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Iowa  
**CONSERVATIONIST**

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Department of Natural Resources

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**T**he great prairie pothole region stretches from Alberta, Saskatchewan and Manitoba southward through Montana, North and South Dakota, Minnesota to Des Moines, Iowa. This vast wetland area is the result of glaciers where glacial ice fields along with erosional action by wind and water created numerous potholes, marshes and shallow lakes. The glaciated area of Iowa, from northwest and north-central Iowa southward to Polk and Jasper Counties, once consisted of about 7.6 million acres of mixed prairie and wetland.

More than 95 percent of the prairie pothole wetlands in Iowa have been drained. The loss of

wetlands to waterfowl, fish, furbearers and many other wildlife species has been monumental. Waterfowl numbers have declined throughout North America largely due to the loss of wetland habitat. In 1985, waterfowl numbers reached all-time lows. If something is not done to increase wetland habitat, waterfowl hunting and benefits from other aquatic wildlife, as we know it, will be gone forever. The plight of waterfowl has caused alarm among waterfowl hunters, wildlife enthusiasts and wildlife professionals. This concern has prompted the wildlife profession to design a continent-wide plan to restore duck numbers. The result — the North American Waterfowl Management Plan (NAWMP).

## Iowa Embarks on a Joint Venture

Story by Richard Bishop  
Photos by Lowell Washburn



Objectives of this plan demand protection and enhancement of enough habitat to accommodate 62 million breeding ducks which in turn would produce an annual fall flight of about 100 million ducks. To accomplish this goal we must protect and enhance existing wetlands, restore large acreages of drained wetland and improve the upland nesting habitat to provide for the 62 million breeding ducks. This won't be accomplished overnight and this 15-year program is designed to protect, enhance and restore wetlands and uplands from the Pacific Coast to the Atlantic Coast and from the Canadian prairies south to the Gulf of Mexico. The work will encompass breeding habitat, migration areas and wintering habitat.

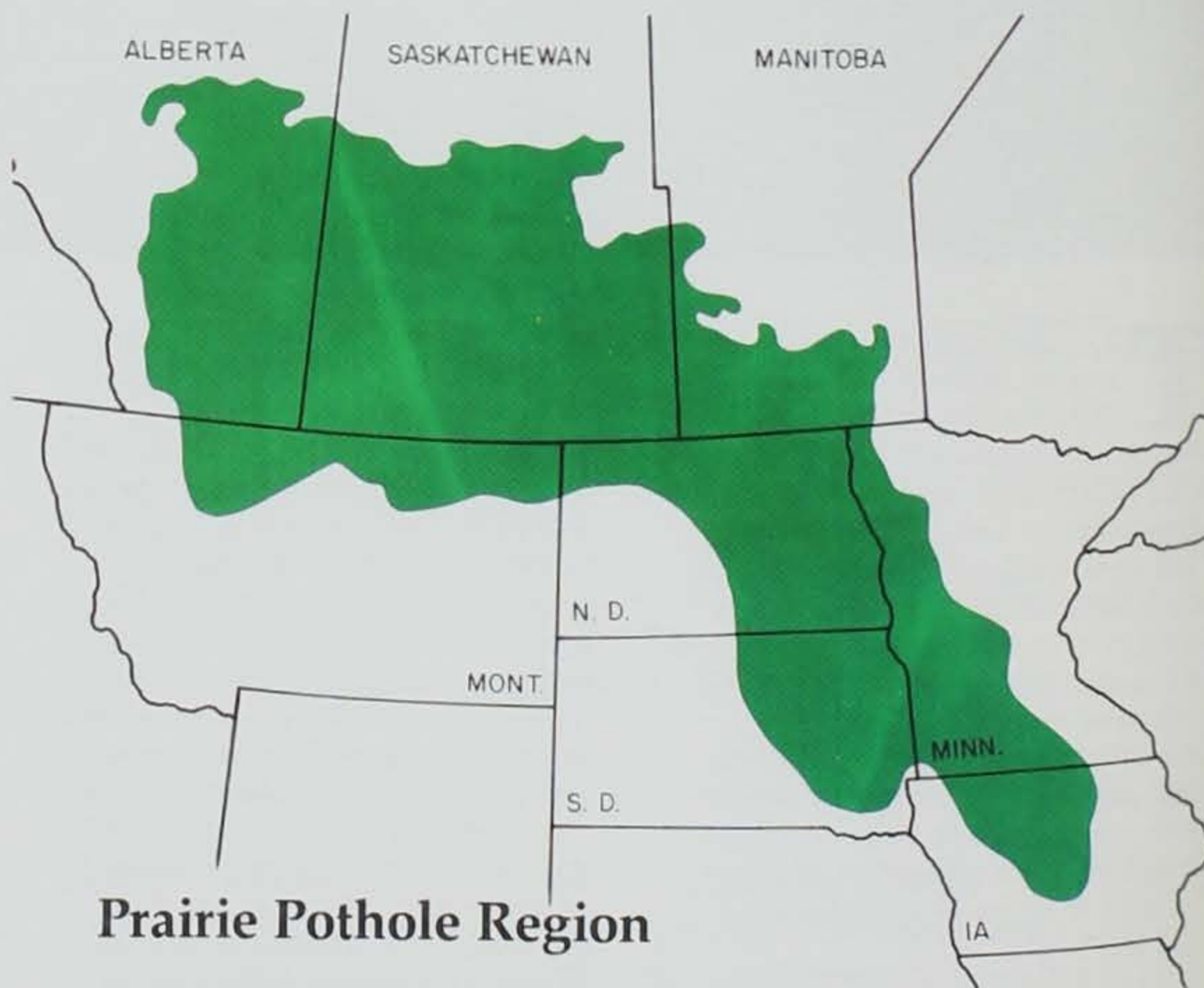
This is truly a cooperative venture requiring close working relationships between the governments of Canada and the United States, sportsmen and women, and the general public. Everyone will have to work together to accomplish this ambitious but necessary goal. Several joint ventures have been undertaken to help fulfill the NAWMP goal. Iowa's involvement is with the Prairie Pothole Joint Venture — a plan to protect 1.1 million acres of waterfowl breeding habitat in the prairie pothole region of United States. Iowa's involvement is with the Prairie Pothole Joint Venture (PPJV). This region covers parts of North and South Dakota, Montana, Minnesota and Iowa. In Iowa, 35 counties, from Osceola County across northern Iowa to Mitchell County and southward to Jasper, Polk and Guthrie Counties, are involved in the Prairie Pothole area targeted by this plan.

Iowa's responsibility is to purchase 30,000 acres of uplands and wetlands in these 35 counties. Although this contribution is small compared to the other states in the PPJV, it is nonetheless very important to breeding waterfowl, other aquatic wildlife and the quality of life for Iowans. The value of 30,000 acres of wetlands and uplands to Iowa's wildlife is of no small consequence. This land will provide wetland homes for many nongame species as well as produce good

numbers of ducks and geese. It will also provide additional hunting lands for deer, pheasant and waterfowl. People interested in viewing wildlife, taking pictures or educators wishing to use the areas for outdoor classrooms will profit also.

The Iowa DNR has identified specific areas within the 35 county region that have high quality restorable wetlands. Most of these areas are next to existing state-owned wetlands or are in large land complexes targeted for purchase. All purchases will be from willing sellers, consequently not all the land needed to complete certain areas will be purchased immediately.

Large wetland complexes attract more breeding ducks and are more easily managed for good waterfowl production. Uplands around wetlands are just as necessary as the wetlands themselves because most ducks nest in grass uplands. An ideal ratio of wetlands to uplands is two acres of upland for every acre of wetland. In some cases we have very attractive wetlands but we do not own any uplands around the marsh. We will



### Prairie Pothole Region

*Within the United States, six joint ventures have been undertaken. Under the Prairie Pothole Joint Venture, Iowa's responsibility is to purchase 30,000 acres of wetlands and uplands in a 35-county area.*





need to purchase cropland surrounding these wetlands and restore good nesting cover. With proper management these additional lands will attract good breeding populations of mallards, blue-winged teal, wood ducks and Canada geese.

Since most of Iowa's wetlands have been drained, we will need to restore many lost marshes. Most of the old wetland basins still remain. They are generally in crop production but they are just waiting for rebirth. Once the land is purchased, by breaking the existing tile lines and in some cases constructing small dikes these areas will return to fantastic wetlands. Seeds from aquatic plants long past are still present in these basins. The recipe calls only to add water. It is exciting to see the rebirth of a marsh where a monoculture of corn existed. Once the water is restored, the mundane cornfield comes to bubbling life, with yellow-headed blackbirds, marsh wrens, bitterns, terns, ducks, Canada geese and a host of other

wildlife species. Wetlands are the most productive and diverse of all wildlife habitats.

There is a certain wisdom to taking land out of corn production and creating marshes. Many of these low basins flood out in wet years and provide low net returns to farmers. Take a moment to look at where annual set-aside land (land taken out of corn production to qualify for government payments) is placed. Often it follows the contours of old wetland basins. The reason for this is that these low basins are less dependable for crop production than the other land the farmer has. These areas are the first to be taken out of crop production. As we know, the Midwest is producing too much corn to keep crop prices at the level farmers need to make a decent return for their labor and investment. Reducing the amount of corn produced helps in a small way to better crop prices. Marshes reduce run-off and store water, recharging vital ground water which also benefits agricul-

ture. Marshes act as settling basins filtering out pollutants, such as farm chemicals, from our water supply. There are many side benefits to wetlands which make them very important to rural Iowa and agriculture.

For Iowa to achieve her commitment to the PPJV at least 2,000 acres of land must be purchased each year for the next 15 years. Knowing the difficulty of keeping programs going for such a time span, Iowa is moving faster and plans to purchase more than 2,000 acres a year for the first 5 to 10 years.

The words "joint venture" means just that. It requires cooperation between the U.S. Government, state government, conservation groups and other private support. People need to contribute personally to raise the needed dollars. The price tag of this project is a minimum of \$1.8 to \$2 million a year. For 1989 the U.S. Fish and Wildlife Service has challenged Iowa to match \$1 million — mostly Federal



duck stamp money. Money from the sale of Iowa duck stamps and habitat stamps will provide part of our \$1 million but \$700,000 more is needed. Private groups such as Ducks Unlimited, Wetlands for Iowa and Pheasants Forever are currently cooperating in land purchases but they need more help. Cooperating organizations like the Sierra Club, Audubon Society, The Nature Conservancy, Iowa Wildlife Federation, Izaak Walton League and trapper organizations need to start active fund raising programs to boost private contributions to the Prairie Pothole Joint Venture. Recently, a number of Des Moines businesses pledged \$100,000 a year for the next three years. This is just one group of concerned citizens. Other large communities such as Cedar Rapids, the Quad Cities, Mason City, Sioux City to name a few could do likewise. You can contribute to the PPJV through your local conservation organization or you can send your contribution to the Prairie Pothole Joint Venture in care of the Iowa Department of Natural Resources, Wallace State Office Building, Des Moines, Iowa 50319-0034. If you would like to be a major donor, you can buy a marsh in your name or buy a portion of one. Recently six people bought 142 acres in Dickinson County and donated it to the DNR. Wetlands were restored on this property and a plaque was placed in their honor.

There are other ways of working toward enhancing and restoring wetland habitat other than simply land purchases. Farmers are helping by cooperating with DNR biologists and the U.S. Fish and Wildlife Service in restoring wetlands on Conservation Reserve Program land. Wildlife biologists and landowners have restored slightly over 1,000 acres of wetlands this last year by breaking tile lines and building small dikes to restore the marshes. If you have one of these basins on your farm and would like to cooperate, call your local wildlife biologist. Many landowners are deriving a great satisfaction from seeing a wetland come to life and being able to show their children and grandchildren the joys of a

marsh.

However, possibly the most immediate and important action the public can take is to encourage government officials to appropriate monies for land purchases. The Department of Natural Resources is asking the Iowa Legislature to appropriate \$500,000 a year to facilitate funding of the Prairie Pothole Joint Venture. You can help by encouraging your representatives and senators to make this request a reality. This is an Iowa project and it will require public support from duck hunters, photographers, educators, businessmen and women, farmers, housewives and others. The Iowa Legislature has already passed laws to protect groundwater and to place 10 percent of the state into public ownership. How could we enhance these two laws any better than to fulfill our obligation to the Prairie Pothole Joint Venture? The U.S. Fish and Wildlife Service and the Iowa Department of Natural Resources along with Ducks Unlimited, Wetlands for Iowa and Pheasants Forever have made major financial commitments. The Governor has given his strong support for this program. How about the rest of us?

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*Richard Bishop is chief of the department's wildlife bureau in Des Moines.*

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# THE MALLARD

Story and photo  
by Lowell Washburn

If you are like most waterfowlers, when you think of duck hunting you think of mallards. And whether you pursue the bird over the wheat fields of Saskatchewan, on the cattail marshes of Iowa or zig-zagging through flooded pin oaks in Arkansas, there is no disputing that the regal greenhead occupies first chair in the tradition-steeped sport of American duck hunting.

It takes little imagination to see why sportsmen hold the mallard in such high regard. First of all, it is big. Drakes average 2 3/4 pounds and will sometimes tip the scales at three. In addition to its size, the mallard is also a gaudy sort, sporting a bright yellow bill, iridescent emerald head and orange feet. During cold weather the species feeds exclusively upon the grains of both wild and domestic plants. Even in the hands of the most unimaginative cook, a fat, grain-fed mallard is 100 percent pure eating pleasure.

However, more than anything, it is the species' gregarious nature that has elevated the mallard to the pinnacle of prominence. No other duck is more willing to circle the decoys time and again or is more eager to respond to the proper use of a call. But although the mallard is extremely social, it also possesses a singular wariness that makes it one of the most difficult species to bag. Hard-core devotees are quick to point out that few thrills in the outdoors compare to being in the right place at the right time as a black tornado of late-season mallards precious breeding habitats, it is time to replace what marshes we can.

Many authorities contend that the mallard stands at a critical





crossroad in its fight for survival. What we do in the next decade could determine if huntable populations of this and many other prairie ducks will continue into the future. If we, as a society, fail to respond correctly we could be one of the last generations to thrill at the sight and sound of a flock of wing-set mallards bailing out of the November sky, the hens talking back to the call as they come down. descends to the decoys with the hens talking back to the duck call. And when it all comes together, the loss of sleep, stale coffee and humbling cold seem a small price in exchange for a million-dollar memory.

Historically, the mallard has been at its best in the continent's mid-section. From the days of Mark Twain to the present, it has provided much of the substance for the legends associated with the "good old days" of waterfowling along the Mississippi Flyway. A quick glance at the records will reveal that the sky-darkening clouds of fowl that once flowed down the continent each autumn, represented a spectacle that modern-day hunters can dream about but never fully comprehend.

In Iowa, as elsewhere, hunting was done for both food and profit. At Clear Lake, the Rickard boys gunned the north shore's Sand Bar and the slain were transported by horse-drawn wagon to the town's hotels and boarding houses that featured wild fowl as a popular in-

season menu item. On Eagle Lake, another group of Clear Lake sports shot an even 150 ducks and were back in town in time for breakfast. The Brownlee brothers spent eight seasons shooting for the market in northern Iowa. Their tally averaged an incredible 3,000 ducks per gun per year.

Most of this abundance was a product of America's prairie pothole region; a wetland-rich breeding ground encompassing 300,000 square miles stretching from northern Iowa to western Alberta. But in spite of the obvious excesses of those early gunners, it took something far more deadly than the roar of the market hunter's eight-gauge to eventually end the great flights. By the turn of the century the breaking plow and clay drainage tile were well on their way to reaking more havoc and destruction on the waterfowl resource than all the guns ever shouldered. As a straw to break the camel's back, federally subsidized programs began paying farmers to eradicate what remnant wetlands remained. The recipe for disaster was complete.

Today, nearly 99 percent of Iowa's natural wetlands are gone. Half of Minnesota's marshes have been drained, and in prairie Canada, an estimated 40 percent of the potholes have been converted to agriculture. The devastation continues and North America continues to lose what remains of her marshlands at the alarming rate of

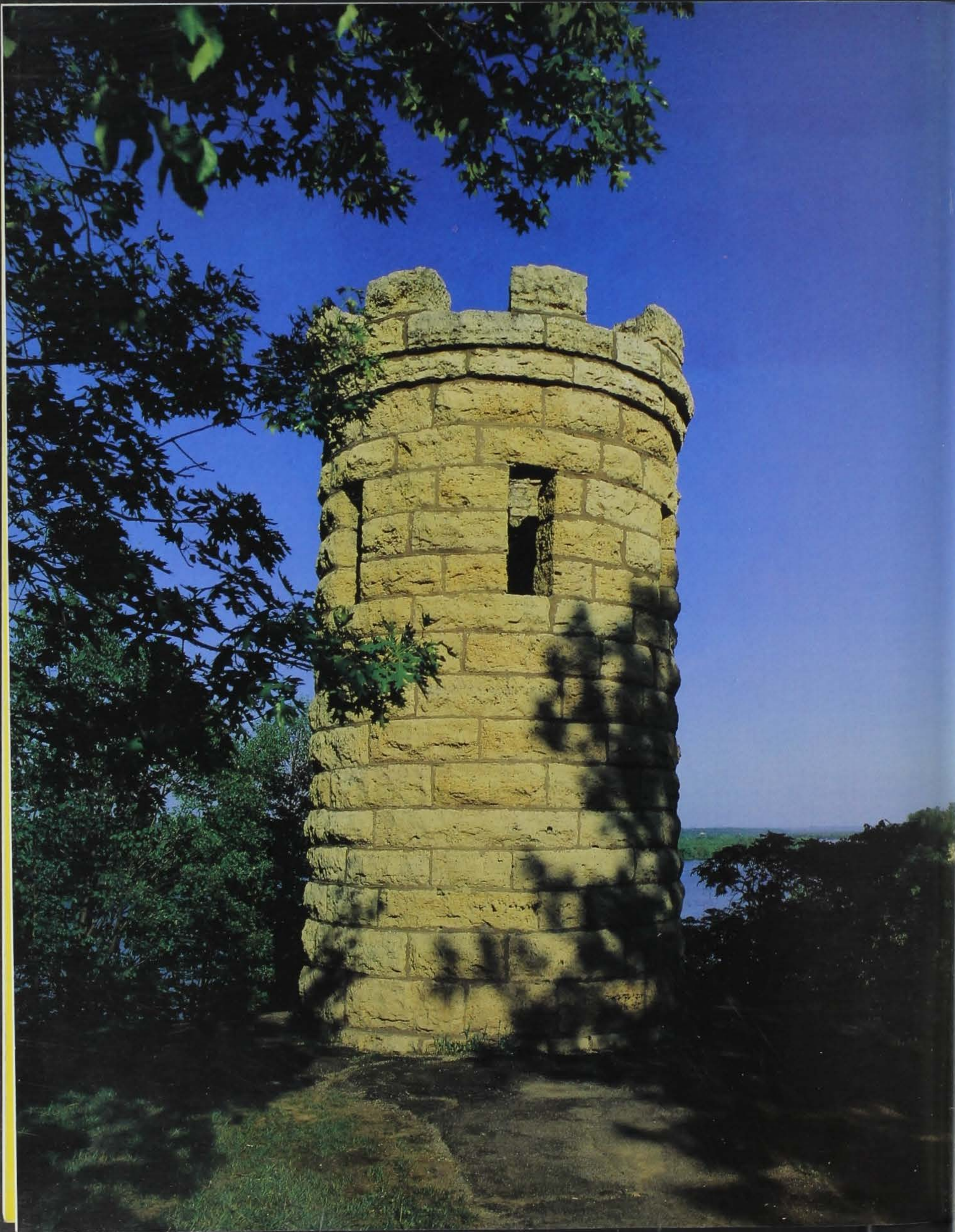
700,000 acres per year. The great flights are but a flicker of their former brilliance.

During the 1950's, waterfowl surveying techniques were standardized and for the first time conservation agencies were able to get a handle on how many birds actually comprised the annual migrations. For mallard ducks, the spring breeding population estimate reached its zenith in 1958 when nearly 13 million birds were inventoried. After the 1950s, mallards continued to exhibit a more or less steady decline as wetland drainage continued. Severe prairie droughts compounded the dilemma and the mallard bottomed out in 1985 when less than 5.5 million breeders were counted. By then it had become painfully evident that the mallard, as well as many other prairie species, was in desperate trouble.

As a result, subsequent hunting seasons have been sharply curtailed and bag limits slashed. But it would be ludicrous to assume that these measures alone are adequate. The times may have changed, but the issues have not. And the true focus of the matter remains squarely where it's always been—habitat.

Until we are willing to address the catastrophic demise of America's dwindling wetlands, there is little hope the trend can reverse. Even the resilient mallard has its limit of tolerance. And after a full century of wholesale decimation of





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# MINES OF SPAIN

## An Interaction of People and Nature

by Mike Abel and Angela Corio

**I**t was the rich and diverse natural resources of the Mines of Spain that attracted native Americans and, later, European settlers. Over the centuries, many peoples have lived here, some for only a season, others for many years. Wildlife has been hunted with stone weapons, bows and guns. Lead was mined on the surface and below ground. Timber was cut for steamboat construction and fuel. Fields were plowed and cattle grazed, and limestone was quarried. Today, as a state recreation area, the Mines of Spain remains to tell its story of human interaction with nature.

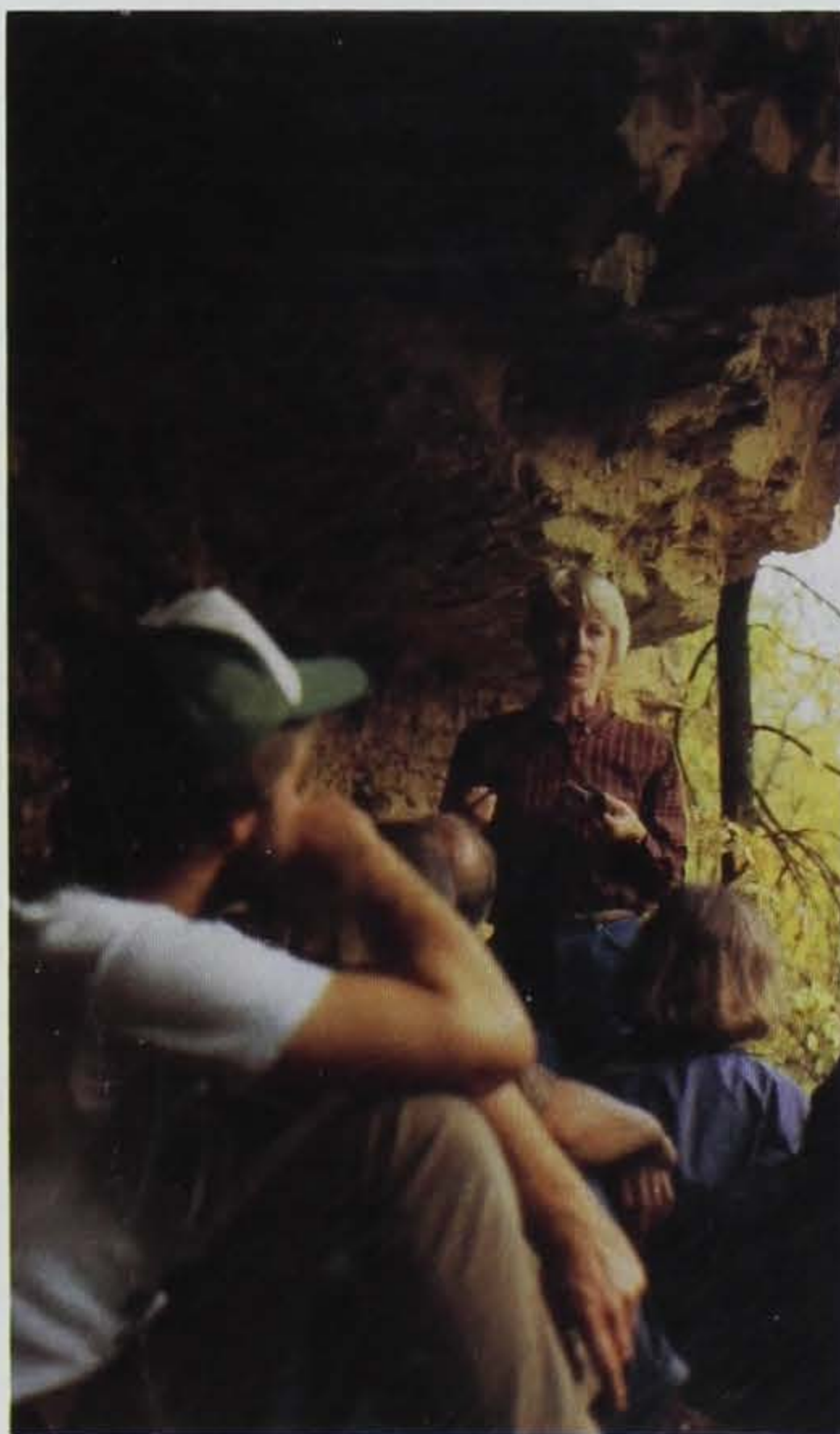
The 1,380-acre tract is located just south of Dubuque, Iowa. Its rugged, timbered bluffs and valleys are bounded on the east by the majestic Mississippi River. The area was acquired in 1980 after many years of interest and effort by individuals, organizations, the county and the state. Its story, however, goes back a very long way.

Archaeological research has uncovered evidence of occupation by native Americans for several thousand years. Conical and lineal mounds, over 40 rock shelters, and campsites all bear witness to early presence on the land. The Mines of Spain was already important in the French-Canadian fur trading culture when Julien Dubuque arrived in the 1780s. He found a Fox Indian village at the confluence of Catfish Creek and the Mississippi. In 1788, the Fox granted Dubuque permission to mine lead on their land. At one time, the Mines of Spain was the major source of lead in the New World. So important was its mining industry that Iowa's only revolutionary war battle was fought there when a British force came downriver and captured the mines. During its

history, the Mines of Spain was governed by four countries: Spain, Great Britain, France and the new United States. Julien Dubuque, in fact, acquired a Spanish land grant for the area and founded the first non-Indian settlement in what is now Iowa. Dubuque is buried on a high bluff overlooking the Mines of Spain and the city that bears his name.

The Mines of Spain offers rugged, timber-covered terrain with a wealth of plants and animals, some on the Iowa list of threatened and endangered species. Geological features are present also — Mississippi

River bluffs, abandoned entrenched river valleys, old lead mines and exposed portions of Galena Group dolomites. Yet, other places in Iowa also have outstanding historical, archaeological or natural features. What is it that makes the Mines of Spain so special? The answer is this — Despite human activities over the centuries, this large area next to a major city has survived. Nature's hand has largely healed the impacts from these activities. The story of the Mines of Spain is there to be told and the area to be enjoyed by present and future generations.



*To increase understanding and appreciation of the natural and cultural heritage represented at the Mines of Spain, a major goal in the development of the area is to establish facilities and programs that interpret the significance of the site's resources.*

*The Julien Dubuque monument (far left) overlooks the Mississippi, Dubuque and the Mines of Spain area.*



ANGELA CORIO



## Master Plan Goals for the Mines of Spain Area

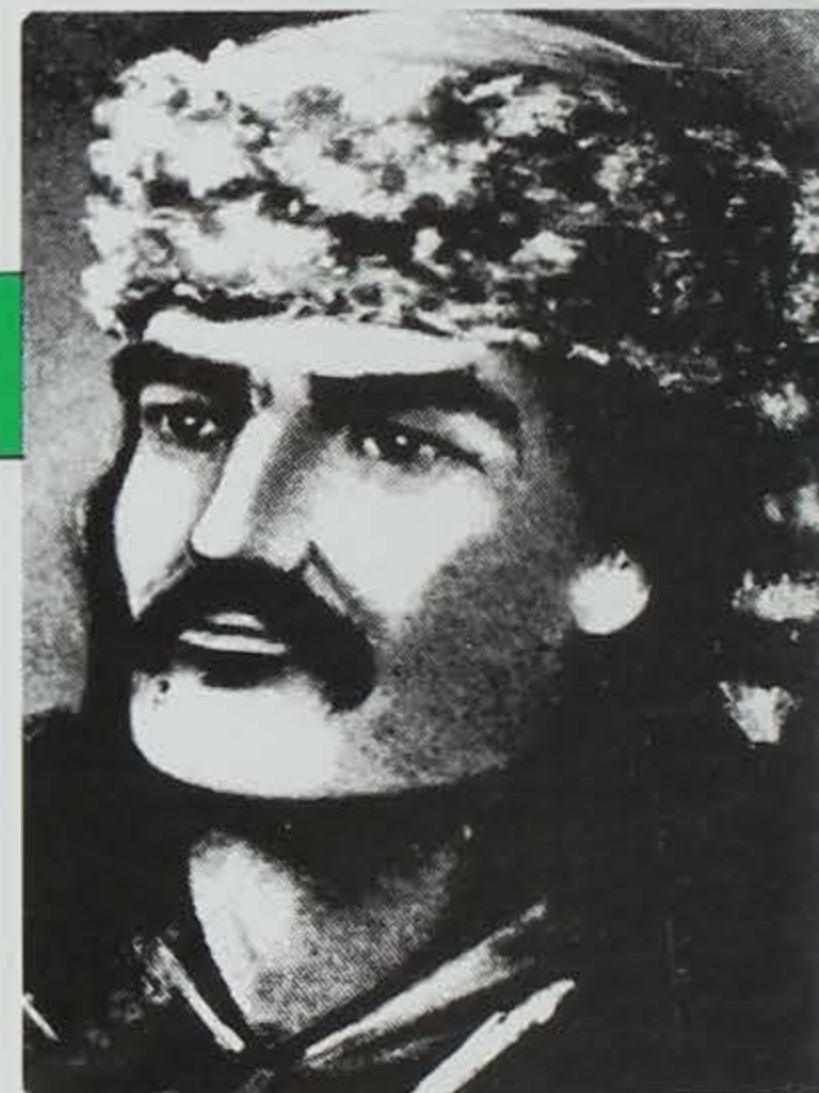
1. To protect and enhance the site's unique, rare and significant cultural and natural resources. These include geological, archaeological, historical, scenic, wildlife and vegetative resources.
2. To develop and promote facilities and programs that interpret the significance of the site's resources to increase visitor understanding and appreciation of the natural and cultural heritage represented there.
3. To maximize multiple-use recreation facilities and opportunities compatible with the area's resources.
4. To manage the site for examples of *pre-* and *post-*settlement vegetation and for the enhancement of both nongame and game wildlife populations.

In order to help ensure the proper use and management of the Mines of Spain, a master plan for the area was begun in May 1985. Detailed studies were first made of the area's archaeological, historical, geological and natural resources. Such research is vital in order to both identify significant features and to ensure that future development and management activities do not negatively impact these features. It was especially important for an area rich in so many resources as the Mines of Spain. For this reason, an extra step was taken. A scientific and historic advisory committee was formed consisting of representatives from a number of colleges and universities as well as the State Preserves Advisory Board. The committee worked jointly with the DNR staff in formulating the master plan concepts.

An important planning resource is the local community. For this reason, public meetings were held in Dubuque in July 1985 and February 1986 in order to inform the public and local organizations on the progress of the plan, review plan recommendations and alternatives, and, most importantly, to receive

public input.

Human activities on the land over the centuries have left their mark in the presence of lead mining remnants, a large limestone quarry, scattered cropfields and old building sites. A mosaic of vegetative communities have also resulted from human activity. This variety of plant life not only provides for a diversity of wildlife, but adds to the beauty of the area. A major thrust of the master plan is interpretation



DUBUQUE COUNTY HISTORICAL SOCIETY

*Julien Dubuque*  
Portrait by Charles Trudell

## MINING IN THE DUBUQUE AREA

While traversing Iowa's rich agricultural landscapes, modern travelers see little to remind them that the state's earliest European explorers were attracted here by metallic mineral wealth. The first written accounts by French travelers in the Upper Mississippi Valley indicate that Indian fur trappers working with French *voyageurs* were engaged



*Otto Junkermann farm 1859-1884. E.B. Lyons Nature Center now occupies the old farmstead.*



— telling the story of the area — its archaeological, historical and natural histories and how people and nature have interacted and continue to interact.

To help interpret significant events of the area's history, a primary interpretive trail will connect a number of reconstructed historic features which will someday include a native American campsite, the "Fessler" underground lead mine, a miner's cabin and a trapper or trader's cabin similar to the one that Julien Dubuque lived in.

Along the trail, special signs will tell the story of life on the Mines of

Spain in other times. Pictorial signs at the mounds and rock shelters will help to make the past come alive. A variety of displays and artifacts will be present at the DNR's E.B. Lyons Interpretive Center. The "interpretive" portion of the area's development will take place in several stages. The first stage will include trail work, which is already underway, and interpretive signing. Subsequent phases will include the reconstruction of historic features and the expansion of the E.B. Lyons Interpretive Center.

Reconstructed historic features will provide the setting for a variety of special events and programs.

Through "living history" reenactments, a number of historic events can come alive for area visitors. Ongoing interpretive programs and seasonal exhibits on a wide range of topics will be provided by area staff both in the interpretive center and out on the area.

Proposed recreation facilities will increase visitor enjoyment and, at the same time, be compatible with the area's resources. While the Mines of Spain will not be developed as a "typical" state park with extensive campground, beach, lodge and picnic facilities, there will be picnic areas with shelters, a quarry overlook area, visitor orien-

in primitive lead mining and smelting activities in this region before the year 1650. By 1682 the lead deposits of the Upper Mississippi Valley were known in Europe through the writing of Nicholas Perrot, and by the end of the century, French and English maps of North America clearly showed lead mines at the present sites of Dubuque, Iowa and Galena, Illinois. By 1788, a charismatic and energetic French-Canadian trader named Julien Dubuque secured exclusive franchise from the Sac and Fox Indian tribes to all mines west of the Mississippi River. In 1796, when the grant was confirmed by the Spanish governor of Louisiana, Julien Dubuque had succeeded in establishing a monopoly controlling the smelting and shipping of lead from the region.

Until his death in 1810, Dubuque operated the "Mines of Spain" from Kettle Chief's village near the mouth of Catfish Creek, a few miles south of the present city of Dubuque. Ridden with debt, Dubuque lost financial control over the "Mines of Spain" shortly before he died, and the enterprise abruptly collapsed following his death as his creditors were unable

to sustain his good relationships with their Native American hosts. Lead-mining rights in Iowa remained in a legal turmoil that lasted until 1953, when the United States Supreme Court issued a landmark decision on the ownership of the Dubuque area mines, disallowing claims based on Julien Dubuque's Spanish land grants.

Thus began the colorful mining history of Iowa's portion of the Upper Mississippi Valley Zinc-Lead District. The mining district, a major producer of zinc and lead ores throughout much of this country's history, covers portions of northeast Iowa, southwest Wisconsin, and northwest Illinois. Commercial mining ventures in Iowa have taken place in Dubuque, Clayton, Allamakee, Jackson, Clinton, and Jones counties. The early development of the district was spurred by the need for metallic lead, used chiefly for making lead shot. Lead production from the Upper Mississippi Valley District peaked in 1848, shortly before the gold rush to California drew many miners west in search of greater riches. The economic life of the district was extended indefinitely when the commercial production of metallic

zinc began in 1860. With its reserves greatly exceeding those of lead, zinc production from the district peaked during World War I.

The mining of base metals historically has been an unstable business, and zinc production from the Upper Mississippi Valley District has waxed and waned primarily in response to economic rather than resource controls. The mines of the Dubuque area were closed in 1910, although a brief attempt was made to revive the industry in the early 1950s. Over 300 years of continuous mining activity in the Upper Mississippi Valley was broken on October 1, 1979, with the closing of the district's last operating mine at Shullsburg, Wisconsin. While it is clear that large quantities of ore remain to be extracted from the region, it is unclear if and when the enterprise will again be considered a profitable venture.

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This is a portion of a story entitled "Lead and Zinc Mining in the Dubuque Area" by Greg A. Ludvigson and James A. Dockal, which appeared in *Iowa Geology*, 1984.



tation center, a hike-in campground and an extensive system of trails. Activities will include nature study, picnicking, hiking, cross-country skiing, camping, fishing, canoeing and bow hunting.

The trail system will be an important element of the visitor's experience. The DNR's goal is to provide quality trails which allow visitor access throughout the area and, at the same time, result in minimum visitor impact to the area's resources. Using construction guidelines developed by the DNR at Ledges State Park, work is underway on the trail system. Trail locations have been carefully chosen so that the proper soil types and slopes are used and sensitive plant and



R. BARTA

animal communities and archaeological or historical features are not damaged.

An important aspect of the master plan is the entrance roadway into the area. The existing access routes visitors through a congested residential area and then through an industrial district. The new entrance will bring visitors into the area from Iowa Highway 52. Due to the sensitivity of the resource at the

Mines of Spain, this portion of the plan received special attention.

The design was carried out by a consulting engineering firm with special experience in the construction of park roadways. A survey of the road alignment was conducted by the Office of the State Archaeologist to ensure that historic and archaeological features were not impacted. In addition, staff botanists of the DNR's preserves and ecological services bureau conducted field surveys of the route to ensure that threatened or endangered plant and animal communities would not be affected. Much of the entrance roadway is located on former crop and pasture land and on old logging roads. The new road will create a safer, more convenient and scenic access for the public to enjoy and will provide for more efficient management of the entire site.

Resource management is a very important part of the "total picture." A master plan is much more than just recommendations for facility development and programs. All aspects of the area, from plants and wildlife to geology and archaeology, must be properly managed so that they remain available to future generations of visitors. The detailed background studies already conducted on the Mines of Spain's resources provide a great foundation for DNR management. The master plan includes resource management guidelines for resident staff to follow. Vegetation management is an important example.

The goal of vegetation management at the Mines of Spain is to provide examples of both *pre-* and *post-*settlement plant communities and, in so doing, enhance both game and nongame wildlife populations. Five vegetation management zones have been identified. In some areas, timber stand improvement will take place; in others, new plantings will occur. Food and cover crops will be provided to enhance wildlife populations. Studies will continue in order to determine if the establishment of oak savannas or juniper groves is feasible. Finally, some parts of the site will be allowed to undergo the

DNR PHOTO

process of natural succession due to the presence of threatened or endangered plant species, historical features, or because they function as scenic buffers.

Once completed, a master plan is not set in concrete. A good master plan is a flexible document that is responsive to change, yet provides ongoing guidelines for proper area development and management. The Mines of Spain master plan is a very sensitive one which places primary emphasis on the resources themselves, their interpretation and management. People and nature have coexisted for thousands of years at the Mines of Spain. Through careful stewardship by the DNR, this unique area will continue to be an Iowa treasure.

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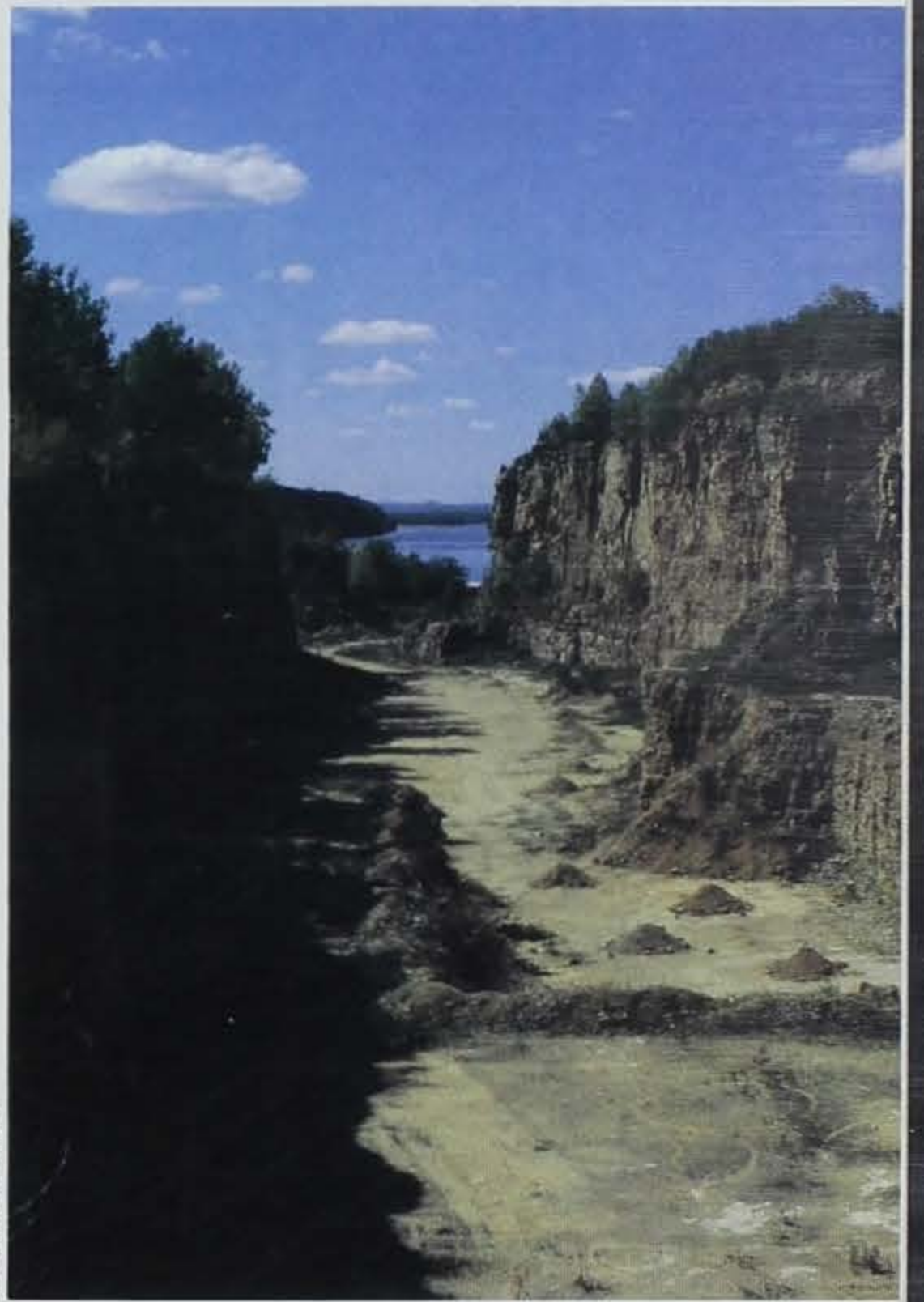
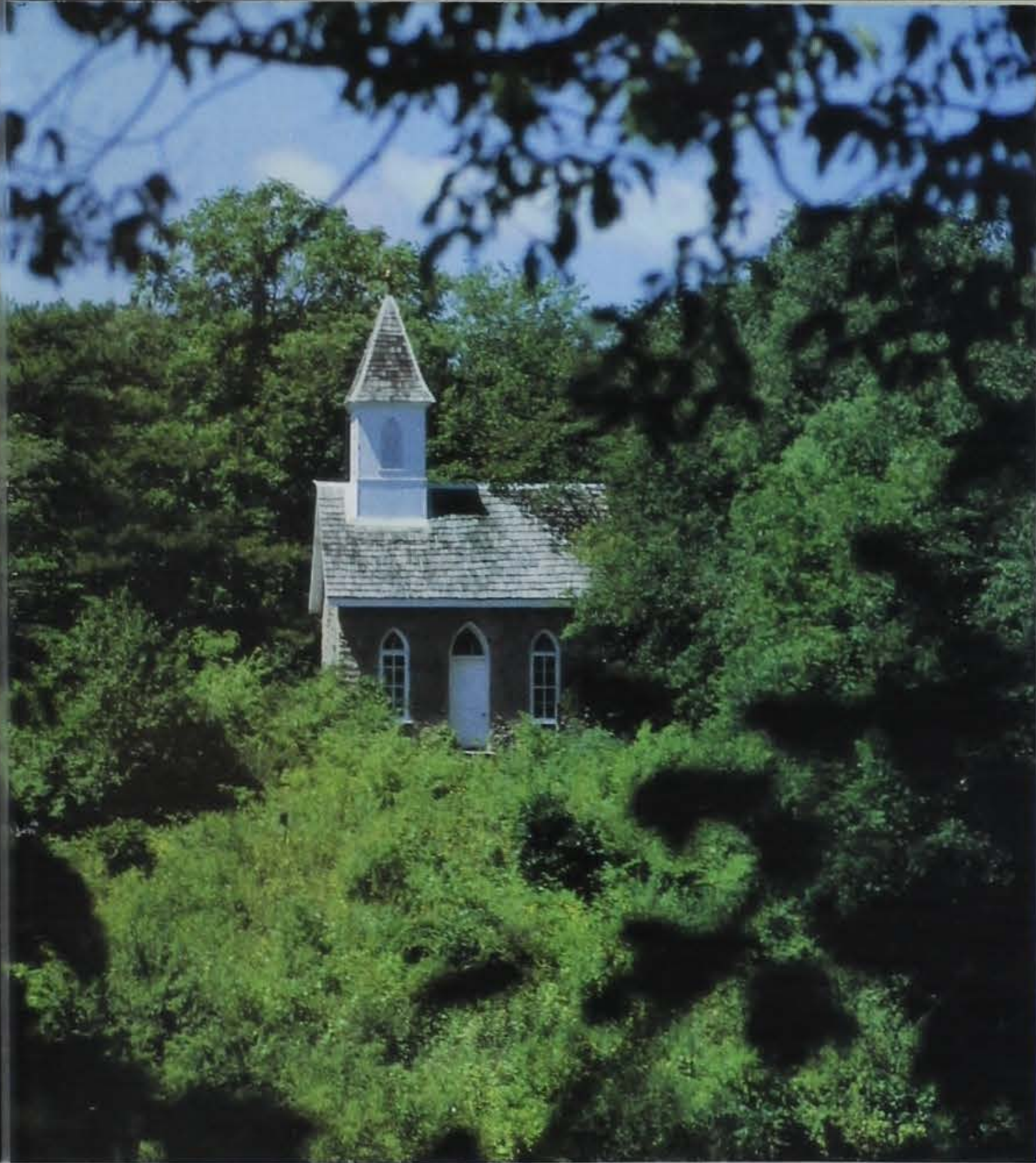
Mike Abel is the park ranger for the Mines of Spain State Recreation Area.

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Angela Corio is a landscape architect for the department's parks bureau in Des Moines.

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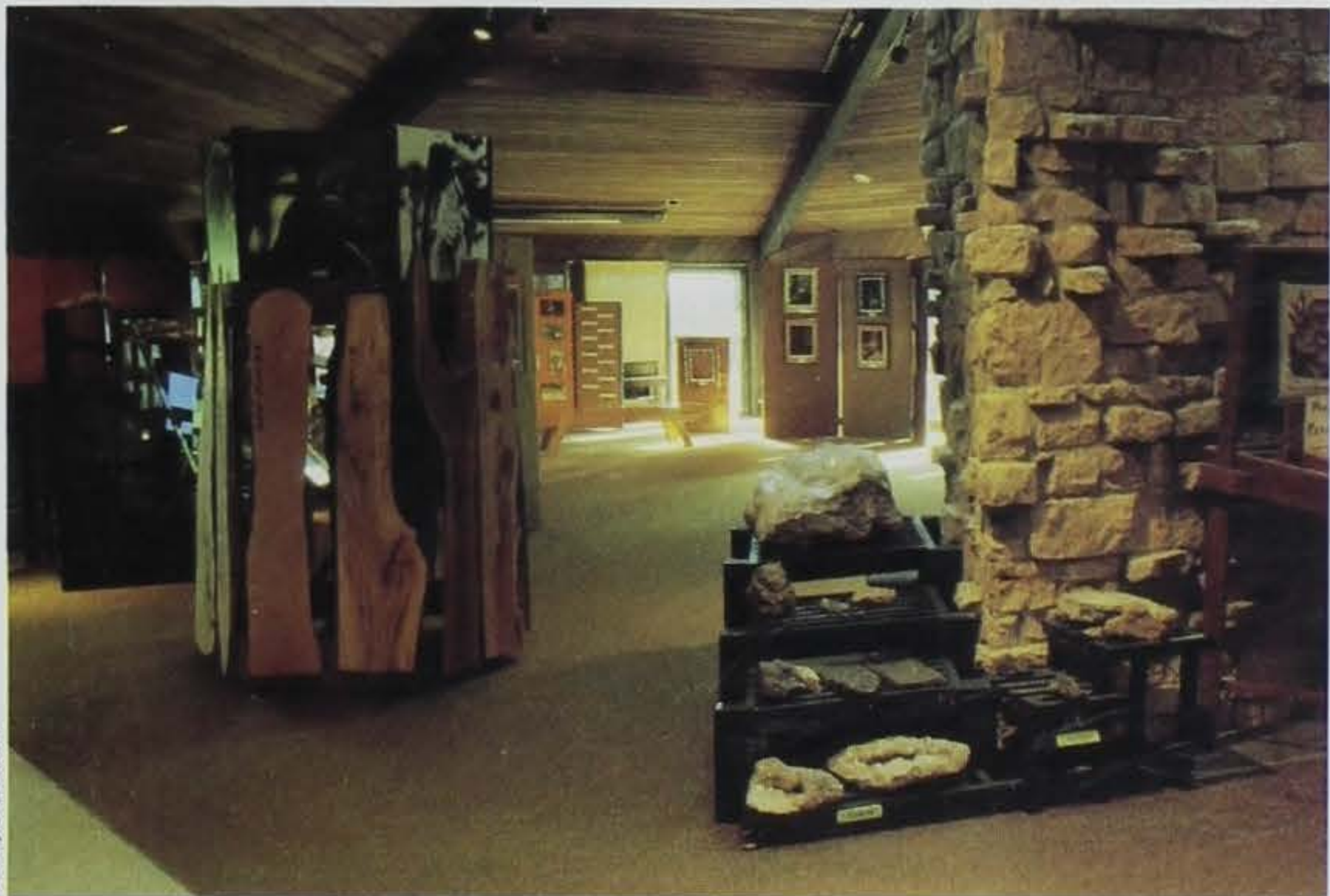




ANGELA CORIO



ANGELA CORIO



RON JOHNSON

*The chapel, which was once part of the Junkermann farm, still stands as part of the E.B. Lyons Nature Center. Limestone quarry on the Mines of Spain Area (above right). Trail work at the Mines of Spain (left) and interior of the E.B. Lyons Nature Center. Examples of pre-settlement vegetation, such as native prairie (opposite page), will be part of the Mines of Spain.*

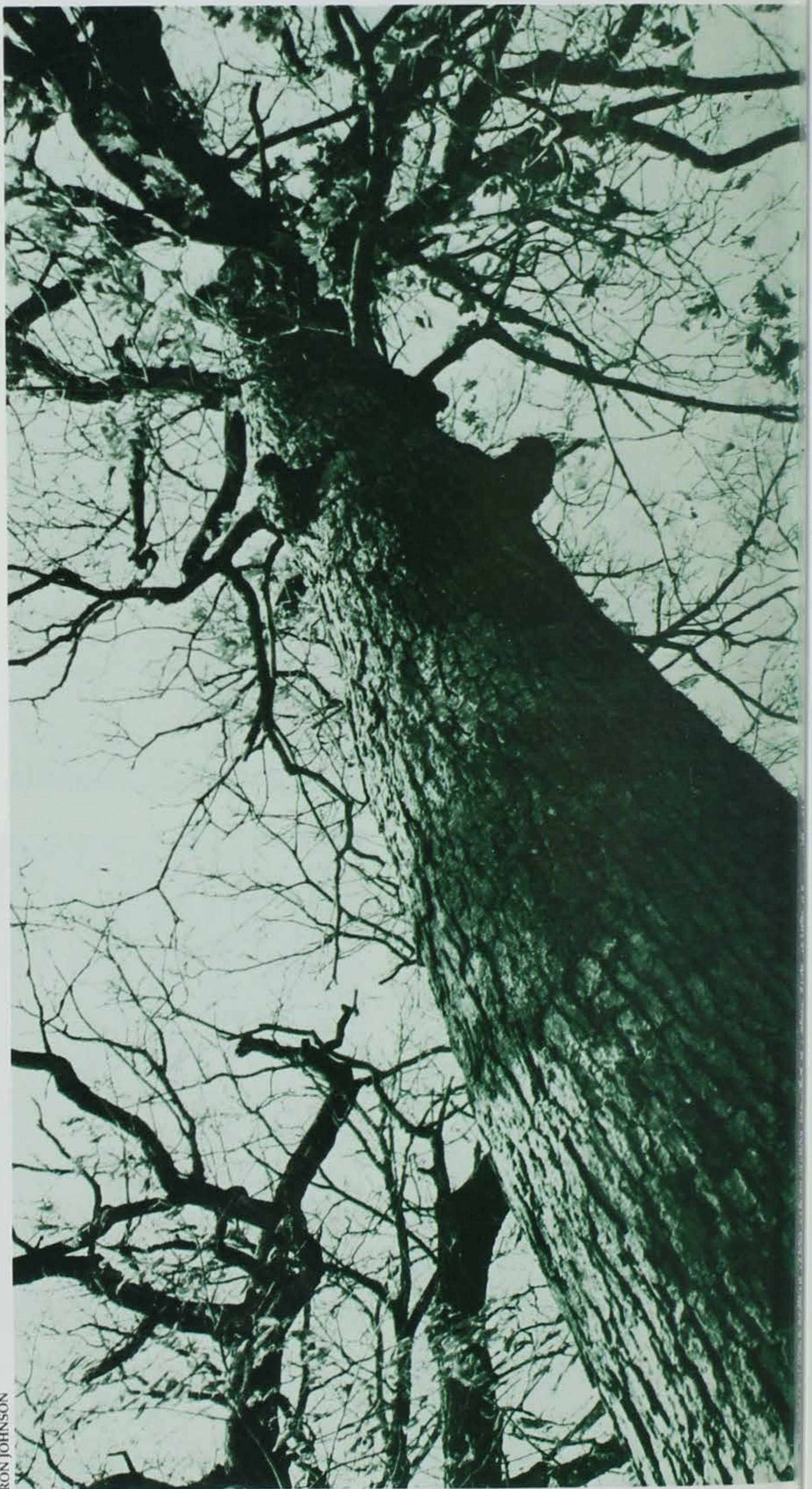


# Ancient Record Keepers

Story by John Pearson  
Photo by Ron Johnson

"1575 . . . 1574, . . . 1573, . . . and subtract another ten to allow for early height growth makes 1563," he said. "Wow! Four hundred and twenty-five years old!"

Dan Duvick and I turned our attention from the core whose annual growth rings he had just finished counting and gazed at the massive white oak with a new appreciation of its large girth, knobby trunk and low, spreading branches. For a moment, we were transported back in time to when Iowa was only the name of a western tribe of Indians and its pre-European settlement landscape was one vast expanse of prairie and savanna. This tree, *this very tree* was here when prairie fires burned, bison grazed and Indians hunted. This grove of white oaks atop a knoll above the Des Moines River may have been a savanna, an open forest dominated by fire-resistant oaks with a grassy, prairie-like



RON JOHNSON



undergrowth. The ancient oak we were admiring was our only tangible link to an important chapter in Iowa's natural history.

Dan Durick is a dendrochronologist, a scientist who studies tree rings. As part of his research with the Environmental Science Division of Oak Ridge National Laboratory in Tennessee, Dan determined the ages of hundreds of trees in Iowa. His efforts were part of a larger project to analyze changes in the climate of the eastern United States during the past 300 years. Duvick's research was based primarily on the white oak because it is sensitive to drought, forms distinct growth rings, and is widespread in Iowa and the eastern United States.

Dan selectively sampled nearly 500 old trees in Iowa in his search for individuals of sufficient age to indicate variations in precipitation that occurred between 1680 and 1980. By extracting a narrow core of a tree's trunk containing rings and counting its annual growth backward from the present year, Dan is able to identify the tree's age and growth history. Nearly three hundred of the trees that he has sampled are greater than 200 years old and about fifty are greater than 300 years old. The oldest is the Red Rock oak which apparently originated in the year 1563.

In his search for old oaks, Duvick explored lands managed by the Iowa Department of Natural Resources. He found old oaks (at least 200 years old) in several state-owned areas, including ten parks (Backbone, Dolliver, Lacey-Keosauqua, Lake Ahquabi, Lake Geode, Ledges, Nine Eagles, Palisades-Kepler, Pammel and Waubonsie), one state forest (Yellow River), one wildlife management area (Red Rock) and three preserves (Merritt Forest, White Pine Hollow and Woodman Hollow). Old oaks can generally be recognized by their knobby trunks (where former branches have broken and healed), twisted or leaning stems, smooth bark (caused by sloughing of the slabs typical of younger trees), moderate to large girth and low, gnarled limbs. They were often found in a narrow strip of land between steep, rugged

slopes and flat uplands.

One of the significant findings of Duvick's research is evidence for the occurrence of two major droughts per century in Iowa. At least five droughts equal to the effect of the 1930s' (though not worse) were discovered in the tree-ring record. The fact could not have been realized without the study of old trees, because most of the events occurred before settlement of Iowa and certainly before the widespread distribution of rain gauges. The lesson is valuable because it warns us to be prepared for the recurrence of a 1930s-style drought.

Duvick's use of public lands is particularly noteworthy because they provided him with a research opportunity which could not be provided on most private lands where economic pressures on individual landowners to convert "idle" forests to a productive state are great. Although not economically valuable, the trees studied by Duvick do provide ecological benefits, including an understanding of natural climatic cycles.

Most of the old trees discovered by Duvick occur as widely scattered individuals, but in some places the old trees are clumped and, in combination with younger trees, form stands or groves ranging from about five to twenty acres in size. These groves are best developed in Pammel, Ledges, Lake Ahquabi and Backbone State Parks, and White Pine Hollow State Preserve. Typically, the overstory of these groves is dominated by large, old white oaks while the understory is dominated by smaller trees other than white oak, including ironwood, ash, basswood, black maple and red oak. The display of groundcover in the groves is fairly rich in spring ephemerals such as spring beauty, Dutchman's breeches, and bluebells, but is rather somber during the summer and fall when oak sedge often appears to be the only groundcover.

These oak groves with their ancient overstory may be relicts of the savannas which once dotted the Iowa landscape. In the absence of fire, their understory has become filled with thin-barked, fire-

intolerant, woody species and the savannas have turned into forests. With increased shade in the groves, light-demanding groundflora (possibly including prairie species) decline. Gerould Wilhelm, a botanist with the Morton Arboretum in Illinois, suggests that the scarcity of flowering herbaceous plants during summer and fall in Midwestern forests is due to the "shading-out" of the original, sunlight-demanding savanna flora; only the spring flora has survived because of the natural leafless condition of the overstory at this season. Wilhelm also suggests that this change does not represent a normal succession of young pioneer forest to old climax forest, but instead indicates deterioration of old savannas to mixed-aged forests.

Deciding how old oak groves should be managed depends on the philosophical and scientific perceptions about them. A purely economic perspective would call for cutting down the old trees and replacing them with a young, vigorous generation of new oaks. Perceiving these groves as old-growth forests approaching or representing a climax community would call for a policy of non-intervention, allowing only natural change to follow its course. Perception of the groves as old, degrading savannas would call for their restoration by reintroduction of fire and selective cutting of non-savanna woody species from the community. Savanna restoration is the newest of the three concepts and is attracting the interest of naturalists, ecologists and foresters alike.

The old oaks and oak groves of Iowa's public lands are a valuable natural resource. They provide us with opportunities for scientific research and environmental education, habitat for the perpetuation of native plants and animals, and scenic features for aesthetic enjoyment. You have an open invitation to visit Iowa's public lands. Try exploring them for old trees during your next trip.

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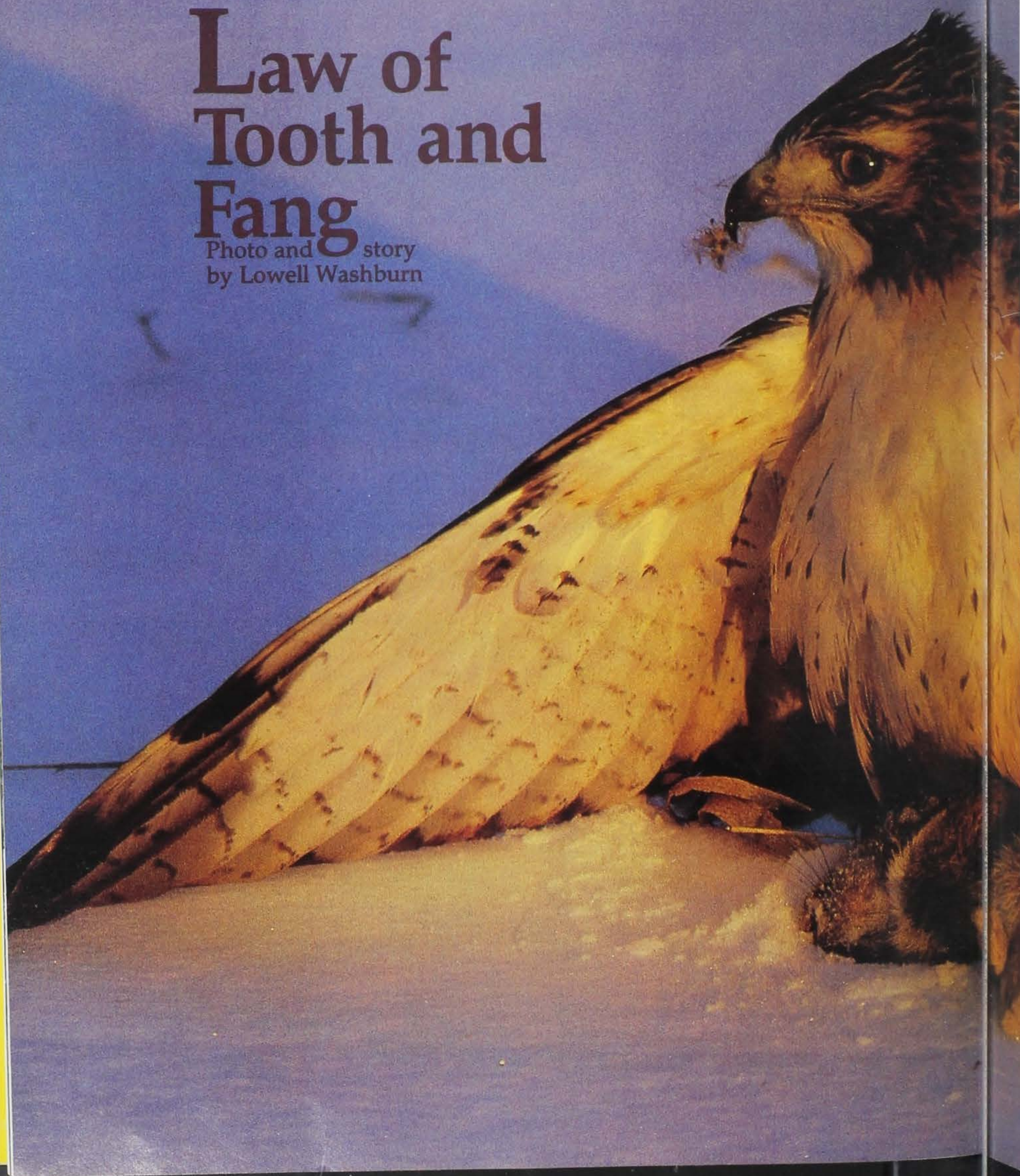
*John Pearson is an environmental specialist for the department and is located in Des Moines.*

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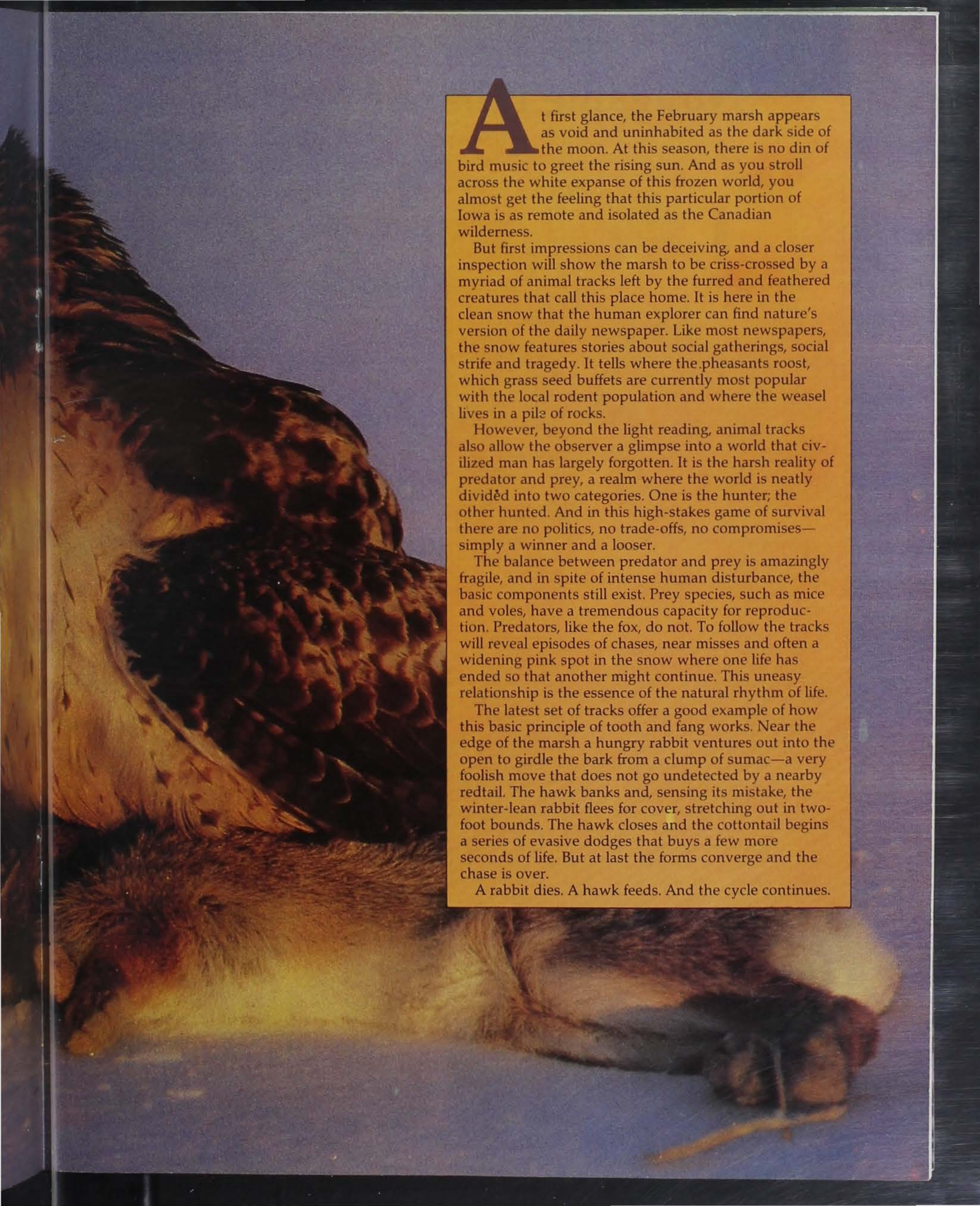


# Law of Tooth and Fang

Photo and story  
by Lowell Washburn







**A**t first glance, the February marsh appears as void and uninhabited as the dark side of the moon. At this season, there is no din of bird music to greet the rising sun. And as you stroll across the white expanse of this frozen world, you almost get the feeling that this particular portion of Iowa is as remote and isolated as the Canadian wilderness.

But first impressions can be deceiving, and a closer inspection will show the marsh to be criss-crossed by a myriad of animal tracks left by the furred and feathered creatures that call this place home. It is here in the clean snow that the human explorer can find nature's version of the daily newspaper. Like most newspapers, the snow features stories about social gatherings, social strife and tragedy. It tells where the pheasants roost, which grass seed buffets are currently most popular with the local rodent population and where the weasel lives in a pile of rocks.

However, beyond the light reading, animal tracks also allow the observer a glimpse into a world that civilized man has largely forgotten. It is the harsh reality of predator and prey, a realm where the world is neatly divided into two categories. One is the hunter; the other hunted. And in this high-stakes game of survival there are no politics, no trade-offs, no compromises—simply a winner and a loser.

The balance between predator and prey is amazingly fragile, and in spite of intense human disturbance, the basic components still exist. Prey species, such as mice and voles, have a tremendous capacity for reproduction. Predators, like the fox, do not. To follow the tracks will reveal episodes of chases, near misses and often a widening pink spot in the snow where one life has ended so that another might continue. This uneasy relationship is the essence of the natural rhythm of life.

The latest set of tracks offer a good example of how this basic principle of tooth and fang works. Near the edge of the marsh a hungry rabbit ventures out into the open to girdle the bark from a clump of sumac—a very foolish move that does not go undetected by a nearby redbelted hawk. The hawk banks and, sensing its mistake, the winter-lean rabbit flees for cover, stretching out in two-foot bounds. The hawk closes and the cottontail begins a series of evasive dodges that buys a few more seconds of life. But at last the forms converge and the chase is over.

A rabbit dies. A hawk feeds. And the cycle continues.







## WARDEN'S DIARY

### Habitat by Jerry Hoilien

Winter at Applesprings is getting to be a favorite time for me. Is that a sign of age? The snow is deep and Mother Nature is resting a bit. Some of her creatures are still busy trying to stay warm and healthy.

Did you ever see a fat bird? Well, believe it or not, I've got a goldfinch that is so heavy he has quite a time just flying from the big brush pile to the feeder. Got a couple of bright red cardinals that look pretty puffy too. Of course, when it's cold they all fluff themselves up to absorb more of the sun's rays.

There's no denying I have a fox squirrel that's just plain plump! He and Bum have a chase almost everyday. Just for the fun of it, after he's eaten of course, he jumps down from the tree branches and runs across the snow with Bum in hot pursuit. Takes that dog right to the wood pile and runs his nose into the end logs about every other time. Then there's a gray squirrel — one with white ears. He likes to sit up in the apple tree, just out of reach and scold, while Bum tries to jump up to him. Such a sight.

The neighbors called this morning to tell me there was a flock of turkeys walking up the road in back of my place. They must have been out looking for something to eat too. Things are hungry this time of the year. Everyone likes to feed the birds. It's important to feed them in a safe place, though. I once saw some well-meaning people pouring out corn on the shoulder of the road. In the next few days, many birds were killed by traffic going by. Most wild

game can survive and find food if they have somewhere to get out of the rain, wind and snow. Shelter belts, brushy weedy draws and ditches offer that kind of protection, if the herbicides haven't destroyed it all. It's the same old story of *habitat*.

One of the best explanations of habitat I've ever heard came from an old warden answering a group's questions on "what happened to all the pheasants?" "It's a little like your town," he said. "If this year I bring in a bulldozer and push over a third of your homes, issue no building permits and allow no repairs. Then, next year I take that same dozer and take out another third. Again, I issue no

permits or rebuilding and continue to do this year after year. What do you suppose is going to happen to *your* population?"

I just came back from a drive across the center of Iowa. Does anyone *wonder* where the bird population went? Just look out there across windswept plowed fields. The only thing that slows the wind down is the barbed wire fence and most of those are gone. I'm not sure how anything or anyone could survive a winter storm out there. Take care Iowans, take care. What good is a game warden, if you don't have any game left to watch over. It's *your* job too, not just ours.



DNR PHOTO



# Creating A Forest

by Jerry Kemperman



JULIE HOLMES



LAURA JACKSON

*Tractor-pulled planting machine.*



RON JOHNSON



**F**orest creation is catching on in Iowa. More than four million trees were planted by Iowans last year. The reasons for planting range from economic investments to pure aesthetics. The plantings' uses could include firewood for energy savings, wildlife habitat, erosion control of fragile soils, or simply the desire to create and own a beautiful forest. Whatever the reasons, many more acres would be planted if landowners knew the alternative to the shovel and backbreaking work.

The first decision is whether to plant the trees yourself or have the work done. If you decide to do the planting yourself, you can use a shovel (or other hand tool) or a tractor-pulled planting machine. With the machine, you can plant an acre of trees in about two hours. By shovel, count on one to two days per acre. Tree planting machines are available throughout the state. They are loaned free or at a minimal charge. Many people find planting trees a gratifying experience and enjoy the satisfaction of watching their forest grow over the years.

Although sometimes more expensive, having the planting done by experienced people usually means a more successful planting and a whole lot less work for yourself. These people have the equipment and knowledge to properly plant trees. They also get the trees in the ground rapidly during the short spring planting season. This can make a big difference in survival.

There are three basic groups that could do the planting for you — professional tree planters, organizations and volunteers. *Professional tree planters* operate across the state. A high percentage of their plantings are successful. They can also apply season-long weed control while planting.

Organizations that can help are generally county based. In some areas, the *county conservation boards* have experienced planting crews. Depending on the county, these

crews can be hired or may even be free of charge. Not all counties have this service. You may wish to encourage yours to consider operating experienced tree planting crews.

Many county chapters of the *Izaak Walton League* have been planting trees for decades. Should you be fortunate to live in a county with such a chapter, you could get some quality planting help. *Pheasants Forever* is a new and enthusiastic organization operating on the county level. Several of their chapters have taken a very active role in tree planting.

The *Turn-Key* program of the Geode Wonderland Resource Conservation and Development (RC&D) group in southeast Iowa has an innovative new approach to make creating a forest successful and easy. They will contract to custom prepare the field, plant and maintain the plantation for five years. In the first year of the program, over 200 acres are under contract.

Your county may also have volunteer organizations involved in tree planting. This activity is often a favorite for groups such as the *Boy and Girl Scouts* and *Future Farmers of America*. These groups can do a good job and they are fun to work with. However, they are not generally equipped to plant more than small areas.

If you are interested in creating a forest, you are probably wondering how to proceed. Simple, get specific planting information through your Department of Natural Resources' district forester. He or she has the information you need to locate planting machines, professional tree planters, organizations and volunteers to plant your trees. The district forester can also help design a tree planting to successfully create your dream forest.

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*Jerry Kemperman is a forestry supervisor for the department and is located in Ames.*

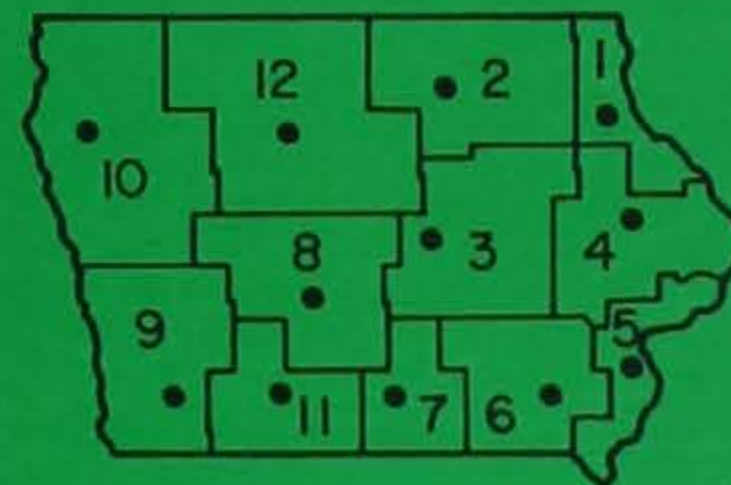
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## Nursery Stock is Still Available From the State Forestry Nursery

Call NOW  
to Order For Spring

515/233-1161

### District Forester Addresses



1. Elkader, Box 662, 52043
2. Charles City, Box 4, 50616
3. Marshalltown, Box 681, 50158
4. Anamosa, Box 46, 52205
5. Wapello, 515 Townsend Avenue, 52653
6. Fairfield, Box 568, 52556
7. Chariton, Stephens State Forest, RR #3, 50049
8. Adel, 110 South 8th, 50003
9. Red Oak, Box 152, 51566
10. Le Mars, 13-1st Avenue NW, 51031
11. Creston, 500 E. Taylor, 50801
12. Humboldt, 102-8th Street S, 50548



# CONSERVATION UPDATE

## Missouri River Concern Still Alive

Despite President Reagan's abolishment of the Missouri River Basin Commission in 1981 and despite last spring's dismissal of the entire three-person staff of the Missouri Basin State's Association (the ten-state organization which succeeded the Commission), the new chairman of the Association maintains that his group has an aggressive agenda underway.



*Navigation, flood control and bank stabilization activities along the Missouri River have caused a tremendous loss of fish and wildlife habitat.*

Jim Brown of Des Moines, an official of the Iowa Department of Natural Resources, is Iowa's representative to the MBSA and was recently elected as its chairman.

"Balancing the competing and the at-times-conflicting uses of the Missouri River and its major tributaries presents a difficult challenge to the multitude of government and private sector interests who have a stake in it," said Brown. "The Missouri Basin States Association

has a critical role to play in the protection and development of the river resource for the social and economic well-being of all of us," he said.

Although the MBSA does not have specific legal authority in river resource management, the organization provides a vehicle for the basin states to work with one another and to bring together a variety of river interests to solve problems and to promote their solutions.

"The board of directors has approved a plan of action which will help to define states' roles in river basin management," said Brown. He added that the association members have agreed to become more aggressive in voicing issues of concern to the basin and to improve public awareness of these issues and the association's efforts. Representatives of involved federal agencies are being added as ex-officio members of the association's board of directors to improve federal/state communication.

An example of projects which Iowa will promote through the MBSA is the mitigation of fish and wildlife habitat losses which have occurred on the Missouri River due to navigation, flood control and bank stabilization activities of the Army Corps of Engineers. The Congress authorized nearly \$52 million to go to the affected states of Iowa, Kansas, Nebraska and

Missouri, but a concerted effort by the states will be necessary to ensure that funds are appropriated and actually available.

Drought related impacts on mainstem reservoirs, support of recreational activities and the allocation of water in the reservoirs for new uses in the basin are also projects receiving attention of the MBSA. States in the organization include: Colorado, Iowa, Kansas, Minnesota, Missouri, Montana, Nebraska, North Dakota, South Dakota and Wyoming.

## Beware of Lake Ice

"Winter's freeze-over of inland waters often does not mean it is safe for anglers to venture out onto the ice," said Sonny Satre, recreational safety officer for the Iowa Department of Natural Resources. "Prolonged freezing temperatures are required for solid ice. Also, snow-covered ice can be dangerous because the snow insulates the ice, preventing it from becoming very thick."

Satre reminded outdoor enthusiasts to look for bluish ice as a safety sign. Slush ice is about half as strong as clear, blue ice, and river ice is 15 percent weaker than lake ice. New ice is generally stronger than old, but repeated travel over the same route weakens any ice, as do underwater springs and



currents. Persons desiring to drive motorized vehicles on the ice are urged to exercise extreme caution.

The following measurements are safety tests for lake ice:

2 inches — will support one individual on foot

3 inches — will support a group of people traveling

5 inches — will support a snowmobile

7+ inches — will support an automobile (2-ton gross)

12 inches — will support a heavy truck

"Look out for clear or honey-combed ice, stay clear of dark spots in the ice and don't tread into areas of lakes where snow cover looks discolored," said Satre.

### Grants Available to Counties for Well Testing and Closing

The Department of Natural Resources approved the award of grants to counties to conduct programs for testing private wells and closing abandoned wells for fiscal year 1990 (July 1, 1989 - June 30, 1990).

Forty-five counties were awarded grants for the purpose of assisting private individuals in properly closing abandoned water wells. For further information on this program, contact county officials in Adams, Audubon, Black Hawk, Bremer, Calhoun, Carroll, Cedar, Cerro

Gordo, Cherokee, Chickasaw, Clayton, Clinton, Crawford, Dallas, Delaware, Des Moines, Dubuque, Fayette, Franklin, Greene, Guthrie, Hamilton, Henry, Howard, Humboldt, Ida, Iowa, Jackson, Jasper, Johnson, Lee, Linn, Mahaska, Mills, Mitchell, Montgomery, Muscatine, Palo Alto, Poweshiek, Sac, Scott, Taylor, Van Buren, Wapello, and Webster Counties.

Forty-four counties were awarded grants for programs to test private water wells for contamination. For further information, contact county officials in Adams, Audubon, Black Hawk, Bremer, Calhoun, Carroll, Cedar, Cerro Gordo, Cherokee, Chickasaw, Clayton, Clinton, Crawford, Dallas, Delaware, Des Moines, Dubuque, Fayette, Greene, Guthrie, Hamilton, Hardin, Henry, Howard, Humboldt, Ida, Jackson, Jasper, Johnson, Lee, Linn, Mills, Mitchell, Montgomery, Muscatine, Palo Alto, Poweshiek, Sac, Scott, Taylor, Van Buren, Wapello, Webster and Winneshiek Counties.

The actual amounts of grant awards will be finalized by July 1, 1989. Funding for these grants is provided for by funds generated by provisions of the Groundwater Protection Act passed by the Iowa Legislature in 1987.

For more information on the grant program, contact Craig Arterburn at 515/242-5081.

### Wildlife Farmer of the Year



*Wildlife Farmer of the Year Gerald Petersen accepts his award from DNR Director Larry Wilson (left) and Natural Resource Commission Chairman Sam Kennedy (right).*

Gerald Petersen of Graettinger, Iowa, was selected the winner of the Iowa Wildlife Farmer of the Year Award for 1988 presented by the Iowa Department of Natural Resources. Petersen has made outstanding contributions to wildlife conservation over the years, managing his land in many ways to maximize the benefits to wildlife. He has preserved a ten-acre marsh that could have been easily tiled, drained and put into row-crop, choosing instead to leave it for wildlife. Also preserved is a ten-acre windbreak to the north and west of his farmstead. A 14-row shelterbelt has been planted in the middle of his farm to provide winter cover for wildlife.

Petersen has participated in the DNR's wetland restoration program and restored three wetlands totaling 6.2

acres and has plans for another. He has 16 acres of native prairie which is managed for wildlife nesting. Hay mowing is delayed on his farm to enhance nesting opportunities. Eighty acres has been enrolled in the CRP program and he practices conservation tillage under an approved SCS conservation plan.

Petersen has also placed himself in a leadership role by becoming President of the Emmet County Izaak Walton League. He has been very supportive of the DNR and Emmet County Conservation Board.

Runners-up in the selection for Wildlife Farmer of the Year were Bob Romeo of Missouri Valley, Percy Ullom of Chester and Howard Billingsley of Mount Sterling. All three men were cited for their contributions to wildlife.



## Book Review

### *Wildflowers of the Tall Grass Prairie—The Upper Midwest*

Most of the surface of the upper Midwest was once covered with tall-grass prairie. With the invention of the steel moldboard plow, the prairie sod was quickly turned and converted to agricultural use—so fast, in fact, that few studies were conducted to determine the true composition of the prairie flora. Much of the prairie disappeared, taking with it many of its secrets.

Today's prairies are small remnants—tiny reminders of what we lost.

This book is the first attempt to provide the public with a guide to prairie wildflowers of the upper Midwest. It includes flora from Iowa, Illinois, Missouri, Nebraska, Kansas, parts of Indiana and Ohio, south and western Wisconsin and Minnesota, and eastern North and South Dakota. One hundred twenty-nine wildflowers and tallgrasses found in this area are depicted in color and described in this informative guide.

Written for the non-

professional, this 292-page, paperback book features a full-color photograph of each species opposite a description page which includes common and botanical names; location and time of appearance; description of plant and blossom; and uses by early settlers and Native Americans in medicine and food. Species are arranged in approximate order of flowering time.

*Wildflowers of the Tall-grass Prairie* was co-authored by Sylvan T. Runkel and Dean M. Roosa. Runkel is the senior natural historian of Iowa. Although retired, he is still very active in conservation groups. He has served as president of the Iowa chapters of the Soil Conservation Society of America, the Society of American Foresters and the Wildlife Society. Runkel, with Alvin F. Bull, has authored *Wildflowers of Iowa Woodlands*, *Wildflowers of Illinois Woodlands* and *Wildflowers of Indiana Woodlands*.

Roosa has served as state ecologist for the Department of Natural Resources since 1975 and is involved with the State Preserves Advisory Board. He has served as a board member of the Iowa Chapter of The Nature Conservancy; a board member of the Natural Areas Association; chairperson of the Iowa Natural History Association; and president of the Iowa Ornithologists' Union. He is

one of the authors of *Iowa Birds* and *Iowa's Natural Heritage*.

*Wildflowers of the Tall-grass Prairie* can be purchased for \$19.95. Please include payment with your order, plus \$2 postage/handling for the first copy, 75 cents for each additional copy. MasterCard and VISA are accepted. For more information, contact Ms. Neelum Chaudhry, Advertising and Publicity Manager, Iowa State University Press, 2121 S. State Avenue, Ames, Iowa 50010. Please include the ISBN #0-8138-1979-2 when ordering.

### Guidelines For Plugging Abandoned Wells

As concern for groundwater quality increases in Iowa, officials are reminding landowners of laws that require abandoned wells to be properly plugged to prevent contaminants from entering vital underground aquifers. Guidelines for sealing and filling those outdated wells are now available from the Iowa Department of Natural Resources.

Rusting, pitting and other deterioration in an aging well casing can create a direct conduit for contaminants to reach underground water sources. Most abandoned wells are easily located, marked by an old hand pump or a rusting windmill. Many oth-



### 1989 Nongame Support Certificate Available

*The 1989 Iowa Nongame Support Certificate is now available for purchase from the Iowa Department of Natural Resources, Wallace State Office Building, Des Moines, Iowa 50319-0034. The cost of each is \$5.*

*This year's certificate features a black swallowtail butterfly photographed by Department of Natural Resources' photographer Ron Johnson. Each of the 3,000 prints are individually numbered. Revenue from the sale of these collector items will be placed in the Fish and Wildlife Protection Fund and will be used specifically to enhance Iowa's nongame species.*



ers are found only through review of old farm plats or other records.

Results from a survey conducted several years ago showed more than 43,000 abandoned wells in Iowa. "However, those were voluntary reports," says Don Gordon, geologist with DNR's geological survey bureau. "We don't have an exact number. There were 225,000 Iowa farmsteads at the turn of the century," he says. "Every one of those farms had a well. Now there are only half as many farms. There may be 100,000 abandoned wells out there."

The DNR was instructed by the 1987 legislature to establish rules for plugging abandoned wells. A 46-page booklet discusses materials that should be used, proper techniques and approximate costs for materials. "Different wells will obviously require different procedures and changes," says Gordon. "It will depend on the depth, the geologic sequence and the diameter of the well." DNR regulations require all wells less than 18 inches in diameter or deeper than 100 feet to be plugged by a registered well driller.

The guidelines booklet is available for \$2 plus \$1 postage and handling by contacting the Iowa Department of Natural Resources, Geological Survey Bureau, 123 N. Capitol Street, Iowa City, Iowa 52242.

## Donations

John McDermott Atlantic	36 junipers and seven forsythias valued at \$172 for park landscaping at Lake Anita State Park
Les Lammers Estherville	One-day use of tractor and wood splitter valued at \$50 for Fort Defiance State Park
Aid Association for Lutherans Algona	Materials valued at \$746 and labor valued at \$150 for playground equipment at A. A. Call State Park
Algona Jaycees Algona	Volleyball equipment valued at \$150 for volleyball court at A. A. Call State Park
Precious Moments Mothers Club Hampton	\$200 for playground construction at Beeds Lake State Park
Bill and Evelyn Walker Memorial Iowa Falls	\$200 for playground construction at Beeds Lake State Park
Spud Reisinger Hampton	Use of dump truck valued at \$50 for playground construction at Beeds Lake State Park
Arlyn Miller Hampton	Use of dump truck valued at \$50 for playground construction at Beeds Lake State Park
Terry Walker Hampton	Use of generator valued at \$75 for playground construction at Beeds Lake State Park
Kenneth Walker Hampton	170 feet of pipe (used) valued at \$70 for playground construction at Beeds Lake State Park
Rural Electric Cooperative Hampton	100 lbs. of used bolts valued at \$50 and 15 light poles, value unknown, for playground construction at Beeds Lake State Park
Weldons Ready- Mix Hampton	Hauling of sand valued at \$107 for playground construction at Beeds Lake State Park
Lynn DeSotel Dows	10 tons fieldstone valued at \$60 for playground construction at Beeds Lake State Park
George DeSotel Latimer	11 tons fieldstone valued at \$65 for playground construction at Beeds Lake State Park
Independent Order of Foresters Des Moines	\$569 for water and ice rescue vehicle (air boat) at Big Creek State Park
Perishable Distributors of Iowa, Ltd. Des Moines	\$200 for water and ice rescue vehicle (air boat) at Big Creek State Park

## Classroom Corner

by Robert P. Rye

Opossums prefer to live in deciduous woodlands in association with streams but will use all habitats. The small farms with the mosaic land patterns — habitat, diversity and edge affect improve the opossum habitat conditions. The extreme cold, reduced den sites and water are limiting factors. Opossums are solitary wanderers that rarely remain in one area for long periods of time, making it possible to see these animals almost anywhere.

Read through the following true/false questions and see what else you can learn about these animals:

- Opossums have a prehensile tail that is often used as a fifth limb.
- Opossums have more teeth than other mammals found in Iowa.
- Opossums are related to marsupials in Australia and South America but are the only marsupials found in the United States.
- Opossums' diet consists of only insects.
- Opossums have well-furred tails.
- Opossums have a gestation period of 13 days and offspring that weigh only 1/15th of an ounce.
- Opossums actually do "play dead."
- Opossums are classified with the furbearers but the pelt is not very valuable.
- Opossums spend most of each winter in hibernation.
- Opossums have an opposable big toe on each hind foot that is used for grasping.

### Answers:

1. True 2. True (They have 50 teeth.) 3. True 4. False (They will eat anything as they are omnivorous.) 5. False (They have naked tails.) 6. True 7. True 8. True 9. False (They lack the stability, making winters a difficult time for them.) 10. True



## COUNTY CONSERVATION BOARD FEATURE

### A Concentration on Education by LaVonne Augustson

When you think of county parks, do you think of rest stops along the road with picnic tables and perhaps a camping area? Or do you think of conservation education centers? Maybe you should think of the Clayton County Conservation Board's Osborne Conservation Education Center south of Elkader. This 260-acre park and education/visitor center is located five miles south of Elkader and eight miles north of Strawberry Point on Highway 13.

Osborne was a small farm community, almost erased by time. In 1960, the Clayton County Conservation Board acquired the Osborne buildings and surrounding land to establish a county park. The board members planted trees and thought about the focus of their new county park. In 1969, the board officially declared Osborne as an education center. The philosophy of the Osborne Conservation Education Center is summed up by the following policy statement: "Young people are our most important resource; if we can teach them to use our other resources, we will have accomplished our goal."

Osborne is at the forefront of county conservation education programs. The center won the first county conservation board conservation education award sponsored by the Iowa Conservation Education Council in 1980.

Education is important at Osborne and a variety of tools are used for teaching at the center. The live animal exhibit is the second largest exhibit of its kind in Iowa. From a modest beginning, housing one pheasant, the

exhibit is now the home for more than 45 different species. Ben the bear and Sheba the cougar, as well as buffalo, raptors and many other species of wildlife greet visitors to Osborne.

Annually, more than 15,000 students come to Osborne to learn about nature and their personal relationships to the natural world. Two full-time naturalists devote

their talents and abilities to teaching understanding and respect of natural surroundings. Teaching is not hammered into the students. Rather, it is done with subtle guidance through thought-conductive activities. Students at Osborne range from pre-school to college-age.

Education is offered to junior high students in the summer dur-



CLAYTON COUNTY CONSERVATION BOARD



# CALENDAR

FEBRUARY 11

**Winterfest 88.** McIntosh Woods State Park in Ventura is the location for a variety of winter activities including cross country skiing, snowshoeing, snowmobiling, ice skating, an ice fishing tournament and snow sculpture contest. For more information contact McIntosh Woods State Park, Ventura, Iowa 50482, (515)829-3847.

MARCH 4-5

**Maple Syrup Festival.** The Indian Creek Nature Center in Cedar Rapids will hold its Sixth Annual Maple Syrup Festival. Included are tree tapping and syrup making demonstrations, and a meal featuring maple syrup. For more information contact the Indian Creek Natural Center, 6665 Otis Road, SE, Cedar Rapids, Iowa 52403, 319/362-0664.

MARCH 11

**Maple Sugaring/Pancake Breakfast.** Demonstrations and discussions of maple sugaring techniques, as well as a pancake breakfast will take place at Oriole Ridge Lodge at Hickory Grove Park near Colo. Fee will be charged for the breakfast. For more information contact Story County Conservation Board, McFarland Park, Route 2, Ames, Iowa 50010, 515/232-2516.

MARCH 11-12

**Bald Eagle Days.** The third and final bald eagle days of the season will be held at Red Rock Reservoir near Des Moines. Displays and indoor programs, as well as outdoor observation areas, will be available. For more information, contact the Iowa Nongame Program, Iowa DNR, Wildlife Research Station, Route 1, Ledges Road, Boone, Iowa 50036, 515/432-2823.

ing two- or three-day camp-outs. In this junior naturalist program, students participate in a gamut of activities from pond studies to night hikes.

For the past 13 years, Osborne has used the Iowa Youth Corps as another method of education. The youth corps is partially funded by the State of Iowa and offers young adults eight weeks of conservation education and employment in the summer. The Osborne Conservation Education Center, through its intern program, also helps educate college students studying conservation.

Students are not the only ones learning at the center. In fact, all visitors to Osborne are encouraged to enhance their knowledge of conservation and the state of Iowa. Each year, more than 100,000 visitors come to this Clayton County park, and it is expected this figure will double

with the opening of the new Iowa visitor center this winter. It will be the only visitor center in northeast Iowa. The Clayton County Conservation Board received a \$150,000 Iowa lottery grant to construct the center and fundraising is underway to match the lottery dollars.

The new education/visitor center, which will replace the old education center, will house geological displays, animal mounts, classrooms and an auditorium. Future plans call for a library on the second floor which will be handicap-accessible. An exciting new feature of the visitor center is the Iowa Room where Iowa pro-



WENDY ZOHRER

ducts will be promoted and sold. Osborne visitors will be introduced to a wide variety of Iowa products from honey to horseshoes, and possibly learn more about the Hawkeye State.

Yes, Osborne is a county park, complete with picnic tables and a campground. But, it is also a conservation education center. Stop and visit the Osborne Conservation Education Center. Perhaps you too will react as so many others have by saying, "I had no idea all this was here!"

*LaVonne Auguston is visitor services coordinator with the Osborne Conservation Education Center in Clayton County.*



# New Faces for Old Man River Nuclear Fish?

by Larry Lajeone and John Pitlo, Jr.

**E**lectric power generation and the culture of fingerling game fish — an unusual combination? Quite the contrary. Electric utility companies have become increasingly active in culturing and stocking game fish as a means of offsetting fish losses due to power generation, or simply to maintain or enhance sport fishing on waters used by their facilities. Some are required to implement such programs through their operating permits, while others participate on a voluntary basis. Such a voluntary program is underway at the Quad Cities Nuclear Station, near Cordova, Illinois on Pool 14 of the Mississippi River.

The station was originally designed to circulate Mississippi River water at the rate of about one million gallons per minute to cool steam used to drive turbines. This water was warmed a maximum of 23 degrees and discharged back into the river through a system of



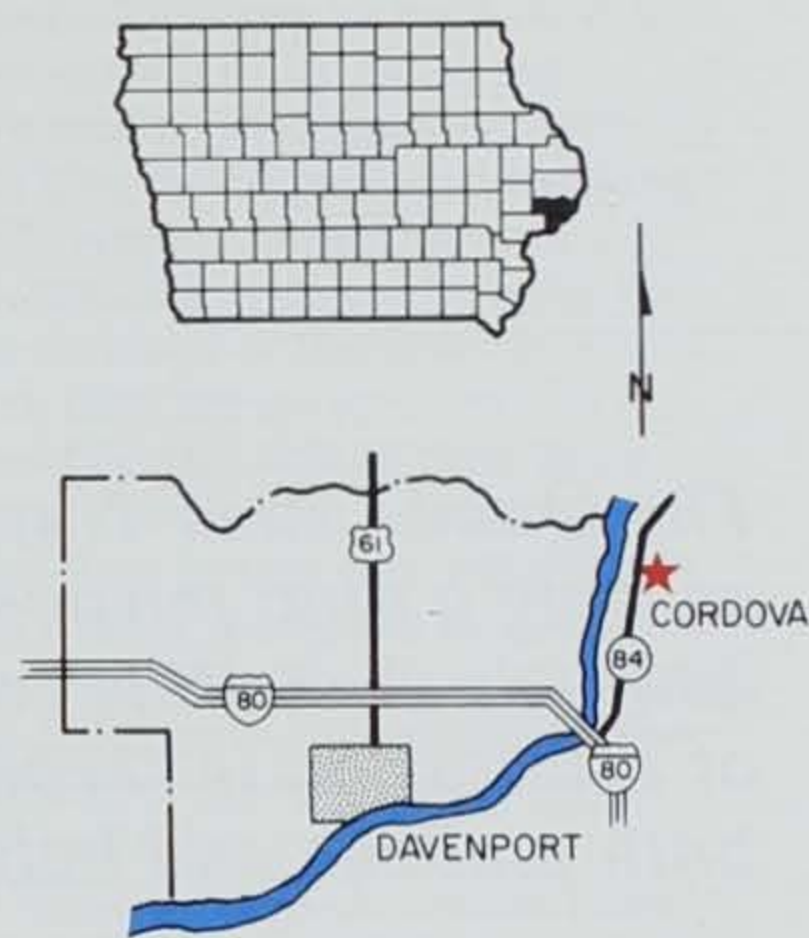


diffuser pipes. Concern over the possible adverse effects of this warm water on the river's ecosystem forced the construction of a three-mile long cooling canal around the station's perimeter for recirculation of cooling water. The canal, however, never provided the cooling capacity for efficient operation of the station, particularly in the summer. Following a thorough review of eleven years of biological data gathered from Pool 14, regulatory agencies from both Iowa and Illinois as well as other environmental groups agreed that a return to open-cycle operation would not have any measurable adverse effects on fish populations in the river. In return for a commitment to continue biological studies, the station was allowed to return to open-cycle in late 1983, leaving the cooling canal unused.

Almost immediately, discussions focused on how best to use the inactive canal. The possibility of converting the canal into a rearing facility for fingerling game fish came up with the idea a portion of the fish produced would be stocked in Pool 14. Research was needed for such a project and funding was provided by the utilities through a grant to Southern Illinois University.

The research project, beginning in 1984 and continuing today, has two major objectives — to develop the canal into a system capable of producing large numbers of game fish fingerlings at a relatively low cost; and to determine whether stocking a large river system can create new fisheries or enhance already established fisheries. Game fish rearing and stocking have long been integral parts to fish management programs in interior Iowa lakes and streams, however, stocking of fish in the Mississippi River, in an effort to improve or provide new sport fisheries, is a controversial new idea. The Mississippi's fishery is managed through habitat preservation and enhancement, not through stocking. However, in view of declining habitat, and with fish available without cost or burden to hatchery facilities in Iowa or Illinois, the experiment began.

Two species were selected for rearing — walleye and hybrid striped bass (wipers). Walleye are common in the Mississippi River and very popular among anglers. It was speculated that the stocking of fingerling walleye would increase their abundance and improve the sport fishery in Pools 14 and 15. The hybrid striped bass, a cross between the ocean striped bass and the common white bass, was selected for several reasons. First, the hybrid is generally sterile and not likely to reproduce in the river, thereby limiting potential overpopulation problems. Secondly, they are more readily



WAYNE LONNING

caught by fishermen than the ocean striped bass with the added advantage of rapid growth to trophy sizes. The growth potential of hybrid striped bass has not yet occurred in Iowa. Specimens over 20 pounds have been netted from Commonwealth Edison's Heidecke Lake in Illinois. The current state record for Iowa is a 10-pound 10½-ounce fish taken from the Des Moines River below the Saylorville Dam.

For the Cordova fish rearing project, one-day-old hybrid striped bass fry are flown from Weldon, North Carolina to the Quad Cities Station. About one-half of the hybrid fry are held in the fisheries laboratory at the station for four or

*Two species were chosen for the Cordova rearing project — walleye and hybrid striped bass. It is speculated that stocking fingerling walleye in the Mississippi would increase their abundance and improve the sport fishery in Pools 14 and 15.*



*The Quad Cities' Nuclear Station is currently serving a dual purpose — generating electricity and fish. A cooling canal around the perimeter of the station is serving as a rearing facility for both walleye and hybrid bass.*

five days before being released into the canal. The others are kept in raceway tanks and fed brine shrimp for three weeks before being transferred to the canal.

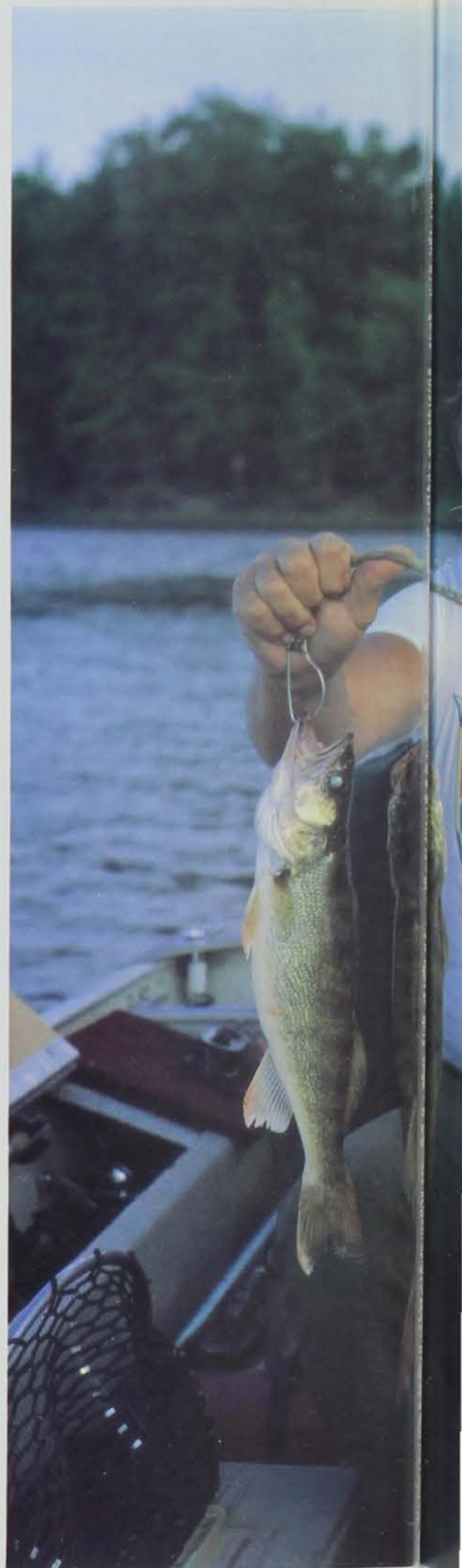
Walleye fry are obtained directly from adult fish netted locally from the Mississippi River or from the U.S. Fish and Wildlife hatchery at Genoa, Wisconsin. Particular care has been taken to insure that walleye stocked in the river originated from native Mississippi River populations. Walleye fry are released into the cooling canal at two to

three days of age and allowed to forage on whatever food is available.

After two to three months in the canal, both walleye and hybrid striped bass range from two to three inches in length and are ready for stocking. Because of the size and length of the canal, harvesting requires several capturing techniques and takes six to ten weeks to remove the majority of fish. Hybrid fingerlings are taken directly from the canal, placed in hauling tanks and then stocked in

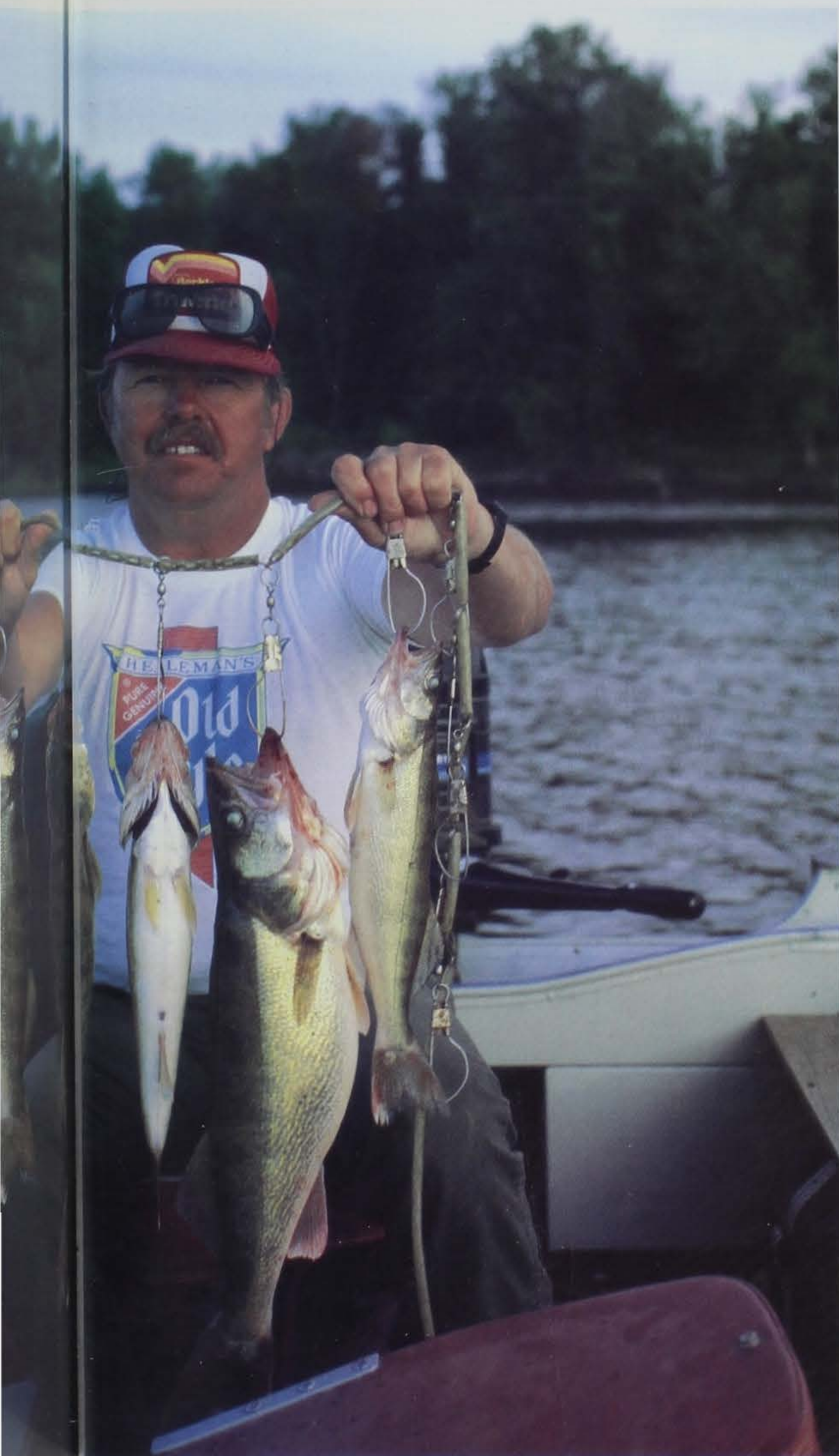


*Aerial view of the Quad Cities' Nuclear Station near Cordova, Illinois.*



RON JOHNSON





several locations in Pool 14. Walleye, on the other hand, are returned to the laboratory prior to stocking for tagging and marking. Each walleye is tagged with a microscopic wire tag injected into the cartilage of the nose. In addition, they are given a vertical bar brand on the side of their body using a technique called freeze branding. In this way researchers can readily recognize stocked walleye and determine how successful the program is by comparing the number of stocked fish to non-stocked fish.

Thusfar, program results have been highly variable because of a "boom" or "bust" tendency in the production of both species in the canal. To date, stocking in Pool 14 includes over 190,000 wiper fingerlings and approximately 50,000 walleye. Research will continue until 125,000 fingerlings of each species are produced from the canal.

Local interest among the fishing public is enthusiastic. Although initial returns of stocked hybrids to anglers have been limited, several fish over four pounds and one weighing 5½ pounds were reported in 1987. Reports of wiper catches increased sharply in early 1988, especially in Pools 16, 17 and 18, indicating growth and survival is good.

Evaluation of the walleye stocking program will take several years because most of the stocked fish are still too small to interest most fishermen. Nevertheless, given adequate numbers of fish in the upcoming years, a new era may be underway for Old Man River. So, if you head to the river for some good fishing, look closely at those small walleye you catch to see if there are any marks on their sides, and be ready to loosen up that drag should you happen to bump into one of those wipers.

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*Larry LeJeone is a fisheries biologist for Commonwealth Edison in Illinois.*

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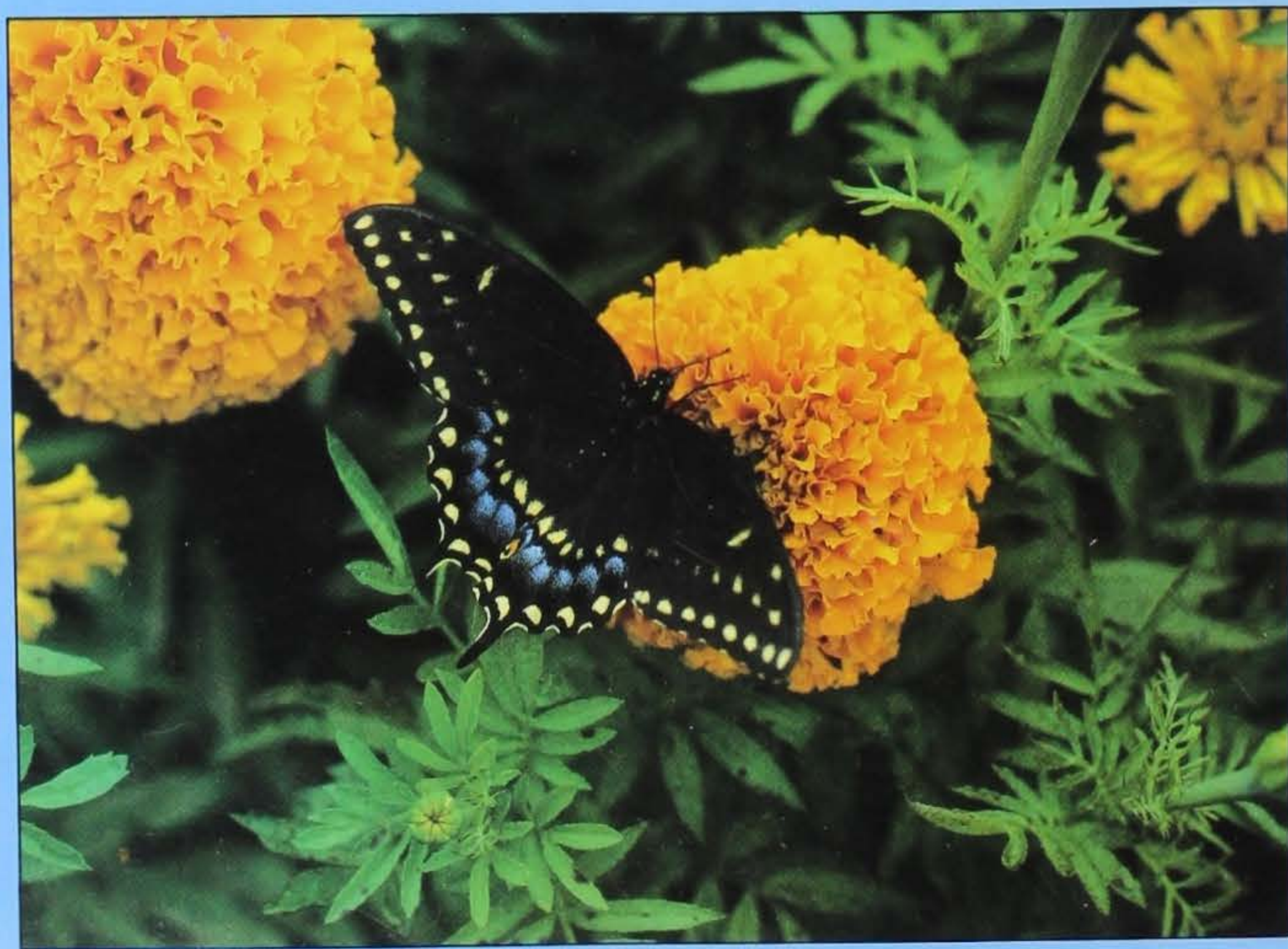
*John Pitlo, Jr. is a fisheries biologist for the department and is located in Bellevue, Iowa.*

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LARRY LEJEONE



10/18/20



Black Swallowtail  
on Marigold