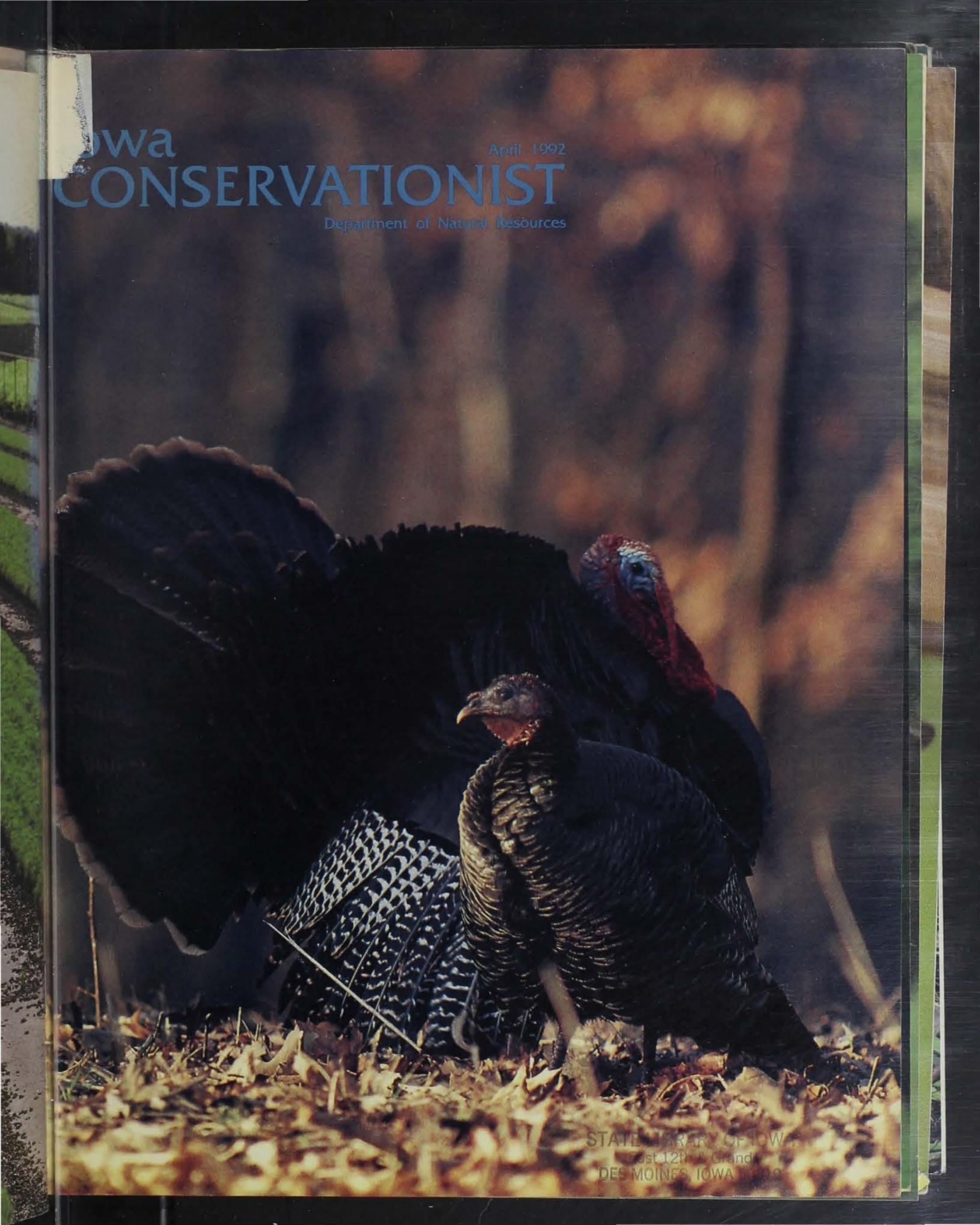


Iowa
CONSERVATIONIST

April 1992

Department of Natural Resources

A photograph of two turkeys in a field. The turkey in the foreground is a female, with dark, iridescent feathers and a smaller, more rounded body. The turkey in the background is a male, with a large, dark tail fan and a prominent, reddish-brown wattle. They are standing on a ground covered with dry leaves and twigs. The background is a soft-focus field of tall grasses or reeds.

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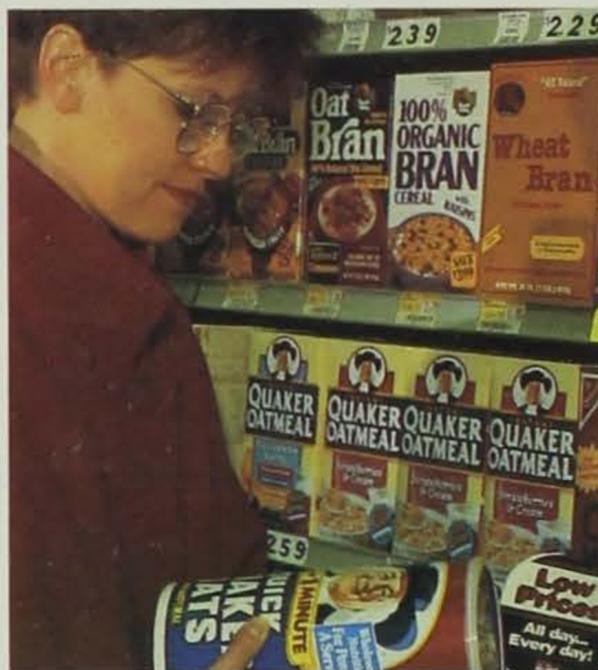
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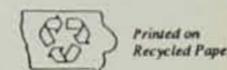
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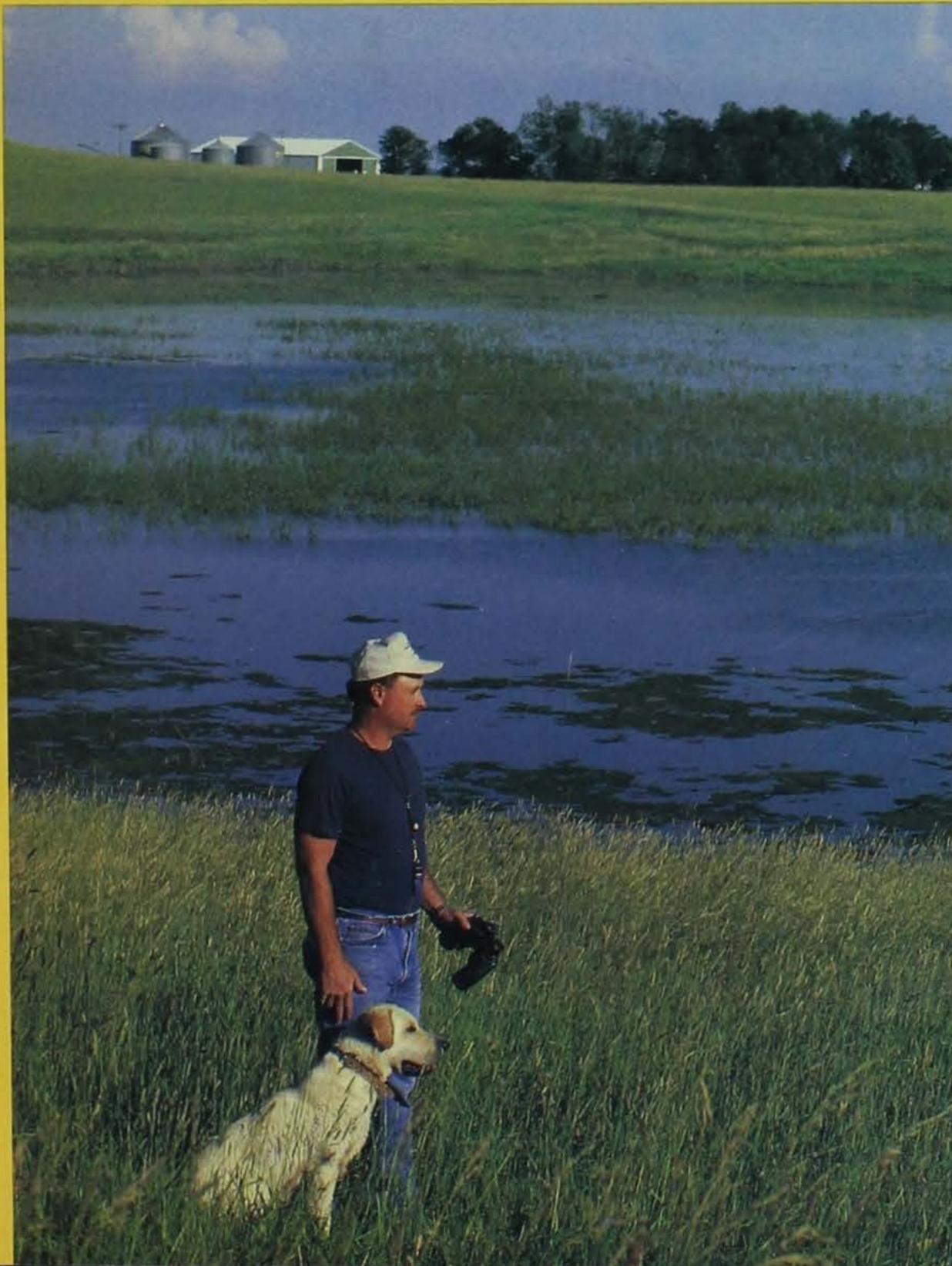
Wild turkeys by Roger A. Hill.



Gems of Blue

A unique partnership between the Iowa Department of Natural Resources, Ducks Unlimited, and the U.S. Fish and Wildlife Service is encouraging Iowa farmers to bring back drained prairie potholes. In the past three years, the effort has resulted in 370 landowners restoring 875 wetland basins totaling 4,000 acres.

Here is one man's story.



Dave McBreen thoughtfully lowered his binoculars, grinned, and shook his head.

"Unbelievable," he said. "This place was dry ground last year, but now look at it. I mean this thing has literally come alive," he exclaimed.

McBreen's comments were aimed at a five-acre chunk of water nestled amid the gently rolling landscape of northwest Iowa's Dickinson County. From our vantage point atop a grassy knoll, the basin appeared as a shimmering blue gem, sharply contrasting with the green of waist-high vegetation that stretched to the horizon.

It was late spring in northern Iowa, and for the resident bird life the annual nesting cycle was under a full head of steam. Courting pairs of blue-winged teal, redheads and ruddy ducks dotted the marsh from one end to the other. Several groups of

Story and photos
by Lowell Washburn

bachelor mallards also dotted the area, belying the fact that their hens were already entering the final stages of incubation. At least one hen had completed her mission and could now be seen guiding her fluffy brood along the water's edge. Red-winged blackbirds called from the marsh fringe, and nearby, a rooster pheasant crowed from the uplands.

"These grassy areas are really bringing back the pheasants," said McBreen. "Last season we enjoyed some of the best hunting that we have

had in 30 years," he said.

As we continued to drink in the sights, it became undeniably apparent that here was a scene guaranteed to warm the hearts of anyone with a love for waterfowl, the outdoors and things natural. But it also occurred to me that in many ways, the scene was as ironic as it was beautiful. For until now, this lush mix of marsh and grassland had been under intense cultivation of row crops -- farmed by McBreen himself.

According to McBreen, this fertile landscape has been in the family for

more than two and a half generations. And although time has forgotten exactly when the marshes were destroyed, they had already gone under the plow when Dave's grandfather arrived on the scene.

"I have been farming this place for about 20 years now," says McBreen. "Some years I would get a crop off these low acres, and some years I would not." In years of heavy rainfall, the efforts to produce a crop of corn or soybeans often proved to be a total bust.



... here was a scene guaranteed to warm the hearts of anyone with a love for waterfowl, the outdoors and things natural.

Unfortunately, the fate of these Iowa marshes was far from unique. For perhaps nowhere in North America has the wholesale eradication of native wetlands been more complete. Standing at the southern edge of the continent's prairie pothole region, Iowa historically contained approximately three million acres of prairie pothole-type wetlands. Today, approximately 98 percent of those wetlands have vanished, most of them drained for agriculture -- their destruction often aided by government programs and taxpayer dollars.

It would have been easy for the story to end here. But strangely enough, it was, in fact, a new round of agricultural legislation that ultimately paved the way for turning many of these marginal croplands back into productive natural communities.

Because of tremendous commodity surpluses due to overproduction, farmers were encouraged nationwide to retire or set aside cropland under the Conservation Reserve Program of 1986. And as farmers were planning their erosion control strategies for those set-aside lands, it was noted that in addition to vegetation, surface water was also listed among the acceptable cover types for those CRP acres.

The upshot was that wildlife biologists with the Department of Natural Resources lost no time in promoting this practice to Iowa farmers.

"I will have to admit that many of us were a bit apprehensive over approaching local landowners with the prospects of putting part of their farm under water," says DNR waterfowl biologist, Guy Zenner. "However, we mustered up the courage and did it anyway," he said. "Much to our surprise, many farmers were actually very enthusiastic over the possibilities," said Zenner.

As biologists made more contacts, the positive response to wetland restoration quickly snowballed. "Before we knew it we were literally swamped, if you will pardon the pun, with landowners requesting marshes," said Zenner. As it turned out, most current landowners had never seen a wetland on their farm. And as restored basins began to fill, farmers were impressed by the beauty. "The fire just fueled itself as the appearance of a

Restoration Recipe

Once a drained wetland basin has been selected for restoration, the recipe for creating instant habitat is quite simple. Biologists or Ducks Unlimited "Door Knockers" determine the approximate locations of all incoming and outgoing tile drainage lines and confirm that the restoration will not negatively impact any previously established drainage patterns on adjacent lands.

If the project appears feasible and cost effective, the surface outlet will be located and a dike, with an emergency overflow, designed and staked if necessary. Because most wetlands in northern Iowa are tile-drained, the next step is to locate all the tile lines that may be draining the basin. At least 50 feet of each tile line is removed downstream from the wetland's edge, and in most cases, one tile line is replaced with a non-perforated plastic pipe. The pipe is laid in the trench left open usually just in front of the dike.

The plastic pipe projecting up into the wetland basin is then cut off at the height of the pond's proposed water level and a trash guard attached to prevent debris from entering, clogging the outlet or tile line. Once the project is completed—just add water--wildlife will appear overnight.

marsh on one farmer's land led to a request on someone else's property," said Zenner.

It was at this point that partnerships began to form. "We looked to the U.S. Fish and Wildlife Service and they agreed to help offset the costs of dirt work, materials, etc.," said Zenner. The Fish and Wildlife Service also sent earth moving equipment and two full-time work crews to aid in dike construction and other facets of marsh enhancements.

But as biologists became occupied with completing projects on backlog, they had little time to deal with new requests or to seek and interview landowners less eager for marsh restoration. "The 'easy sells' had already been signed up, and this is where Ducks Unlimited clearly came to the rescue and provided a vital

link to the wetlands effort," said Zenner. Ducks Unlimited immediately hired three people to sell our wetlands restoration program to Iowa farmers, he added.

"You have to realize that this required a very special type of person,"



▶ A joint effort between the U.S. Fish and Wildlife Service, Ducks Unlimited and the Department of Natural Resources is creating potholes as productive as any other high-quality marsh. By simply removing tile lines and installing a plastic overflow pipe, all that is left to do is add water -- wildlife will appear overnight.



said Zenner. First of all, Ducks Unlimited's "Door Knockers" as they came to be known, needed to be extremely knowledgeable about or actively involved in farming. Of course, they also needed a strong commitment to wetlands habitat and wildlife. Perhaps most importantly, they also needed a broad knowledge of government farm practices and programs, and they needed to have an ability to clearly communicate with landowners and guide them through the necessary government red tape.

Tom Lichter was an individual who met all those requirements, and was the first Door Knocker hired by Ducks Unlimited. Lichter makes his home in north-central Iowa's Kossuth County where he raises grain and cattle in a family partnership.



"In this area (north-central Iowa) many of the farmers were initially very skeptical of our wetlands program," said Lichter. They liked to see wildlife, but were afraid to enter into restorations for fear that they would lose control of their lands. "There were a lot of rumors floating around that once they restored a pothole, we could essentially dictate land use policies on their property," he said. The first order of business was to clear up those misconceptions and to gain landowner trust.

Ironically, one of the biggest opportunities to overcome that mistrust came when a restored wetland did adversely affect an adjacent landowner by backing water onto his property. "It was an honest mistake, and we removed that wetland the next day," said Lichter. The word got around, and after that it all fell into place.

"After the first new signups got going, I would try to plan my schedule for a week, but pretty soon so many people would be calling or stopping me on the street that I would be another week behind by Tuesday," said Lichter. Almost overnight Lichter had entered into 33 landowner agreements which allowed the restoration of 77 prairie wetland basins.

"This change is so refreshing, so exciting," said Lichter. "For years, whenever you would see a bulldozer parked somewhere, you would know that a wetland was going to be drained or a farm grove pushed out," he said. "Now that same 'dozer means that we are about to build some habitat to benefit wildlife. To me, that is really neat," he added.

By the end of 1991, 370 Iowa farmers had become involved in wetland restoration, reestablishing 875 basins totalling 4,000 acres. In nearly all cases, it was the enrollment of land in CRP that provided the catalyst for converting dry land back to wetland.

Dave McBreen was no exception. Alarmed over growing publicity concerning groundwater contamination, he had already begun toying with the idea of restoring his own wetland basin to its



natural state when the Conservation Reserve Program was initiated.

"I had read about the cleansing effect that marshes have on many types of pollutants," said McBreen. "I have a shallow well here, in fact, it is only 50 feet deep," he said. "I got to thinking that maybe a marsh could help improve our drinking water," he added.

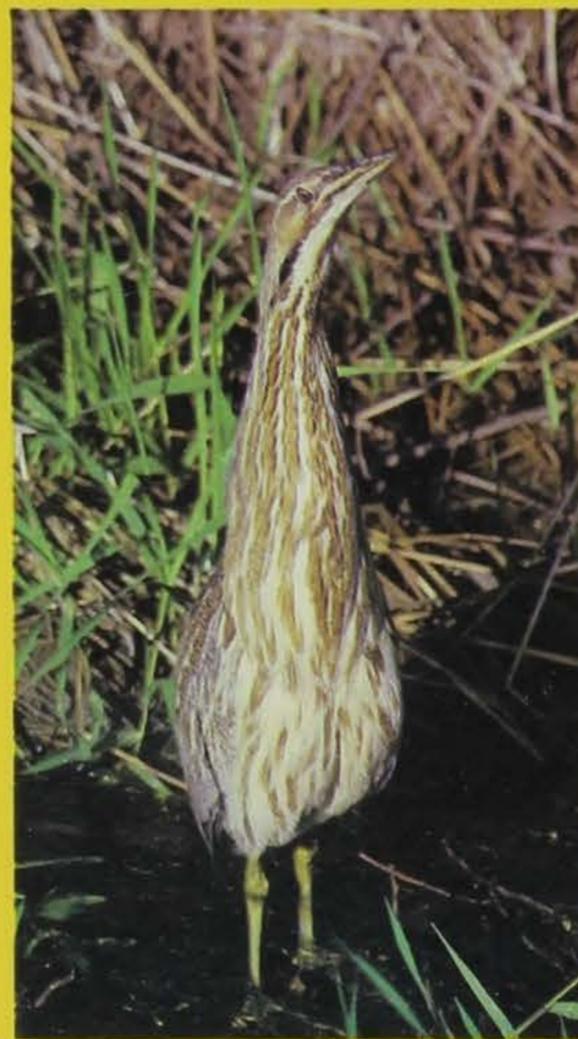
However, McBreen admits that it was an interest in seeing more wildlife that provided the greatest impetus for restoration. And when he finally enrolled 130 acres in CRP, he decided the time had arrived to convert the dream to reality.

"The first thing we did was restore this basin here, which is about six acres," he said. "The water came in and we could not believe it. Overnight the place was just alive with birds. That is when it dawned on us that we had our own wildlife area," said McBreen. The McBreen family was so impressed by the instant success of their first wetland that they restored another, 7.5-acre marsh just over the hill from the first one.

"Nowadays when our relatives come to visit they are not around the house anymore — they are down at the marsh," says McBreen. The neighbors come to look at it too, and in the

▲ Clarion Reece, Kossuth County farmer, and Tom Lichter, DU "door knocker," discuss plans for restoring a wetland on Reece's land.

"For years, whenever you would see a bulldozer parked somewhere you would know that a wetland was going to be drained . . . Now that same 'dozer means that we are about to build some habitat . . ."



▲ The Blandings turtle and the American bittern are two of the more than 150 species to benefit from the restoration of wetlands on private land.

► Mac, McBreen's yellow Lab, is a spin-off of McBreen's wetland restoration effort. Both the dog and the McBreen family enjoy the new marsh.

Wetlands Net Iowa Farmer Conservationist of the Year Award

Kermit Hovey of Forest City, has been named the Iowa Wildlife Farmer of the Year for 1991 by the Iowa Department of Natural Resources.

According to DNR wildlife biologist, Greg Hanson, the award was presented in acknowledgement of Hovey's work involving wetland restoration. At his farm, located in north-central Iowa's Winnebago County, Hovey has restored a total of seven prairie pothole-type marshes which are surrounded by 370 acres of upland nesting cover which is enrolled in the Conservation Reserve Program. The farm also contains an ungrazed, oak timber.

"The Farmer of the Year Award is a nationwide contest in which participants are graded against a specific set of standards," said Hanson. Points are awarded for such things as wetland quality, waterfowl nesting structures, food plots, etc. Hovey scored on virtually every item found on the list, said Hanson.

"His achievements toward wildlife conservation is really quite remarkable," said Hanson. As soon as the wetlands filled with water during the spring of 1991, the response by wildlife was dramatic and immediate. During its first nesting season the area produced mallards, teal, gadwall, shovelers and a total of 32 Canada goose goslings. Other wildlife attracted to the marshes included shorebirds, redwings and turtles. Deer, wild turkey, pheasants and bluebirds frequent the uplands and oak timber.



▲ Kermit Hovey and DNR waterfowl biologist Guy Zenner

"The CRP acres were a real boom to wildlife in general, but the wetlands have really brought the diversity," said Hovey. "The deer come here to drink, and sometimes there will be four or five standing in the water at once. That's really beautiful," he said.

"Actually, these marshes are good for everything," Hovey added. "The ducks and geese nest here in the summer, and during the winter the pheasants use the cattails for cover. I just wish we had done some of this 50 years ago. We'd all be better off today."

-- Lowell Washburn

summer kids show up on bikes. "We are down there all the time ourselves," says McBreen, "checking water levels and seeing the ducks."

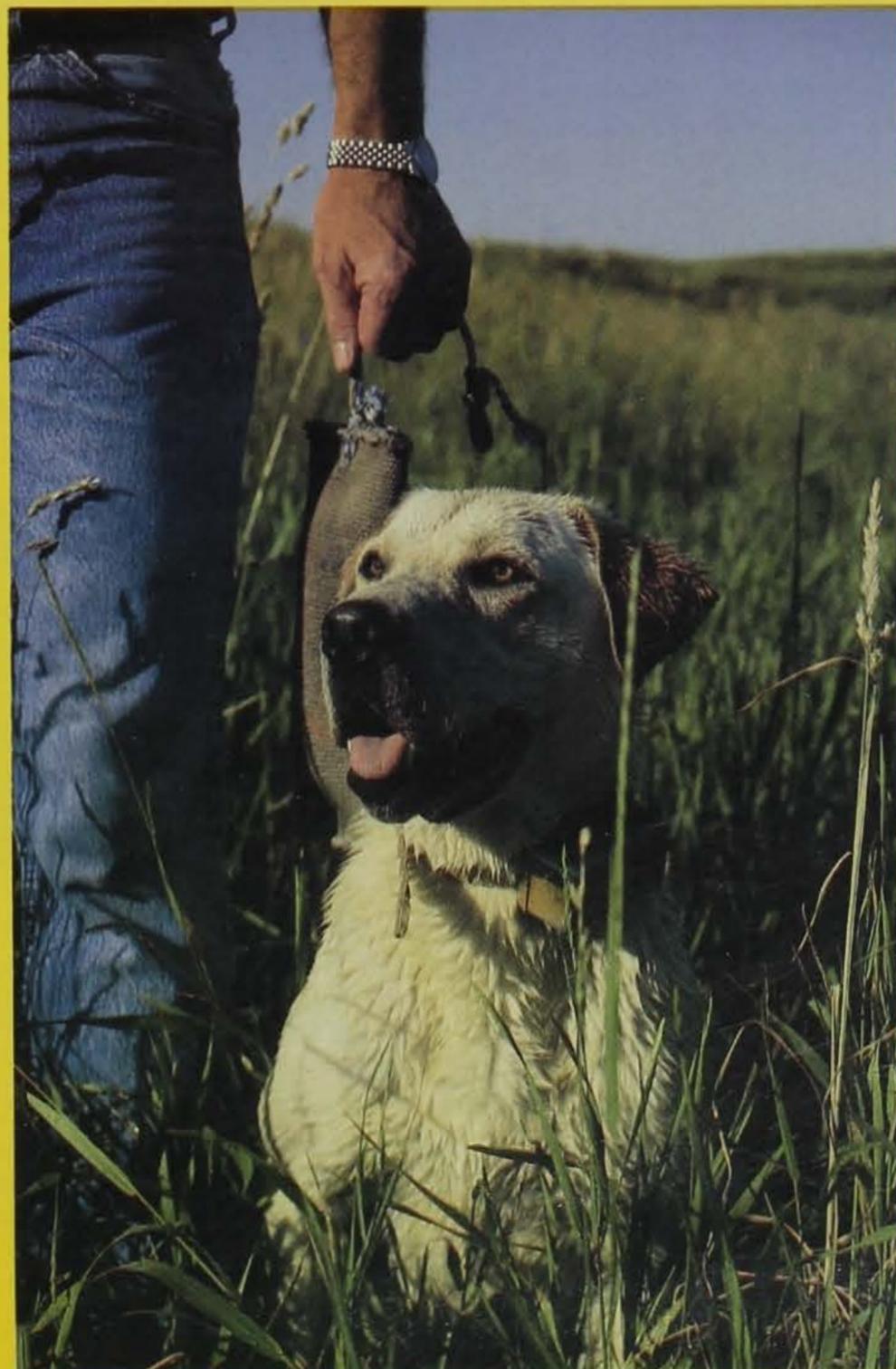
Although McBreen's farming activities continue to exact heavy demands on his time, he notes that his wetland development has been largely responsible for some pleasant changes in his lifestyle. A now abundant crop of rooster pheasants causes him to spend a bit more time tromping the uplands these days. He has also established a permanent blind on the marsh and plans to do some serious wildlife photography. And let us not overlook the addition of Mac, McBreen's energetic two-year-old yellow Lab. "Even this dog is a spin-off of the marsh," said McBreen. "He is the first one I have ever trained, and it has been a good experience for me," he added.

Of course, in addition to being positive for landowners, kids on bikes, and visiting relatives — Iowa's aggressive wetlands restoration program has also been very beneficial to wildlife. To access that benefit, the Iowa DNR began to evaluate restored basins' beginning in 1989. Waterfowl numbers were recorded on 228 restored potholes and the numbers were compared to those found on 158 wetlands which had never been drained.

"What we found was more than two breeding pairs of ducks for every acre of restored wetlands," said Zenner. These are some of the highest pair densities found anywhere in the prairie pothole region—including prairie Canada, he said.

"Our nesting success for ducks averages more than 20 percent, and that also compares very favorably with other product areas," he added. The surveys also tallied one pair of giant Canada geese for every two wetland acres. It was estimated that for every acre of water restored, one immature Canada goose was added to the fall flight. "To me that's very positive, very upbeat," said Zenner.

A good share of the productivity of Iowa's newly restored marshes can be



Update: Prairie Pothole Joint Venture

by Lee Gladfelter

Iowa is participating in an international effort to reverse downward trends in wetland acres and drastic population declines for waterfowl and other wetland wildlife. This effort, called the North American Waterfowl Management Plan (NAWMP), was initiated in 1986 to accomplish specific acquisition and management goals by the year 2000. Iowa is one of five states located in the Prairie Pothole Joint Venture (PPJV) which is one of 34 regional areas of major concern identified in the NAWMP. Iowa's goals are to protect 2,000 acres of wetlands and associated uplands each year, restore additional wetlands on private land and raise \$2 million annually for habitat acquisition from federal, state and county agencies, conservation organizations, private business and concerned citizens.

The results of the PPJV project in Iowa have been dramatic. In 1991, about 2,500 acres of wetlands and uplands were acquired in the 35-county PPJV area in north-central and northwestern Iowa. From 1987 to 1991, a total of 10,500 acres of habitat has been placed into public ownership through this project. About \$2.1 million was raised to fund the 1991 acquisition effort with about \$9 million spent to date in the PPJV area. In addition, 650 acres of wetlands were restored on private land and public areas during 1991 for a total of more than 3,000 acres restored since 1987.

Another important source of federal funds for wetlands is the North American Wetlands Conservation Act. Iowa received its first grant from this funding source in 1991 for a wetland project in Dickinson County. This funding was for the Meinking-Krumman project which includes acquisition of 260 acres of

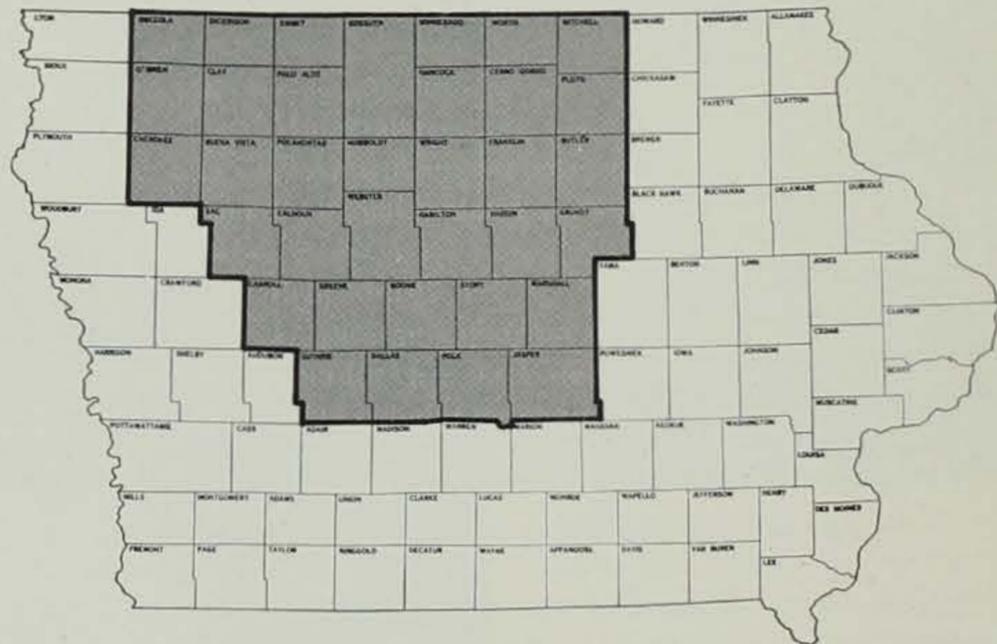
land and restoration of a 40-acre marsh along with 10 smaller prairie potholes. Associated uplands will be planted to dense nesting cover to provide nesting sites for wildlife. Wildlife response to the new area has been tremendous with waterfowl, wading birds, upland game and many nongame species of wildlife using the new habitat. This project is a part of the Spring Run Wildlife complex which currently provides more than 2,000 acres of wetland/upland habitat for wildlife.

The PPJV has helped protect and restore thousands of acres of wetlands in Iowa -- a state that has lost more than 98 percent of its original wetlands. Wetlands can be restored relatively easily just by interrupting drainage tile

and allowing water to accumulate. Many of the original wetland plants deposited their seeds in the soil years ago and only need some water to flourish and provide habitat for many wetland wildlife species. A marsh can be recreated almost immediately if the money and commitment to do so can be found. The Iowa DNR and many other cooperating conservation organizations have made that commitment and will continue to protect and restore wetlands through the year 2000 and beyond.

Lee Gladfelter is a special projects coordinator for the department's wildlife bureau in Des Moines.

Iowa's 35-County Prairie Pothole Joint Venture Area



Approximately 2,500 acres of wetlands and uplands were acquired in 1991 in the 35-county Prairie Pothole Joint Venture area of Iowa. From 1987 to 1991, a total of 10,500 acres of habitat has been placed in public ownership through PPJV.

directly attributed to its food sources. "One of the most amazing things to me is how quickly native marsh plants return to restored wetlands," said Zenner. In some cases pothole basins that have been dry and row cropped since shortly after the turn of the century will exhibit good densities of both submergent and emergent plant communities within a year after being covered by water. "We have looked through the water and seen native marsh vegetation growing right up through last year's corn cobs," said Zenner. Even after a half century or more, those seed banks are still viable and are just laying there waiting for the water to come back, he said. As soon as the plants appear, the whole marsh ecosystem of invertebrates, waterfowl, furbearers and nongame wildlife follows.

But the ultimate value of Iowa's restored wetlands far exceeds the benefit received by locally nesting ducks and geese, says Rick Warhurst, biological supervisor with Ducks Unlimited's Great Plains regional office at Bismark, North Dakota.

"In terms of total waterfowl production and in terms of the continuity of migrational habitat, the entire resource was impacted when Iowa lost many of its wetlands," said Warhurst. "People do not realize how important those small, Iowa potholes are to migrating birds."

As waterfowl head north to nest each spring, the females need to find massive quantities of protein which is essential for egg production. The best source of that protein is aquatic invertebrates. According to Warhurst, Iowa's wetlands may serve a critical role in enabling northbound hens to build sufficient nutrient reserves.

"The smaller basins are extremely important for successful nesting," said Warhurst. They are the ones that warm the quickest, melt first, and consequently have the first good supply of invertebrates, he said. Birds such as mallards and pintails stop on these potholes, and the hens load up. By the time these females arrive on the northern most

prairies in mid- to late April, their eggs are well formed and they begin laying immediately. Early nests are the most productive and contain the largest clutches of eggs. "Those early nests are the ones we really need, says Warhurst. Later-nesting hens mean smaller clutches and, of course, later ducklings. During autumn migration those younger ducklings just do not survive as well as birds that hatched early, said Warhurst. The bottom line is that the early duckling may have hatched from an egg that was largely formed by eating insects found in a northern Iowa pothole. "From north to south the whole thing is really inseparable," said Warhurst.

Naturalist Aldo Leopold stated that the management of private land is the key to wildlife abundance. That thought still rings true today says Warhurst. Regardless of how many state, federal, or provincial wildlife management areas we may acquire, we are still going to produce only a fraction of the waterfowl on those lands. "What we need is to enable the private landowner to make a profitable and sustainable living in a manner that is compatible with wildlife," said Warhurst. The two are not mutually exclusive. If they were, we would be in trouble, he said.

"We started out with this thing thinking we were going to benefit wildlife," says Dave McBreen. "Now we realize it is really benefiting us."

When you start getting older, you start to think about leaving something behind, said McBreen. "Life should not be just take, take, take," he added. "I am only 38, but I am starting to look at things a lot different than I did."

"What we need is to enable the private landowner to make a profitable and sustainable living in a manner that is compatible with wildlife."



▲ In addition to the obvious benefits provided waterfowl, restored wetlands also provide habitat to other species, such as the killdeer.



PART I
Environmental
Shopping

AN EFFORT THAT WON'T GO TO WASTE

Article by
Julie Kjolhede
Photo by
Ken Formanek

Before it became vogue to shop with the environment in mind, smart shoppers were already reading labels, asking questions and pausing to think about the products they purchased.

Recently removed from the register of endangered species, smart (a.k.a. environmental) shoppers are flourishing at an astonishing rate nationwide. For example, a *Reader's Digest* 1991 Environmental Study, published in the January/February 1992 issue of *In Business*, found 98 percent of the consumers polled are willing to change their behavior and buying habits in order to ensure a cleaner world. When asked if they are willing to pay more for environmentally safe products, 85 percent responded as willing to accept cost increases for less polluting detergents and soaps; 82 percent would pay more for biodegradable plastic packaging, and 79 percent would pay extra for gasoline that is one-third less polluting to the air.

The importance of environmental shopping is more easily understood when we realize that each product we buy has a past, present and future. A product's past is its manufacturer, and its present life is represented by the time the product is used by a consumer. The future of a product relies on each Iowan's decision to either toss this resource into a recycling bin or into the garbage.

As consumers, we are most familiar with the environmental effects of *using* a product — the present state of its life cycle. Too often, we overlook the past and future of a product.

So, what can each of us, as responsible, earth-caring buyers, do? Begin by being an informed shopper. *Choose products carefully.* Whether you're buying an energy-efficient appliance, a fuel-efficient car or a non-toxic cleaner, realize that your choices can make a very real difference.

Then, *vote with your dollars.* A consumer's tremendous buying power can help to change the marketplace. Environmental shoppers are serious consumers looking beyond products to the companies that make them. It is no longer enough to manufacture environmentally conscious or *green* products; smart shoppers are demanding that companies promoting *green* products also practice responsible *green* ethics.

Remember, every time your dollar crosses the counter, you are voting "yes" to a product that may help the environment — or may harm it. Ask yourself if the product or the packaging that comes with the product is worth it — can it be reused or recycled in your community? Does the product support recycling by using recycled content materials? Are there less toxic alternatives available? Then, buy only

those products to which you can answer "yes."

Use products wisely. Use each product carefully and safely. *Be responsible.* When you purchase a product, remember that you also purchase and *own* the responsibility for its proper use and disposal. It only takes a few minutes to prepare a container for recycling, repair rather than replace, donate rather than discard, rent or borrow infrequently used products or call the DNR's Waste Management Division for free assistance on alternative uses and disposal methods.

Your actions *do* make a difference. So, be a smart shopper! Read labels, ask questions, pause to *think* about the products you buy and encourage others to shop as if the environment matters -- because it really does.

For a free brochure on environmental shopping, call 1-800-DNR-1025. Call today. Your efforts won't go to waste.

How do you rate as an environmental shopper?

Turn the page for a consumer survey.



◀ Choosing products carefully is the key to environmental shopping. Too often, consumers do not realize that every product has a past and future to its lifecycle.



PART I
Environmental
Shopping

BE AN ENVIRONMENTAL SHOPPER (CONSUMER SURVEY)

Every day we make choices that affect the amount of waste we produce. Take a few minutes to consider *your* shopping habits by answering the following brief questions. Answer each question with either *never*, *sometimes* or *often*.

Never = 3 points

Sometimes = 2 points

Often = 1 point

Add your total number of points, then use the scoring information at the right to improve your environmental shopping skills.

Do you . . .

1. consider the amount of packaging on an item before you buy it?
2. check the recyclability of an item before you buy it?
3. question whether you really need a product before you buy it?
4. think about what will happen to a product or package when you no longer have any use for it?
5. create uses for items you already have instead of disposing of them and buying new products?
6. wash out and reuse plastic bags in your home?
7. consider what pollution and wastes were created in the manufacturing of the products you buy?
8. take advantage of opportunities to recycle in your area?
9. use dishcloths, sponges and cloth napkins instead of disposable paper products?
10. avoid items such as disposable diapers, razors, lighters and pens when longer-lasting alternatives are available?
11. avoid eating in places which wrap your food in layers of paper or plastic, or ask that less wrappings be used for your order?
12. compost kitchen waste and other decomposable organic matter?
13. talk to store managers about stocking bulk items or avoiding packaging?
14. buy bulk items?
15. read consumer information articles to learn about the quality of the products you buy and the environmental ethics of the product's manufacturer?
16. call or write manufacturers requesting more environmentally safer products?

If your score is:

40 or more

You're not alone! Producing less trash means adjusting consumer shopping habits and adapting lifestyles to meet the needs of the environment. What can you do? Be aware of the amount of trash you produce each week. Note what materials could be reused, recycled or avoided entirely. Next time you shop, check if any of the products you normally buy in *nonrecyclable* packaging are available in reusable, refillable or recyclable containers and packaging. Don't turn your cash into trash! Avoid products with excess packaging.

Between 21 and 39

You are already doing some reducing, reusing and/or recycling, but would like to do more. Consider what materials may be accepted for recycling in or near your community, and focus on purchasing items that support area recycling activities. Buy products in bulk; seek out durable products, not disposables; select non-toxic over hazardous substance products whenever possible; reject unnecessary bagging; return paper and plastic bags to the market for reuse; tote your own reusable canvas bag to hold purchases from malls and supermarkets. Be creative! Think of the environment — its future depends on you.

20 or less

You've obviously done some serious thinking about the need for resource conservation. It shows!

This survey was adapted by the Iowa Department of Natural Resources from a publication by Rhode Island Department of Environmental Management, Waste Education Curriculum and Oregon Department of Environmental Quality, Solid Waste Division.

Think about the things you do to conserve resources and encourage others to consider doing the same. Make store managers and manufacturers aware of your preferences. Take your smart shopping skills to the workplace. Get involved in solid waste planning in your community. Keep up the good work!

Next month:

Environmental Shopping continues with information about product labeling.

Living on the Edge

"The beauty and genius of a work of art may be reconceived, though its first material expression may be destroyed; a vanished harmony may yet again inspire the composer; but when the last individual of a race of living things breathes no more, another heaven and another earth must pass before such a one can be again."

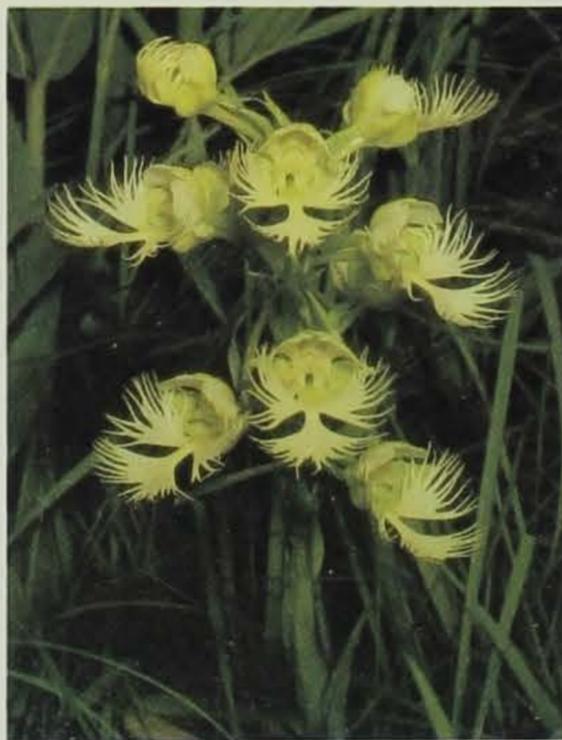
--William Beebe

Iowa has many rare plants and animals living on the edge of extinction. Their precarious hold on life, their fate, will be determined by us and by future generations of Iowans.

Prior to settlement, Iowa enjoyed the presence of 579 vertebrate animal species and 1,419 plant species. Iowa's early settlers saw an endless horizon of tallgrass prairies, rolling hills and clear streams bordered by forests. Iowa's original diversity stems from the state's seven natural geologic regions (see map, page 17). The Loess Hills featured plants reminiscent of dry lands further west while the Paleozoic Plateau contained special cool north-facing talus slopes that allowed more northern plants to extend into Iowa. The Des Moines lobe was a glaciated area dotted with thousands (perhaps millions) of wetlands while much of the rest of the state contained prairies with hundreds of species of forbs and grasses.

Even by the mid-1800s, the impact of humans was felt. Wolves, bears, mountain lions, elk, pronghorn and

by Laura Spess Jackson
and Daryl Howell



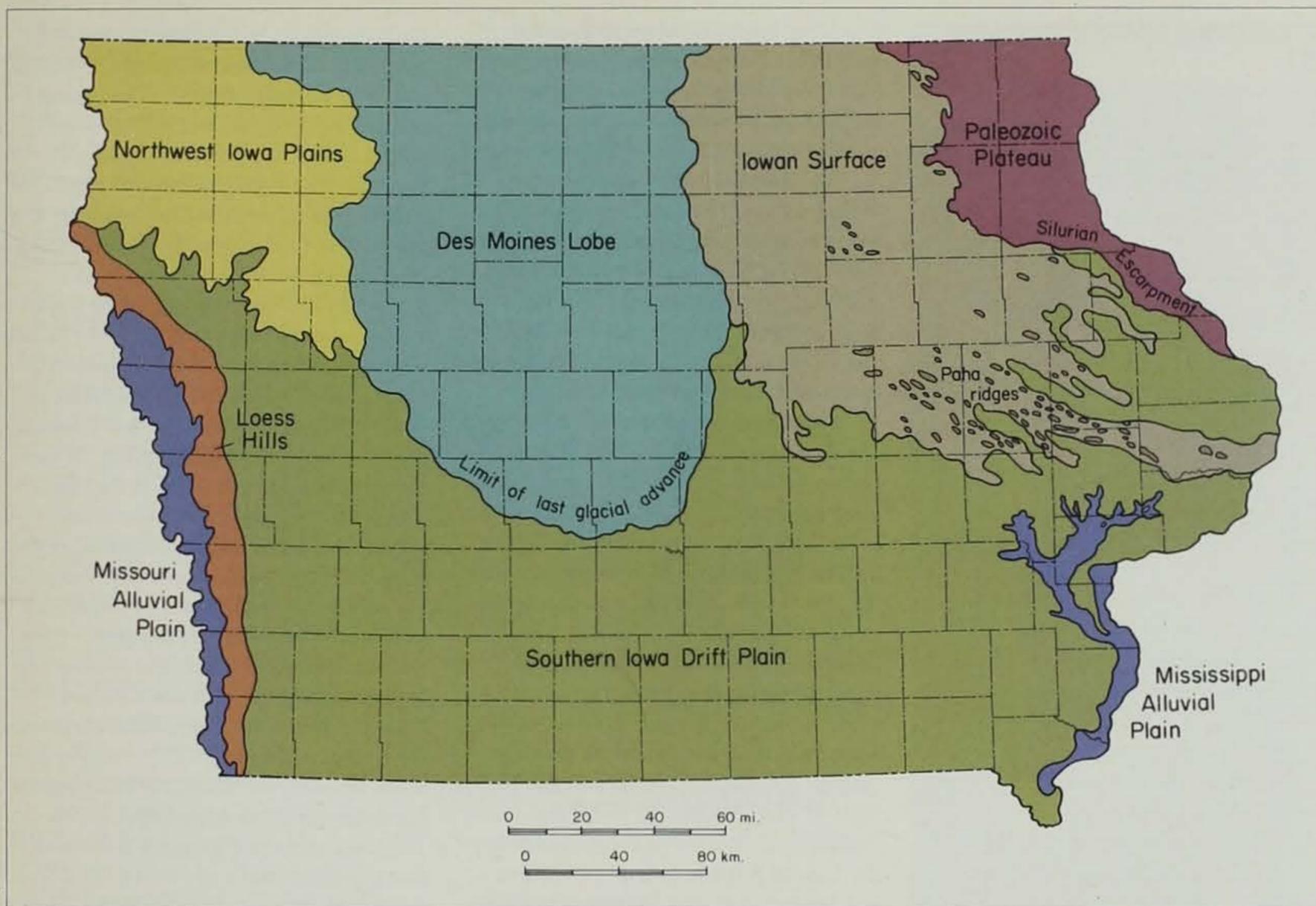
Mark Leoschke

▲ The western prairie fringed orchid is a state-endangered and federally threatened species which is currently known to occur at only 15 sites in Iowa.

bison were eliminated. Some were wantonly killed for food, some were killed out of fear and all were eventually affected by too little space to survive. By the early 1900s, much of the prairie which originally covered 85 percent of Iowa was already obliterated and the forests were drastically reduced. To date, Iowa has lost more than 99 percent of its prairies, 95 percent of its wetlands and 75 percent of its original forests. Iowa's soil was valued much more than its rich diversity of life and natural beauty. Currently, only two percent of the state is in public ownership. The parks, preserves, forests and wildlife management areas that exist provide some haven for wildlife and native plants, but they may not provide enough space for species already threatened or endangered, or species such as scarlet tanagers, wood thrushes, oven birds, dickcissels and bobolinks that need continuous blocks of habitat.

So what is the importance of plants and animals? How can we

Reprinted from LANDFORMS OF IOWA, Prior, 1991, University of Iowa Press.



▲ The landform regions of Iowa. Iowa's original diversity stems from these seven natural geologic regions.

preserve our natural heritage and what is being done now?

New information from the tropics suggests that there may be as many as 30 million species of plants, animals and microorganisms on earth. Currently, only 1.5 million have even been named. Less than 100 species have been studied to the extent of corn, fruitflies or lab rats to even begin to understand their biological or genetic makeup and potential products. Plants provide us with anesthetics, insecticides, anti-cancer drugs and a variety of other medical products as well as food, beverages and raw materials for equipment, homes and clothing. As for wildlife, animals till and aerate the soil, pollinate plants, spread plant seeds, recycle nutrients and assist decomposition as well as provide, clothing, raw materials and medical products.

Wildlife can also warn us of



Ron Johnson

environmental hazards. When peregrine and bald eagle populations plummeted, people began to realize the organochlorine pesticides (DDT, etc.)

▲ River otters, although listed as threatened in Iowa, are making a comeback due to aggressive reintroduction efforts.

On the Road to Recovery

1900--The Lacey Act is passed. The legislation prohibits interstate marketing of wildlife.

1973--Federal Endangered Species Act is passed. It provides federal protection and financial support for threatened or endangered species.

1973--Convention on International Trade in Endangered Species of Wild Fauna and Flora is passed by numerous nations. It restricts international trade of endangered species.

1975--Iowa Threatened and Endangered Species Act is passed.

1977--Iowa drafts first list of animals and plants which are threatened or endangered in the state.

1982--First release of peregrine falcons in the Midwest takes place in Minnesota.

1985--Iowa begins river otter reintroduction project.

1989--Iowa begins peregrine falcon reintroduction project.

1991--Eleven bald eagle nesting attempts are made in Iowa. Eight are successful and produce a total of 18 young.

that were affecting these birds might also affect humans. Like the miner's canary, wildlife sharing our forests, grasslands, wetlands and cities can alert us of potential danger.

Wildlife has also served as a basis of inspiration, from poetry and art to developing airplanes and sonar equipment. Wildlife also live in our minds. Although we might never see a polar bear, timber wolf, great gray whale, or rare tropical bird, it is exciting to know they still exist somewhere.

Protection for our natural resources has come gradually. In 1900, the Lacey Act was passed which prohibited interstate marketing of wildlife. The Lacey Act effectively ended most of the market hunting that was rampant in the late 1800s. This bill was fought for by sporting enthusiasts, birders, naturalists and scientists. Hunting and fishing became regulated; and hunters/anglers, through license fees and excise taxes, provided nearly all the financial support for wildlife programs through most of this century. In 1973, the Endangered Species Act was passed in the U.S. to provide federal protection and financial support for threatened or endangered species. Also in 1973, the Convention on International Trade in Endangered Species of Wild Fauna and Flora was passed by numerous nations to restrict international trade of endangered species.

Iowa passed a state threatened and endangered species bill in 1975. In 1977, Iowa drafted its first list of animals and plants which were threatened or endangered in the state. Including mammals, birds, fish, reptiles, amphibians, butterflies, snails and clams, Iowa has 90 species of threatened or endangered animals. With regards to plants, 198 species are listed. A threatened species is any plant or animal which is likely to become endangered in the foreseeable future throughout all or a significant portion of its range. Endangered means the species may become extinct throughout all or a significant portion of its range.

Within the Iowa Department of Natural Resources, the preserves and ecological service bureau administers

the threatened and endangered species program. The nongame program within the DNR cosponsors several threatened and endangered projects with the preserves staff. The preserves bureau is funded by general revenue and some federal grants, whereas the nongame program is funded strictly by the Chickadee Checkoff and direct donations. Cooperatively the programs have supported grants that have researched various endangered species. The preserves and ecological services bureau has taken the lead on research and protection planning projects, and the nongame program has led reintroduction projects in the state. The following are some of the most recent threatened and endangered species projects the programs have administered.

River otters are listed as threatened in Iowa. Historically, otters were abundant along Iowa's major waterways and throughout most of the U.S. and Canada. However, otters were eliminated from most of Iowa by 1913, except for a small remnant population of otters which persisted along the Mississippi River. In 1985, the nongame program coordinated an otter reintroduction project. The first release occurred in 1985 at Red Rock Reservoir. Since then, a total of 222 otters have been released at 11 sites across the state. The otters have successfully reproduced in most of those areas and are gradually making a comeback in Iowa.

The bald eagle is a federal and state endangered species, meaning it suffered huge population declines across the entire nation as well as the state. Prior to 1850, bald eagles regularly nested in Iowa. However, from the turn of the century until 1977, no eagles nested in the state. Slowly eagle numbers have been increasing throughout the Midwest. The eagle's recovery is a result of federal protection of the bird and its habitat, education programs and the banning of DDT pesticides which caused egg shell thinning. To help the bald eagle, the nongame program hosts educational events such as Bald Eagle Appreciation Days to inform people about this majestic bird. A bald eagle winter survey is also conducted each winter, and locations of eagle nests are tracked.

In 1991, Iowa had 11 bald eagle

nesting attempts, eight of which were successful and produced a total of 18 young. Eagle numbers have been doing so well during the past decade, that the bald eagle might soon be taken off the endangered list and regraded to threatened. The bald eagle and its habitat would still be protected by federal law, but the regrade would recognize that eagle populations have reached their recovery goals in many areas.

Peregrine falcons are also a federal and state endangered species. Like the bald eagle, the peregrine suffered widespread population declines because of DDT. By 1964, peregrines were virtually eliminated from the entire eastern half of the U.S. In 1982, the first release of peregrine falcons in the Midwest was attempted in Minnesota. Eventually, other states began programs to release young peregrines. Iowa joined the regional restoration effort in 1989. To date, the nongame program has coordinated the release of 23 young peregrines in Cedar Rapids and 19 in Des Moines. In 1992, plans have been made to release 10 more peregrines in Des Moines and join the Illinois Department of Conservation, Quad Cities Conservation Alliance and Iowa Falconers Association in releasing peregrines in the Quad Cities. Iowa-released peregrines have survived very well and have been observed in Canada, Nebraska, Minnesota and throughout Iowa.

The western prairie fringed orchid is a state-endangered and federally threatened species which is currently known to occur at 15 sites in Iowa. This species was once found in at least 35 counties in northern and western Iowa. The western prairie fringed orchid occurs in moist to wet prairies. Almost all of these areas have been plowed or intensively grazed; thus, the species has been eliminated from most areas in Iowa.

During 1991, one additional population of 21 orchid plants was located in northern Iowa on private land. Also during 1991, monitoring plots were established on one prairie

preserve to determine the effects of burning on a population of this species. Fifteen treatment and fifteen control plots were established. The treatment plots will be burned while the control plots will remain unburned. Various measurements will be taken on the treatment and control plots. The comparison will provide information on the best way to manage prairie areas for this rare species.

The Iowa Pleistocene land snail is listed as endangered by both state

"Eagle numbers have been doing so well during the past decade, that the bald eagle might soon be taken off the endangered list and regraded to threatened."

and federal regulations. It occupies cool, moist, shaded talus (rock rubble) slopes in northeast Iowa. Many of the talus slopes contain ice-filled cracks which have surface openings. Constant outflows of the ice-cooled air at these surface opening create areas with cooler, moister air and soil conditions than the surrounding areas.

The cool talus slopes provide the habitat requirements for the Pleistocene land snail and several other rare species of snails and plants. All of these species are dependent upon the cool, moist conditions of the talus slopes. The distribution of these species is fragmented because the distribution of these cool slopes is patchy in Iowa.

Surveys of the Iowa Pleistocene land snail were completed in the late 1980s. Current work with this species has concentrated on developing better methods of monitoring populations. Due to the loose surfaces of the talus slopes, it is necessary to develop methods for

determining the health of the snail populations while protecting the habitat. The DNR is working with The Nature Conservancy and the U.S. Fish and Wildlife Service to complete and test various techniques, as well as purchase the talus slopes with the best populations of snails. A number of sites have been purchased, but several additional sites need to be protected before the species can be considered secure. These efforts should be completed in the next three years.

Why is it important to protect endangered species?

The question often asked is, "What use are these plants and animals?" Some species such as the bald eagle, which is our national symbol, and the peregrine falcon are of great interest to many people, but other species like the Iowa Pleistocene land snail would be recognized by only a very few scientists.

Each plant and animal species is unique because it represents potential solutions to many biological problems. Some

of these solutions may be of use to us today or in the future. An example of the importance of plants and maintaining diversity is demonstrated in agriculture. The genetic resources of crop lands are rapidly disappearing. This is a very disturbing trend because it threatens the base of modern agriculture. The genetic diversity of these plants provide plant breeders with the means to help crops cope with diseases, insects and droughts.

Individual species also contribute to the maintenance of other species within a community. Thus, the loss of what appears to be an unimportant species may result in the loss of one or more species which are very important to us. By allowing species to become extinct, we are making decisions which cannot be reversed.

Laura Spess Jackson is a nongame biologist at Boone.

Daryl Howell is the chief of the preserves and ecological services bureau in Des Moines.

CONSERVATION UPDATE

CARRY-IN- CARRY-OUT TRASH PROGRAM IN PICNIC AREAS OF PARKS

As a part of the state's efforts at waste reduction starting in 1992, all day-use areas in state park and recreation areas will be carry-in-carry-out trash areas. Following the theme **BYOBag** - Bring Your Own Bag, day-use area visitors will bring their own bag and remove the trash they generate from their activities. Trash containers have been removed from picnic and other day-use areas.

"Waste reduction really begins when visitors stop to think about the items they are carrying into the picnic area. Using reusable products such as washable utensils and dishes rather than paper plates and disposable plastic or Styrofoam is one step everyone can take to reduce waste that goes to the landfill," said Doyle Adams, park management bureau chief in the DNR's Parks, Recreation and Preserves Division.

"When the Iowa General Assembly passed the 1989 Waste Reduction

and Recycling legislation, it set the goal of a 25 percent reduction in waste going to our landfills by 1994 and a 50 percent reduction by the year 2000. The public is becoming more aware of the steps it needs to take to meet these goals. The **BYOBag** program and the educational efforts that will accompany it should help increase that awareness, as well as help keep our parks clean and litter free," said Adams.

"Many of us remember picnicking with a wicker basket and reusable utensils or the Thermos, picnic set, tablecloth and plaid blanket we carried to the park. If visitors take a few minutes to plan what they are going to take on their outing, they will be able to plan their picnic so there will be very little trash generated and very little they will have to

take out with them. This return to the "basics" takes very little time, produces immediate waste reduction results and even saves money for the picnicker," Adams said. "Even something as simple as buying less expensive, bulk snack items and packing them in reusable containers instead of buying single-serving, individually wrapped items can make a noticeable difference. Since the implementation of the bottle deposit law, park visitors have been carrying out some of what they carry in to their picnic. The **BYOBag** concept is another logical step in waste reduction education, awareness and action."

A pilot waste reduction "Carry-In-Carry-Out" project was conducted in Maquoketa Caves, Bellevue, Wildcat Den,

Lake Ahquabi, Lewis and Clark and Backbone state parks in 1991. Signs informed park users about the program and despite some initial misgivings, compliance was good. There was a minimum of waste left on-site and few if any visitor complaints. Rangers in the pilot parks were pleasantly surprised at the public's response to the program and initial results met or exceeded projections.

"Last year, in the pilot project areas, park visitors showed their willingness to practice waste reduction efforts in their recreation as well as at home. This agrees with the information we received from other states that already have carry-in-carry-out programs in operation in their parks. It was gratifying, however, to see that Iowa residents re-



Ken Formanek

These signs are being posted in all picnic or day-use areas in state park and recreation areas around the state. They are a reminder to park visitors of the carry-in-carry-out trash program.

sponded so quickly to the program, and we expect the same positive results as our state-wide program goes into effect," Adams said. "Iowans enjoy and appreciate the beauty and value of their recreation areas and generally act very responsibly in maintaining their quality."

In addition to the signs posted at the park's entrance (pictured at left) brochures describing the program are being widely distributed. DNR park staff members are working with local community and civic organizations to make area residents aware of the new system and the benefits of the carry-in-carry-out program. While trash containers will continue to be available for lodge, cabin and group camp renters, as well as campers and supervised beach users, the waste reduction message of the **BYOBag** program should help make all park users more aware of the trash they generate.

Midwest Environmental Education Conference

"EcoDreams: Awareness to Action," is the theme of the 1992 Midwest Regional Environmental Education Conference scheduled for October 1-4, 1992. The conference will be held at the 4-H Education and Natural Resources Center in central Iowa.

The goal of environmental education is to

encourage people to take action on behalf of the environment. Each step along the way -- awareness, knowledge, attitudes, skills and action -- is important to the process. The conference will have session strands that address all these steps for specific audiences. These include formal and nonformal education, focusing on grades K-12.

The sessions will deal with topics as varied as "Ecological Nightmares" and "Environmental Daydreams." The keynote speakers are Lou Gold, a proponent for the nation's northwest rainforests, and Lewis Crampton, EPA administrative assistant, who will speak about environmental education from the viewpoint of the EPA. Entertainment will be provided by environmental songwriter and singer Doug Wood, professional dancer and instructor Faythe Kubik, storyteller Susan Strauss and artist Susan Fowler.

Conservation educators, school teachers and administrators, naturalists and interpreters, formal and nonformal teachers, students, youth group leaders and other interested people may attend. For more information and a conference packet contact Cele Burnett, Story County Conservation Board, McFarland Park, RR2 Box 272V, Ames, IA 50010, 515/232-2516.

1992 Water Safety Poster Winners Announced

Winners of the Water and Boating Safety Committee of Iowa's 12th annual water safety poster contest have been chosen. The theme for this year's contest was "Take a Boating Course."

Melissa Johnson, a sixth-grade student from James Madison Middle School of West Burlington, won first place. In addition to winning \$100 and a certificate provided by IMT Insurance, Johnson has been invited to meet Governor Branstad and witness the signing of Iowa's safe boating proclamation in May. Second place winner Keith Leedom of West Burlington, also a sixth-grader from James Madison Middle School, received \$50, and third place winner Craig Staley, a fifth-grader from Charter Oak-Ute School, received \$25. Honorable mention certificates were mailed to 15 additional students whose drawings were selected by the judging panel.

According to Sonny Satre, recreational safety coordinator for the Department of Natural Resources (DNR), the poster contest was a big success. "Choosing the best designs from more than 300 entries was a difficult task for the judges to complete," he said. "Every poster carried an important safety message and students from across the state responded to the contest. While the com-



mittee was very happy with the quality and quantity of the entries it made the task of sorting out the winning entries very difficult," Satre said.

"We feel that Iowans all across the state won because of the wide response to the project," said Satre. "The project's objective is to develop water safety awareness among young Iowans. As the contest participants' awareness of water safety is raised, they in turn influence their families and friends. Every school administrator and teacher as well as the students who participated are making a very real contribution towards water safety in Iowa."

IMT Insurance will print a quantity of the winning poster for distribution throughout the state. Cosponsors of the annual program are the Iowa Department of Natural Resources, U.S. Coast Guard Auxiliary, Des Moines Power Squadron and the Iowa Marine Dealers Association.

CONSERVATION

UPDATE

Upcoming NRC, EPC and Preserves Board Meetings

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

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

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

Natural Resource Commission:

--May 7, Decorah
--June 4, Okoboji

Environmental Protection Commission:

--May 18, Des Moines
--June 15, Des Moines

State Preserves Advisory Board:

-- June 9, Mahaska County

Spring 1992 Toxic Cleanup Days Schedule

The DNR has scheduled the 1992 Spring Toxic Waste Cleanup Days.

Toxic waste cleanup days provide urban and rural households with an outlet for safely disposing of household wastes that cannot otherwise be used up, given away, reused or recycled.

Again this year, people wishing to dispose of their household wastes are asked to call ahead to schedule an appointment, according to Marilyn Krogulski, of the Waste Management Division of the DNR. "Last year's telephone scheduling, the first of its kind in the nation, meant faster service to toxic waste cleanup participants and provided more one-to-one information on the disposal of household hazardous materials. This method is more effective because only those materials that have no other safe outlet for disposal are disposed of by the hazardous waste contractor," said Krogulski. Assistance will be given to help residents use up, give away, reuse or recycle what they can.

Dates and locations for the toxic waste cleanup days are:

- ◆ May 16, Calhoun County, County Secondary Roads Maintenance Shop, Rockwell City.
- ◆ May 30, Lee County, Lee County Transfer Station, Carbide Lane, Keokuk.

◆ May 30, Louisa County, Louisa County Fairgrounds, Columbus Junction.

◆ June 6, Clinton County, DeWitt County 4-H Fairgrounds, DeWitt.

◆ June 6, Lee County, Lee County Fairgrounds, Donnellson.

◆ June 6, Henry County, McMillan Park, Mount Pleasant.

◆ June 13, Clinton County, site to be announced, Clinton.

Watch local newspapers later this spring for phone numbers to call for appointments.

Story County Roadside Weed Survey

According to the results of a roadside vegetation survey conducted in Story County, almost every roadside with a grass border at least six feet wide and good conservation tillage practices in the adjacent fields tended to have very few weeds. "In contrast, if fields are farmed into the ditches or severe soil erosion is occurring, roadside weeds are generally numerous," said David Webber, Story County roadside management biologist. "Weeds in the roadside ditches can move into adjacent crop fields but conditions in the crop fields also affect the number of weeds in the ditches," Webber said. "Many farmers have blamed weedy roadside ditches for

problems in their fields, but that is not the whole story."

In the past, roadside vegetation management primarily involved mowing ditches and spraying them with herbicides. According to Webber, these methods can reduce the prevalence of some weeds but often damage "good" roadside grasses in the process. In addition to stressing the desirable roadside vegetation, soil erosion, tillage and other roadside disturbances create a more favorable environment for weeds to grow the following year.

"Rather than continuing this 'weed cycle' by using mowing and spraying alone, the county's Integrated Roadside Vegetation Management (IRVM) program uses other techniques like roadside burns and prairie vegetation plantings to control weeds. We still attack problem weeds such as Canada thistle with mowing and spot-spraying herbicide during the summer and fall, but we are working year-round to research, develop and promote other methods to improve Story County's roadside weed control program," Webber said.

Webber sees the IRVM program as an opportunity for cooperation. "Story County farmers and landowners who are interested in the use of field borders or other methods of weed control and erosion control can contact the IRVM program headquarters at Hickory Grove Park near Colo, 515/377-2229, for more information.

CLASSROOM CORNER

by Bob Rye, education specialist, Springbrook Conservation Education Center

The following activity is a modified version of "Migration Headache" from the *Project WILD Aquatic* activity manual, copyright 1987.

Age:

Grades 4-12

Objectives:

Students will be able to:

1. list limiting factors affecting populations of migrating water birds.
2. predict the effects of such limiting factors.
3. describe the effects of habitat loss and degradation on populations of migrating water birds.
4. make inferences about the importance of suitable habitat for migrating water birds.

Method:

Students role-play migrating water birds traveling between nesting habitats and wintering grounds and are subject to hazards at either end of the migration path as well as along the way.

Background:

How do birds, fish, mammals and insects travel the immense distances they do with such exactness? Some travel at night, some during the day, some in the skies and others deep within the sea. Scientists have proposed that they use the stars, the sun and even the earth's magnetic field for guidance. Some animals, such as salmon, seem to use smell to guide them home from the sea. Most probably, migrating species use a combination of means to guide their journeys.

Many migrating birds -- ducks, geese, swans, cranes, ibises, herons, rails, egrets, gulls, terns and shorebirds, for example -- require the presence of wetlands in their breeding habitat and on their wintering grounds. Because these two regions are often thousands of miles apart, they need Iowa wetlands such as Riverton, Forney's Lake and DeSoto Bend, as well as small potholes, to provide them with food and rest in between.

The primary threats to the survival of migratory water birds are the disappearance and degradation of wetlands.

The migration routes, or flyways, of North American water birds are well known. Before regulations, the market hunters of the 19th century took advantage of the fact that vast numbers of water birds would often concentrate at set points along these routes. Wetland habitats, usually found in low fertile plains along water courses, were historically

prized for conversion to farmland and settlements. Agriculture, development and industry are all reducing the availability of natural wetlands. Pollution, through pesticides and acid precipitation, as well as the use of lead shot rather than steel shot during hunting, all take their toll. Predators, weather, disease and fire also influence both the animals and their habitat.

Emphasize that many of the hazards faced by migrating water birds are hazards en-route. Each student represents thousands if not tens of thousands of water birds. The major purpose of this activity is for students to dynamically experience some of the important factors which affect the survival of migratory water bird populations.



Materials:

Playing area, two paper plates for every three students (mark top and bottom).

Procedure:

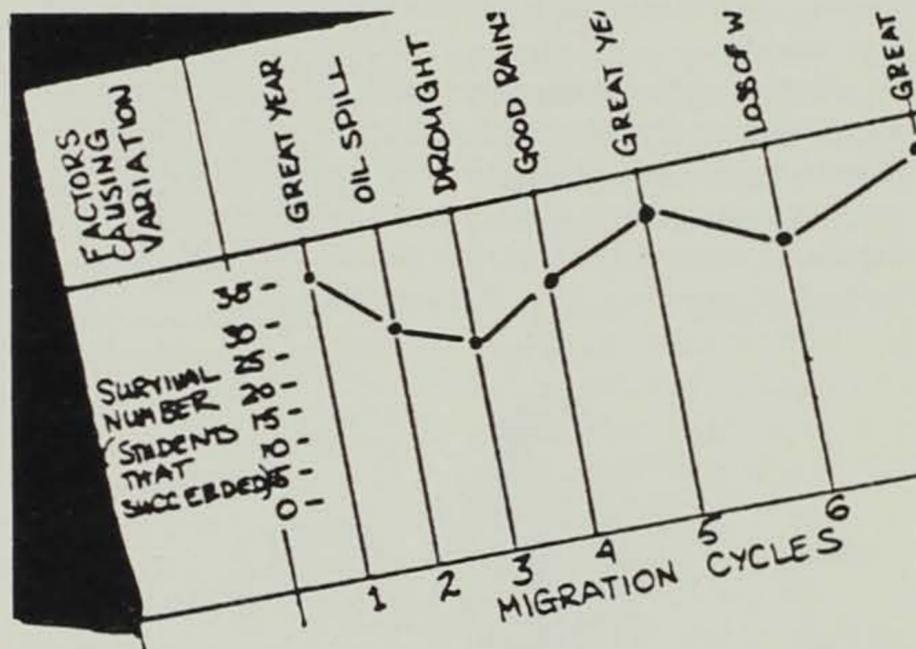
1. Select a playing area about 70 feet in length. Place one plate for each three students at each end of the field. Designate one the "wintering habitat" and the other the "nesting habitat." Place a few plates in the middle as Iowa "resting places."

2. The students represent water birds and will migrate between the paper plates representing "wetlands." At the end of each journey, the students will have to have one foot on a paper plate. If they cannot get their foot on a plate, that means they have not found any suitable habitat. They "die" and have to move to the sidelines and watch. Explain that many factors will limit the survival of populations.

3. Begin with all the students at the wintering habitat. Have the students migrate in slow motion. Later they can speed up. On the first try, all the birds will successfully migrate with no loss of habitat and a successful nesting.

4. Before the students migrate toward the wintering habitat, turn over one plate from the wintering region. Explain that a wetland has been drained for agricultural purposes. Repeat migration. Remind any "dead birds" that they will have a chance to get back into the activity as surviving hatchings when favorable conditions prevail and there is habitat available.

Note: The series of migration cycles can be graphed as shown below. Many teachers have chosen this method to record the cycles.



5. Before the next migration to the nesting region, turn over four plates in the nesting habitat. This represents a catastrophic loss as a result of an oil spill in the local river, severely damaging shoreline habitat.

Note: This results in a large number of students waiting on the sidelines. Before many cycles are repeated, provide them with an opportunity for re-entry. Each time give the students examples of changes in the habitat conditions.

6. Be sure to create one or more "disaster" years to illustrate catastrophic loss of large areas of available habitat. The greatest long-term threats to the survival of populations are the loss and degradation of habitat.

7. Ask the students to summarize what they have learned. List and discuss human-caused and environmental factors, then compare similarities and differences between these limiting factors.

Extensions:

1. Pick a species of water bird. Find out more about its characteristics. Conduct this activity again with each student representing a specific kind of water bird.

2. Explore the major factors affecting habitat loss and degradation, or gain and restoration, in your area. Research the causes for long-term habitat loss, as well as any major efforts underway to prevent these increasing losses.

3. Visit a national wildlife refuge, state wildlife area, bird observatory, private sanctuary, local wetland or other habitat for migratory water birds.

4. What other animals (such as the monarch butterfly) migrate? Are the problems they face similar to those of migratory birds?



Resource Materials:

Ducks, Geese and Swans of North America, Bellrose, Frank C., Stockpole Books, Harrisburg, PA, 1976

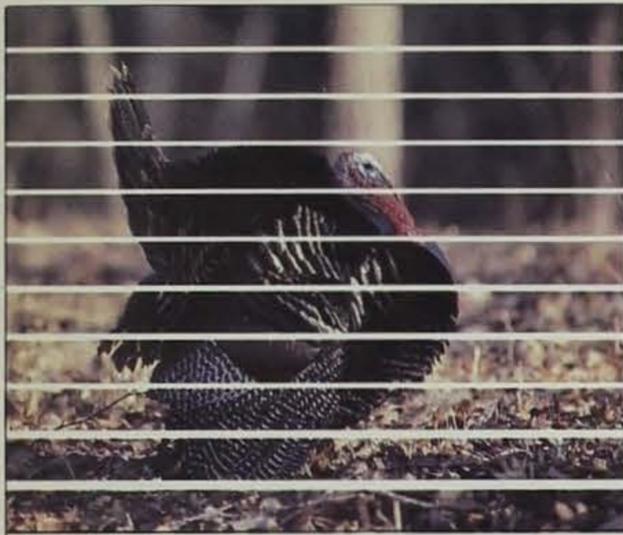
Waterfowl In Iowa, Musgrove, Jack W. and Musgrove Mary R., State of Iowa, 1977

Factors Limiting Survival of Populations of Migratory Birds

- wetland drainage
- drought
- pollution and contamination of water
- urban expansion
- conversion of wetlands to farmland
- conversion of natural waterways to canals
- illegal hunting
- lead shot in food supply
- disease

Factors Favoring Survival of Populations of Migratory Birds

- preservation of wetlands
- high rainfall
- restoration of habitat
- dynamic balance with predators
- human action aimed at protecting and restoring wetlands, including education
- regulation of hunting and human predation



Roger A. Hill

1991 Top 25 Turkeys

**New All-Time Top 10 Turkey*

TOTAL SCORE	WEIGHT	BEARD LENGTH	LEFT SPUR	RIGHT SPUR	NAME/CITY	COUNTY TAKEN
*85.38	27 lbs. 10 ozs.	10-6/8	1-6/8	1-7/8	Steve Winkey, Iowa City	Johnson
*85.00	28 lbs. 4 ozs.	10-2/8	1-7/8	1-6/8	Thomas L. Miner, Chariton	Lucas
*84.25	31 lbs. 8 ozs.	10-6/8	1-4/8	1-5/8	Douglas D. Vaux, Coon Rapids	Guthrie
82.50	29 lbs. 8 ozs.	10-7/8	1-5/8	1-4/8	Tom Huggins, Central City	Appanoose
82.25	24 lbs. 8 ozs.	12-5/8	1-6/8	1-4/8	Mike Krasean, Webster	Hamilton
82.00	29 lbs. 4 ozs.	10-1/8	1-7/8	1-3/8	William Anderson, Mt. Pleasant	Van Buren
81.50	28 lbs. 8 ozs.	10-7/8	1-5/8	1-4/8	Robert Ellinger, Des Moines	Madison
80.75	27 lbs.	11-2/8	1-4/8	1-5/8	Tim Taylor, Maquoketa	Jackson
80.62	27 lbs. 10 ozs.	11-4/8	1-4/8	1-4/8	Roy L. Semon, Sgt. Bluff	Monona
80.50	26 lbs. 12 ozs.	12-4/8	1-4/8	1-3/8	Dan Carl, Corning	Adams
80.50	23 lbs. 8 ozs.	9-6/8	1-7/8	1-7/8	Steven Wayne Hiveley, Madrid	Webster
79.75	22 lbs. 4 ozs.	15	1-3/8	1-3/8	Darryl St. Clair, Salem	Van Buren
79.69	24 lbs. 3 ozs.	11-4/8	1-4/8	1-6/8	Nick Daedlow, West Branch	Cedar
79.00	26 lbs.	11-4/8	1-4/8	1-4/8	Ted Trowbridge, Marshalltown	Marshall
78.88	25 lbs. 6 ozs.	11-6/8	1-3/8	1-5/8	Steven Hal Frymoyer, Bloomfield	Davis
78.75	26 lbs.	12	1-3/8	1-4/8	Gordon W. Stewart, De Witt	Jackson
78.62	28 lbs. 2 ozs.	11-4/8	1-3/8	1-3/8	Gerry H. Hildal, Jewell	Hamilton
78.62	25 lbs. 10 ozs.	11-4/8	1-4/8	1-4/8	Joe Kirkendall, Sloan	Woodbury
78.50	29 lbs.	11-5/8	1-3/8	1-2/8	Kenneth Schrader, Camache	Jackson
78.25	25 lbs.	11	1-5/8	1-4/8	George L. Ahrens, Boone	Boone
78.12	25 lbs. 2 ozs.	11-4/8	1-4/8	1-4/8	Michael C. Miller, Fort Madison	Lee
78.00	27 lbs.	11-1/8	1-3/8	1-4/8	Terry D. Kahler, Clermont	Fayette
77.75	30 lbs. 8 ozs.	11-6/8	1-2/8	1-1/8	Kenneth J. Vance, Muscatine	Van Buren
77.75	28 lbs. 8 ozs.	11-4/8	1-3/8	1-2/8	Harold N. Peters, New Hampton	Winneshiek
77.62	27 lbs. 10 ozs.	10-5/8	1-4/8	1-3/8	Randy Deeds, Correctionville	Woodbury

All-Time Top 10 Turkeys

TOTAL SCORE	WEIGHT	BEARD LENGTH	LEFT SPUR	RIGHT SPUR	NAME/CITY	COUNTY TAKEN	YEAR
88.94	25 lbs. 7 ozs.	10-4/8	2-1/8	2-1/8	Thomas J. Moravec, Cedar Falls	Allamakee	1990
86.63	29 lbs. 10 ozs.	11	1-6/8	1-6/8	Duane Frey, Winterset		1987
85.69	28 lbs. 3 ozs.	11-2/8	1-6/8	1-6/8	Matt Whatley, Riverside	Davis	1988
85.38	27 lbs. 10 ozs.	10-6/8	1-6/8	1-7/8	Steve Winkey, Iowa City	Johnson	1991
85.00	28 lbs. 4 ozs.	10-2/8	1-7/8	1-6/8	Thomas L. Miner, Chariton	Lucas	1991
84.25	31 lbs. 8 ozs.	10-6/8	1-4/8	1-5/8	Douglas D. Vaux, Coon Rapids	Guthrie	1991
83.88	28 lbs. 6 ozs.	10-2/8	1-6/8	1-6/8	Bryan T. Hayes, Mystic	Appanoose	1989
83.31	30 lbs. 5 ozs.	11-4/8	1-4/8	1-4/8	C. L. Current, Monroe	Marion	1987
83.06	28 lbs. 1 oz.	11-2/8	1-4/8	1-6/8	James H. Meeks, Solon	Van Buren	1990
82.75	28 lbs.	13	1-4/8	1-4/8	Steven M. Dirks, Wyoming	Jones	1988

NEW WAVES

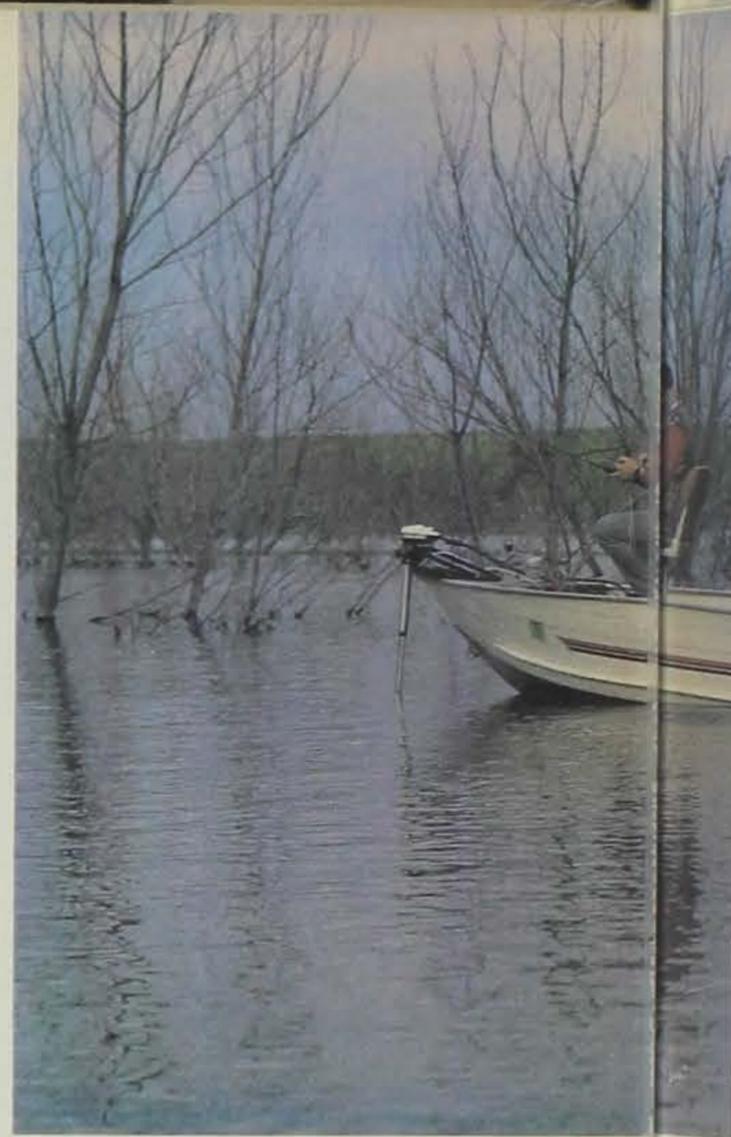
FISHING LAKES OF THE FUTURE

by Martin Konrad

EACH YEAR BEFORE the last ice crystals leave lake surfaces and before spring peepers sing and red bud trees blossom, anglers have visions of the upcoming fishing season. A vision for some anglers may be the sporting challenge of hooking a trophy-sized bass and for others it may be abundant catches of panfish for a summer fish fry. As time passes those visions fade and reality hits with a vicious strike of a lunker bass or as an arm strains to lift a basket of panfish.

To bring vision to reality in some instances is not readily obtainable in one fishing season. This is often the case in the Department of Natural Resources' efforts to bring additional fishing opportunities to Iowa anglers. A long-range DNR vision for the 1990s and the following decade is for land acquisition and development of eight new lakes. This vision first appeared in 1984 when Congress passed the Wallop-Breaux Amendment to the Sport Fish Restoration Act. Passage of this amendment meant a five-fold increase in federal money coming to the DNR specifically for the enhancement of sport fishing and boating opportunities. This federal money comes from user fees anglers pay when purchasing fishing tackle, motor boat fuels and imported tackle and boats.

Beaver Lake in Dallas County is the first "vision" lake to become a reality. Construction activities were completed on this 34-acre lake in 1989. Bluegill, channel catfish and largemouth bass have been stocked and are now providing excellent angling opportunities. To make the lake readily accessible for angling, the DNR constructed four fishing jetties, one handicapped-accessible fishing pier and a two-lane



boat ramp. Trees were anchored, rock reefs constructed and woody vegetation left in the lake basin for fish habitat. Three sediment/nutrient basins were constructed in the lake's watershed for the purpose of preserving good water quality and fish habitat.

Lake Sugema is the next lake Iowa anglers will reap benefits from. This 574-acre lake is located four miles south of Keosauqua in Van Buren County. The U.S. Soil Conservation Service (SCS) is constructing the lake for flood prevention and for municipal and industrial water supply purposes. As a lake sponsor, the DNR is responsible for creating sport fishing opportunities. Facility-use developments for lake accessibility includes eight fishing jetties, one handicapped-accessible pier and three boat ramps. In 1991, nearly 100 trees were anchored, four reefs and seven humps constructed and much of the woody vegetation was left in the lake basin for fish habitat. When complete, one large in-lake basin and four watershed sediment/nutrient basins will be constructed to preserve good lake water quality and fish habitat.

Construction of the lake dam will be complete early this year. Initial fish stockings will begin this year and will be completed in 1994. Lake Sugema



Ron Johnson

Increased federal funding is making possible the construction of eight new fishing lakes in Iowa. The first lake was completed in 1989, and the final lake is to be completed sometime after the year 2000.

fish stockings will consist of largemouth bass, walleye, channel catfish, bluegill, crappie and bullhead. Anglers will experience good fishing for bluegill, largemouth bass and bullhead at the lake in 1994.

A similar lake to Lake Sugema will be Three Mile Lake in Union County. This lake will also be an SCS flood prevention and water supply lake. The DNR has again become a lake sponsor in order to provide the same amenities as those constructed at Lake Sugema. Land is currently being purchased at the 850-acre lake site. Although lake planning is in its infancy, it is expected that lake construction and development will begin in the late 1990s.

Brushy Creek Lake is another "vision" lake that Iowans will soon see under construction. This 690-acre lake will be located in Webster County only 20 miles southeast of the city of Fort Dodge. Land for this lake was first acquired in the mid-60s with DNR intentions of developing a multi-purpose recreation area. Environmental concerns and competing recreational activities have delayed lake construction over past years. But recent completion of an environmental impact statement, by a private

consulting firm, confirmed minimal impacts would result from dam construction and basin inundation.

Dam construction is expected to commence this year. This two-year lake project when completed is expected to produce a quality fishing lake

second in quality only to West Lake Okoboji. Fisheries developments will be similar to those at Beaver and Sugema lakes. Fish stockings will be the same as those at Lake Sugema and angling in Brushy Creek Lake should begin in 1995.



The eight newest fishing lakes in Iowa. Land acquisition and construction has already begun -- or has been completed -- at most of these sites.

IN THE MID-1980s the Department of Natural Resources methodically chose four sites for future lake construction on the basis of specific physical and geographical criteria. General physical site requirements were the lake basin's ability to hold water; the presence of proper soil types for dam construction; a low watershed-to-lake-area ratio and relative steepness of the lake basin. Fisheries research has shown the latter two requirements are important for making quality fishing lakes. Populous areas of Iowa lacking lake fishing opportunities was the foundation for selecting geographical locations.

Since 1987 the DNR has acquired nearly 2,750 acres from willing sellers at these four lake sites. The four sites have become known as Deer Creek, Lost Grove, Shawtee and White Water.

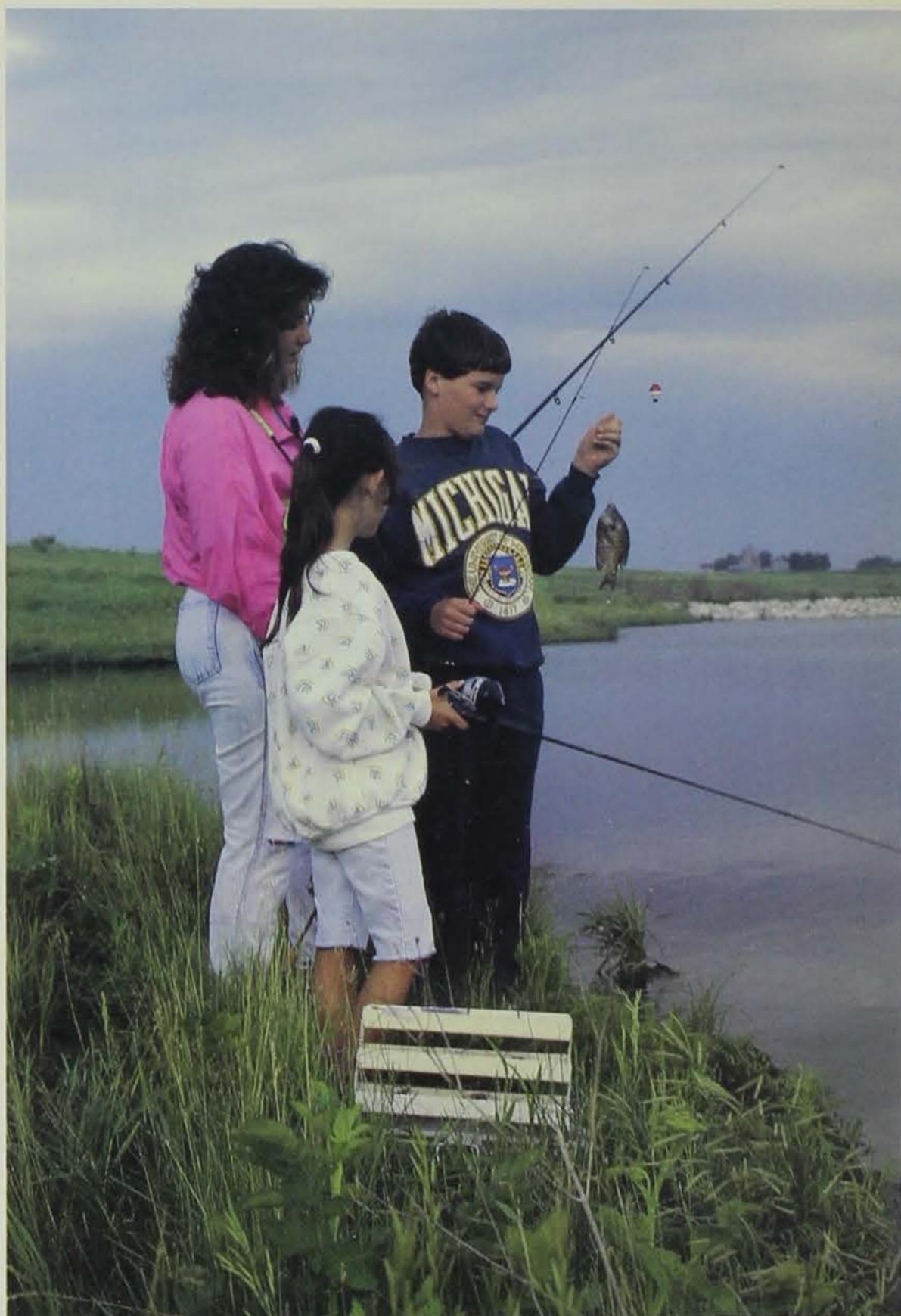
Land acquisition efforts have been most successful at the Deer Creek site. This site is located approximately 15 miles north of Sioux City in Plymouth County. To date, all lake basin and public access lands have been purchased. Steps are now being taken to design the dam, public-use facilities and fish habitat areas of this 44-acre lake. Lake construction and development is projected for 1994 and 1995. Bluegill, largemouth bass and channel catfish will be stocked. Acquisition of additional land around the lake will continue in an effort to protect water quality and fish habitat.

Land acquisition at the other lake sites is progressing at a slower pace. Nearly 1,100 acres have been acquired at the Lost Grove site. This is 50 percent of the land needed for construction and protection of this 350-acre lake. The Lost Grove site is located 10 miles north of Davenport in Scott County.

To date, less than 20 percent of the needed land has been acquired at the Shawtee site and less than 10 percent at White Water. The Shawtee Lake site is located in Fremont County, approximately 40 miles south of Council Bluffs.

The White Water site is found in Dubuque County, 20 miles west of Dubuque. Lake Shawtee is expected to be 350 surface acres and White Water Lake 106 acres in size. Lake construction at the Lost Grove, Shawtee and White Water sites is not expected until after the year 2000.

The DNR has used advanced fisheries science and knowledge of angler needs in selecting, creating and developing the eight fishing lakes. Beaver Lake and Lake Sugema are testimony of DNR visions becoming



Lowell Washburn

▲ **The most advanced fisheries science and knowledge of angler needs was used in developing the eight new fishing lakes.**

realities. Continued commitment to and planning of Brushy Creek and Deer Creek lakes will soon make them more than mere mirages in the horizons. Lake planning will also continue for development of angling opportunities at the Three Mile site and land will be purchased when it becomes available at the Lost Grove, Shawtee and White Water sites. Eventually the fishing lakes of the future will become those of the present.

Martin Konrad is a fisheries specialist for the department in Des Moines.



Lowell Washburn



Beaver Lake, the first lake to be completed, is now providing excellent fishing opportunities for bluegill, channel catfish and largemouth bass anglers.



All eight lakes will have facilities which are accessible to the handicapped.

Ron Johnson



Nestled in the northeast corner of Iowa, away from the main traffic routes and trade centers, lies a place that many would argue is not located in a state described by gently rolling terrain, expansive corn fields and landscapes broken only by the occasional farmstead. But it *is* Iowa, and the place is Yellow River State Forest.

Originally acquired in 1935, Yellow River Forest has grown to almost 8,000 acres in eastern Allamakee County. Some of the most unique forest features and terrain in

the state can be found at Yellow River, making it an ideal area for multiple-use forest management. The concept of multiple use forestry is sometimes difficult to define. Basically, it means that Iowa's state forests are primarily oriented towards the practice of forestry, but other uses of these outdoor areas can be compatible with forest management goals. So state forest managers are not only interested in the production of wood and wood products, but in wildlife management, watershed protection and outdoor recreation as well.

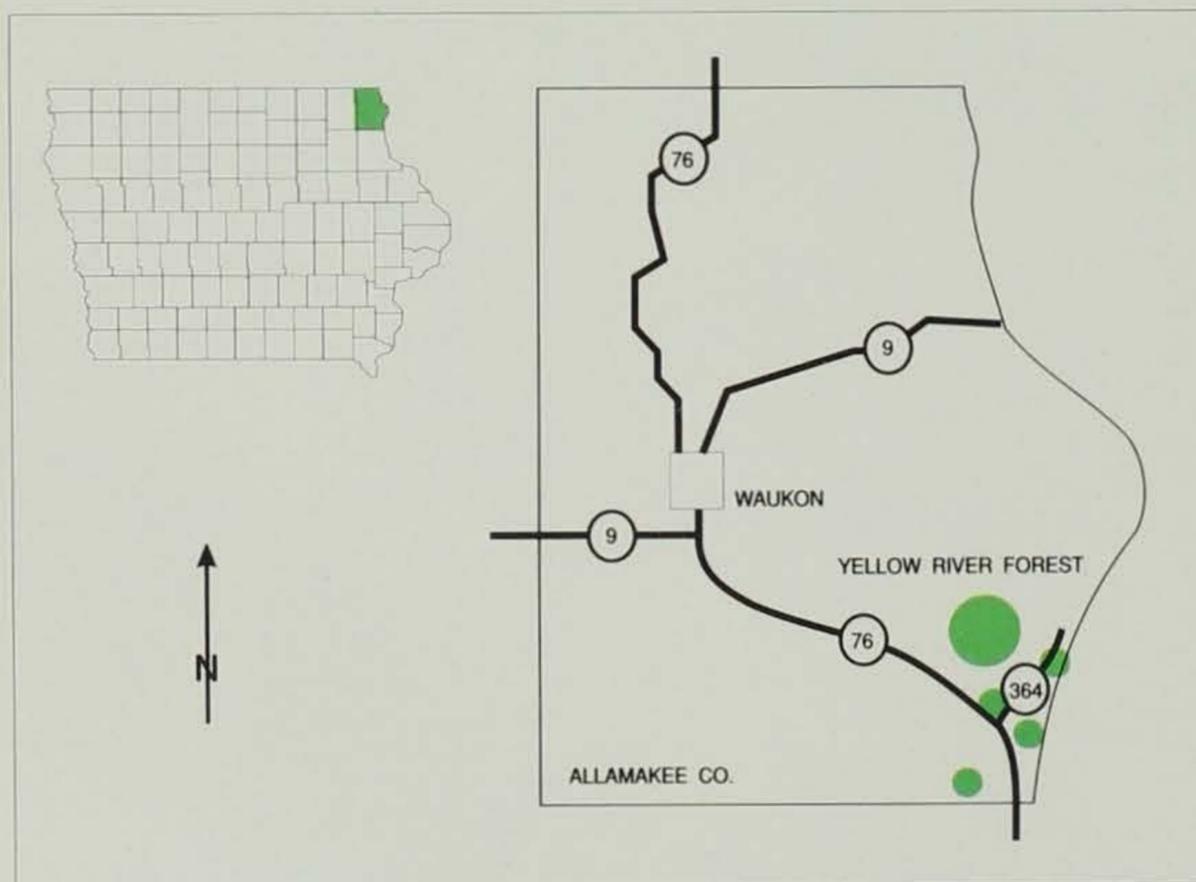
by Robert Honeywell

About 75 percent of Yellow River Forest is currently under various stages of timber management. Many of the most recent land acquisitions with marginal farmlands are being reforested through an ongoing planting program which increases the forested acreage every year. Young stands of trees are evaluated and thinned accordingly to produce the best mix of marketable mature trees. Mature stands are periodically harvested using various techniques to ensure that the forest will regenerate and continue to supply future generations with the benefits a forest ecosystem can provide. Special care is taken to preserve wildlife den trees, sensitive and unique habitats, and scenic views. Harvest areas are generally kept small enough to have little effect on the environment, yet large enough to regenerate the oak-hickory forest type which provides so much in the way of wood products, wildlife habitat and aesthetics.

Demonstrations of various harvest techniques, tree plantings and timber stand improvement can be seen at Yellow River, as well as all the different tree species which are common to the north-central United States. Extensive conifer plantings add to the diversity of timber types. Forestry field days and other public programs are held on the forest each year to help landowners better manage their own forests.

Yellow River Forest is a very popular area for hunting deer, wild turkey, ruffed grouse, rabbits and squirrels. The forest entertains more than 5,000 hunters each season, giving testament to the forest's quality wildlife habitat and diversity of cover types. Timber harvest schemes add much to the edge effect which many game species depend upon, and winter food supplies are supplemented with food patches, shrubs and mast-pro-

Yellow River FOREST



▲ Yellow River, located in eastern Allamakee County, encompasses nearly 8,000 acres of prime forest area.



DNR Photo

◀ **The sawmill at Yellow River. State forest managers are not only interested in the production of wood and wood products, but also in wildlife management, watershed protection and outdoor recreation.**



DNR Photo

▲ **Some of the most unique forest features and terrain in Iowa can be found at Yellow River.**

ducing trees. Native grasses and other prairie plant species maintained within the forest area also provide nesting cover and seed for foraging wildlife.

Yellow River Forest is home to more than 65 species of birds and a vast array of other nongame wildlife species, including some endangered and threatened species such as the red-shouldered hawk and Cooper's hawk. A wildlife consideration currently being dealt with at Yellow River Forest is the concept of forest fragmentation. Studies show frag-

mentation of large continuous timber tracts may be very detrimental to certain wildlife species which depend on large areas of unbroken forest cover. This issue is being carefully considered in Yellow River Forest's future management plans.

Recreation interests at Yellow River Forest are becoming more prevalent each year. The state forest system has traditionally been oriented toward the more wilderness-like experience, even though Yellow River Forest is not large enough to be classified as a wilderness area. Camping facilities are available 12 months of the year to accommodate the winter

outdoor enthusiast as well as the fair weather camper. Yellow River maintains an extensive trail system on the Paint Creek Unit for hikers, equestrians, snowmobilers and cross country skiers. Two trout streams -- Paint Creek and Little Paint Creek -- flow directly through the main campgrounds, making trout fishing a very popular activity at Yellow River. Many overlooks provide unparalleled views of the Paint Creek watershed and the Mississippi River valley.

Next time you really want to get away from it all without leaving the

state, come visit Yellow River State Forest. It is an experience you will want to relive again and again. For more information, write to Area Forester, Yellow River State Forest, R.R. 1, Box 73, Harpers Ferry, IA 52146.

Robert Honeywell is the area forester at Yellow River State Forest.

