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Iowa
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Iowa Department of Natural Resources

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Iowa CONSERVATIONIST

Iowa Department of Natural Resources

March 1987

Volume 46 No. 3

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FRONT COVER: River otter. Photo by Ron Johnson.

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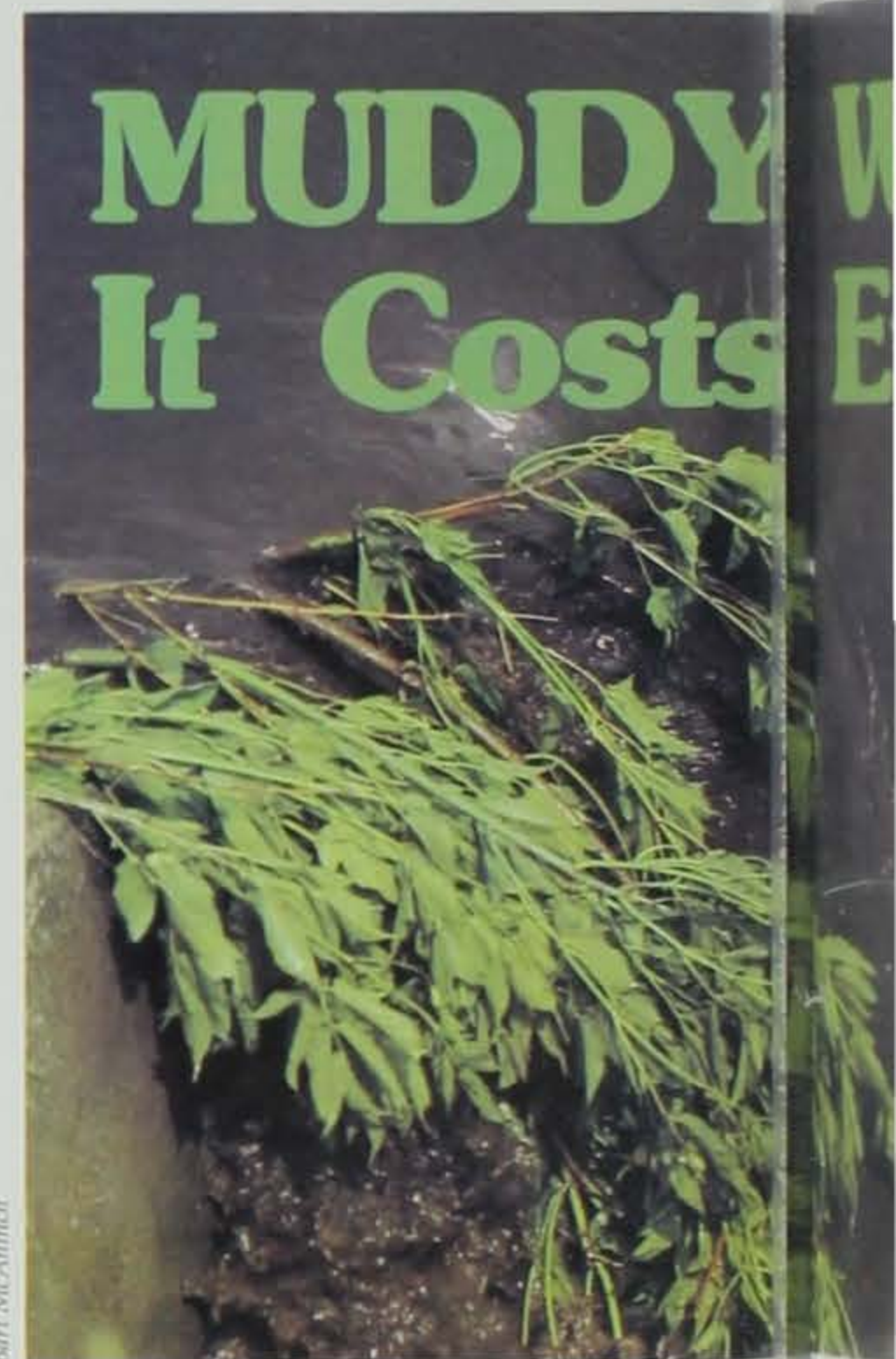
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Bart McAninch

By Lynn Betts

Sediment — ton after ton after ton — is choking Iowa's streams, waterways and lakes. It is clogging roadside ditches, dirtying drinking water and fouling fish habitat.

"Muddy water is not much fun to swim in, fish in, or even picnic near," says Mike Nethery, State Conservationist for the U. S. Department of Agriculture's Soil Conservation Service (SCS). "And the sediment that drops out of that water is filling our lakes and water supplies. It is also causing problems on farmland."



Gene Alexander

WATER Everyone



As topsoil from farmlands is dumped downstream, costs add up. Sediment damages to farmland, transportation, recreation, fish and wildlife, and municipal water supplies is estimated at more than \$32 million a year in Iowa.



Lynn Betts

Sediment damage to Coralville Reservoir, Johnson County (above). Road ditch cleaning in Floyd County (below).

While most people recognize sediment and soil erosion as major problems in Iowa, Nethery says finding solid information on the overall economic effects has been difficult.

Two years ago, SCS launched a cooperative interagency study of the problem. Their conclusion: soil erosion from farm fields is costly because of lowered production, but the costs of eroded soil being dumped downstream may be even higher.

The study, called "Off-Site Costs of Erosion," estimates current sediment damages in Iowa at more than \$32 million a year.

Those damages include the costs of cleaning sediment out of drainage ways and road ditches, loss of recreation value in streams and lakes, extra costs for treating drinking water and sediment damage to farms and other areas.

Annual damages are estimated at more than \$8 million to transportation; \$10 million to recreation, fish and wildlife; \$1 million to municipal water supplies; and more than \$13 million in damages because of sediment buildup and blocked drainage on agricultural land.

"But the estimates tell only part of the story. They represent what is currently being spent each year to ease the problems, not eliminate them," Nethery says.

One example is the cleaning of roadside ditches and culverts. "Each year we use a three-man crew to clean roadside ditches. That costs Floyd County approximately \$30,000 each year," says Lyle Laartz, Floyd County Engineer. "But our ditch cleaning crew only works on the more serious problems. If we methodically tried to clean out our ditches as they should be, the cost to county taxpayers would double and even triple," he says.

Farmland Damages

Sediment damages begin in the field where soil erosion occurs. The sediment covers crops at the bottom of a slope, and prematurely fills terraces, ponds and other conservation practices on farmland. It commonly fills in grassed waterways and gradually covers fences in many drainage ways.

A major financial cost is flooded cropland. The flooding occurs when sediment from wind or water erosion blocks drainageways and culverts.

Iowa's study of off-site costs of erosion estimates that flooding alone costs nearly \$10 million a year in crop losses.

Recreation, Fish Habitat Damages

The Iowa study looked at a sample of 14 lakes, and expanded data from those lakes for statewide damage estimates to recreation and fish and wildlife resources. Costs reviewed included dredging lakes or raising dams, and controlling the excessive plant growth caused by runoff into the lakes.

The estimated damage to recreation facilities includes declining public use of an area because of sediment



— dirty water, too much plant growth, and other results of soil erosion.

One of the 14 publicly owned lakes studied was Union Grove Lake in Tama County. Union Grove is a popular lake.

"It is the only lake in the vicinity, so it draws people from a fairly large area to fish, swim and picnic," says Bob Middendorf, a fisheries biologist with the Iowa Department of Natural Resources. "But in 30 years, 20 acres of surface water have been lost to sediment. In about 25 percent of the 107-acre lake, there is too much vegetation," Middendorf says.

Fishing is virtually impossible in the heavily vegetated, shallow areas, and the dense vegetation gives pan-fish a place to hide.

"The excessive vegetation is allowing an overpopulation of pan fish, and they become stunted and slow growing. We have had fish kills

because of low dissolved oxygen levels in the lake as well," Middendorf says.

"I have been associated with the lake for 22 years and have seen the damage from soil erosion," Middendorf says. "I am convinced that this lake could be useless in 30 years if we allow heavy erosion rates to continue. And this isn't the only lake with these problems. Agricultural runoff is our number one water quality problem in Iowa's lakes and streams."

Drinking Water

Sediment is often the cause of high turbidity in city water supplies. Raw water turbidity may range from 50 to 1,000 units at heavy runoff times — municipalities strive to get the level to less than one unit for drinking water. The result: more chemicals and higher costs for treating water. Sediment also decreases the capacity

of the lake, which is a problem for a number of cities.

The statewide study estimates that it is costing about \$1 million annually to clean sediment out of or prevent it from entering municipal water supplies.

The study marked the first time a concentrated effort has been made in Iowa to get specific damage estimates on downstream costs associated with soil erosion.

The Center for Agricultural and Rural Development (CARD) at Iowa State University gathered cost data from county engineers, state agencies, city water treatment officials and others. Cooperating in the study were the Southern Iowa Ag Boosters, the Soil Conservation Service, the Iowa Department of Natural Resources, Iowa State University, the Iowa Department of Transportation, and the Iowa Department of Agriculture and Land Stewardship.



Sediment and nutrient runoff to recreational waters such as Union Grove Lake, Tama County, leads to excessive plant growth (above). That plant growth can cut lake capacity, destroying the area for recreation and causing overpopulation and stunting of fish. Topsoil in agricultural runoff is the prime reason for increased turbidity and higher treatment costs for communities, such as Winterset, which use surface water supplies (above middle). Conservation practices, such as contour farming and no-till, used on the Bob Cerven farm in Montgomery County (opposite page) can prevent topsoil and nutrient losses from farmland, which hurt productivity.





Lynn Betts

Controlling Soil Erosion

A 1982 study by the U. S. Department of Agriculture (USDA) showed that Iowa has the worst soil erosion of any state — an average of 9.4 tons per acre on 26.1 million acres. That amounts to nearly 240 million tons, equivalent to 1/16 of an inch of topsoil each year. This rate is twice the national average.

"The truth is, erosion cannot be stopped completely. But with a soil conservation system designed to fit individual farming operations and soils, it can be limited to a rate that will allow sustained soil productivity," says Nethery. "And that means fewer sediment problems downstream."

Lynn Betts



Conservationists say there are two basic ways to control soil erosion: 1) put a protective cover over the soil such as crop residues, grass or trees and 2) shorten the length or flatten the steepness of a slope.

Conservation tillage, the practice of leaving much of the previous year's corn or soybean residue on the soil surface while planting the current year's crop, has grown tremendously in Iowa. Half the state's corn and soybeans were planted in 1986 with conservation tillage methods.

"If a raindrop is intercepted by a plant or plant residue rather than splash onto bare earth, then it cannot get the erosion process started," Nethery says. "That is true with conservation tillage, and even more so with grass cover because coverage is more complete."

Nethery believes USDA's Conservation Reserve Program will continue to help Iowa farmers convert highly erodible land from corn and soybeans to grassland and trees. In 1986, 358,000 Iowa acres were enrolled.

Contour stripcropping, grass waterways and headlands, and crop rotations that include small grains and legumes are other practices that protect the land.

Another option for erosion and sediment control is to build terraces. Terraces work like eavespouts on a house, catching runoff water at intervals down a slope. The water they collect is channeled to a grass waterway or through underground tile to the bottom of a slope. Terraces can reduce the amount of sediment that leaves a field by up to 95 percent.

For more information on soil conservation, visit a local office of the SCS. There is an office in most county seat towns. The SCS has just published a 24-page full-color pamphlet on Iowa's soil erosion problems and solutions. It is available free from any SCS office or by writing Losing Ground, SCS, 693 Federal Building, Des Moines, Iowa 50309.

Lynn Betts is an information officer for the USDA Soil Conservation Service in Des Moines. He holds a B.S. degree in ag journalism from Iowa State University and has been with the SCS since 1970.



Yellow River Forest, Allamakee County.

TREES

A SECRET PRIDE OF IOWA

By Reinee Hildebrandt

Iowa's woodlands are often considered impediments to modern land management philosophies, but historically trees were very important to Iowans and have continued to be so to many. The reason for their importance has changed through the years.

If we look at documents of settlement times, wood was one of the three resources most demanded by settlers. In those days, woodlands provided windbreaks, shade and food such as deer and squirrel. Wood products included houses and other buildings, fences, fuelwood for heating and cooking, and tools. One of the major uses of wood in those days was for fencing. It was said that the lack of wood for fencing the prairie slowed immigration because it could cost up to \$340 to fence 40 acres.

Iowa's woodlands were also the economic commodity which helped farmers pay for their land and start their farming business. In 1943, Guy Ramsey, forester at Iowa State College, noted, "Log cabins housed the first Iowa farmers. From Iowa's woods came the cribs to store the first corn crops. From Iowa's woods came the posts and rails to enclose the first

Ron Johnson

Iowa pastures. More than that, settlers in many Iowa counties bought land, cut timber from it, sold the lumber and received enough from the sales to recover the entire purchase price of the land. In addition, they had enough money to buy all the agriculture implements and livestock necessary to start themselves in the farming business."

In 1914, Iowa's trees gained national and even international fame. Iowa State College forester G. B. MacDonald wrote, "Few people know that an Iowa company is the largest producer of rough gun stocks in the world. The Des Moines Sawmill Company, located in the capitol city of the state, produces annually about 1,200,000 walnut gun stocks. This number was sold by the company in the past year. It has been estimated that this lumber equals from 50 to 75 percent of the total yearly supply of walnut stocks in the United States." Iowa's walnut trees then and now are praised internationally for their deep dark-brown coloring.

By the 1920s, the importance of Iowa's trees for their aesthetic and recreational value was being noticed. Our woodlands were being set aside as forest preserves and public parks. A 1921 article written by Dr. L. H. Pammel, Iowa agriculturist, states, "No longer do we find in Iowa places where the family can go and enjoy a day's outing without trespassing. Therefore, it is important that the state provide these free places where the whole family can enjoy the trees, flowers and birds."

Another early agriculturist, Frank H. Culley, noted in the 1920s, "With such a state park system within our borders, we could feel that the citizens of this state had done their part in preserving, not only for the enjoyment of all generations, those gifts that the Creator has bestowed upon all of his children and to whom no right has been given to destroy. By the conservation of such areas, it would be possible to cope with the

ever-increasing problem of recreation for the great masses of people. These areas would afford camping grounds, summer home sites, picnic grounds, and an opportunity for fishing, hunting, trampling and a closer study of Nature at her best without the always evident no trespassing sign which often cools the ardor of a would-be nature lover."

Iowans saw the importance of setting aside lands for public use. Iowa even hosted the first national meeting to promote a state parks system. In January of 1921, 200 delegates from 25 states met in Des Moines to plan the extension and development of a state parks system. As a result of this meeting, the permanent organization of the National Conference on State Parks was formed.

The 1940s to early 1960s brought a new type of fame to Iowa's trees. Trees of cottonwood (*Populus deltoides*) impressed Belgian and Dutch researchers in their quest for the ideal hybrid poplar. In the late 1940s, Professor Andy McComb, then of the Iowa State University forestry department, helped collect cottonwood cuttings that were sent to the Belgium research program. At that time, this research was supported by the Swedish Group of Match Companies. During the mid-1950s, McComb, Sande McNabb, professor of forestry and plant pathology, and Gordon White of the Crandon Paper Company in Fort Madison, made further seed collections from Iowa cottonwood trees for use in poplar breeding programs in Belgium and the Netherlands. In the early 1960s, another collection that was a part of an international collection of North American poplars and aspens was sent to these two western European countries. Many of these original Iowa trees are mothers, grandmothers, or great grandmothers of the most successful hybrid poplars existing today. According to Dr. McNabb, some 3,300 hybrid poplars being tested today in the Netherlands have ties to

Iowa. Fourteen of the named hybrid poplars in the European nursery trade have these Iowa connections.

During the collection period of the 1950s, another Iowa poplar-type tree was discovered. Natural hybrids of the native Iowa aspen, big-toothed aspen, and a European import, the white poplar, were found. As farmers settled southeastern Iowa, they brought the white poplar from their homeland and used it in farm plantings. With native aspens in the natural landscape, these two trees have produced a number of natural hybrid clones. Four of these clones have been used in forestry research in North America since the 1950s. One of them called the Crandon hybrid, found by Gordon White, has been sent to all corners of the world. Dr. McNabb remembers sending material to Italy in the late 1950s, and he found it in the Republic of Korea in 1981 when he observed their poplar breeding research. They had received their Crandon poplars from Italy. Once again, Iowa trees were recognized internationally.

In 1982, Iowa was the number one exporter of veneer-quality logs in the nation. Veneer logs are the highest quality since they have clean or knot-free trunks of eight or more feet. A veneer-quality log ranges in price from \$200 to \$5,000 per thousand board feet!

What does the future hold for Iowa's trees? With the passage of the 1986 Farm Bill, Iowa's trees could continue to be a small but proud part of Iowa's economy. It is time to diversify our agriculture lands. If you decide to participate in the soil conservation section of the Farm Bill, what better way than to choose a product that has been the best-kept secret and pride of Iowa.

Reinee Hildebrandt is a forestry extension assistant with the Iowa State University Extension Service. She is currently working on her PhD at ISU. She has been with the Extension Service since 1981.

Fall Shotgun Turkey Season Results Are In

Results of the DNR Wildlife Bureau's survey of fall shotgun turkey hunters indicate that 1986 was another good year for fall turkey hunters in Iowa. According to post-cards returned from a statistical sample of hunters, a record 3,554 hunters took to the forests during a 13-day season, October 14-26, and harvested an estimated 1,830 turkeys. Shotgun hunters were allowed to hunt in one of six zones which together covered about 70% of Iowa's forested land. Hunter success rates were 52%, which is the second consecutive year that success rates have averaged above 50%. Fall turkey hunters are allowed to kill any turkey as opposed to spring hunters who are limited to bearded turkeys only.

According to Greg Hanson, forest wildlife biologist for the DNR, turkey populations over much of the eastern part of the state are at an all-time high. Success rates were down slightly in most zones, but this was probably due to a lower percentage of juveniles in the population.

Like most species of wildlife, juveniles are less wary and therefore

easier to harvest. "Production was down slightly in 1986 so a decrease in hunter success was expected," said Hanson.

Success rates were the highest in southern, western and northeastern Iowa with 53%, 51% and 52% success, respectively. Hunters in a new zone in central Iowa had a success rate of 42%. Success rates in Stephens and Shimek State Forests were 33% and 41%, respectively. These areas were zoned separately in 1986 as a result of hunter crowding on these large public areas.

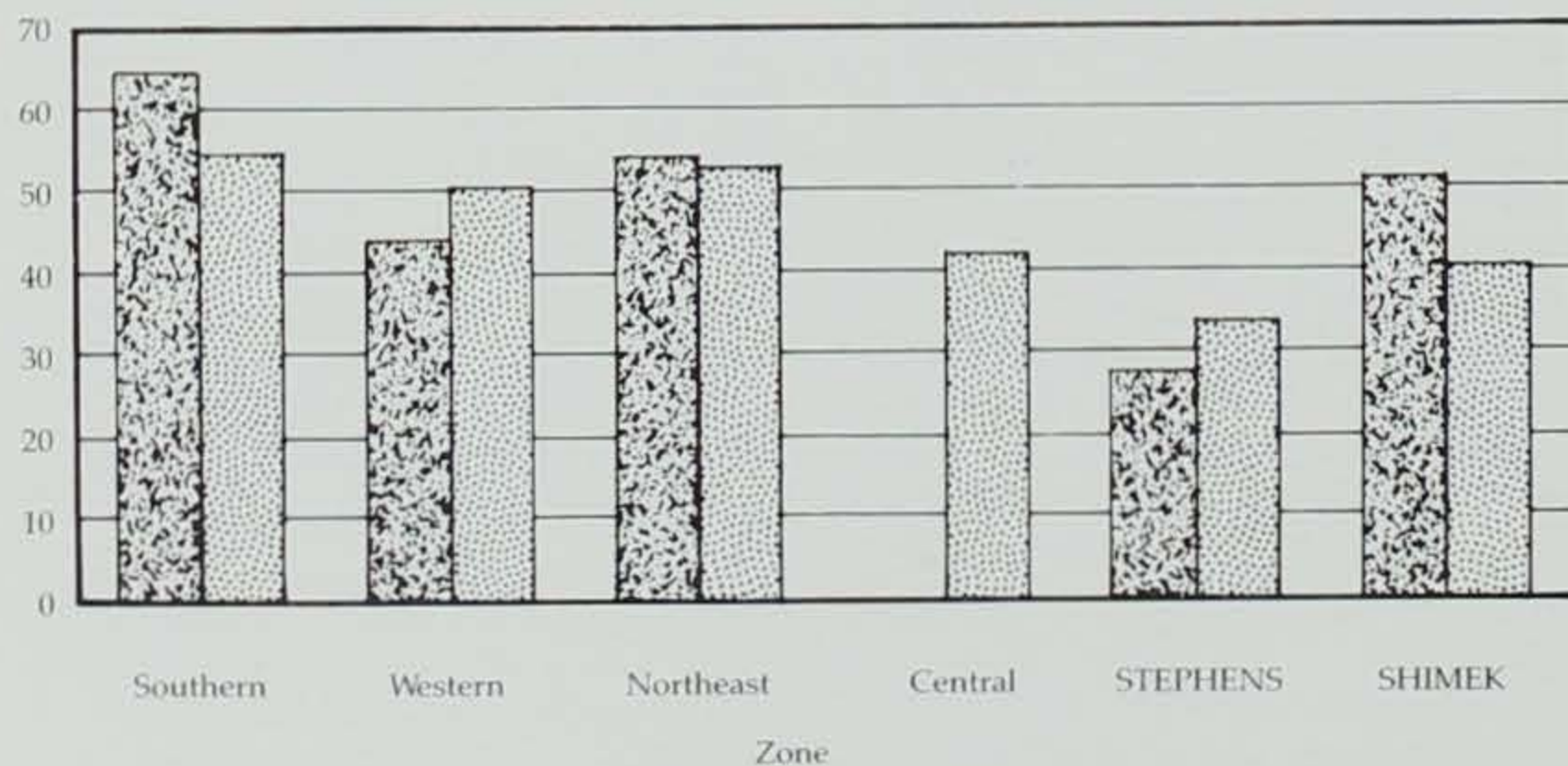
Due to the continued success of the Iowa wild turkey program and the high turkey populations in many areas of the state, the DNR has proposed some regulation changes for the 1987 fall season. Included in these changes are higher license quotas in several zones and increasing the season length from 13 to 28 days.

According to Hanson, hunters can expect continued changes toward less restrictive regulations as long as turkey populations remain high.

FALL TURKEY HUNTER SUCCESS

BY ZONE, 1985-1986

Success Rate



1985 1986

1986 Top 25 Turkeys

Name/Address	Weight	Date	County Taken
*Donald Marshall Leon	30 lb. 3 oz.	4-25	Decatur
*Sally A. Fruechte Cedar Rapids	29 lb. 14 oz.	4-24	Allamakee
*C. Current Monroe	29 lb. 13 oz.	4-21	Marion
Marion M. Douglas West Des Moines	29 lb. 2 oz.	5-9	Lucas
Calvin L. Scalf Wellman	28 lb. 14 oz.	4-26	Washington
Hank Stumpff Amana	28 lb. 12 oz.	4-17	Iowa
Jerry E. Jones Leon	28 lb. 10 oz.	5-4	Decatur
Joseph J. Herman Solon	28 lb. 8 oz.	4-15	Linn
Ronald W. Kuntz Des Moines	28 lb. 8 oz.	5-4	Guthrie
Mike J. Kurimski Lovilia	28 lb. 4 oz.	4-19	Monroe
Carl Ash Muscatine	28 lb. 2 oz.	5-2	Muscatine
Scott R. Hacksen Camanche	28 lb. 2 oz.	4-18	Clinton
F. Patrick O'Brien Dubuque	28 lb. 1 oz.	4-16	Jones
Jack Loonan Waterloo	28 lb.	4-18	Allamakee
Francis Redlinger Marengo	28 lb.	4-16	Iowa
Tony Arnold Humeston	27 lb. 12 oz.	4-30	Wayne
David Bigler Decorah	27 lb. 12 oz.	4-15	Allamakee
Jerry E. Jones Leon	27 lb. 12 oz.	4-14	Decatur
Michael C. Knoll Dallas Center	27 lb. 12 oz.	4-15	Dallas
Jay E. Holley Burlington	27 lb. 11 oz.	4-14	Des Moines
Robert Humberg Clear Lake	27 lb. 11 oz.	4-15	Allamakee
Dirk Hoover Algona	27 lb. 8 oz.	4-16	Kossuth
John M. Mitchell Council Bluffs	27 lb. 7 oz.	4-27	Harrison
T. J. Gerdes Garner	27 lb. 6 oz.	4-21	Kossuth
Randy Jones Des Moines	27 lb. 4 oz.	5-3	Appanoose
Stacy M. Soper Adel	27 lb. 4 oz.	4-16	Lucas

ALL-TIME TOP TEN TURKEYS

Name/Address	Weight	Date	County Taken
Dr. David J. Randall Lucas	30 lb. 8 oz.	4-21-82	Lucas
Dennis Moore Sherrill	30 lb. 4 oz.	4-17-81	Clayton
Eldon C. Sear Zwingle	30 lb. 4 oz.	4-15-85	Clayton
Donald Marshall Leon	30 lb. 3 oz.	4-25-86	Decatur
Sally A. Fruechte Cedar Rapids	29 lb. 14 oz.	4-24-86	Allamakee
C. Current Monroe	29 lb. 13 oz.	4-21-86	Marion
Dwight D. Schumann Spencer	29 lb. 12 oz.	5-2-82	Monona
James Reihmann Amana	29 lb. 10 oz.	4-21-82	Iowa
Raymond Stotlar Weyer	29 lb. 9 oz.	4-12-83	Des Moines
Reggie Williamson New London	29 lb. 7 oz.	4-17-84	Des Moines

*new records

Warden's Diary

LAW ENFORCEMENT RESEARCH

By Jerry Hoilien

What is fish and game law enforcement research? A good number of years ago, the concept was born at a meeting of the Midwest Association of Fish and Game Law Enforcement Officers. It is an organization of 19 states, the U. S. Fish and Wildlife Service, and several provinces of Canada. Some of us could see a vital need of "tools" for the law enforcement officer. Lord knows, we had lots of rules and regulations to enforce, but no tools so-to-speak to work with. We had no way of identifying game stored in a freezer as to species or sex. No way of identifying blood or hair, or where it came from. Looking at wounds in animals, there was just our personal knowledge as to what caused it. In other words, we had to operate, more or less, by the seat of our pants or our own bluff.

It all began with a sharing of knowledge. One of our western neighbors said, "Hey, we have developed a way of detecting lead from a bullet in an archery-shot deer!" Then another neighboring warden from Wisconsin said his department had developed a technique for pouring hot sulphur in snow to get a good imprint of tires or boot prints — very interesting. It started with a trickle that turned into a flood. Information on more and more special tools came in from all over the U. S. and Canada. So much information that it had to be divided and categorized; thus, the "blue books" were born. Each agency received a copy so that they could look it over and decide what was applicable to their particular area and then could distribute it to the field officers.

Now, what had been a common practice in one area became known to every field officer in the Midwest. Investigative techniques which once were used only by a few became the practice of hundreds of fish and game officers. Many of our new-found techniques became valuable to other law enforcement agencies. Hair identification, blood ID, species and

sex identification, easy ways to sex pheasants from feathers, bones and meat. Wound identification, to tell if an animal had been killed by a bow, a rifle or a shotgun. Time of death has been a problem since Cain and Abel, and today we have a new publication on field methods of determining time of death in most species. We have techniques for sexing frozen and cooked venison, recovering spent bullets in snow, sexing and aging deer, etc.

"It is getting so that a guy can't do nothin' without that game warden knockin' on your door!" said an old violator who had not heard of law enforcement research, but was well acquainted with its results (for about the third time). It's what I call a deterrent. When the violators *know* that the game warden is *so good*, that no matter how clever he is or tries to be, the warden is going to get him. Then we can really begin to save our fish and wildlife for whom it is intended. "I just knew you were coming, I just didn't know when" was the expression I heard as a "friend" of mine opened his door. I held a search warrant for a deer he had shot out of season.

Our Iowa officers share knowledge with all other brother agencies. We now have a new magazine, *The International Game Warden*, published by Don Hastings of Illinois. It is written by, about and for game wardens all over the U. S., Canada and Africa and shares a wealth of knowledge of all phases of "wardening" — equipment, techniques, training, wages, retirement, etc. The Forensic Committee of the Association, along with the Training and Covert Committees, have set up a special meeting each year where wardens from all over can gather to share knowledge and experiences and learn from one another. Many are sent by their agencies, some are sponsored by their sportsmen clubs, and many come on their own. They come, thirsty for information to do a better job, to establish a better deterrent within their areas. The Midwest Association has become a leader in this field with many similar organizations seeking their help. There is a small plaque on their speaker's podium which says, "May our efforts and enthusiasm be equal to the ever-increasing challenge, so our future generations may say, 'Well Done!'"



Photo by Author

Nature Tale for Kids

The Swamp

By Dean M. Roosa

There was a neglected wilderness at the edge of town. To understand the importance of this wilderness, called "the swamp" by everybody, you had to be a kid, or to have been a kid sometime. It was not really a swamp, not really neglected, and surely not a wilderness, except in the minds of children. It was here where most neighborhood kids bagged their first "bunny," shot a shotgun for the first time, made their first attempt at cooking over a campfire, and maybe smoked their first cornsilk. The swamp caused mothers to worry, made dads wish they were boys again, provided the scraggly habitat needed for dozens of rabbits to live, and at some time had some effect on every person in the neighborhood. Here is where kids became little savages, or Indians, or famed frontiersmen, or whatever their minds could conceive. It was here a young, dark-haired girl came to read her books and became lost in the story and part of the swamp. She was a visitor from afar, visiting her grandparents each summer. The swamp had been there forever and every grandfather could tell a tale, some taller than others, of what went on in the swamp when he was a boy.

The swamp was a poorly drained area, with a small creek and many giant old trees that had seen generation after generation of children come, grow up and leave. Mosses grew on the north sides of trees, and often mists hung around the tops of these giants, giving a surrealistic appearance. Tales were told of bobcats being in the swamp. The children never saw one, but would occasionally see tracks that made their hair stand on end, and would hear awful sounds in the deep of night when camping.

Once a four-year-old boy wandered into the swamp and spent three happy hours playing in an ancient sycamore, hollow even before the little boy's grandfather played there. Unknown to the boy, his mother was frantic because she could not locate him. The panic proved contagious and soon half the town was called in to search the swamp. Before long, the tyke wandered into his yard, into the house

and curled up on the sofa for a nap. He did not fully comprehend all the commotion when he was found there a short time later. "Drain that awful place" was the cry for a few days. But, cooler heads prevailed and the episode was forgotten to all except the boy, who was to forever remember the glorious feeling of pure solitude, of adventure and just a bit of fear. So, the swamp was spared to educate yet another generation of youngsters.

Being taken for granted is never acceptable, whether you are a person or a swamp, but taken for granted is what was happening to the swamp. It would simply always be there, everyone thought. Imagine the surprise when a small real estate "for sale" sign appeared at the edge of the swamp one early summer day. Suddenly, the entire town took pride in the swamp. Telephones rang in the real estate office, in the county supervisor's office, and in the local conservation office. The owner lived in a far away state and was tired of paying taxes on it. And no, he could not afford to donate it to a conservation organization. Soon the draglines and bulldozers were at work, draining, gouging, erasing three generations of memories. Old men stood on the road and quietly watched; youngsters watched alongside, wondering where their Saturday adventures would be found. A hundred raccoons, squirrels, skunks, owls and a bobcat had to find new homes that night. A few short weeks later, a new apartment house was in the middle of the swamp. A beautiful new sign with the name "Wilderness Acres" marked the entrance.

Now, kids in the town occasionally put up tents in their backyards and read books about adventure, frontiersmen, savages and bagging a bunny. They often gather around an old man who tells them how a swamp was once at the edge of town and how this swamp was a place of high adventure, of bobcat screams, of giant old trees where the mist hung around and people could get lost and wander for years. Their hair bristles as they listen. Then the group dissolves, some going back to town, some to the apartment in the area marked "Wilderness Acres."

PROFILE OF AN ENDANGERED SPECIES

Prairie White-Fringed Orchid

By Dean M. Roosa

One of Iowa's most beautiful and rarest orchids is the prairie white-fringed orchid. At the time of settlement, this plant was reputedly fairly common and early accounts speak of the faint sweet smell, emanating from this species and hanging over the prairie swales. When Dave Niemann researched the status of Iowa orchids in the mid-1970s, he found evidence that this species once occurred in 42 Iowa counties. In all likelihood, it reached its maximum abundance in the wet prairies of Iowa and Illinois. The near-destruction of prairies in the upper Midwest has made it rare to the point where many botanists have not seen it in the field. In recent years, it has been reported from at least twelve counties in Iowa.

Its biology is of interest to botanists. Seemingly, it has the ability to remain dormant some years, at least not flowering every year. Therefore, a prairie may have several dozen plants flowering one year, and a few or none the following year. Also, pollination is achieved by sphinx moths that fly just at dusk.

Recent research has shown that there are two white-fringed orchids in Iowa. In about the eastern one-third of Iowa is found *Platanthera leucophaea*; in the remainder of Iowa is found *P. praeclara*. The plant may achieve a height of three feet or more, and have creamy white or greenish-white flowers which appear in June through July. These flowers, each about an inch long, form a thick but loosely arranged cylindrical spike which may be five inches long and two or three inches wide.

We are always anxious to learn of new locations for rare plants such as this species. Should you be so fortunate to find one, write to the Natural Areas Inventory in care of the Iowa Department of Natural Resources.



Mark Loosche

A Field Guide to

OTTER WATCHING

By Douglas A. Reeves

Tom Wahl

People attending Iowa's four river otter releases have had a tremendous opportunity to observe the otters. In fact, the otters were so careful at checking out their new homes and so slow to leave the release sites that some folks wondered just how wild the animals were. On the other hand, after the releases, the otters have become almost invisible.

Verifiable sightings from fishermen, duck hunters and other outdoor recreationists are rare. In fact, I once sat hidden for over two hours in an area where three otters equipped with radio transmitters were living and although I could pick up their signals close by, I never saw one of the animals. This article will help you locate areas where otters occur and recognize evidence of their presence even if you do not actually see the animals.

Winter

Unlike some Iowa animals, the river otter remains active all winter. It is during this time that otter tracks and other sign is most obvious. The unique dot-dash-dot track pattern left by otters in the snow is unmistak-

able. The "dots" are where the feet of the animal land as it is loping along. The "dash" is where the otter slides along on its belly. The belly slide is usually six to twelve inches wide and may be four feet to fifteen feet long. Although beaver can make a track in the snow that shows a wide tail drag, their tracks are much closer together and indicate a "waddling" form of locomotion. Also, the tracks of beaver show huge hind feet in comparison with the front feet. Upon further investigation, you will usually locate a twig that the beaver clipped off for a meal. The dot-dash-dot track pattern of the river otter is most frequently seen in the snow on ice where the animal has been moving directly from one area to another. If snow cover is one inch or less, otters may not slide on their belly at all. At such times their tracks can be quite difficult to distinguish from the tracks of other animals. Otter tracks are slightly larger than most raccoon tracks and are arranged on a diagonal pattern somewhat similar to the tracks of other members of the family Mustelidae, like skunk, mink and weasel. Although I advise extreme

caution on the ice of all Iowa streams, there are places along each of the rivers where otters have been released that you can actually get out and spot otter tracks in the snow.

At all times of the year, river otters seem to like areas where creeks enter major streams. They often climb and roll around on the bank right at the junction of the streams. If the tributary stream remains free of ice, otters will frequent the area all winter. Their tracks will indicate where they have rolled and slid in the snow. Sometimes otters will scratch through the snow and kick grass and leaves around. This activity is often associated with scent marking and/or defecation. In areas where otter populations are well established, these sites are usually used for the same purpose over a long period of time. I know of one such "stooling site" in a northern state that has been used for at least the last ten years. As the transplanted otters in Iowa become established, they will quite likely establish similar sites. Stooling areas are fairly easily recognizable by the fish scales and bones found in otter droppings. After they have

With snow cover of an inch or more, otters will frequently slide between steps creating their familiar dot-dash-dot pattern (left). During spring and summer, otter tracks can be found along the water's edge and sandbars (right).

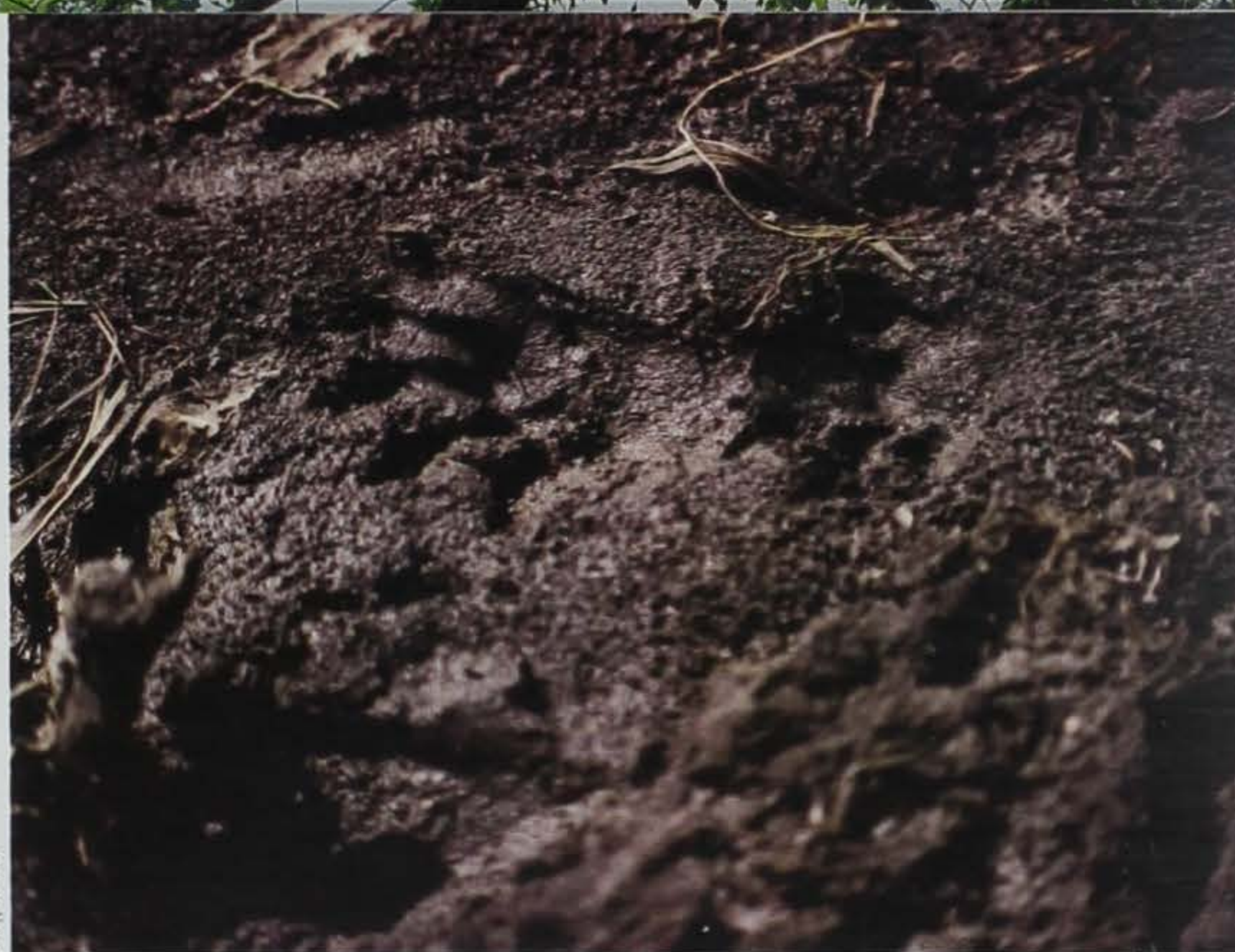
weathered, the scats simply look like small piles of fish scales. There is usually no odor associated with a stooling site.

Other places where otter tracks and sign can be found along Iowa streams are near bankside brush-piles, beaver lodges and bank dens. At one brushpile along the Des Moines River near Stratford, I recently found a place where an otter had caught and eaten a freshwater drum. Otter tracks, fish scales and fish blood drew my attention to the site. Upon closer investigation, I discovered that otters were coming up through a hole in the ice around the brushpile. Some such places remain open throughout the winter and are frequently used by otters.

Beaver dens seem to be particularly attractive to otters. Unoccupied dens and lodges are often used as stooling and resting sites and are excellent areas to look for otter tracks. During our radio telemetry project, otters were also located in occupied beaver dens. For this reason, a special trapping regulation is in effect around all otter release sites. No traps may be set within ten yards of any beaver den or lodge (occupied or unoccupied) in designated otter release areas.

Occasionally, river otters will make treks across forested or agricultural land away from water. Usually the animals are traveling from one watershed to another when they make these journeys. At such times, their tracks can be found in odd places like timber or agricultural fields. This type of movement is comparatively infrequent and will go unnoticed unless snow conditions are just right.

An easy place to look for otter tracks on the ice is at bridges. Otters often travel on the ice under bridges. A quick spot check will sometimes give you an indication of the animal's presence. However, you are much more likely to find otter tracks if you spend some time hiking along the



Douglas Reeves

riverbank. At culverts, otters are more likely to leave the ice and go overland around the crossing. Sometimes they will leave the stream channel much before they reach the culvert and re-enter 100 yards or more upstream. Still, the prudent observer will sometimes see evidence of otter presence at these crossings.

Spring, Summer

Evidence of the presence of river otters is much more difficult to detect when the snow and ice of winter are gone. Still, the observant investigator can tell if otters are in the area by looking for sign. At this time, otter tracks are evident at water's edge and on sandbars. This fall, I observed one sandbar that otters had crossed several times over a period of about one week. Some tracks were slightly rained in, others were quite fresh. I could not find tracks in other nearby areas, and the presence of the animals would have gone completely unnoticed had I not looked on the sandbar. On moist sand or mud, otters usually hop along, but they do sometimes drag their bellies leaving a track that is similar to the dot-dash-dot pattern that was described for winter.

The same stooling sites that otters use in the winter are used at other times of the year; so once located, they are good places to check for otter tracks. In fact, if you are unsure of the identity of the tracks, otter scats can confirm the determination.

As in the winter, otters use log

jams and beaver dens during summer. They also continue to make frequent visits to tributary streams. Again, tracks can often be found at the confluence of streams. Occasionally, you will even find evidence of an otter meal in such an area.

Also during spring and summer, a quiet canoe ride through an area where otters have been released might actually get you a glimpse of an animal. Although the chance of a sighting is rather slim, it is possible and worth a try. Common sense about keeping noise and motion to a minimum applies when you are trying to see these shy, wild animals that quickly become well attuned to their environment.

Some bank fishermen will also see otters. Those who do see one will most likely be fishing quietly. In fact, one person who was sitting near the Raccoon River last fall reported observing an otter for about 20 minutes without being detected.

Otters are among the most popular of Iowa's animals. Everyone who is aware of their release into Iowa waters wonders how they are doing. The pat answer is that most are doing just great and are staying near the release areas. If you want to find out more for yourself and like to discover new things, why not go otter watching near one of the release areas? Even if you are not successful at glimpsing an otter, you might learn a lot more about them by observing evidence of their presence. In fact, some of us enjoy seeing where they

Otters enjoy the curious habit of sliding down steep banks to splash into the stream below. Individual otters have been watched "playing" on their slides for over an hour.

have been and what they have been doing without knowingly disturbing them.

Otter "watching" is one of my favorite activities. Maybe I will see you out there.

If You Go

River otters have been released at the following four sites:

1. Red Rock Reservoir on the Des Moines River downstream from Des Moines. A good starting point is the area round Runnells and Swan. Highway 316 is the main road to the area. Other accesses along the Des Moines River on the upper end of Red Rock from Highway 14 to Carlisle are also likely spots to look for otter tracks.

2. Otter Creek Marsh. The Otter Creek Marsh is located between Tama and Chelsea along the Iowa River. The wildlife management area is just south of Highway 30 at the junction of county blacktop E66. Otters are living in the marsh as well as along the river.

3. Boone Forks. Otters are now living along both the Boone River and the Des Moines River in Hamil-



Ron Johnson

ton and Webster Counties. A good place to begin looking is the Boone Forks Wildlife Area north of Stratford. There is a canoe access on the Boone River within one-half mile of the junction with the Des Moines River that makes a good starting point.

4. Springbrook State Park. Otters were released along the Middle Raccoon River at Springbrook State Park. There is a fishing access at the park that is the first place to check for otter sign.

Three additional otter releases are planned for this spring. They will be good places to watch for otters and tracks in the future. The sites are Sweet Marsh in Bremer County, Lake Rathbun in Appanoose County, and

the Little Sioux River in Clay, O'Brien, Cherokee and Buena Vista Counties.

Although there are state-owned lands in all of these areas, there are also many private landowners. Please be courteous to them and ask permission first if you are not sure about access. In many cases, landowners are as interested in the otters as you are and will appreciate a report of your findings.

Doug Reeves is the nongame biologist located at Boone. He holds an M.S. degree from Michigan State University and has been with the department since 1984.

Creating a place for wildlife to live might seem to some a quick and simple task. Get a piece of land, plant some trees and grass for cover, leave a patch of corn for food and presto — wildlife!

Simplified to its very basics, that formula might result in a little more wildlife. But, to maximize wildlife production and yield best results for dollars invested, there is a lot more to the process. Instant success is seldom possible, as it may take a few years for the area to become highly productive.

Those are important considerations on the minds of Iowa DNR wildlife management biologists when faced with the task of creating or improving habitat and producing wildlife. Let us take a closer look at what goes into the planning of a typical wildlife management area (WMA) in Iowa.

For our example, we will examine Grover's Lake, a new WMA located in Dickinson County not far west of Spirit Lake. For at least 30 years, the Iowa DNR had eyed some choice lands in this area. Here, a mixture of marshes, shallow lakes, woodlands, brush, native prairie haylands and

some croplands already provide for the needs of many wild creatures. In addition, the lands lie in close proximity to Kettleon Hogsback, a large and popular wildlife management area. With acquisition of additional property here, the area had potential for greatly increased wildlife production.

Until 1983, the owners had been reluctant to consider selling their land. It was a "century farm," passed down through generations, and this made parting with the farm difficult for some family members. Advancing age of the owners and other factors caused them to reconsider. When local DNR staff contacted them about selling at least part of the farm to the state, the family agreed to negotiate through their realtor.

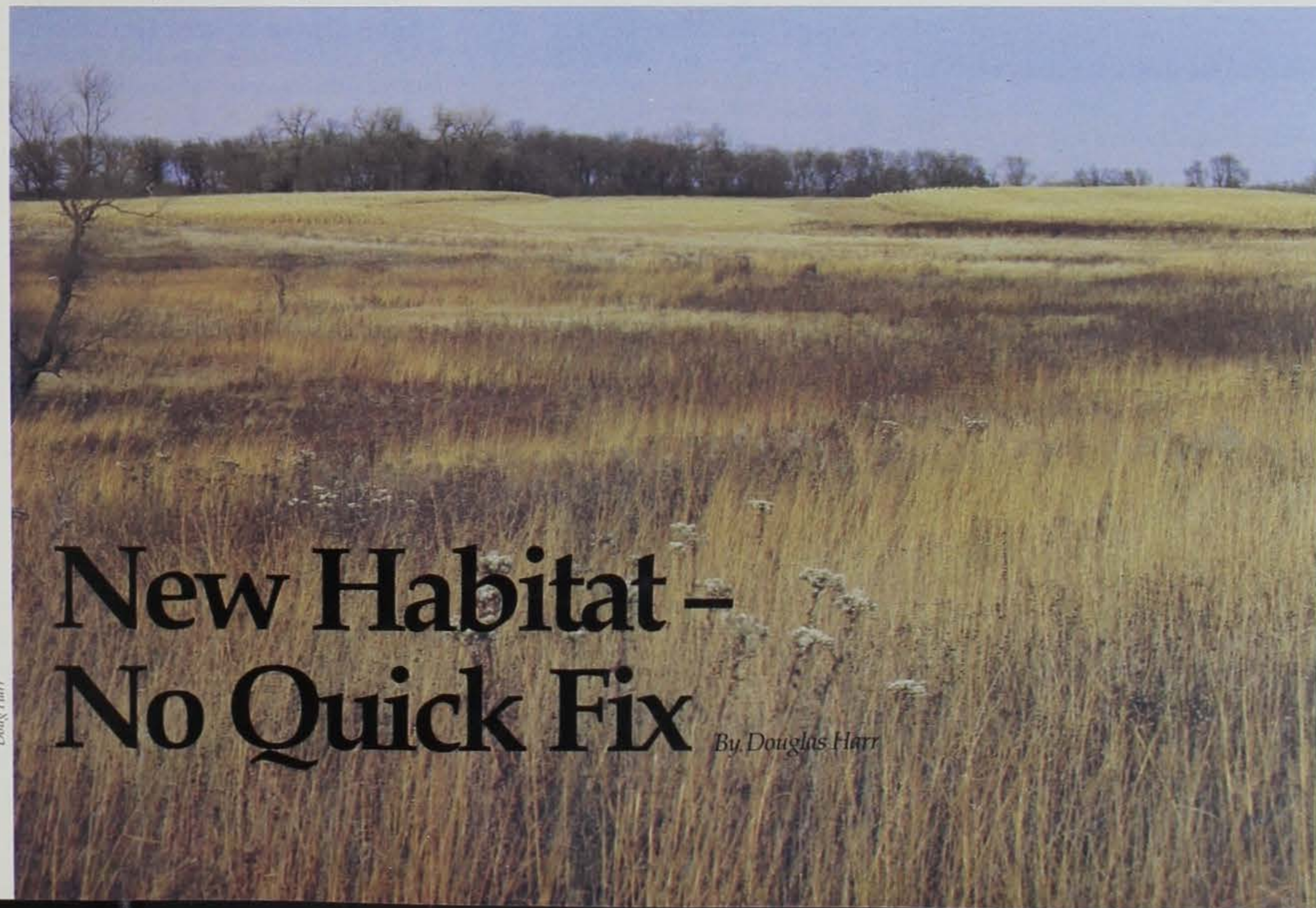
After discussing which tracts of the larger farm might be most useful for wildlife management purposes, an acquisition field report was submitted to DNR headquarters in Des Moines. This document briefly described the property, its topography and natural features, existing and potential wildlife use, public use facility needs providing it was purchased, the owners' asking price,

and a recommendation as to whether the field staff felt this property should be pursued further.

After review by Fish and Wildlife Division administrators, an appraisal was made of the property's value, in comparison to other similar properties sold in the vicinity. A DNR negotiator was then sent to discuss with the owners and their attorney a final price and agreement to what portion of the farm would be sold. After four months of such discussions, it was agreed that the state would purchase about 321 acres, excluding some of the higher-valued cropland. This would enable the DNR to keep the purchase price low, while still acquiring the best lands for wildlife. An option to buy was signed and on December 28, 1983, some eight months after discussions began, the state accepted a deed. Because of the important wetlands acquired (approximately 125 of the 321 acres) waterfowl stamp monies were used for the purchase. This was and is the largest acquisition ever made using duck stamp money from Iowa's hunters.

While a surveyor was hired to mark the property boundaries, local

Grover's Lake WMA four years after acquisition. Strips of oats, corn and switchgrass serve as background for a large native prairie recently renovated by burning.



New Habitat — No Quick Fix

By Douglas Harr



Doug Harr

SCS District Conservationist Clarence Call discusses contour field layout with the author (left). A bulldozer is used to bury ruins of an old farm-site along the shore of Grover's Lake (below).



Doug Harr

wildlife management staffers met with the Soil Conservation Service to look at the 62 acres of cropland included in the tract. Those lands which had the most erosion potential would be taken out of production and sown to a cover which would protect the soil and offer wildlife shelter. A meeting of several northwest Iowa wildlife managers was then held to "brainstorm" some ideas for the best management practices. Each was asked to submit suggestions and a map to the wildlife management biologist who would be assigned the property, to be included in a final land management plan.

Although no land management could begin until the DNR had possession of the cropland, there were other things to be done. Boundary fences needed to be constructed, old buildings torn down, boundary signs

erected and a public parking lot built. It was also possible to begin putting up goose nest barrels on wetlands and wood duck nest boxes on lakeshore trees and posts. The making of a wildlife area was now underway.

In the spring of 1985, work began in earnest to turn an old farm into improved wildlife habitat. Most of the 34 acres to be retained as cropland were mapped out into contoured strips, each field separated by a 50-foot-wide strip of switchgrass, a native perennial favored for nesting by some birds. These strips would also serve as travel and flushing lanes for fall pheasant hunters. A crop rotation plan was designed using corn, oats and hay in a classic rotation that would benefit wildlife and enrich the soil. Bids were let for neighboring farmers to handle the actual cropping based on the DNR plan, and the high bidder was awarded a three-year contract. This required the cooperator to delay hay mowing operations annually until after the summer nesting season and to leave 25 percent of the corn standing for winter wildlife food. In return, he would harvest the rest for a reasonably low per-acre annual rent.

Old croplands around marsh edges and on cropland headlands were seeded to mixed native prairie grasses. These would serve nesting needs of waterfowl, songbirds and

other small wildlife. Two tree plantings were made, in order to provide eventual dense winter cover protection from northern Iowa's notorious blizzards and cold. Red cedars were selected because they offer the densest shelter of any evergreens, and these were supplemented with rows of berry-producing shrubs such as plum, dogwood and Siberian crabapple.

Prior to state acquisition, this farm had about 15 acres of native prairie which had been annually cut for hay through most of this century. There was some question whether or not its prairie plants might recover, as they seemed to be dominated by introduced grasses including brome and timothy. After leaving the hay uncut through 1985, DNR officials thought there were enough remnant prairie species to warrant a controlled burn. Controlled burning is commonly used to renovate deteriorated prairies. In April of 1986, a prescribed burn successfully rejuvenated the area. By fall, a nearly perfect recreation of the original native grassland was dominated by chest-high warm-season grasses and a diverse number of wildflowers. Another small piece of prairie, five acres that had never been mowed or grazed, was also burned. This tract is now preserved to safeguard its population of the small white lady's slipper orchid, a rare and unique wildflower.

Preservation and improvement of wetlands on the tract were important considerations, especially since the land was purchased with duck stamp funds. Since part of Grover's Lake was still privately owned and extended into the state of Minnesota, there were limitations on what could be done with water levels. It was possible, however, to clear some trees and brush from the shore of Grover's Lake, to entice upland nesters like mallards and blue-winged teal to selected nesting sites. Also, a low wet spot in a field was excavated

with a bulldozer into a small pond with a center island. The first spring after this was completed, a pair of giant Canada geese used the island to raise their brood of six goslings.

This acquisition actually consisted of two tracts — Grover's Lake itself and a separate pasture bordering nearby Hottes Lake, part of the Kettleson Hogsback WMA. The summer of 1986 was the first time this area had been free of cattle, so the grasslands were just allowed to recover. Although there may be little prairie left, the bluegrass, buckbrush and other shoreline vegetation will now likely experience more nesting by ducks and geese. There may be opportunities for other habitat improvement on this pasture in the future.

By the fall of 1986, the entire area looked attractive to wildlife. Ducks and geese flocked to the wetlands on migration, pheasants darted among the strips of switchgrass and corn, deer slipped quietly through the woodlands along Grover's Lake, and hawks hovered above grasslands as they hunted mice and other small prey. Hunters had also discovered the area as was evident by frequent presence of cars at the roadside parking lot.

It has taken nearly four years for Grover's Lake WMA to reach this point, but there is still more to be done. Additional land purchases are needed to solve several management problems. More trees and shrub plantings are being considered. Another small wet area might be developed into a small marsh. Periodic burning of the native prairies and planted native grasses will be required to maintain their vigor. Wildlife populations will also be monitored to assess how management practices are affecting numbers of key wildlife species. Signs, fences, parking areas and other facilities will need periodic repair or replacement. The list goes on.

Development and maintenance of good wildlife habitat is not as easy as it first might appear. It requires considerable knowledge of the wildlife species to be managed and their life requirements. It requires land, preferably in enough quantity to have a meaningful impact on wildlife numbers once habitat is developed. It

requires money, not only for land acquisition, but also development and long-term maintenance. And perhaps most importantly, it requires time and considerable patience. Nature took thousands of years to create similar habitat and wildlife.

Finally, a wildlife manager must recognize that what he or she does may not always have exactly the desired results because of surrounding private agricultural practices and other factors. Aldo Leopold, a native Iowan who founded the science of modern "game management," penned the following thought in the first text ever published on this subject in 1933:

"Every head of wildlife still alive in this country is already artificialized, in that its existence is conditioned by economic forces. Game management merely proposes that their impact shall not remain wholly fortuitous. The hope of the future lies not in curbing the

influence of human occupancy — it is already too late for that — but in creating a better understanding of the extent of that influence and a new ethic for its governance."

Professional wildlife managers must use what knowledge is available through training, experience and personal skills. But there is also an element of faith involved, a kind of faith that an individual can do everything humanly possible to recreate wildlife habitat, and that nature will recognize those efforts and supply the creatures to go with it. If and when that happens, you know you have "made" a wildlife area.

Doug Harr is a wildlife management biologist in northwest Iowa's Big Sioux Wildlife Unit. He holds an M.S. degree from South Dakota State University and has been with the DNR since 1972.

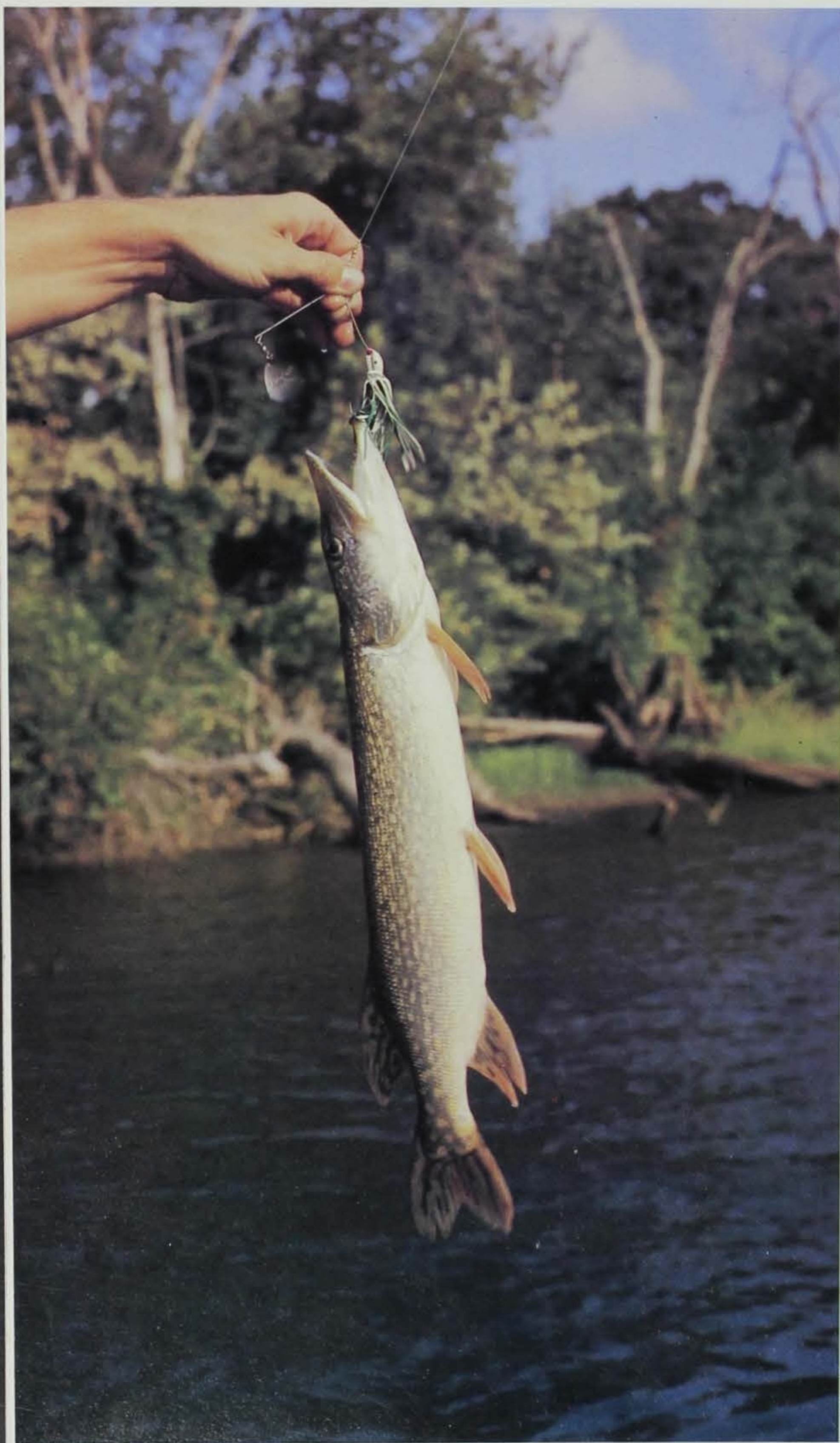


Doug Harr

A first task after acquiring new land is to construct a parking area convenient for public use (left). The local wildlife management staff inspects a tree planting just completed to improve future winter cover for wildlife (below).



Doug Harr



WOLF of the WAPSI

By Jerry Hudson

The marsh lay silent, reflecting the early morning sky and tell-tale signs of an approaching thunderstorm. Several large raindrops fell from the converging clouds and soon individual drops were lost in the fury of a brief squall over the marsh. The marsh plants shouldered the brunt of the storm, moving in cadence to the wind. Still dressed in winter brown, they resembled old sentinels, stooped with the changing seasons into grotesque masses, obscuring the far shoreline. Spring had arrived late this year, forcing the ice, along with winter, to retreat.

Even before the ice disappeared, the "wolf" of the river ascended the Wapsipinicon, its tributaries, backwaters and marshes. These areas warm first in the spring, providing open water with the correct temperature gradient and the necessary habitat for northern pike spawning. Typically, this species prefers sluggish water with abundant vegetation. A female and several males gather, releasing eggs and milt over the aquatic vegetation where the eggs are left unattended to hatch on their own in 12 to 14 days.

Once the spawning fever subsides, most northerns seek the solitude of deeper pools and drop-offs in the river to recuperate during the post-spawn period. Some pike, however, still hang out in the marshes and backwater areas where the water is warmer and new vegetation growth is first to occur. Shallow backwater expanses saturated with weeds, flooded timber, and fallen trees provide good cover and prime northern pike feeding areas. Insects, min-

Jerry Hudson photo

nows, and other small fish gather in these locations to feed and reproduce, building up to incredible numbers which serve to attract large predators. Since pike prefer aquatic vegetation, they are particularly suited to feeding in and around shallow weedbeds. Their elongated body, dark green sides with light irregular spots and duck-billed jaws filled with sharp teeth give them the camouflage, tools and tenacity to launch a short-range ambush on their prey.

Fearless of other fish, the water wolf's nasty disposition and savage nature make it the most aggressive predator in the river. Yet these very traits prove this "eating machine" to be highly prized by those anglers who put a lure in front of him. While this species may hit any type of bait, live bait such as a chub or sucker impaled on a hook behind the dorsal fin and suspended below a bobber is one of the best northern pike fishing methods. This bait has some freedom of movement, which attracts the pike's attention. This technique has probably taken more pike than any other fishing method.

Artificial baits can be just as effective on big northern pike if fished properly. Spoons, spinners, and crank baits in various colors each have their

place in different fishing situations, and most dedicated anglers have several of these pike catchers on hand. No matter which lure you select, each one duplicates the flash or natural movement of bait fish, provoking a furious attack. For river fishing, it is important to select a lure that can be fished in a variety of habitats without constantly getting hung up. In this respect, the spinner bait seems to be a good choice. Regardless of the lure used, a steel leader between the bait and fishing line is a prerequisite when fishing northern pike. Without it, the pike's dental arrangement can slice through monofilament line resulting in missing terminal tackle or a lost trophy.

While it is possible to catch northern pike from the riverbank, an angler has a marked advantage by fishing from a boat. More cover and a greater number of areas can be fished in search of the "wolf." One thing to keep in mind is to look for shallow, flooded backwaters with good exposure to the sun and protection from the early spring and late fall breezes. Many such areas exist along the Wapsi River. This is where a trophy might reside, and with a little imagination, luck and the right equipment, the "wolf" is within your grasp.

Jerry Hudson is a fisheries management biologist located at Manchester. He has a B.S. degree in fisheries biology from Kansas State University. He has been with the DNR since 1975.



The Wapsi's shallow backwaters (above) provide good cover and prime northern pike feeding areas.

HOW TO REMOVE "Y" BONES

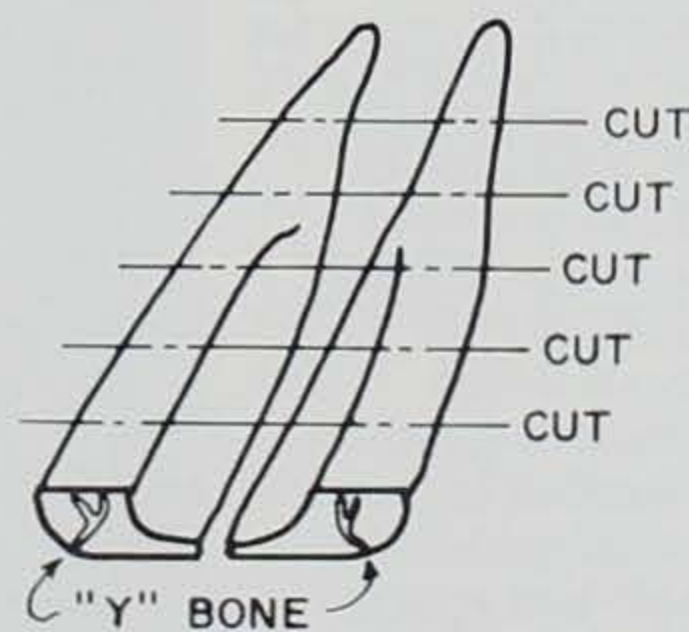
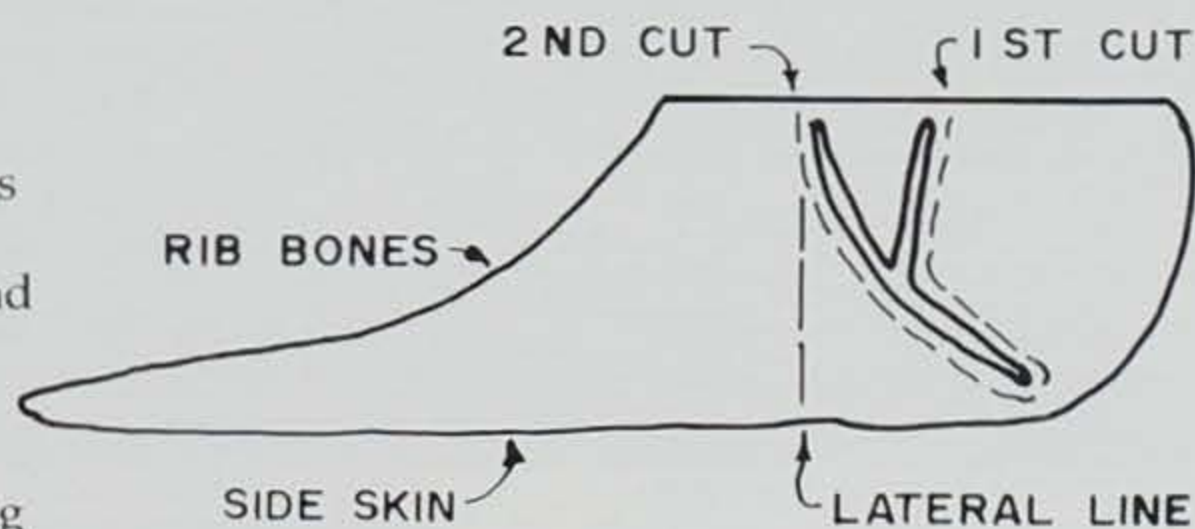
After filleting and skinning a northern pike, you have two long fillets. Cut these two fillets into steaks about 3 inches wide (it makes it easier to bone them).

Next, fillet the rib bones from the steaks. The tail pieces will have no rib bones or "Y" bones, so they may be set aside. In every other steak there will be both rib bones and "Y" bones.

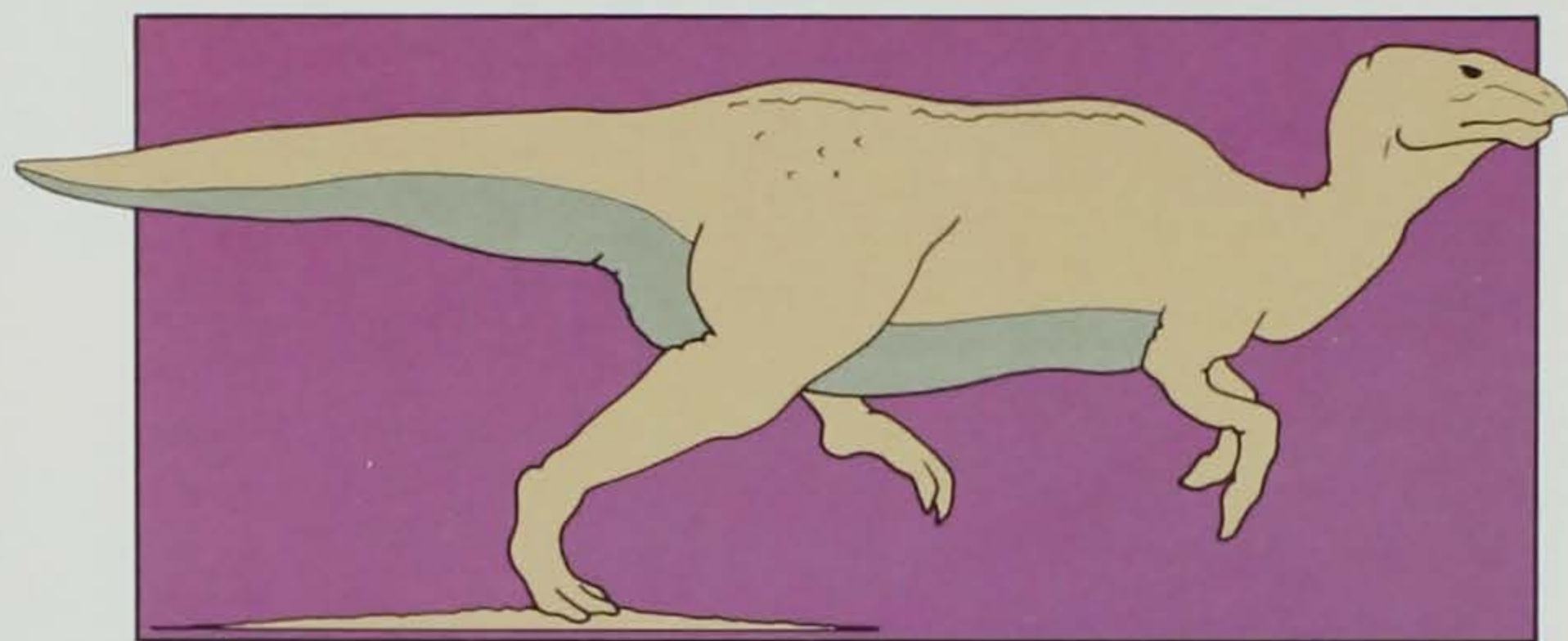
Examine the diagram to see how the "Y" bones are situated.

You can see and feel the tips of the "Y" bones projecting through the flesh above the lateral line. Use these tips (projecting bones) to guide the incision for the first cut. Then just slide the knife along the bones down and toward the back. You will be past the bones before you cut through at the back, so be sure not to cut off that large piece of meat.

The second cut starts right at the lateral line. Cut down and then under the bones towards the back. As the second cut approaches the first cut, the piece of bones can be gently pulled and removed. When you flip the back piece over to its original position, it is hardly apparent that anything was removed.



Dinosaurs once lived in Iowa, although the fossil evidence is meager. Below is a reconstruction of a duck-billed dinosaur about 30 feet long.



FOSSILS

A Part of Iowa's Geological Puzzle

By Brian J. Witzke and Wendy J. Zohrer

Iowa's fossil record conjures up images of coral-studded tropical seas, of dinosaurs browsing in subtropical forests, and of elephants wandering Iowa's icy landscape. No one today has ever witnessed such scenes, but Iowa's rocks and fossils remain as a silent testimony of what lived millions of years ago.

Fossils are remains or traces of ancient animals or plants which have been preserved by natural processes within sediments or sedimentary rocks of the earth's crust. Most of Iowa's fossil record is preserved within limestone, shale, and sandstone layers deposited in ancient coastal lowlands or seaways that once covered the state. The dead remains of many organisms were buried and preserved by accumulating layers of sediment in these ancient environments. Soft-bodied remains of these organisms are only rarely preserved within the geologic record, primarily because soft tissues generally decay as sediment accumulates. However, the hard parts of organisms, especially shells and bones, are more resistant to decay and erosion, and as such, most fossils found in the geologic record represent only the hard parts of ancient life forms.

Fossil hunting can be a fascinating hobby but it also provides scientists with a link to Iowa's ancient past. This link provides insight on how plants and animals have changed over time. Fossils also provide evidence of life forms which no longer live in the modern world. This record can be found in Iowa's native or sedimentary rocks.

The sequence of fossils through time is determined from the geologic record by applying a simple rule: younger strata or layers are deposited above older strata. Only in areas of intense mountain-building activity have older strata been folded or thrust above younger rock. The fossil record is used to categorize divisions of various geologic time. Various biologic and geologic events can then be put into a historical context by using the fossil record.

Ancient seas covered Iowa during portions of the Paleozoic Era, ranging in age from 285 to 525 million years ago. Paleozoic means "ancient life", and fossils from this era include the remains of many organisms which are unfamiliar in the modern world. Most of Iowa's common fossils are remains of animals that lived on the ancient sea bottom. These include clams, corals, sponges, brachiopods (lamp shells) and crinoids or sea lilies.

Dense accumulations of coral formed reef-like masses on the Iowa sea floor. Brachiopod shells are among the most familiar of Iowa fossils and hundreds of species have been recognized. Crinoids are among the most beautiful of Iowa fossils, although complete crinoid specimens are usually quite rare. Still this fossil is so abundant in some places that their broken skeletal remains make up entire layers of rock. Crinoids superficially resemble plants but actually represent a group of animals related to the starfish.

Other animal groups that inhabited the ancient Iowa seas include active predators and scavengers which crawled or swam in this sea. These included cephalopods, worms, trilobites, crustaceans and sea urchins. A variety of extinct shelled cephalopods, ancient relatives of the modern chambered *Nautilus* have been found in Iowa. In the early Paleozoic seas some cephalopods reached lengths of 10 feet and are among the largest animals known at the time. Trilobites are among the most popular of Iowa fossils and are highly prized by Iowa collectors. These extinct creatures are distantly related to modern horseshoe crabs.

Fossil fish remains are generally rare in Paleozoic rocks of Iowa. Small fossil skin plates of ancient jawless fish date back 470 million years in Iowa. Sharks, extinct bony fish and an extinct group of armor-headed fish called placoderms are found in younger Paleozoic rock layers. Fossils of early land dwelling vertebrate animals are extremely rare, but 335 million year old amphibian fossils were discovered recently in southeast Iowa. These exciting fossils are among the oldest four-legged animals known in the world.

When plants and animals flourished in the shallow seas of the early Paleozoic, the land surface remained largely barren. Plants did not become well established on the land until middle and late Paleozoic time. Plant fossils are particularly abundant in Iowa's coal-bearing strata. Lush tropical vegetation covered the coastal lowlands and the remains of these plants accumulated in swampy areas. Later these swamp sediments were changed into coal. Fossils of

ferns, seed ferns, scale trees, and giant horsetails are among the most common plants found in the coal-bearing strata.

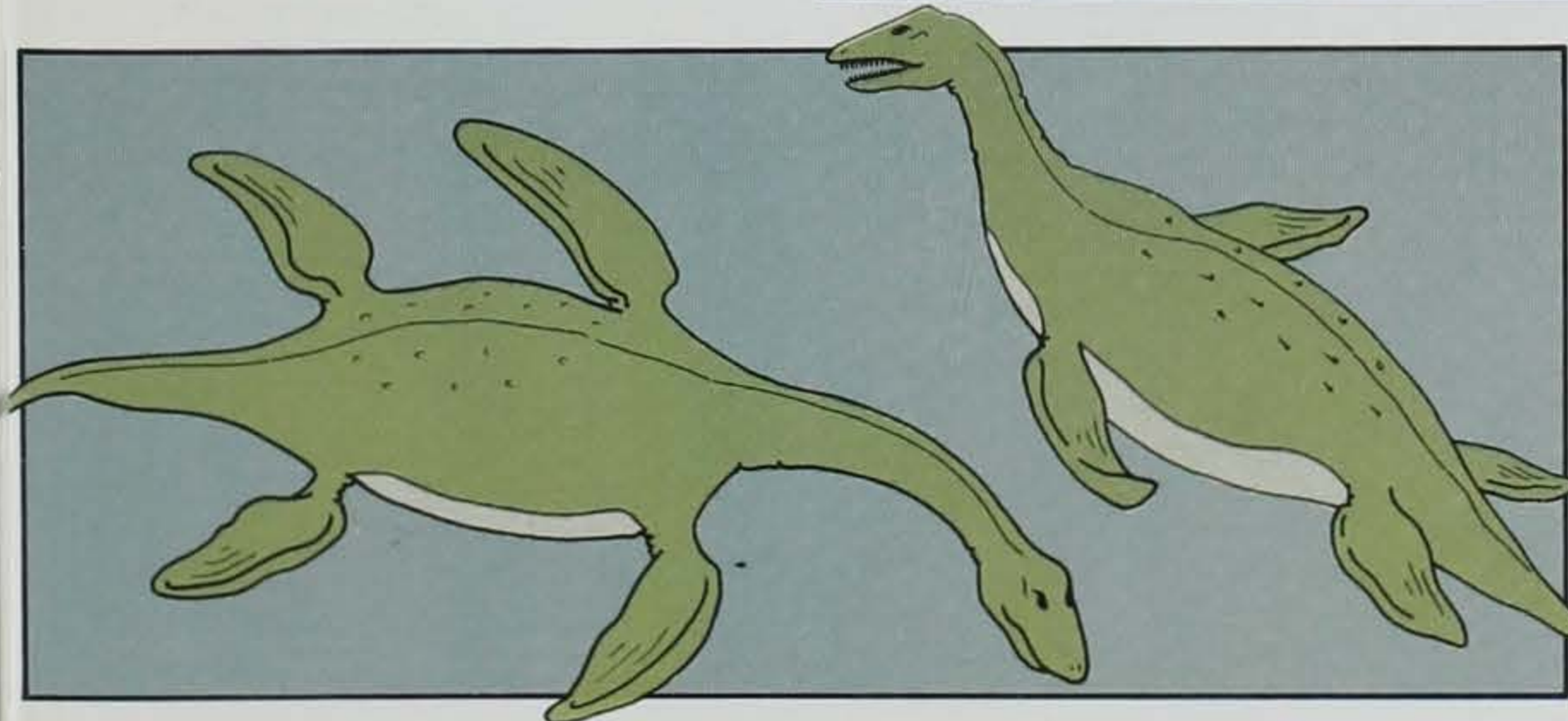
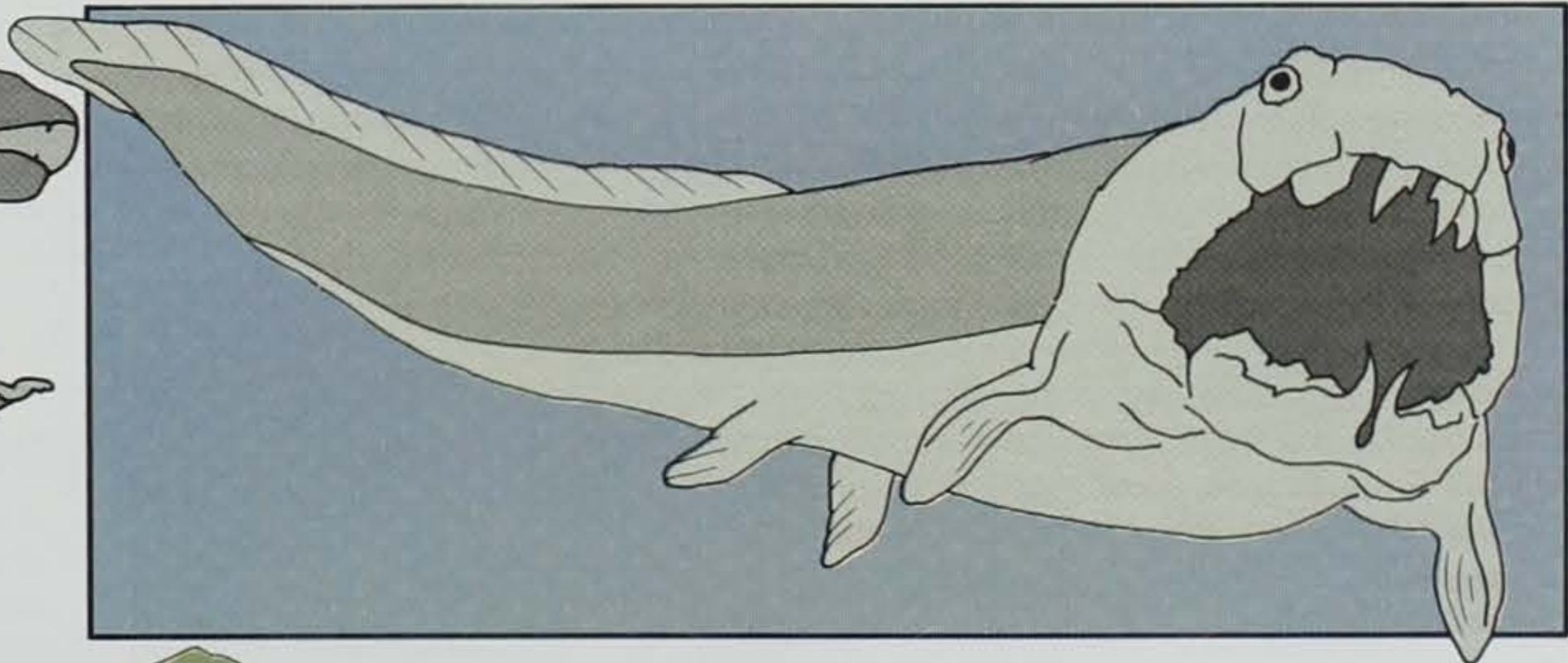
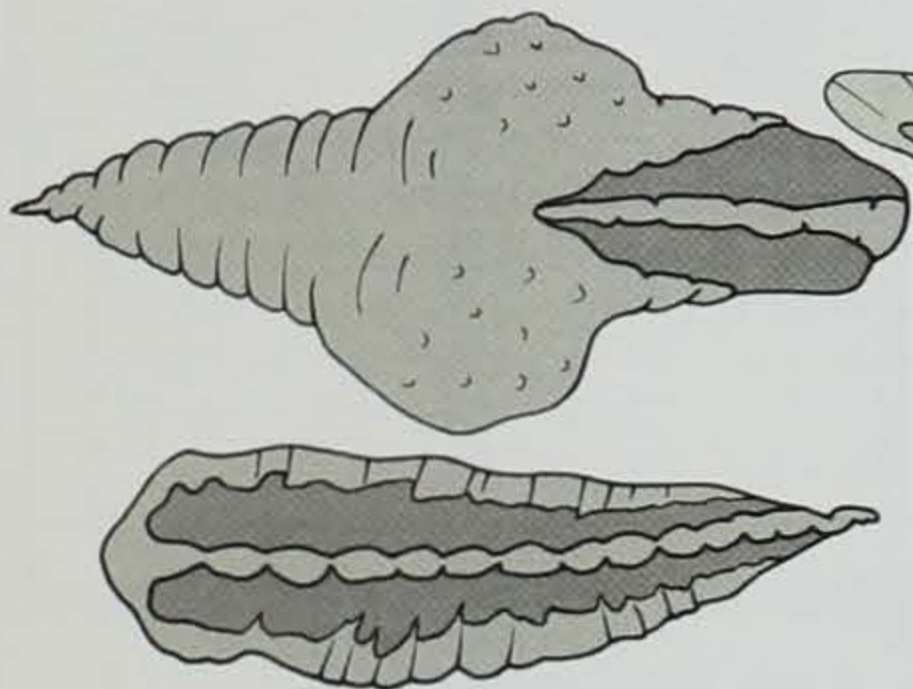
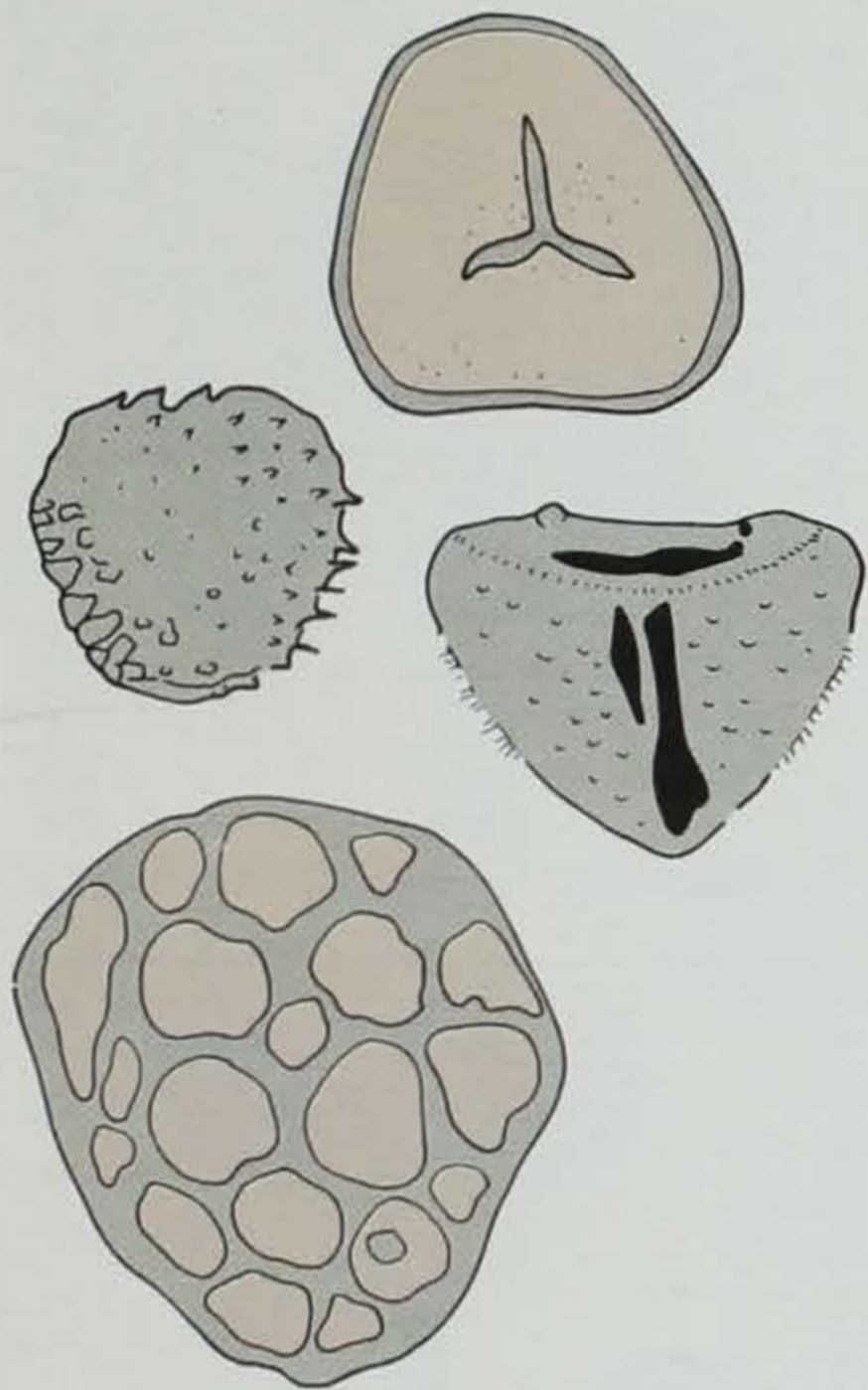
Erosion has erased much of the rock and fossil record of the last 40 million years of the Paleozoic Era in Iowa. Sediment began to accumulate again during the latter half of the Mesozoic Era or the period of "middle life". This was the "Age of Dinosaurs". The oldest Mesozoic rocks are exposed in the gypsum mines at Fort Dodge. These rocks were probably deposited along the margin of an ancient seaway that covered much of the western U.S. about 160 million years ago. As we continue through time, sediment began to accumulate in ancient river systems in western Iowa beginning about 100 million years ago. Flowering plant fossils such as magnolias are preserved within these deposits. These represent some of the oldest flowering plant (angiosperm) fossils known.

Fossils, especially dinosaurs, can titillate the imagination of people of all ages. What first comes to your mind when the word "fossil" is mentioned? Ask an elementary student and that word may be "dinosaur".

Many will ask, "Did dinosaurs really live in Iowa?" The answer is "yes", but the record is meager. A single dinosaur bone scrap has been found in Guthrie County. It provides the first direct evidence that dinosaurs once lived in this state. Bone from duck-billed dinosaurs has also been found 2 miles west of the Iowa state line near Onawa. Careful searching by fossil collectors and geologists hopefully will uncover additional evidence.

Sea water covered the state for the last time during the late Mesozoic Era spanning a time about 75 to 93 million years ago in Iowa. A great variety of fish including sharks inhabited the surface waters of this sea. Relatively few animals lived on the sea bottom. Plesiosaurs, large sea-going reptiles also lived in Iowa at that time.

As we continue through the geologic record, the Cenozoic Era, or period of "recent life", makes up the last 65 million years of earth history. Erosion again greatly altered the geologic record in Iowa during this time. Only the last few million years are commonly represented in Iowa's sedimentary record. These latter deposits date back to the "ice age" or



Microfossils (left column) are commonly used for geologic correlations. These microscopic fossil plant spores (top) and conodonts (bottom two fossils) are from coal-bearing strata in Iowa. Placoderms (above), or armor-headed fish, lived in the middle Paleozoic seas of Iowa.

Plesiosaurs (left), an extinct group of sea-going reptiles, lived in the Mesozoic seas that covered Iowa. The plesiosaurs and placoderm are about 20 feet long.

Pleistocene epoch. Vast continental sheets of glacial ice covered parts of Iowa during this period. A series of climatic changes accompanied the growth and melting of these glaciers. Animals and plants characteristic of tundra and the boreal forest environment lived in Iowa during the cold episodes while other groups lived here during the warmer periods.

Many animal species represented in the Pleistocene deposits still live in the modern world. Remains of other large land animals can only be found as fossils. It is unknown as to why they became extinct ten or twelve thousand years ago. Giant ground-sloths, horses, peccaries, camels, caribou, musk oxen, long-horned bison, giant beavers, mammoths (elephants), and mastodons roamed the Pleistocene landscape in Iowa. It is speculated that many of these now-extinct animals were hunted by prehistoric people. It is hoped that continued studies in Iowa and adjacent areas will provide new answers to this segment of the geologic puzzle.

All fossil collectors can assist in unraveling our complex geologic puzzle by reporting any unusual finds. Fossil collecting can be fun as well as educational. Little equipment is necessary, but a rock hammer or

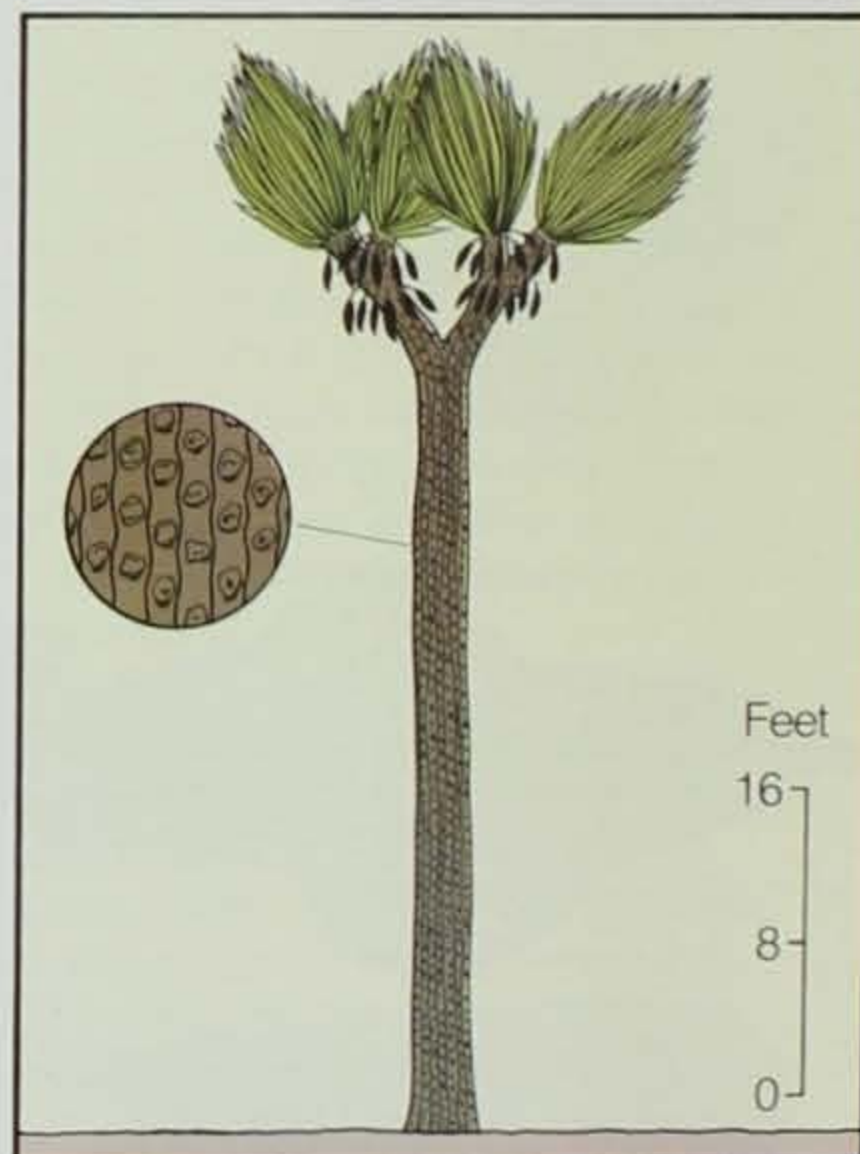
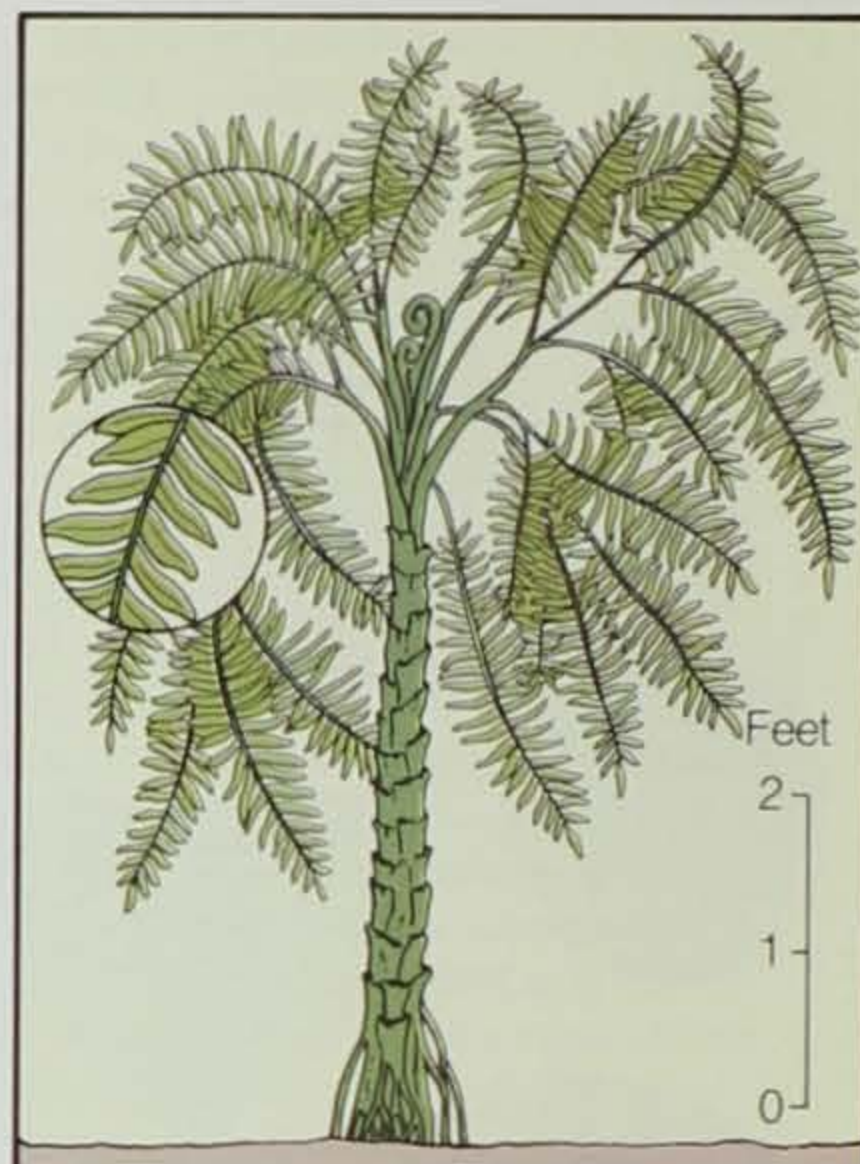
chisel can be handy when attempting to remove fossils from large rocks.

The best places to look for fossils are along natural rock exposures, quarries and road excavations. Careful searching is necessary, although fossils may be so abundant in some localities that even the casual observer can find specimens. Cleaning most fossils is an easy task and can be accomplished with a toothbrush and water. Other specimens require special techniques and a great deal of patience.

Why not plan a family geology outing. Who knows, you may be rewarded with a fossil of great beauty. Maybe not, but even the smallest or the most insignificant fossil illustrates our heritage, a physical link preserved in rock.

Brian Witzke is a geologist for the DNR's geological survey bureau. He has a PhD in geology from the University of Iowa and has been with the survey for nine years.

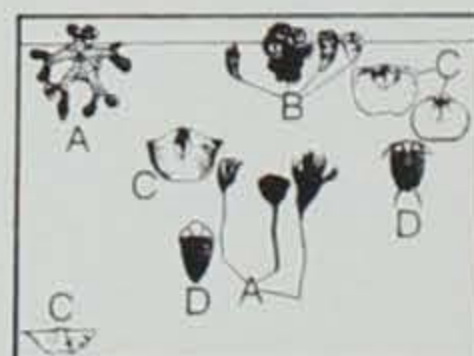
Wendy Zohrer is the field information specialist for the DNR in Iowa City. She has a B.S. in fish and wildlife biology from Iowa State University and has been working in the conservation field for eleven years.



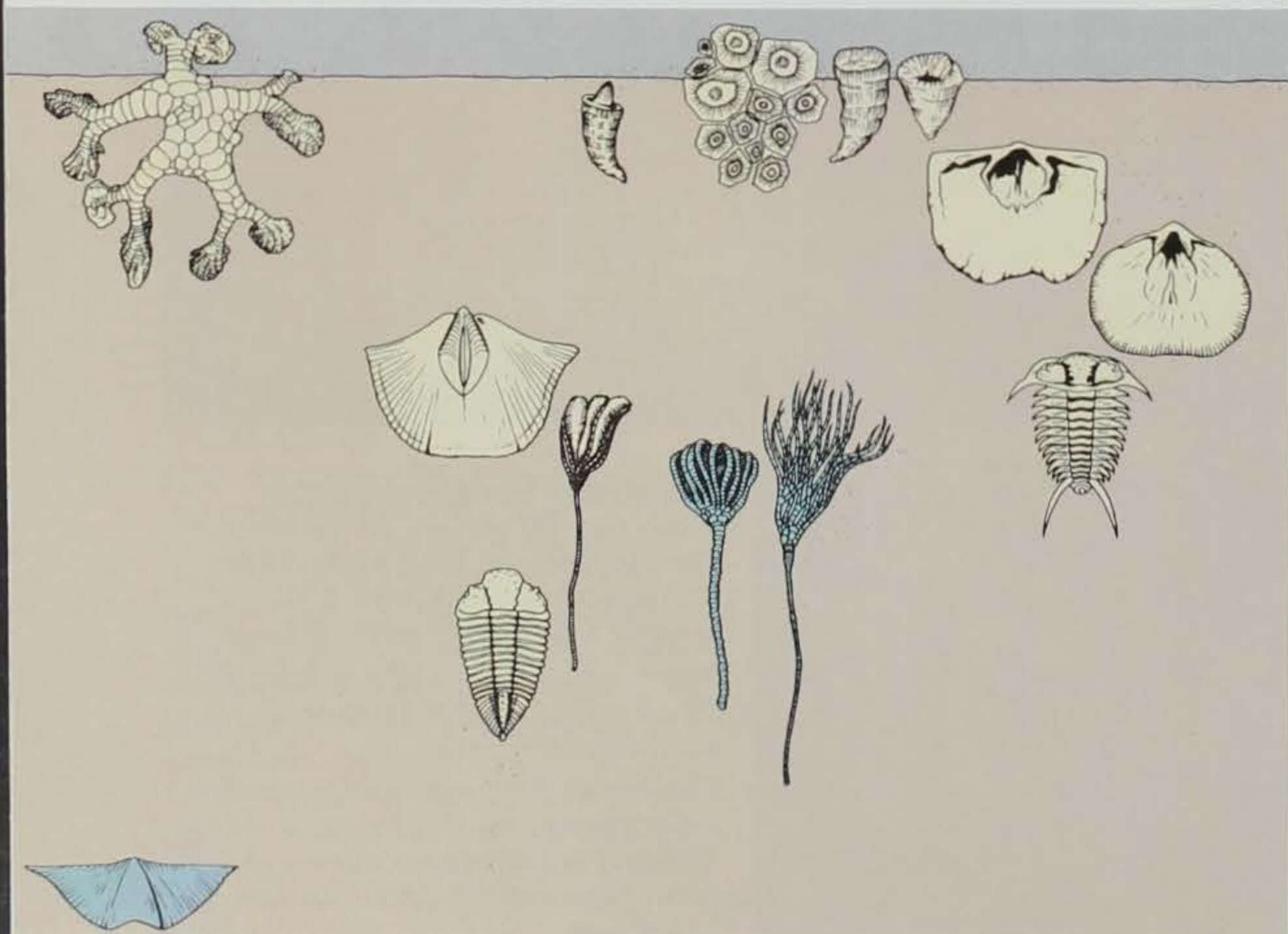
A seed fern, Medullosa (above) and a scale tree Sigillaria; Late Paleozoic coal swamps of Iowa.

Paleozoic-age marine invertebrate fossils found in Iowa

- A. Crinoids
- B. Corals
- C. Brachiopods
- D. Trilobites

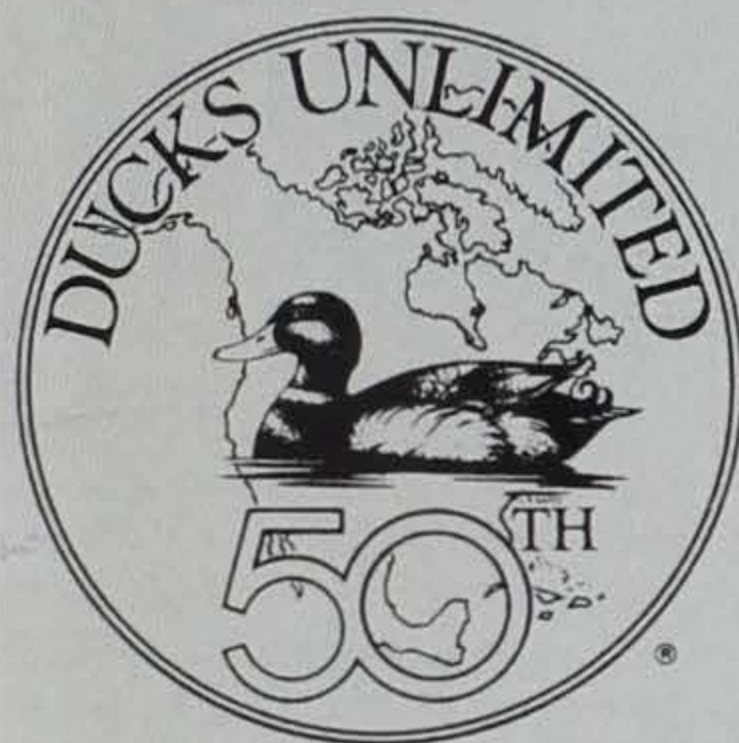


Illustrations by Patricia Lohmann





Ducks Unlimited Celebrates 50th Anniversary



1937-1987

Ducks Unlimited turned 50 this year, bigger, healthier and more determined than ever to continue leading the way in wetlands conservation across North America. It was on January 29, 1937 that a small group of dedicated outdoorsmen incorporated DU in Washing-

ton, D.C.

To celebrate its anniversary year, Ducks Unlimited plans to raise more money, recruit more members and accomplish more for the continent's waterfowl than ever before.

Iowa ranks among the top ten states in both total DU members (23,480) and total DU committees (130 chapters). Last year, Iowa DU volunteers helped raise \$1,237,000 for waterfowl.

Seven and one-half percent of the total money raised in the state is returned to Iowa for DU's M.A.R.S.H. program (Matching Aid to Restore State Habitat). In 1985, a 140-acre wetland area in Clay County was purchased through the M.A.R.S.H. program.

In addition to the money contributed through DU banquets and fund raisers, 15 percent of Iowa duck stamp monies are given for DU projects.

Commenting on the DU anniversary, U. S. Interior Secretary Donald Hodel stated: "For all of its 50 years, Ducks Unlimited has been an outstandingly effective private wetlands and waterfowl conservation group in North America. From a fledgling group of sportsmen in 1937 to 600,000 members today, Ducks Unlimited has grown right along with its commitment to see a job through."

"Ducks Unlimited realized a long time ago," says Interior Secretary Hodel, "that conservationists cannot and should not wait around for government to bear the entire responsibility of sound resource management. The private sector must lend a hand, and Ducks Unlimited has. I salute Ducks Unlimited on its first 50 years, and remind every conservationist of his or her responsibility to support the efforts they believe in."

Losing Ground

Iowa's topsoil is eroding at a rate twice the national average, making it one of the worst states in the country. That soil erosion costs the landowners who allow it to erode, but the downstream consequences of soil erosion are equally as serious (see story page 2). Yet, it wouldn't have to happen, because the technology is available to control soil erosion.

That is the message of a colorful 24-page brochure just published by the Soil Conservation Service in Iowa. "Losing Ground — Iowa's Soil Erosion Menace and Efforts to Combat It" capsulizes soil erosion problems in this state and explains how the problems could be controlled. More than 50 color photographs of Iowa scenes show the impact of erosion on our land and the dramatic differences soil conservation can make.

The booklet is available free from local offices of the USDA Soil Conservation Service.

BOAT REGISTRATIONS EXPIRE

The Department of Natural Resources reminds boaters that this is the year to register boats. At midnight April 30, all boat registration certificates will expire.

Vessel owners may obtain an application for registration from the county recorder in the county in which they reside. Registration will be valid for a two-year period ending April 30, 1989. The fees for boat registrations are as follows:

IOWA BOAT REGISTRATION FEES

			New Registrations Only	
			Odd-Numbered Year	Even Numbered Year
No Motor/ No Sail	Any Length	New	\$ 5.00	\$ 2.50
		Renew	5.00	—
Motorboat OR Sailboat	Less Than 12 Ft. In Length	New	8.00	4.00
		Renew	8.00	—
	12 Ft. To Less Than 15 Ft.	New	10.00	5.00
		Renew	10.00	—
	15 Ft. To Less Than 18 Ft.	New	12.00	6.00
		Renew	12.00	—
18 Ft. To Less Than 25 Ft.	New	18.00	9.00	
	Renew	18.00	—	
25 Ft. Or More In Length	New	28.00	14.00	
	Renew	28.00	—	
Documented Vessels	Any Length	New	25.00	12.50
		Renew	25.00	—

A \$1.00 writing fee is charged by the County Recorder for each registration.



Water Safety Poster Contest Winners Announced

Winners of the Water and Boating Safety Committee of Iowa seventh annual water safety poster contest have been chosen, according to the Iowa Department of Natural Resources. The theme for this year's contest was "Take A Boating Course."

Selena Gloede, a sixth grade student from Charter Oak-Ute School, won first place for her cartoon character of an owl with the message, "Be Wise, Take A Boating Course."

Selena is the daughter of Randy Gloede and Lita Butler.

In addition to winning a \$200 savings bond and a certificate provided by IMT Insurance, Selena has been invited to meet Gov. Branstad and witness the signing of Iowa's safe boating proclamation in May.

Second place winner Jon Harms of Denison, a fifth-grader in Denison Community School, receives a \$100 savings bond, and third place win-

ner Kelli Joy White, a fifth-grader in Walnut Grove Elementary School, Council Bluffs receives a \$75 bond. Honorable mention certificates will be mailed to 16 additional students whose drawings were selected by the judging panel.

According to Sonny Satre, recreational safety coordinator for the DNR, the poster contest was a big success. "Choosing the best designs from a record 800 entries proved to be a difficult task for our judges," he said. "The committee was pleased with the interest shown by students across Iowa. Every poster carried an important safety message."

Satre said the objective of the project is to develop water safety awareness among young Iowans. "We are happy with the response. Participating school administrators and teachers, as well as the students, are making a real contribution toward water safety in Iowa."

IMT Insurance will print a quantity of the winning poster for distribution throughout the state. Co-sponsors of the annual program are the Iowa Department of Natural Resources, U. S. Coast Guard Auxiliary, Des Moines Power Squadron, U. S. Army Corps of Engineers and the Iowa Chapter of the American Red Cross.

"Natural" Lottery Project Ideas Sought

The Iowa Department of Natural Resources is looking for nongovernmental organizations and individuals who have a desire to double their money in their quest to help protect some of the state's most outstanding natural areas.

With a part of its share of the state lottery, the DNR can match privately raised funds up to \$500,000 a year for the purchase of natural areas with unique or unusual features, according to Arnie Sohn, planning bureau chief of the agency.

Sohn explained that although lottery receipts have come in below original expectations, two projects have already been funded under the natural area protection program:

— Steele Prairie: A 200-

acre tract of tall grass prairie in Cherokee County, cost-shared on a 50/50 basis with The Nature Conservancy at a total cost of \$180,000.

— Diamond Lake Wildlife Area: A 34-acre natural wetland in Dickinson County, cost-shared 50/50 with the Dickinson County chapter of Pheasants Forever at a total cost of \$16,000.

Groups or individuals who want to know more about potential cost-sharing projects should contact Arnie Sohn, DNR, Wallace State Office Building, Des Moines, Iowa 50319-0034; phone 515/281-5814. The application deadline for the current funding cycle is April 15, 1987.

Former DNR Staff Member Named New Nature Conservancy Director



William W. Crews, a native of Muscatine and former water resource advisor to Governors Branstad and Ray, has been selected as director of The Nature Conservancy's Iowa operations the organization's state chairman. The Nature Conservancy is a national nonprofit conservation organization that identifies and protects significant natural lands and the rare species they shelter. Active in Iowa

since 1963, the Conservancy has helped protect more than 31,000 acres in 22 projects statewide, and has secured voluntary registration of an additional 145 areas. Crews succeeds Lester L. Zimmer of Des Moines.

"The Nature Conservancy's reputation as an effective, professional organization and the great need to preserve what little natural diversity remains in Iowa presents an exciting challenge to me," Crews said. "With current land prices, we have an opportunity to realize significant gains in preservation. I look forward to working with the members of The Nature Conservancy and the citizens of Iowa in generating the support necessary to take advantage of this opportunity."

Classroom Corner



Changes in Fishing Laws

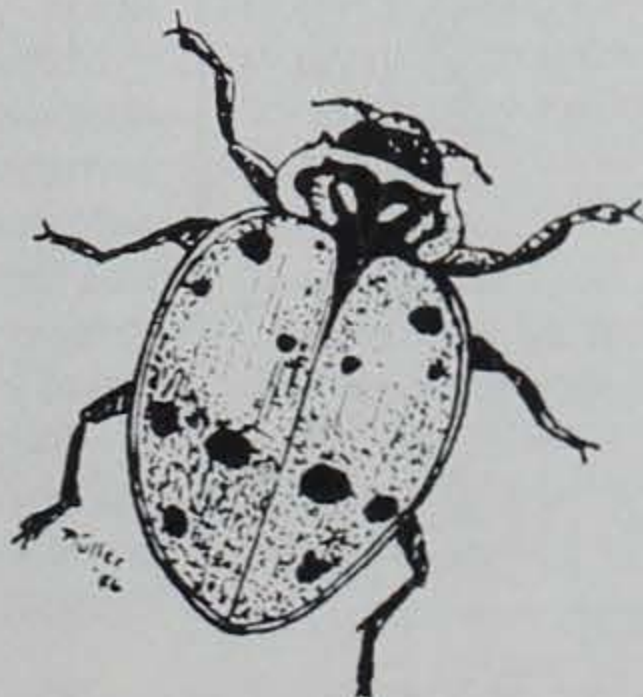
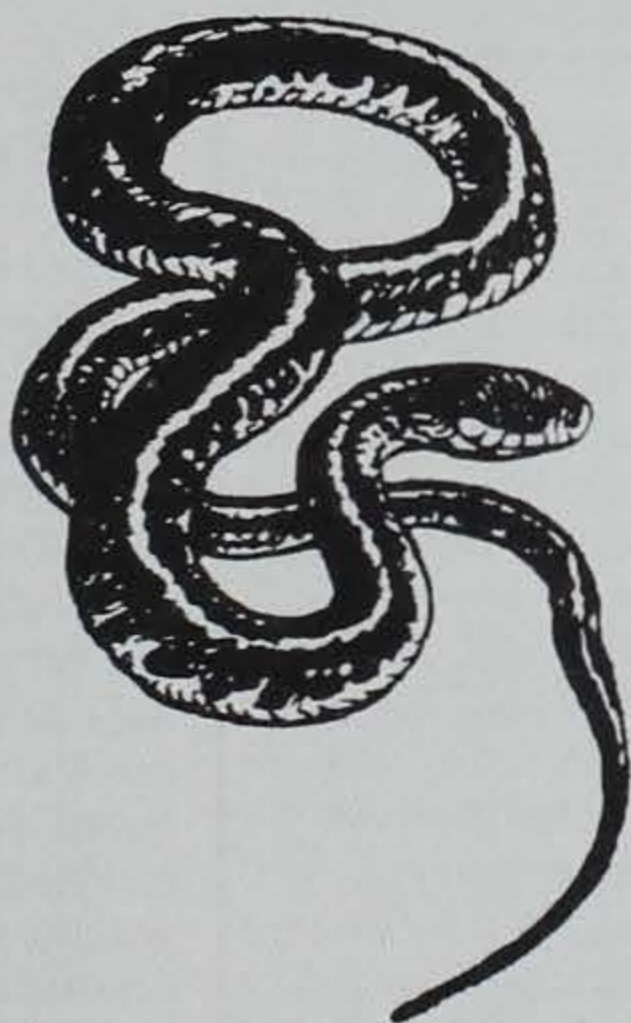
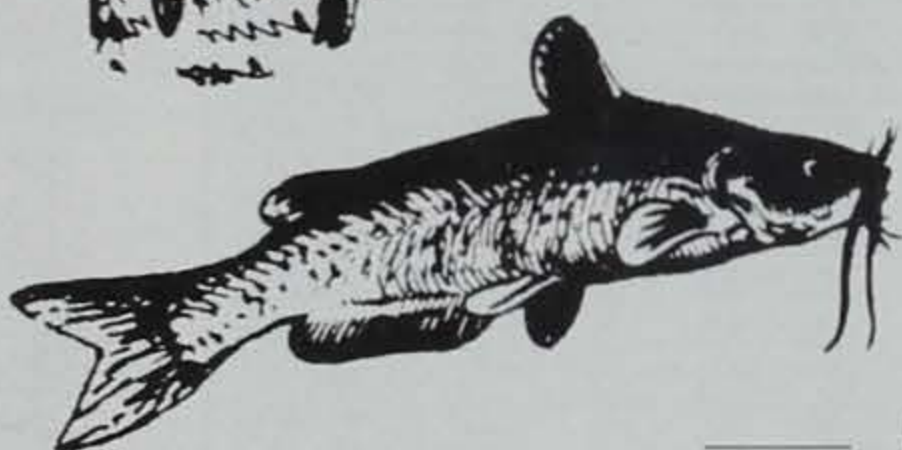
Several changes have been made in Iowa's fishing regulations according to DNR fisheries bureau officials.

A statewide minimum-length limit of 15 inches will apply on black bass in public lakes, unless otherwise posted. Any largemouth or smallmouth bass under 15 inches in length caught from a public lake must be immediately released. The exceptions to this rule, which will be posted as such, are Swan Lake in Carroll County, 16 inches; Lake Wapello in Davis County, 16 inches; Green Valley in Union County, 18 inches; Casey Lake in Tama County, 18 inches; Hawthorn Lake in Mahaska County, 12-16 inch slot; Iowa Lake in Iowa County, 12-16 inch slot.

The daily catch limit on black bass has been reduced to three, and the possession limit is six.

The daily catch limit on channel catfish in all interior streams has been increased to 15, with 30 allowed in possession. Lake catfish daily and possession limits are still 8 and 16 respectively.

A 14-inch minimum limit on walleyes applies in lakes West Okoboji, East Okoboji, Spirit, Upper Gar, Lower Gar and Minnewashta in Dickinson County. No more than one walleye above 20 inches may be taken per day from these lakes. Walleye length-limit restrictions do not apply elsewhere in Iowa.



By Robert P. Rye

Protection is something we are all concerned about. We have steel-toed boots, insulated gloves, sunscreen lotion, running shoes, and the list goes on. Wild animals must have protection also. The most common protection is to stay away from adverse conditions by migrating, but some animals have protection which allows them to survive.

Match the following animals and exterior protection forms.

- a. American Toad
- b. Box Turtle
- c. Catfish
- d. Cardinal
- e. Clam
- f. White-tail Deer
- g. Lady Bird Beetle
- h. Mink
- i. Snake
- j. Woodchuck



- _____ 1. What animal has hollow hair to help maintain body temperature during winter and also help it float while swimming?
- _____ 2. What animal grows two hinged shells within which it lives, and has powerful muscles to hold shut?
- _____ 3. What animal, when adult, has a hard brittle shell made of chitin?
- _____ 4. What animal, unlike others in its class, lacks scales and is protected by a smooth, slimy skin?
- _____ 5. What animal has a slimy skin, sprinkled with warty growths which contain bitter poison?
- _____ 6. What animal is raised by man for its valuable, lustrous brown fur and produces a scent similar to a skunk?
- _____ 7. What animal has a smooth dry skin, covered with scales and a transparent cap that is shed with the skin?
- _____ 8. What animal's protective brownish fur is so coarse that the creature has never been considered a furbearer.
- _____ 9. What animal doesn't migrate and has a red crest that he can fluff up to insulate against the cold?
- _____ 10. What animal lives in a shell like case so cleverly fashioned that in times of danger it can shut itself in, including head, tail, and four legs?

Answers:

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



CALENDAR

March - May, 1987

March 11-18	Wetlands Week Celebration	Lee County 319/463-7673
March 13, 14	Environmental Issues Workshop at Springbrook Education Center	Warren County 515/961-6169
March 14	Landscaping for Wildlife	White Pines Shelter Scott County Park Quad Cities 319/332-8936
March 14	Frosty Canoe Trip - 9:00 a.m. (Reservations Required)	Lee County 319/463-7673
March 15	Full Moon Walk - 7:30 p.m.	Pollmiller Park Lee County 319/463-7673
March 15	Maple Syruping 1:00 p.m.	Liberty Center Warren County 515/961-6169
March 15	Waterfowl Observation 2:00 p.m.	Linger Longer Rest Area Lee County 319/463-7673
March 15	Maple Syruping Demonstration 9:00 a.m. - 4:00 p.m.	Madison County Park 515/462-3536
March 15	Grundy County Museum 8th Anniversary	Morrison Grundy County 319/345-2688
March 15	Building Bird Houses (Call For Reservations) 1:00 p.m.	Manchester - Bailey's Ford Park Delaware County 319/927-3410
March 15	Owl Lookout	Swan Lake Park Carroll County 712/792-4614
March 15-21	National Wildlife Week "We Care About Clean Air" Slide Presentations	Polk County 515/999-2557
March 15, 22	Making Syrup 1:00 p.m.	Hartman Reserve Nature Center Cedar Falls - Black Hawk County 319/277-2187
March 17	Cedar Valley Recreation Plan 7:00 p.m.	Hartman Reserve Nature Center Cedar Falls - Black Hawk County 319/277-2187
March 18	Pheasants In Iowa Slide/Lecture 7:00 p.m.	Emmetsburg — ILCC Auditorium Palo Alto County 712/837-4866
March 19	"Bats in the Attic" Solving Animal Problems 7:00 p.m.	Indianola Public Library Warren County 515/961-6169
March 19	National Wildlife Week Public Program	Fayette — Upper Iowa University Fayette County 319/425-3613
March 21	Bluebird Day	White Pines Shelter Scott County Park Quad Cities 319/332-8936
March 21	Maple Syrup Festival 8:00 a.m. to 12:00 noon	Hartman Reserve Nature Center Cedar Falls - Black Hawk County 319/277-2187
March 21	Kite Building Program	Indianola Public Library Warren County 515/961-6169
March 21	Bird House Seminar	Bellevue - Spruce Creek Park Jackson County 319/652-3783
March 21	Maple Syruping Program 2:00 p.m.	McFarland Park Story County 515/232-2516
March 21	Kestrel and Bluebird Nest Box Building - 10:30 a.m.	Kossuth County 515/295-2138
March 22	Maple Syruping Program 2:00 p.m.	Hickory Grove Park Story County 515/232-2516
March 24-29	Iowa Sports and Vacation Show Iowa Taxidermist Show	Veterans Auditorium Des Moines
March 26	"A Bit About Birds" 6:00 p.m.	Hagge Park Sac County 712/662-4530
March 27-28	Go Fly A Kite Construction: 27th - 6:30 p.m. Flying: 28th - 10:00	First National Bank Comm. Room and Lake Comelia Park Wright County 515/532-3185
March 28/ April 25	Junior Conservation League (one-act play) 1:30 p.m.	Izaak Walton League Building Kossuth County 515/295-2138

March 29	Prairie Burn 2:00 p.m.	McFarland Park Story County 515/232-2516
March 29	"Planting in the Dust" (one-act play) 7:30 p.m.	Algona High Little Theatre Kossuth County 515/295-2138
March 30	"Planting in the Dust" (one-act play) 7:00 p.m.	Emmetsburg — ILCC Auditorium Palo Alto County 712/837-4866
April 8	Conservation Family Night 7:30 p.m.	Burt Community Room Kossuth County 515/295-2138
April 11	Landscaping for Wildlife 1:30 - 3:30 p.m.	Belva Deer Rec. Area Sigourney Keokuk County 515/622-3757
April 11	Nighttime Prairie Burn 5:30 p.m.	Hickory Grove Park Story County 515/232-2516
April 12	Early Spring Walk 2:00 p.m.	McFarland Park Story County 515/232-2516
April 12	Hanging Bog Discovery 2:00 p.m.	Swiss Valley Nature Preserve Dubuque County 319/556-6745
April 22	Breeding Bird Atlas Public Information Meeting 7:30 p.m.	Kossuth County 515/295-2138
April 24	Evening Woodcock Watch 6:30 p.m.	Swiss Valley Nature Preserve Dubuque County 319/556-6745
April 25	Star Party 7:30 p.m.	McFarland Park Story County
April 26	Wildflower Walk 2:00 p.m.	YMCA Nature Center Story County 515/232-2516
April 26	Discover New Wine Park 2:00 p.m.	New Wine Park New Vienna Dubuque County
May 3	Spring Wildflower Hike 2 p.m.	Swiss Valley Nature Preserve Dubuque County 319/556-6745
May 9	Birdwatch 8 a.m.	Brookside Park Ames Story County 515/232-2516
May 9	Full Moon/Music in May 9 p.m.	McFarland Park Story County 515/232-2516
May 10	Spring Birding Program 2 p.m.	Swiss Valley Nature Preserve Dubuque County 319/556-6745
May 17	Snake Program & Hike 2 p.m.	Swiss Valley Nature Preserve Dubuque County 319/556-6745
May 28	Doolittle Prairie Walk 7 p.m.	Story County 515/232-2516
May 30	Star Party 8:30 p.m.	McFarland Park Observatory Story County 515/232-2516

March

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County Conservation

Wright County

MAPLE CREEK WILDLIFE AREA

Rebuilding Its Past

By Jan Libbey

"On this sand farm in Wisconsin, first worn out and then abandoned by our bigger-and-better society, we try to rebuild, with shovel and axe, what we are losing elsewhere."

Aldo Leopold "A Sand County Almanac"

Wright County Conservation Board's Maple Creek Wildlife Area is similar to Leopold's sand farm in two respects. First, the Maple Creek area shows signs of past abuse, scars that the board is trying to help heal with habitat plantings. Secondly, both the sand farm and the Maple Creek area serve as oases. For Leopold, the sand farm was a "refuge from too much modernity." The Maple Creek area, with its rugged 56 acres, provides a dramatic change of scenery from Wright County's many agricultural fields.

Maple Creek Wildlife Area was acquired by the Wright County Conservation Board in the spring of 1985 with assistance from the Iowa Natural Heritage Foundation (INHF). The conservation board paid half the purchase price with revenue funds. The remainder of the purchase price was paid by the INHF. The conservation board will repay the INHF over the next three years with revenue-shar-

ing funds, conservation board appropriations, and income from the sale of buildings on the area.

The wildlife area, a mixture of upland and bottomland timber interspersed with three six-acre former cropfields, was put on show during a public program in April, 1986. The program took participants on a tour of the new area, explaining management objectives and future plantings. Evidence of the area's past abuse was obvious to visitors as they viewed trash heaps and the remaining hog confinement buildings.

But the conservation board has already started the Maple Creek area on its way to recovery by removing buildings, burying trash, and seeding native prairie grasses in the area. Native grass seeding is also planned for the three former cropfields, and an alfalfa/food plot rotation is under way to provide nesting and winter cover for wildlife. Tree plantings on the area will help in reforestation.

Maple Creek's rugged terrain creates a mystique that surprises many visitors. Located along the Iowa River, the area's hills provide a sense of isolation and wilderness that is more often found hundreds of miles from Wright County. Maple Creek, the area's namesake, is a small creek that runs through the middle of the area. As the topography drops nearer to the river and the presence of beaver becomes apparent, the creek spreads into numerous channels working toward the river. It is in this area that dry-footed travel is possible only during the winter and late summer.

From an adjoining ridge, visitors may get a unique overview of the streams which suddenly appear to spread into a lacework of water glistening in the sun. Those upland ridges include red oak, hophornbeam, basswood, bur oak and several old butternut trees.

Another special quality of the Maple Creek area is its proximity to two other county-owned areas — Bingham Park and Reitz Timber Preserve. This brings the total publicly



Bruce Lindner

owned acreage within a one-mile radius to 83 acres.

Multi-use management objectives are reflected in the area's boundary signs labeling it as a "natural resource area." Consumptive and nonconsumptive uses capitalize on the year-round opportunities. Maple Creek Wildlife Area is obviously a place that invites people to visit the area at different seasons to explore its various moods.

"It is here that we seek — and still find — our meat from God," Leopold said about his Sand County farm. Likewise, it is in Maple Creek Wildlife Area that the Wright County Conservation Board's work will provide renewed habitat for wildlife and renewable resources for its human visitors.

Jan Libbey has been a naturalist with the Wright County Conservation Board since 1984. She holds a B.S. degree in fisheries and wildlife biology from Iowa State University.



Tim Landgraf

The Maple Creek Wildlife Area (top) is a mixture of upland and bottomland timber and old cropfields. Last April the Wright CCB sponsored a tour of the area for interested individuals.

Northward Journey

"Dedicated in loving memory of my grandfather — Glen Vauthrin. He'll miss this spring's migration for the first time in 83 years. I'll miss him."

By Ted LaGrange

With a sudden thrust of wings she was airborne; her mate trailed closely. The mallard pair rose steadily through the twilight sky. They made a final pass over the flooded Arkansas timber that had been their winter home and then disappeared northward into the darkness.

The morning sun caught them 400 miles to the north and weary from the long flight through the cold night air. They set wing to a flooded corn field far below. The hen preened her feathers back into place, stretched and then began to feed intensely while the drake remained on constant alert. It was mid-March and they had arrived in central Iowa.

The hen had ample reason to be hungry, for the spring migration is an energy-draining time in the life of many waterfowl. There's the obvious wear of the migration flight itself, with many ducks flying over 1,000 miles from their wintering areas in the South to the breeding grounds of northern Iowa, Minnesota, the Dakotas and prairie Canada. This flight takes the ducks north with, and often slightly ahead of, the advancing spring. Early spring in Iowa can be pleasant, but more often than not, late winter storms strike, plunging temperatures to below zero and dumping up to a foot of new snow. This weather is tough enough on hardy lowans, but imagine being a duck out in the storm. The ponds freeze and snow covers the fields, preventing feeding. Much energy is

used just trying to keep warm. It is also during this time that hens molt (replace feathers) and get into breeding condition, both activities demanding their share of energies.

Sound like a tough life? It certainly would appear to put any of the modern diet plans to shame. But I discovered during a recent study of the spring migration in Iowa (supported by Delta Waterfowl and Wetlands Research station and Iowa State University) that hen mallards *gained* weight during migration! There was a reason for this weight gain and how it could occur during the spring in Iowa.

Central and northern Iowa were once a vast complex of marsh and prairie. It's estimated that there were 2½ million acres of wetlands alone. But as this fertile land was settled the marshes were drained. In less than 150 years the vast complex of prairie and marsh was converted to monocultures of corn and soybeans — over 98 percent of the wetlands had vanished.

But each year as the winter snow begins to melt and the spring rains return, an amazing transformation occurs. The prairie wetlands of Iowa are born again for a brief but critical time during March and April. The former wetland basins refill with sheet water and await flock after flock of northbound waterfowl. The secret to the mallards' spring weight gain is in using this rich, seasonally available sheet water to meet their needs.



Ted LaGrange

Here the hens feed intensely, with 40 percent of their day spent consuming high-energy, nutritious foods. In a maneuver I termed the "muck shuffle," they paddle their webbed feet against the flooded soil to stir up the bottom, then kick back, drop their bills beneath the surface and use them as efficient food strainers. Over 40 different types of foods are consumed with the most common being the moist-soil plant seeds of millet, smartweed, foxtail and cutgrass, nut-sedge tubers, and corn. The importance of these foods influence what ponds the ducks use. Ponds that provide abundant moist-soil plant seeds and corn are used most heavily. Fall tillage, especially plowing, decreases the number of seeds available and greatly reduces duck use.

These sheet water rest stops in Iowa provide part of the energy needed by mallards to head north and lay a clutch of eggs. But as wetlands and sheet water drainage con-

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Iowa's spring sheet water provides vital resting and feeding areas to north-bound waterfowl.

tinue to increase, there will be fewer and fewer places for the northbound migrants to use. Without a place to rest and feed, where will these migrants stop on their northward journey?

As the late March sun slipped below the Iowa horizon, the mallard pair grew restless. It was time to move, for spring progresses quickly. They took to flight, circled overhead and in a passage measured by wing beats disappeared into the darkness. Well fed and rested they were headed for their next destination — the prairie nesting grounds to the north. In a few short weeks the hen would be incubating a clutch of 12 new eggs — a future mallard generation.

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Jerry Leonard

FARM PROGRAMS AND WILDLIFE — Can They Mix?

By Guy Zenner

Wildlife is a product of the land, much like corn or soybeans. In Iowa, wildlife is a product of private land because less than one percent of the state's land base is used for state- or county-owned wildlife and recreational lands. Over 90 percent of the state's land is considered farmland, with 83 percent of the state's 27 million acres of cropland in row crops.

Nearly everyone living in this rural state appreciates seeing and hearing our many resident wildlife species, and these creatures significantly add to the enjoyment of country living and working. But despite this general appreciation and interest, few people have the time to understand the complex environmental requirements of these and many species. Few take the time to insure that these creatures' habitat requirements are met on their land. In most instances, wildlife is not so much a product as it is a by-product of agricultural land-use practices, and a byproduct that is seldom given much thought until it is gone.

It has been said many times before, but it is a statement that bears repeating: wildlife cannot survive without appropriate habitat. Appropriate habitat varies depending upon the species that is being considered, but it must include all the necessary requirements for that animal's survival over an entire year. If one of those necessary components is missing, the animal will also be missing, or at least absent at that critical time of the year.

Because many forms of wildlife are quite mobile, they are able to move to different areas at different times of the year to find the habitat components they require. More often though, the animal in question is not

completely absent, but can only be found in very low numbers. This is often the case on northern Iowa farms and simply reflects the limited availability of one or several vital habitat components. There are very few animals whose entire habitat requirements are fulfilled in a corn or soybean field. Consequently, with over 95 percent of many intensively farmed sections in row crops such as corn and soybeans, there are very few acres left to fulfill the other habitat requirements of wildlife attempting to survive and reproduce in those sections.

A landscape of only corn and soybeans is even too sterile an environment for many humans, much less wildlife, as is indicated by the numerous requests received by conservation agencies for assistance in wildlife habitat and shelterbelt planning. In the past, these requests have been difficult to respond to given that "good cropland" could not be taken out of production. But with the present USDA farm programs, all that has changed. Now, most anyone interested in creating a better environment for themselves, as well as the wildlife that resides on their land, can use the USDA farm programs as a way to put some wildlife habitat back on the land.

Under the Conservation Reserve Program (CRP), the ten-year set-aside program, the land must be protected with some kind of cover — grasses, trees or a combination. Even the restoration of a drained wetland would qualify as appropriate cover. SCS personnel and wildlife biologists consult with farmers who have a particular wildlife species in mind to benefit on those CRP acres. For those who wish to plan their own areas, the following points should be con-



Laurel Washburn

sidered. Many species of upland game and nongame reproduce every spring in undisturbed grasslands. On most farms, the only "undisturbed" grasslands are found in the road ditches. Therefore, any additional acres of grasslands will likely attract everything from pheasants to bobolinks.

However, research has shown that mixtures of alfalfa and brome are more attractive than other cool-season grass mixes when it comes to attracting many grassland nesting birds. Other good choices for nesting birds would be warm-season grasses such as switchgrass, big bluestem and Indiangrass. These are the native warm-season grasses that prairie wildlife used for tens of thousands of years. Switchgrass is the least expensive of the group and has excellent standability, making it useful as winter cover where it does not fill with blowing snow.

Planting grasses that are attractive to wildlife is only half the job. The real key to making any grassland useful to wildlife is to keep the area undisturbed. Driving over the area or using the grassed headlands as turning strips should be avoided until after July 15. If noxious weeds must be controlled, "spot spraying" or "spot mowing" can prevent disturbing the entire field.

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Present USDA farm programs may be the antidote to many ills, including lack of wildlife habitat.

If a fair amount of undisturbed grasslands already exist, resident wildlife may benefit more from the addition of a good patch of winter cover. This too can be planted on the CRP lands and may be the best use for very highly erodible soil.

Although it would be best to make plans when first seeding the area, trees and shrubs really can be added anytime. A minimum design for a good planting should contain at least eight rows of trees and shrubs with the interior four rows being conifers or cedars. Good winter cover can be vital to wildlife survival in northern Iowa, especially to resident birds, whether they be pheasants or cardinals. The plan could be similar for deer, but would have to be of substantial size. Trees and shrubs are available from the state forest nursery at a minimal cost just for such plantings.

Even if no land is in the CRP program, there are still things that can be done on annual set-aside acres (ACR). To conform with ASCS regulations, some type of cover crop must be planted on these acres to reduce soil erosion. One annual cover crop worth considering is sudax, a sorghum-sudan grass hybrid. Planted at a reduced rate of 10-12 lbs. per acre, this is an economical way to instantly produce winter wildlife

habitat that in structure is much like the cattail marshes that dotted this countryside years ago. If planted no-till or with reduced tillage, some nesting cover may also be created. But if the equipment isn't available to plant sudax, a corn food patch can be considered. Nearly everyone has an old bag of seed corn lying around and anyone can plant a food patch on the annual set-aside acres so long as the food patch is noted when the acres are certified in July. For maximum enjoyment, planting it close to the grove or house affords viewing of wildlife using is throughout the winter. These food patches can attract everything from bluejays to deer. In some counties, groups like Pheasants Forever or the DNR have cost-sharing programs to promote this practice. Monetary assistance may only be a phone call away.

Another good annual cover crop that can benefit wildlife is oats. A dense stand of oats, planted early in the spring, can make very nice nesting habitat for birds, especially if planted in a field with plenty of crop residue left on the ground. However, to really be of value to wildlife, the oats should not be cut until after July 15 and delaying until August 1 is even better. Depending upon the ASCS regulations regarding this program, delayed mowing may be an

option worth looking into, even if it does require a small inspection fee. In some counties, Pheasants Forever chapters have been willing to pay for this inspection fee.

Those who have participated in the annual set-aside program for several years might want to consider permanently seeding an area rather than seeding an annual cover crop. For the past few years, annual set-aside acres could be put in the same place on the farm each year. A one-time seeding would have been an economical way to stop erosion on these lands as well as improve wildlife habitat. If the past few years are any indication, this may still be a good practice to consider.

These are just a few cost-effective ideas for using annual or long-term set-aside acres for improving wildlife habitat on the farm. With just a little imagination and care in managing farm program lands, everyone can find ways to make survival for their wild neighbors a little easier and at the same time improve their own environment.

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