Studying fossils helps us appreciate the history of life on Earth. They provide a link between geology and biology that is valuable to the study of global changes and how life

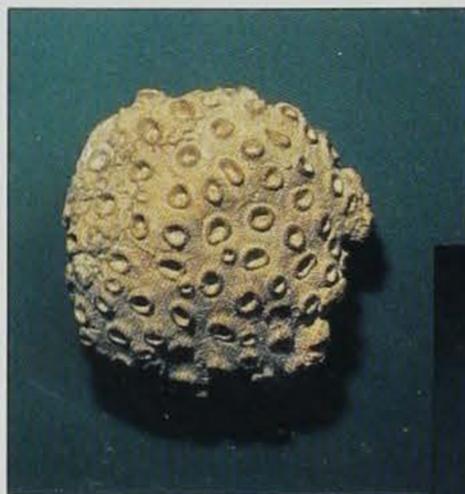
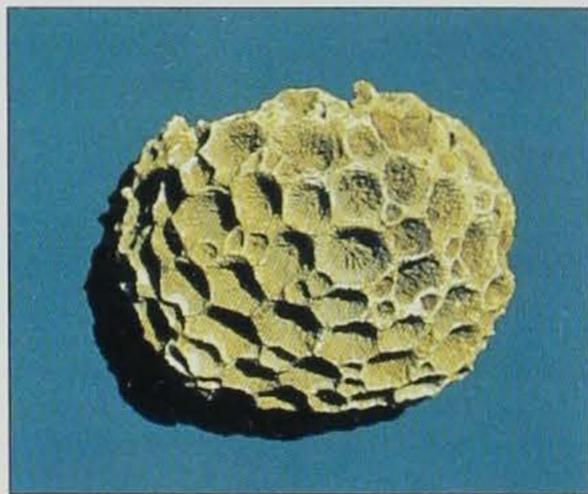
adapts. Fossil remains also are an important tool in dating different rock layers, and in comparing the sequence of strata from place to place across broad areas.

Iowa has many well-known fossil-bearing rock formations, and fossils from around the state have found their way into museums around the world. These pages help to identify a few of Iowa's many fossils that may be found by careful observation of road cuts, quarries, stream banks and other exposures of earth materials.

Solitary coral (*below*): Corals also lived alone in curved, cone-shaped skeletons unattached to other individuals. This fossil "horn coral" housed the animal's soft tissues, including tentacles which filtered food particles from sea water.



Bryozoan (*right*): "Moss animals" were also colonial, filter-feeding organisms that inhabited the sea floor. A well-known bryozoan (Archimedes) consisted of concentric rows of lace-like fronds attached to a corkscrew-shaped axis. The preserved core is seen in this Lee County specimen (340 million years old, Mississippian).



Colonial corals: Bottom-dwelling corals lived in reef-like communities in warm, clear, tropical seas covering Iowa. Many species were colonial, living together in a mass of individual skeletons of lime, resembling a honeycomb. Distinctive colonial forms from eastern Iowa include the "chain coral" (*right*), *Pachyphyllum* (*above right*), and *Lithostrotionella* (*above*). They were especially abundant in Devonian and Silurian seas, 375 to 425 million years ago.



Crinoids (*left*): Crinoids lived anchored to the sea floor by flexible, rooted stems. Segments of the rounded stems are commonly found as fossils. Famous localities in Iowa include the LeGrand and Burlington areas.

Crinoid (*left inset*): Often called "sea lilies," crinoids are actually animals related to starfish. This 350 million-year-old (Mississippian) specimen from Marshall County shows the arms, which in life would filter sea water for food particles.



Trilobites (*above*): Prized by collectors, whole trilobites usually display a three-lobed, oval-shaped, segmented skeleton, often with distinct eyes. They belong to an extinct group of bottom-dwelling, hard-shelled arthropods that scavenged the sea floor. These Scott County specimens are 375 million years old (Devonian).



This coiled cephalopod (*left*) is a 365 million-year-old (Devonian) specimen from Butler County, and a distant relative of the chambered nautilus seen in today's oceans.



Clam shell (*left*): Like gastropods and cephalopods, clams are also mollusks that live in a protective shell. This Plymouth County specimen lived on a sea floor 90 million years ago (Cretaceous). Clams were abundant in these waters, the last of the great inland seaways to cover Iowa.

Cephalopods: These squid-like animals lived in chambered shells and could propel themselves by ejecting water from a tube near their head. The shell's partitions were filled with gas, enabling the animal to regulate its buoyancy. These straight-shelled cephalopods (*right*), from Marion County are 300 million years old (Pennsylvanian).



Seeds (*below*): These black fossil seeds are from Scott County. They grew at the end of a frond on a fernlike tree about 300 million years ago (Pennsylvanian).



Seed-fern leaves and scale-tree trunk (*far right*): The fossil foliage of seed ferns (small fossils) was found in Dallas County, and the scale-tree (*Lepidodendron*, large fossil) in Muscatine County. About 310 million years ago, these plants were common in the coastal swamps that produced Iowa's coal deposits (Pennsylvanian).



Mastodon (*above left*) and mammoth (*above right*) teeth: Tooth shapes of these 15,000 year-old molars indicate mastodons browsed tree branches, while mammoths grazed grasses. Fossils of these extinct Ice Age (Pleistocene) creatures resembling elephants have been widely found across Iowa.



Amphibian pelvis (*left*): This pelvic bone belonged to a three- to four-foot-long protoanthracosaur, a rare, primitive amphibian that lived 330 million years ago (Mississippian) and was found in Keokuk County.



WARDEN'S DIARY

by Chuck Humeston

"Just Call Me Jacques"

I thought I knew about winter until I moved to northwest Iowa. Sure, I grew up with cold, wind, snow and ice in southern Iowa, but, man, it was nothing like the *industrial-strength* winter I encountered around the lakes.

When I was first assigned there, the officers I worked with -- those who were *really* experienced with these elements and thus much more used to them -- seemed to take great pleasure in getting me into situations so they could watch me suffer and shiver.

"What's the matter, Humeston, a little cold? Ha, ha, hee, hee."

"Guess you'll need a few extra layers of clothes to tough it out up here."

"Hey Humeston, is this a little different than your last area? That was Acapulco, right? Guffaw, guffaw."

"Quick! Somebody help him move. He's slowing up and might freeze solid if we don't keep him moving."

Right, hilarious. They laughed and laughed. I just froze.

Then, when I was first issued my equipment, I noticed a pair of items I didn't recognize. They were each about three feet long with some sort of aluminum frame and plastic lashing in-between the frame. Lacrosse sticks, strange badminton rackets or rackets for playing slush-ball tennis, I wasn't sure what they were but they were alien to me.

"Here are your snowshoes," said my supervisor.

"My what?"

"Snowshoes. Take them, they'll come in handy."

I threw them in the trunk of my car and didn't think much about them. I had already decided that if God wanted me to walk through snow-drifts, I would have been given three-

foot-long feet. It just didn't seem natural (or possible either for that matter) for humans to scamper across the top of the snow. But, one day my curiosity got the better of me and I decided to try them out on one of the frozen, snow-covered lakes.

I set them on the snow, and then just stood on them. I realized I didn't know how to tie them to my feet. (O.K., let's be brutally honest. I had no idea how anyone would *ever* fasten them to their feet.)

By trying various knots and configurations, I finally came up with something I thought would hold them on my boots. I tried walking and found normal walking just did not cut it with these things. I tried some small steps, crossed the front of my shoes and fell over. Wait a minute, making snow angels with my face was not my idea of an efficient or pleasant means of transportation.

Wondering if the French "voyageurs" searching for the Northwest Passage had the same problem with their first pairs of snowshoes, I tried again.

Through trial and error and many spills in the snow, I soon developed a type of movement that was a combination of crosscountry skiing, stair stepping and Iowa Marching Band swaggering. It was crude, and it would have been hilarious to watch, but it worked!

I snowshoed all over the lake. By that time I was hooked. I soon used them to go everywhere.

I would strap them on and head over the drifts to a group of ice shacks, or use them to trek on out to check a line of traps.

I was *Jacques Le Humeston*, Game Warden of the Northwest -- blazer of foot trails to the frozen unknown. Sergeant Preston of the Mounties may have had his dog sled

for glamour, speed and endurance but at least I never had to feed my snowshoes.

The shoes did live up to their utilitarian purpose. One night I spent following two raccoon hunters still stands out in my memory. It was one of those clear, bitterly cold moonlit winter nights. The raccoon hunters were falling through the waist-high drifts. They were struggling, freezing and snow covered. And, there I was behind them, observing and smoothly duck-waddling over the woodland drifts.

Another time, when I was working with a spotter in an airplane, we had a couple of deer hunters who did not want to come out to be checked. They decided to thrash through the snow in the opposite direction, figuring they had a head start we couldn't make up. Paul Magnussen and I strapped on our snowshoes and skimmed after them. It wasn't much of a chase.

But the best part about the snowshoes was the world they opened -- winter, up close and personal. They made it possible to make my own trail along the river, to stop in the protection of a creek bed, look up, and see the bare trees being blown about by the wind. They allowed me to get away from everyone, to sit, pull out a hot thermos and just listen and watch. Those snowshoes made it possible to not just see winter, but to be a part of it.

When I transferred to Iowa Falls, I had to give my snowshoes back. I haven't been in a pair since, but I have a good friend who is building a pair. I look at them fondly because they are not the high-tech aluminum model, but the *real* kind instead -- the kind Jacques Le Humeston, Game Warden of the Northwest would wear.

