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Front — Screech owl finds refuge in cavity of dead tree. Photo by Lowell Washburn. Back — A late-season hunter enjoys an early January morning. Photo by Wayne Lonning.

CHICKADEE CHECKOFF

The Next Endangered Species? by Terry Little



Ron Johnson

IT'S HARD TO BELIEVE THAT THE VARIED ITEMS ON THE LIST BELOW HAVE ANYTHING IN COMMON, but they do. All have been funded from Iowa's "Chickadee Checkoff," the popular name for donations made to the DNR's nongame program by Iowans on their state income tax forms. The other amazing fact is that all this has been accomplished in just four years.

The tax checkoff became law during the 1982 tax year. Prior to that, biologists in the DNR's wildlife bureau did some nongame work as time permitted, but spent most of their effort on projects directed at

One of the major nongame programs is a river otter restoration project.

The list is diverse and the accomplishments are impressive:

Publications

Snakes of Iowa
Lizards and Turtles of Iowa (In press)
Bats of Iowa (In press)
Attracting Backyard Wildlife
Bald Eagle - Seabird of the Midwest
The (Not So) Common Barn Owl
Eastern Bluebird
Quarterly "Nongame Newsletter"
Numerous professional and magazine articles

Land Acquisition and

Development - Acquired or assisted in acquiring:

Chichauqua Trail (Baxter-Bondurant)
Oberhauser Tract (wetland addition to Morris Lake in Wright County)
Addition to Mericle Woods Preserve (Tama County)
Shield Prairie (Muscatine County)
Fencing and trail development at Strasser's Woods Preserve (Polk County)
Acquisition and fencing of endangered alluvial slopes (northeast Iowa)
Construction of a waterfowl and shorebird observation overlook at Red Rock Reservoir

Wildlife Restoration

Reared and released 411 barn owls
Coordinated the release of 116 river otters
Placed 100 kestrel nest boxes on signs along Interstate 35
Constructed and distributed 400 bluebird nest boxes
Cooperated in rehabilitating over 100 raptors and other injured wildlife

Habitat Improvement

Developed the following projects:
Consulted with 27 counties or municipalities on urban habitat development
Initiated urban landscaping project
Butterfly garden at state fairgrounds
Coordinated placement of bald eagle nesting platforms at Red Rock Reservoir and at Lansing
Backyard "Songbird Package" of trees and shrubs, with instructions
Habitat enhancement at Terrace Hill (Governor's mansion)

Nongame Surveys

Frog and Toad Survey
Iowa Breeding Bird Atlas
Midwinter Bald Eagle Survey
Iowa Bird Feeder Survey
Bluebird Nest Box Monitoring Survey

Research - Funded or helped fund projects to:

Evaluate the effectiveness of the barn owl release program
Identify and develop a plan to protect bald eagle wintering areas on the Mississippi River
Determine nest box use by screech owls
Identify raptor migration patterns along the Mississippi River
Determine bird use of developing urban habitat projects (Tama)
Nest success of piping plovers and least terns along the Missouri River

Public Events - Conducted the following annual events:

Pelican Watches - Red Rock and Saylorville Reservoirs, Ingham Lake
Bald Eagle Days - Keokuk, Davenport, Red Rock
Hawk Watch - Effigy Mounds National Monument
Workshops - Landscaping for Wildlife, Bird Feeding, Bluebird Management
Traveling Displays - Nongame Program, Nest Boxes, Bird Feeders, Wildlife Landscaping
Hundreds of nongame and urban wildlife presentations



Ron Johnson

game species funded by hunting license sales. Money available through the checkoff allowed the hiring of a full-time nongame biologist in 1983, an urban wildlife biologist in 1985, and two technicians to help get projects done. Their list of accomplishments in just four years is a credit to their dedication and to the generosity of Iowans who contributed to the Fish and Wildlife Protection Fund, the official name of the checkoff.

Although much has been accomplished, much more needs to be done. Iowa is home to 439 species of nongame wildlife. The distribution and biology of many species is poorly known. Twenty-four species are



1988 NONGAME SUPPORT CERTIFICATE

The 1988 Nongame Support Certificate, featured above, is a great blue heron photographed by Jim Messina of Cedar Rapids. Each of the 5,000 prints are individually numbered and can be purchased from the Iowa Department of Natural Resources, Wallace State Office Building, Des Moines, Iowa 50319-0034. The cost of each is \$5.

Revenue from the sale of these collector's items will be used specifically to enhance Iowa's nongame species.



Ron Johnson

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TOTAL CONTRIBUTIONS (\$) (THOUSANDS)
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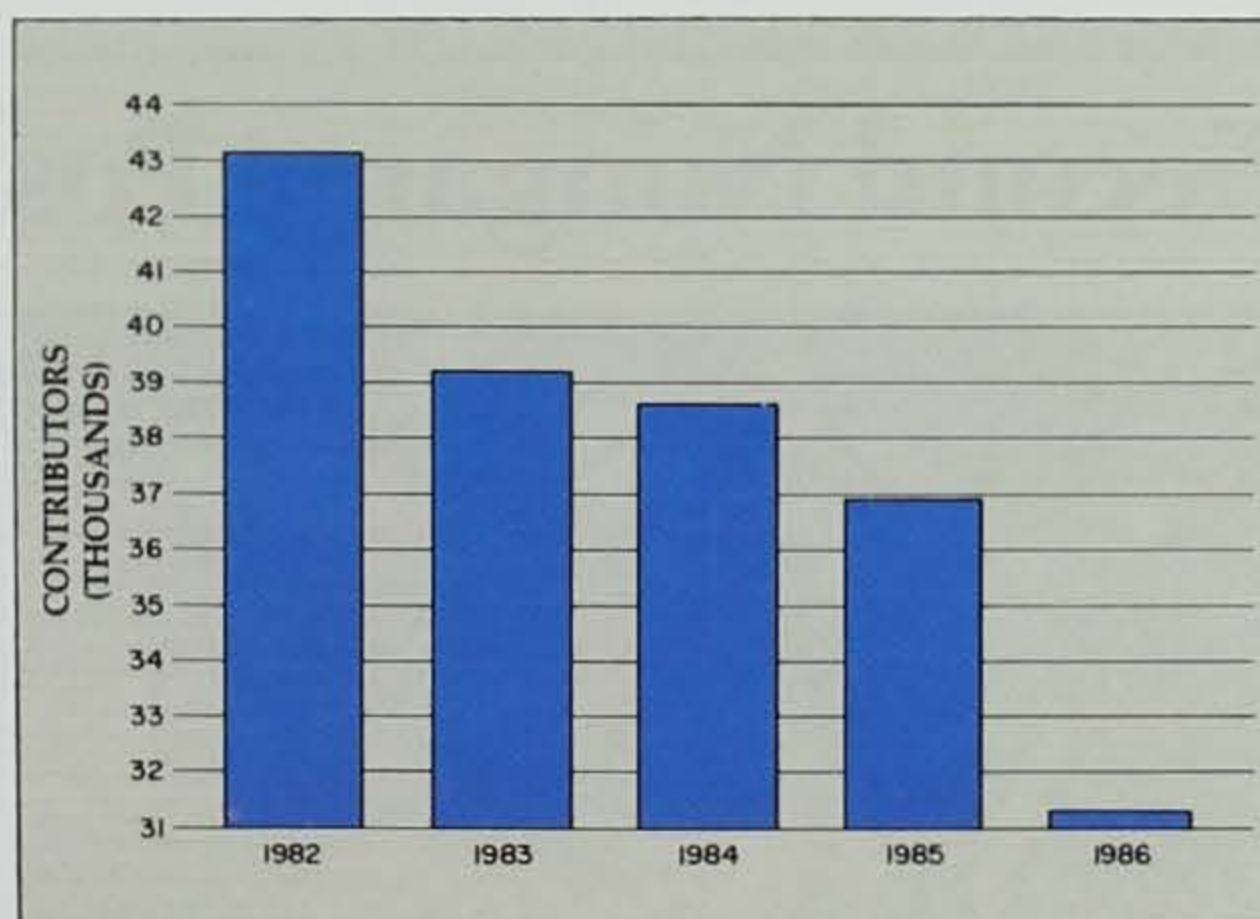
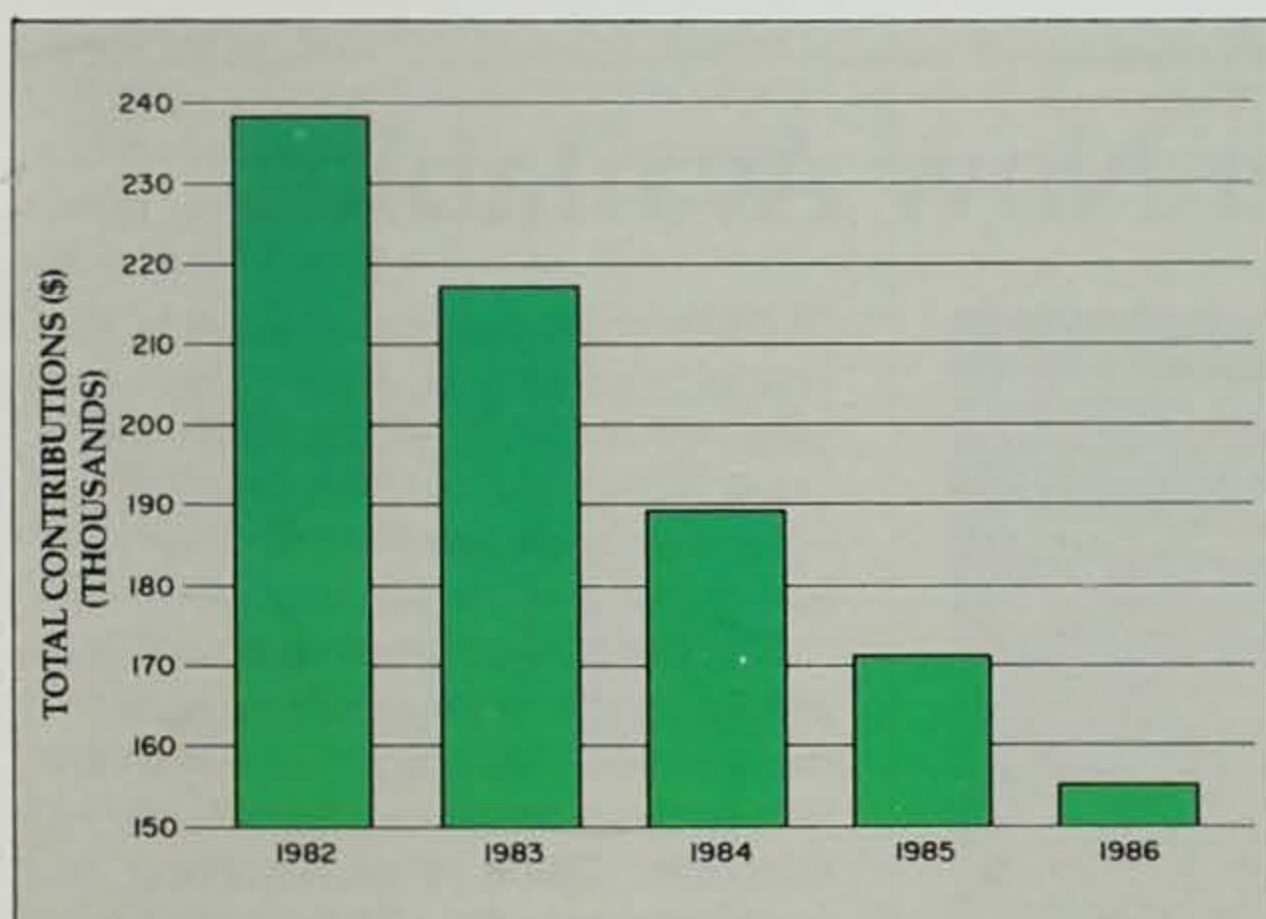
listed as threatened, and 36 species are on the endangered list. Management strategies need to be developed to protect rare animals, as well as to develop an appreciation among Iowans for popular species whose habitats are shrinking. Although the checkoff provides money that can be used for these purposes, not nearly enough has been donated to address the many priority projects that have been identified. Unfortunately, it appears that less will be done in the future, rather than more. "Why is this?" and "Can this be corrected?" are questions crucial to the future of nongame management in Iowa.

Since its inception in 1982, nearly \$1 million has been contributed

through the checkoff system. DNR officials were pleasantly surprised with the first year's results: 43,000 Iowans (about seven percent of those receiving tax refunds) donated \$238,000, or \$5.52 per person. This was somewhat higher than expected and got the program off to an excellent start.

Unfortunately, revenues have declined about 10 percent per year each year since 1982. Fewer taxpayers have contributed less per individual, resulting in smaller total donations each year. A good cushion was provided the first two years because there were no programs in place to use all of the money. As the nongame program expanded, how-

As the nongame program expanded, however, expenditures have increased to the point that, if donations decrease again this year, programs will have to be cut.



Bob Dolan



Ken Formanick

Other nongame projects include (left to right) pelican watches, construction of bald eagle platforms, bird feeder surveys and the breeding bird atlas.

ever, expenditures have increased to the point that, if donations decrease again this year, programs will have to be cut. Many of the projects crying for attention will have to be ignored. From a promising beginning, the chickadee checkoff has entered the threatened stage and will soon be endangered if current trends continue.

How could such a healthy program become ill so suddenly? An examination of sources of revenue used to fund the DNR's wildlife programs provides some perspective on this dilemma.

Funds for programs that benefit game animals — those that are hunted or trapped — come entirely

from user fees (license sales and an excise tax on sporting arms and ammunition). Funds for nongame programs come from the checkoff, sales of nongame support certificates and private donations. Nongame animals also benefit from the acquisition and development of habitat on public hunting areas purchased with money from hunters.

In 1986, approximately 239,000 hunters and trappers contributed about \$5.6 million to the DNR for wildlife management purposes and about \$1.5 million was returned from excise tax revenues. In the same year, an estimated 31,000 Iowans contributed just over \$155,000 to the Chickadee Checkoff. Checkoff contributors

represent just 1.4 percent of the 1.5 million Iowans who stated in a 1985 poll that nongame wildlife was important to them and that more money should be spent on its management. These expenditures work out to an average of \$24 per hunter, \$16 per trapper and 11¢ per nongame enthusiast for the management of the resources they enjoy. Surveys of checkoff contributors show that nearly half of them also buy a hunting or fishing license. Thus, less than one percent of Iowa's nonconsumptive wildlife enthusiasts — individuals who neither hunt nor trap — actually contribute to nongame management.

Because hunters and trappers con-

Second Nongame Poster Now Available



The second nongame poster is printed and now available. This year's poster features the bald eagle at left.

Don Poggensee of Ida Grove, Iowa, donated the photograph.

The poster will be a major tool in publicizing the nongame program this year, as well as a gift of appreciation to those who contribute to the Fish and Wildlife Protection Fund (also known as the Chickadee Checkoff).

Those who donate to the Fish and Wildlife Protection Fund on their state income tax form may obtain a copy of the poster by asking their tax preparer or by sending a card with their name and \$2.50 for postage and handling to:

ATTN: NONGAME PROGRAM
Department of Natural
Resources
Wildlife Research Station
Rt. 1, Ledges Road
Boone, IA 50036

Those who do not contribute to the Fish and Wildlife Protection Fund via the state tax form, can send a direct donation to the Nongame Program at any time and receive a poster by mailing the donations plus \$2.50 for postage and handling to the above address. Address all checks to the NONGAME PROGRAM DONATION.

tribute so much more than nongame enthusiasts, the DNR is able to spend about \$4 million annually for management of game species. The budget for nongame wildlife is stalled at about \$150,000 and may be cut if funds remain low.

The conclusion seems obvious — voluntary contributions to fund wildlife management programs do not work satisfactorily. There is little doubt that less money would be received for game management if hunters' and trappers' license fees were voluntary. But the fact remains that consumptive users have allowed themselves to be taxed to support their wildlife-related recreational interests. Nongame enthusiasts have not stepped forward with equal fervor. Studies have shown that much interest in nongame is opportunistic and casual, and that many nonconsumptive users who say they are concerned about wildlife take advantage of relatively few opportunities to seek contact with it.

For whatever the reasons, the fact remains that Iowa's "Chickadee Checkoff" may become the state's next endangered species. Unless the trend to declining donations can be reversed, existing programs will have to be cut and new ones ignored. If you appreciate nongame wildlife and are concerned for its future, contact your friends with similar interests and ask them to contribute to the "Fish and Wildlife Protection Fund." The space for donations is on line of your 1987 individual state income tax form. You may contribute part of your refund, or add to the tax you owe. If you don't help, the Chickadee Checkoff, born in 1982 and threatened in 1987, could have a short existence indeed!



Terry Little is the wildlife research supervisor for the department.

CLASSROOM CORNER

by Robert P. Rye

IOWA'S BIG BIRDS

Birds attract people's attention easily - they fly out where it is easy to see them and frequently call to help us look in the right direction. Usually people ask questions about large birds found in Iowa, such as the bald eagle or pelican.

Test your knowledge of these "big birds" of Iowa by answering the following questions.

Which of these birds:

1. is the smallest?
 - a. Cooper's hawk
 - b. northern harrier
 - c. American kestrel
 - d. rough-legged hawk
2. nests on the ground?
 - a. screech owls
 - b. northern harrier
 - c. northern goshawk
 - d. red-shouldered hawk
3. have three-color phases?
 - a. bald eagle
 - b. screech owl
 - c. northern harrier
 - d. Cooper's hawk
4. are scavengers?
 - a. turkey vultures
 - b. short-eared owls
 - c. osprey
 - d. American kestrel
5. is the most colorful?
 - a. long-eared owl
 - b. turkey
 - c. northern goshawk
 - d. American kestrel
6. is a capable runner?
 - a. turkey
 - b. red-tailed hawk
 - c. great-horned owl
 - d. bald eagle
7. lives entirely on fish they capture alive?
 - a. bald eagle
 - b. golden eagle
 - c. barn owl
 - d. osprey
8. is the most common and widespread?
 - a. turkey vulture
 - b. red-tailed hawk
 - c. barn owl
 - d. sandhill crane
9. is the most common and the largest, long-legged, wading bird?
 - a. snowy egret
 - b. green heron
 - c. great blue heron
 - d. greater yellow legs
10. as an adult has a white head and tail with yellow eyes?
 - a. osprey
 - b. bald eagle
 - c. barred owl
 - d. great-horned owl



Answers:

1. c 2. b 3. b 4. a 5. d 6. a 7. d 8. b 9. c 10. b

-Radon Gas-

A POTENTIAL PROBLEM

by Don Koch

RADON IS A NATURALLY OCCURRING, INVISIBLE (COLORLESS) GAS THAT OCCURS IN TRACE AMOUNTS IN THE AIR WE BREATHE.

It is derived primarily from the radioactive decay of radium, which itself occurs in trace amounts in most kinds of soil and rock. So why is it a potential problem? Outdoors, radon becomes harmlessly diluted into the air. Radon gas can, however, seep from surrounding soils and rocks into basement foundations through cracks, joints, floor drains, sumps, and pores and cracks in hollow-block walls. Without adequate ventilation, radon concentrations can increase with time to problem levels. The health threat with radon arises because it, too, is radioactive. Its decay products, or "daughters," adhere to dust particles which can be inhaled. Once inhaled with the dust, the radioactive daughters irradiate lung tissues, increasing the possibility for lung cancer.

Radon concentrations in homes can vary greatly with time and with location of a house. Basement areas, since they are immediately adjacent to the soil and rock sources of radon gas, tend to have the highest concentrations as heated air, rising in the home, creates a "chimney" effect that draws radon from the ground into the home. Storm windows, vapor barriers, tightly sealed doors and the like act to trap radon inside. The highest radon concentrations tend to occur in the winter when houses are sealed tightest and the chimney effect is greatest.

There is a direct relationship between radon concentration and its radioactivity. Radon concentrations can easily but indirectly be determined by measuring the radioactivity of the air at a particular location. Radioactivity is measured in picocuries per liter (abbreviated by pCi/l). One pCi/l means that for each liter (about one quart) of air or water, two atoms of radon decay per minute to other elements. The U.S. Environmental Protection Agency's "action level" for radon is four pCi/l. Relative radon-risk evaluations are shown in the accompanying chart.

What contributes to the radon problem?

There are two major aspects to the radon problem: the nature of the radon source (related to the radium concentrations in surrounding soils and rocks) and the potential of the house to allow radon gas to infiltrate and be stored in the house (related to the type of home construction, the house's conditions and the nature of house ventilation). Many kinds of soils and rocks contain at least trace amounts of radium. Rocks with relatively high concentrations of radium include: uranium ore, granite, black shale, phosphate and pitchblende. In Iowa, black shales occur in south-central and southwestern Iowa. Phosphatic rocks occur in parts of northeastern Iowa. However, in most areas, both of these rock types are buried by younger

wind-, glacier-, and river-derived deposits and are not major radon sources. Only a few homes, in small localized areas, are likely to have their foundations in or near where these rocks would serve as radon sources.

The surface materials across most of Iowa, which are the principal sources of radon, consist primarily of either glacial deposits (till), wind-blown silts (loess) or river deposits (alluvium). Currently we know little of the actual radium content of these different materials. They each contain trace amounts of radium, but the concentrations vary from site to site. The radium in glacial deposits is derived primarily from shale and granite fragments glacially eroded from these rock types occurring to the north and northwest of Iowa.

The wind-blown silts (loess) are derived from wind erosion of glacial deposits, and the radon source materials probably consist of the same type of rock fragments but from smaller-sized particles and in lower concentrations. Wind is capable of transporting only small-sized particles and radium is usually contained in the heavy minerals.

RELATIVE RADON-RISK EVALUATION CHART¹

pCi/l ²	WL ²	Estimated number of lung cancer deaths due to radon exposure (per 1,000)	Comparable exposure levels	Comparable risk
200	1	440-770	1,000 times average outdoor level	More than 60 times nonsmoker risk
100	0.5	270-630	100 times average indoor level	4-pack-a-day smoker
40	0.2	120-380	100 times average outdoor level	20,000 chest x-rays per year
20	0.1	60-210	10 times average indoor level	2-pack-a-day smoker
10	0.05	30-120	10 times average outdoor level	1-pack-a-day smoker
4	0.02	13-50	10 times average indoor level	5 times nonsmoker risk
2	0.01	7-30	10 times average outdoor level	200 chest x-rays per year
1	0.005	3-13	Average indoor level	Nonsmoker risk of dying from lung cancer
0.2	0.001	1-3	Average outdoor level	20 chest x-rays per year

¹From U.S. Environmental Protection Agency

²pCi/l, picocuries per liter; WL, working levels.

Consequently, wind-blown deposits likely have a lower radium concentration than the glacial deposits.

The river deposits (alluvium) in Iowa are derived primarily from glacial meltwaters or from the erosion of previously deposited glacier- and wind-derived deposits. River deposits likely have variable radium sources depending on the type and relative amounts of materials derived from these different origins. Based on the limited information on radon levels across Iowa, it appears that surface materials produce relatively low amounts of radon, though radon levels above the U.S. EPA action level are not uncommon, at least seasonally, in some Iowa homes.

The other factors affecting radon levels in homes are related to home construction and ventilation. Radon entry into homes occurs primarily around house foundations, which are usually basements. As stated earlier, radon gas can seep into the home through dirt floors, cracks in concrete floors and walls, floor drains, sumps, joints and tiny cracks or pores in hollow-block walls. Sealing these different entry points can greatly reduce radon infiltration into the house.

Once radon gas has infiltrated the house, radon levels are largely determined by the amount of ventilation. In well-ventilated houses, the radon harmlessly disperses to low levels. This is why radon levels in most homes are low during the summer months. In the winter, fresh air ventilation into homes is restricted and radon concentration can rise. The worst case is likely where a poorly constructed or deteriorated basement allows significant radon entry into the house, and a "tight," energy-efficient upper structure retains the radon. The best case is likely when a tight, well-built basement restricts radon gas entry, and still, a tight, energy-efficient upper structure provides efficient heating.

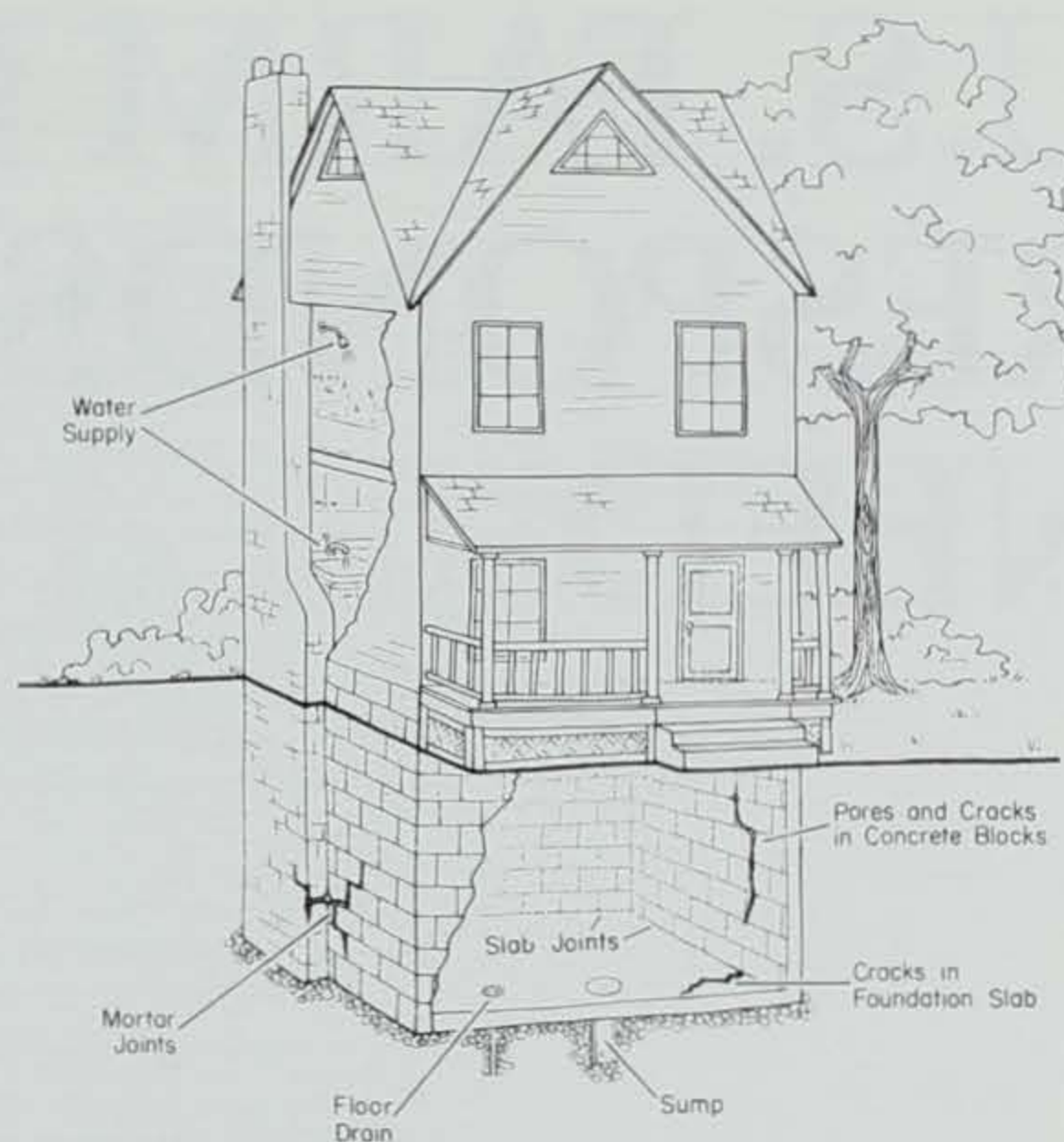
How large is the problem?

There currently is no definitive answer to that question, either nationally or within Iowa. High, indoor radon levels have been found in homes built on uranium-rich bedrock and derivative soils in an area of eastern Pennsylvania, northwestern New Jersey and southeastern New York known as the "Reading Prong." No uranium-rich bedrock is known in Iowa.

Currently, there is no method to predict potential radon levels in individual homes in Iowa. Variability in local geologic materials and variation in home construction and ventilation make predictions nearly impossible. Preliminary results from the Iowa Radon Project (Iowa State University Extension Service) suggest that about 40 percent of Iowa homes may have radon levels under four pCi/l, and that nearly 60 percent of Iowa homes may have radon levels between 4 and 20 pCi/l. These results derive from measurements of nearly 1,000 homes through voluntary purchases of detectors. The Iowa Radon Project hopes to carry out a true radon survey of about 400 Iowa homes this winter.

What can be done about a radon problem?

For existing homes, the first step is to test to see if radon is at problem levels in your house. Relatively inexpensive charcoal canister detectors can be obtained from private



Radon gas may seep into a home through various openings in the basement and from the water supply.

vendors or from the Iowa Radon Project, Engineering Extension Service, Iowa State University, EES Building, Haber Road, Ames, Iowa 50011. If the test results indicate that radon levels are above the U.S. EPA "action level" of four pCi/l, further testing may be recommended, depending on the situation. Because of the relatively low radon levels generally found across Iowa, relatively simple and inexpensive sealing and ventilating techniques have been found to be effective.

For new construction, there are a variety of simple, inexpensive techniques that can be used to minimize radon gas entry into the house. Information on these techniques can be obtained from local contractors or from the Engineering Extension Service, Iowa State University, Ames, Iowa 50011.

Further information about the health effects from radon can be obtained from county health departments or from:

Iowa Department of
Public Health
Lucas State Office Building
Des Moines, IA 50319-0075
(515) 281-5787

U.S. EPA Region VII
726 Minnesota Avenue
Kansas City, KS 66101
(913) 236-2803

For information about construction techniques and ways to reduce radon in your house, contact a local contractor or:

Iowa State University
Engineering Extension Service
EES Building
Haber Road
Ames, IA 50011
(515) 294-8815

U.S. EPA Region VII
726 Minnesota Avenue
Kansas City, KS 66101
(913) 236-2803

Don Koch is the chief of the Geological Survey Bureau.

U.S. FARM PROGRAM RESPONDS TO FOREST NEED

by Mike Brandrup



IN THIS TIME OF LOW COMMODITY PRICES AND HIGH PRODUCTION COST, IT would seem to be a reasonable idea to consider ads like this one. Think about it. Take your least productive, most erodible cropland out of production and receive an annual rent payment for 10 years. At the same time, receive assistance in planting trees on that ground. The tree planting may be your future fuel supply, retirement fund or a forest legacy for your children. At the end of 10 years, the land is still yours and so are the trees.

The Conservation Reserve Program (CRP) has been doing this for landowners since 1985 and to date, 1,556,140 acres of highly erodible Iowa land has voluntarily been placed in this program. As of June 1987, foresters for the Iowa Department of Natural Resources have developed tree planting plans for 4,423 acres of CRP land.

The USDA Food Security Act of 1985 mandated the CRP program. The program gives landowners with highly erodible cropland an opportunity to submit bids to the USDA for an annual rental payment for that land. (Maximum bid payments have ranged from \$65 to \$90 per acre, depending on the location in the state.) The landowner agrees to rent the ground to the USDA for 10 years, and also agrees to plant a cover crop of grass, or grass and trees, on the ground. Establishment costs for both grass and tree plantings will be cost-shared with the landowner on a 50-50 basis.

The 1985 Forest Resource Plan, adopted by the DNR, sets a goal of increasing Iowa's present 1.5 million acres of forest land to three million acres by the year 2010. Tree planting under the CRP program has a great potential to help Iowans meet this goal.

Tree plantings under the CRP program can be tailored to a landowner's

needs or desires.

If a landowner has a need for fuel wood, silver maple or hybrid poplar may be planted. In 10 years, these trees should be large enough to be harvested, and if harvesting is done during late fall and winter, the remaining root system will produce another crop of firewood without having to replant.

Plantings of alternate rows of evergreens (pine, spruce, fir, cedar) and walnut will produce good winter cover for wildlife while at the same time provide a potential high-quality walnut stand 40 to 60 years in the future. The evergreens will grow quickly to shade the ground, lessening weed control expenses, while at the same time forcing the walnut to grow straight and tall.

Similarly, alternate row plantings of green ash and walnut will yield a firewood harvest of ash in 10 to 15 years and still have the potential for high quality walnut log production in the future.

Planting of windbreaks or shelterbelts consisting of shrubs, hardwoods and evergreens will not only provide wildlife winter cover, but will help control soil losses caused by wind erosion and cut energy costs. (See shelterbelt story, page 20.)

Plantings for Christmas trees, nut production or orchards are not permitted on CRP ground. The Food Security Act of 1985, which mandated the Conservation Reserve Program, also provided that anyone who plants crops on highly erodible land needs a conservation plan developed by the Soil Conservation Service by 1990. The Act also provides that by 1995 all highly erodible soils must be farmed in a manner so that soil losses are not greater than the natural rate of soil replacement. Failure to comply with either of these requirements will result in farmers being ineligible for USDA farm program benefits (price and income supports, FmHA loans, farm storage loans, etc.).

The Conservation Reserve Program offers landowners the opportunity to take highly erodible land out of production, to receive an annual rental payment on that ground for 10 years and to plant trees that will control erosion, increase water quality and improve wildlife habitat.

These same trees could also earn a return of eight percent or more on direct investment above inflation, over the life of the stand.

Iowa's commitment to three million acres of forestland by the year 2010 is a goal that will be greatly assisted by programs like the Conservation Reserve Program.

For those interested in the Conservation Reserve Program, the next sign-up period will be from February 1-9, 1988, at county ASCS offices around the state. For further information, contact a district forester, or local ASCS or SCS office.

Mike Brandrup is chief of the Forestry Services Bureau.



Jerry Leonard



DNR photo

A carefully managed walnut tree planting can provide a retirement fund or a lucrative legacy for the next generation. Current federal farm programs provide incentives for planting trees.



Just Add Water

by Ron Howing

WHEN THE VERY FIRST SETTLERS ARRIVED IN THE PRAIRIE POTHOLE region of northern Iowa, it was estimated that there were between two and a half to three million acres of wetlands. As the land was drained to provide more cropland, many marshes began to disappear. By 1954 there were about 50,000 acres of wetlands. Today there are only a few thousand acres of private wetlands in Iowa's prairie pothole region, also referred to as the Glacial Lakes Plateau. This is more than a 99 percent loss.

As the prairie marshes were drained, wildlife that depended on these wetlands drastically decreased in numbers — ducks, geese, muskrats, mink, marsh wrens, red-winged blackbirds, terns, herons and many other species of wildlife needing wet-

lands to produce and rear their young. Without these marsh areas their numbers diminished.

However, new opportunities have opened for marsh restoration on private lands. The Conservation Reserve Program, administered by the U.S. Department of Agriculture, retires highly erodable cropland for a ten-year period. These CRP acres provide excellent wildlife habitat, especially for upland wildlife. About 146,000 acres of CRP land were enrolled by the fifth enrollment period in Iowa's prairie pothole region, where most of the drained basins exist. The Department of Agriculture allows marshes to be developed on CRP land, with the approval of the ASCS, using design specifications of the SCS.

The Iowa Department of Natural Resources has a new program to help private landowners restore wetlands on their land, including CRP land. If

the landowner will sign a 10-year agreement, the DNR will do the development to restore marsh areas and the cost of development will be paid by the DNR. This will include materials, drainage tile, pipe, equipment operation, labor and equipment rental. If the landowner does not want to sign an agreement, free technical assistance will be provided by a wildlife biologist.

When the biologist meets with the landowner who wants to restore the marsh, the first thing that has to be determined is if it is feasible. Will the necessary development back water up on a neighbor, impact drainage of outlets, drainage districts or other land? If it does, then the marsh will not be developed, unless permission is granted by those affected.

Most areas that are restored are on small drained basins (1 to 15 acres). Larger basins usually have larger watersheds where development

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would impact drainage on the neighbor's land.

The project also has to be cost effective. If a lot of dirt work with extensive material cost is required, the marsh acres need to be large enough to justify the project. If the project is feasible, the area will be surveyed to determine the type of outlet plug and desired water depth, which is normally one to three feet.

Some basins were drained by surface drainage which means a dike plug is all that is needed to hold water. However, most basins were drained by tiling. If the area was tiled, 30 to 50 feet of the tile needs to be removed and non-perforated flexible plastic tile needs to be installed. The top of the plastic tile or inlet will be put at the desired water level, located on the marsh side of the dike. The dike fill lines and tile inlet levels will be shown with a marked lath.

If the landowner wants to develop the marsh on CRP land, permission must then be given by the ASCS. A plan, meeting SCS specifications, will be completed by the wildlife biologist and filed in the SCS office. The landowner can then begin development or sign a 10-year agreement with the DNR where all development cost will be paid by the DNR.

There are many benefits landowners receive by restoring wetlands on their land. The marsh area will provide hunting and trapping for the owner, friends and neighbors. The owner can get extra income by trapping the marsh. It is estimated that furharvest income will exceed \$50 per marsh acre per year on well-managed marshes at present fur prices.

When CRP land is flooded, the owner will save the cost of seeding. There will also be no noxious weeds to mow or spray because the newly developed marsh will contain only aquatic plants. If a landowner wishes to establish a marsh on land that is not in CRP, the owner can get complete property tax exemption, if allowed in that county under the Slough Bill.

By storing water in the marsh, there will be a reduced demand on outlets making downstream drainage systems more efficient. Besides providing wildlife habitat, there are aesthetic values, benefits for



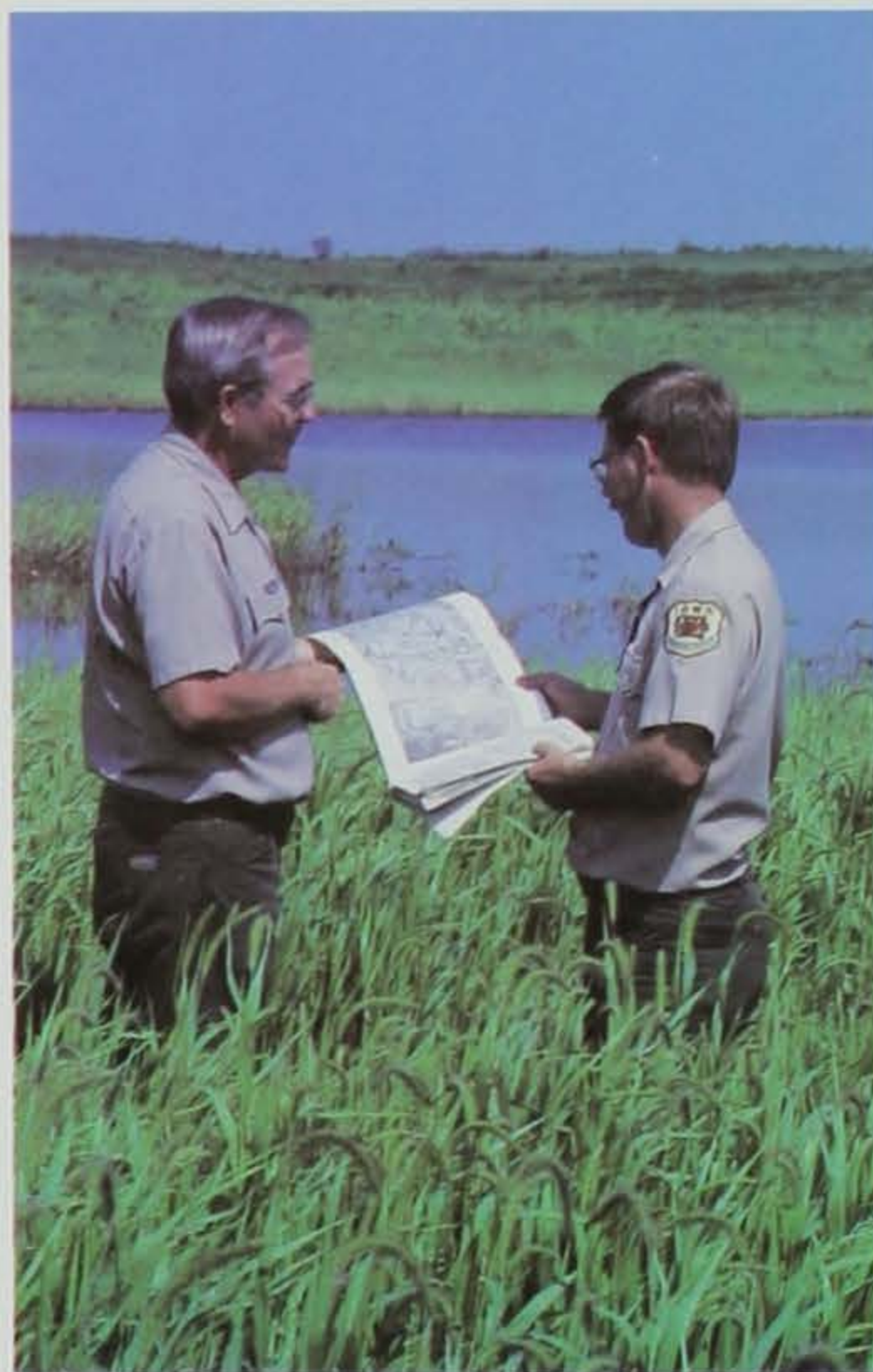
Bruce Morrison



Louell Washburn

Wildlife biologist examines broken tile which has been interrupted and replaced with a standpipe — the outlet for the new marsh. By the end of last year, over 160 acres of marsh were created on CRP lands. Hunting and trapping opportunities are just a couple benefits landowners may derive from their new wetland.

Permission to develop a marsh on CRP land is given by the ASCS. A plan, meeting SCS specifications, will be completed and filed by a DNR wildlife biologist. Most areas restored are on small, drained basins, 1 to 15 acres.



Lowell Washburn



Roger Hill

groundwater recharge, water purification and flood control.

Some landowners are concerned as to whether the tile in the marsh will work if it is reconnected at the end of the 10-year contract. Tiling contractors, farmers and SCS personnel have assured that it will work. Water standing still in tile systems will not cause tile to fill with dirt. Freezing will not occur at tile-level, below the marsh, causing tile damage.

Once a marsh is restored, marsh vegetation, aquatic invertebrates, waterfowl, furbearers and other marsh inhabitants return very quickly. It is practically "instant marsh" — just add water.

One added plus to restoring wetlands on CRP land is the abundance of excellent upland nesting cover for waterfowl. Most areas have five or more acres of nesting cover for every acre of marsh. This ratio is ideal for optimum waterfowl production.

The primary objective of the Iowa DNR in helping restore wetlands on private land is to provide a home for wildlife to produce and rear their young. Hunting and trapping are secondary objectives. As with all private land, sportsmen still need to get permission to use these marsh areas.

The wildlife biologists have been pleasantly surprised at the positive response of the few landowners already contacted about restoring wetlands. By December 1, 1987, the Iowa DNR had helped 17 landowners restore 31 marsh areas on CRP land, totaling 169 acres. Three landowners decided to restore a marsh on their CRP acres themselves, with the DNR and SCS providing only technical assistance. These three marshes will total about 14 acres. One individual landowner established two marshes amounting to 20 acres on non-CRP land.

If you would like more information or are interested in participating in a wetland restoration project, contact your wildlife biologist or SCS office. They will be more than happy to assist you. You could be reaping the benefits of your own private marsh.

Ron Howing is a wildlife management biologist in northwest Iowa.

A DEAD TREE PRODUCES LIFE

by Lowell Washburn

MOST FOLKS CAN RELATE TO THE FACT THAT A TREE REPRESENTS A WONDERFULLY COMPLEX AND HIGHLY beneficial plant form. Trees provide us with shade and enhance property values. They also absorb deadly carbon monoxide and produce much of the planet's supply of oxygen. Most produce some sort of fruit which is utilized by either man or wildlife; and for many types of birds and mammals, trees provide indispensable nesting and winter cover.

But a tree, of course, is a living thing. And like all living things, it must one day die. At this point, most people assume that the tree has ceased to function. Since a dead tree no longer produces oxygen, shade, or fruit it can be of little value. Consequently, the now leafless form is promptly erased from the landscape.

But although this line of logic may seem perfectly reasonable on the surface, a closer examination will reveal that, even in death, a tree continues to serve a critically active role in the natural scheme of things. And when looked at from a wildlife perspective, that rotten snag you've been meaning to do away with may indeed provide to be the most valuable tree in your woodlot.

The abundance of cavities found in dead trees represent critical nesting habitat for a wide variety of wild creatures that range from white-footed mice to raccoons. However, their most visible and endearing residents are a highly specialized form of bird life known as the cavity nesters. As diverse as they are beautiful, these birds are divided into two classes — primary cavity users and secondary cavity users.



White-breasted nuthatch.



Red-headed woodpecker.

Lowell Washburn



Louell Washburn

Downy woodpecker.



Louell Washburn

Northern flicker.

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Louell Washburn

The primary cavity users, such as the flicker, are those species which chisel out their own entrance holes or nesting chambers. By contrast, secondary users exploit cavities that have been abandoned by the original excavators or that occur naturally through decay. I once read a bulletin that contained a list of 82 species of Iowa wildlife that utilized dead trees during some part of their life cycle. It later occurred to me that few, if any, living trees could claim such variety.

However, in spite of the fact that dead trees and snags represent such crucial nesting areas for such a wide range of both game and non-game wildlife, they are perhaps the most difficult form of habitat to preserve. Most often the cycle is short-circuited as these tremendously valuable commodities are swiftly and efficiently removed.

To wildlife it matters little if the reason was simply a misguided sense of aesthetics or perhaps a quest for firewood — the bottom line is the same. Fewer nesting cavities today translates into fewer birds tomorrow.

So what is a dead snag? Is it an eyesore or a thing of beauty? In the final analysis I doubt that anyone would think that the Iowa landscape is really more attractive without the stunning brilliance of a red-headed woodpecker or the evening flight of wood ducks. In fact, we may yet come to realize that few things are so full of life as a dead tree.

Great-horned owlets.



Bruce Morrison



Linnell Washburn



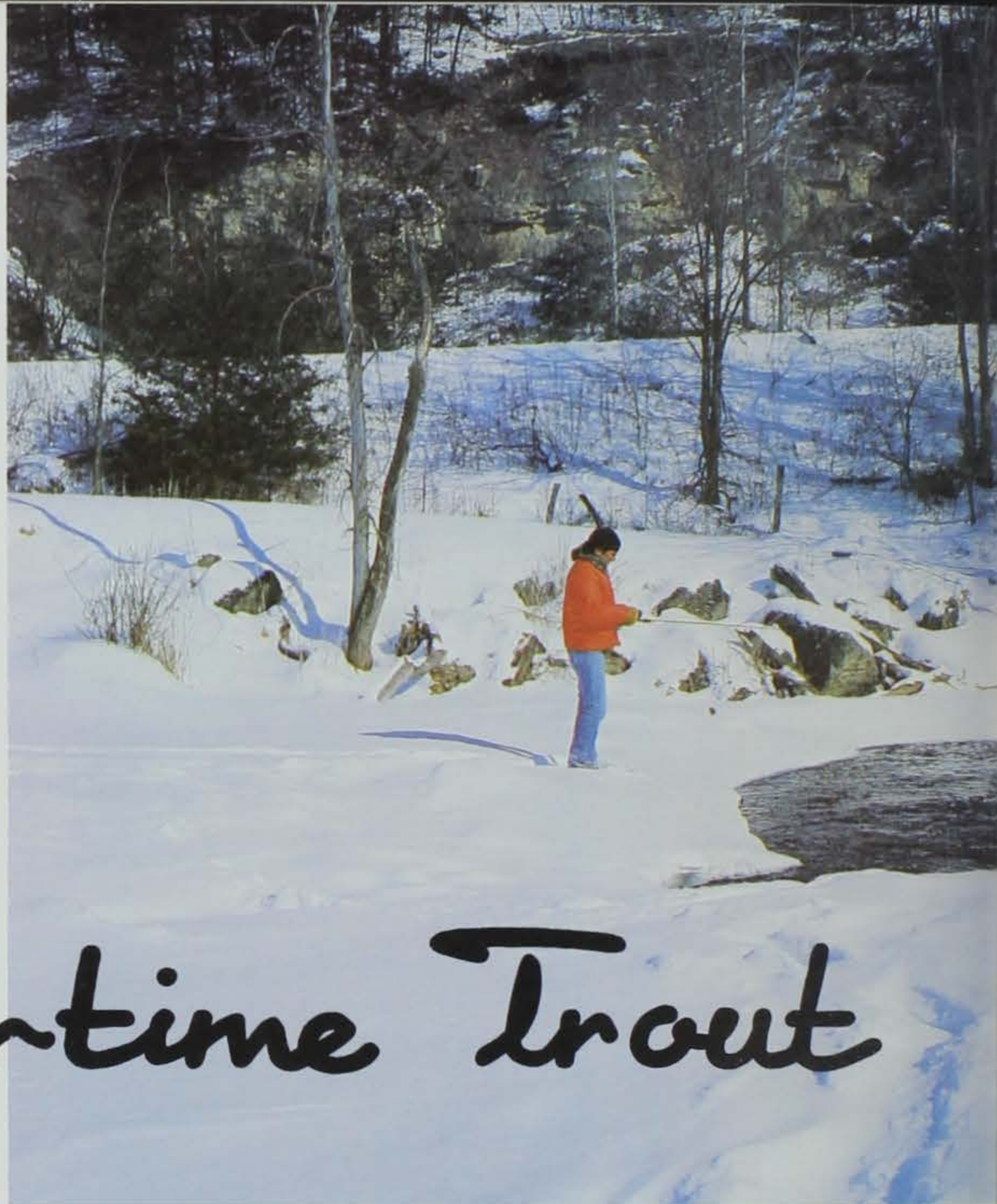
DNR photo

Fox squirrel.

Red-bellied woodpecker.

S NOW FILTERS THROUGH THE TREES, COVERING THE VALLEY WITH A DRIFTING blanket of white. Other flakes join the deluge, gaining momentum from a cold breeze moving through the woods like an apparition with a restless spirit. This is more than just a flurry, it is the first snowfall of the season and a full blown storm which obscures the landscape. Only the stream remains impervious to the harsh realities of winter. Ice free, it flows along, cascading over moss-covered rocks before replenishing several large pools below. Each pool is alive with brightly colored trout foraging for the many aquatic nymphs drifting from upstream. These trout are aggressive, surviving the gamut of anglers, since they are stocked during the late fall.

Winter provides a great opportunity to fish for trout, as this is the



Wintertime Trout

by Jerry Hudson

most over-looked trout angling period. Few anglers are enthusiastic about cold fingers, wading through snow or walking some distance to reach the stream. However, there are many positive benefits derived from such an outing. At no other time will an angler find such beauty or solitude and just as importantly, the chance to sample some winter, tackle-busting action.

There are approximately 50 catchable trout streams, six walk-in areas, four special regulation streams and 25 put-and-grow streams located in nine northeast Iowa counties that support some winter fishing for rainbow and brown trout. Many of these streams are located in out-of-the-way places, where the roadways are not maintained during the winter months. In order to fish a particular stream, it may be necessary to leave your vehicle near the main road and hike some distance. Regardless of the inconvenience, it can be fun and pro-

vide some excellent exercise.

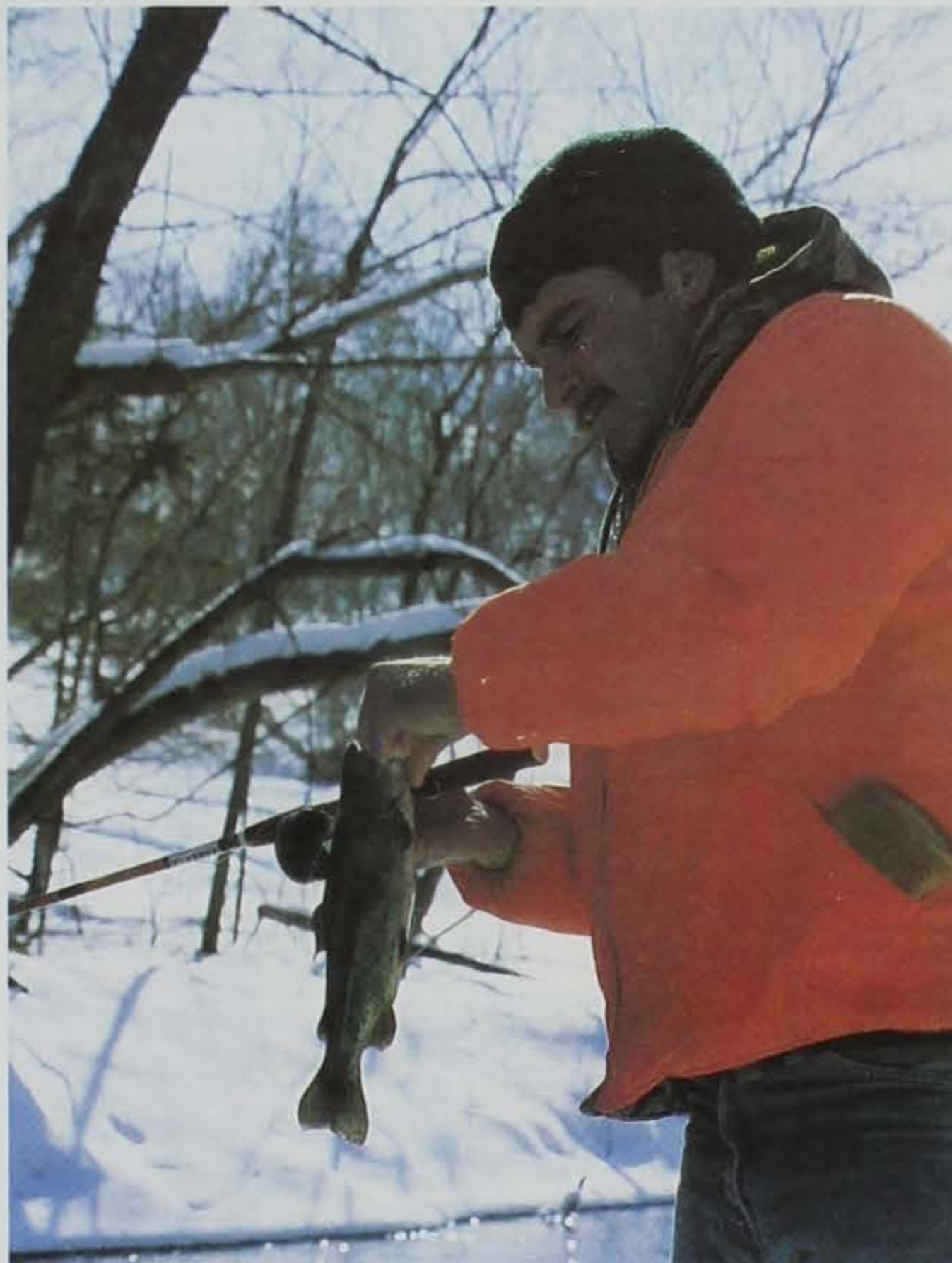
Fishing techniques differ slightly from other seasons. The streams are usually clear at this time of year and, therefore, light tackle is a must. An ultra-light spinning rod with two- to four-pound test line, a small hook and live bait should induce a strike. Grubs, waxworms and minnows are excellent choices of bait when presented in the proper manner. Other tackle might include an assortment of leadhead jigs and small spinners to tempt the trout, but for the fly fishing enthusiast, a nymph imitation is hard to surpass.

Perhaps winter stream fishing is not your forte, but you would rather try another trout fishing adventure. What else is available? In 1982 the Iowa Department of Natural Resources initiated a trout ice fishery on Mitchell Lake in Waterloo as part

of an urban fishing program. A total of 4500 rainbow trout were stocked during November, December and January with 1500 released each month. By ice-out in the spring, over 95 percent of these trout had been caught, providing an exceptional rate of return to the angler. Since its inception, the program has gained in popularity as indicated by a 1986 trout angler survey. Of the 286 anglers interviewed, eight percent said they had fished at least once in Mitchell Lake. Expanding this number to fit the trout fishing fraternity means that 2,156 anglers completed 13,686 fishing trips trying to catch a limit of trout through the ice.

Typically the basic ice fishing equipment differs from open-water fishing. The long spinning rod is replaced with a short ice fishing rod, designed to put the angler near the

In addition to northeast Iowa stream fishing, trout can be caught through the ice on Mitchell Lake in Waterloo.



Ron Johnson

Ron Johnson

ice hole where the action is. Aside from this, light line, bobbers, small hooks or tear drops are standard. Hook on live bait like waxworms, grubs or minnows and you have all the trappings for a successful winter trout fishing expedition. Of course two essential tools haven't been mentioned yet — an ice auger to drill through the ice and a dipper to remove ice chips from the hole. Both are necessary for this type of fishing.

Trout are coldwater fish, actively feeding through the coldest winter days. Therefore, winter trout fishing is a logical and fun sport to pursue during these "off-season" months. It can be an exciting way to spend a beautiful winter day.

Jerry Hudson is a fisheries management biologist located at Manchester.



Jerry Hudson

A portable ice shack can make even the coldest days pleasant.

MANY BENEFITS of WINDBREAKS

by Tom Neal



DNR Photo

"IT'S SNOWING AGAIN!" EVERY RURAL RESIDENT OF IOWA HAS HEARD this cry. We all know it can either be "snowing" or "SNOWING." It can be a nice over-the-river-and-through-the-woods-to-Grandmother's-house-we-go snow. Or we can add below-zero temperatures and a 50-mph wind to the formula, and "snowing" becomes "SNOWING." It's not fun anymore when wind chill factors hit minus 100 degrees and the wind-driven snow rakes your skin like sand. The weather isn't fit for "man or beast," but there is something that can be done about it.

We can plant trees. I'm not talking about a crabapple for your front yard. I'm talking about planting real trees and lots of them on the north and west sides of farmsteads.

Such a tree planting is called a shelterbelt because it provides protection from the elements for people and animals. Many shelterbelts that were planted in the past were not satisfactory. A row of honeysuckle and two rows of trees simply will not provide enough windbreak or shelter to protect your livestock or wild animals.



DNR Photo



DNR Photo

For guaranteed protection, a shelterbelt should contain at least eight rows of trees and shrubs. Four or more rows should be evergreens. Sure, that sounds like a lot of trees, but it takes a lot to take the blow out of an Iowa blizzard.

What will a good shelterbelt do for you? Lots of things. First, it will make you and your family more comfortable. The wind will no longer take your breath and your arm-load of mail away everytime you step outside. The kids might decide that playing outside isn't so bad after all. A good shelterbelt can save you up to 36 percent on your winter heat bills, plus make the house more comfortable and less drafty. Your snow removal costs can be cut by as much as three-fourths. If you enjoy shoveling snow every time the wind blows, shelterbelts may not be for you. Otherwise read on.

If you have livestock, it's just good business to have a shelterbelt. How much do you suppose animals gain with a wind-chill factor of minus 50 or 100 degrees? Not only do animals exposed to such weather not gain weight, they may actually lose it. Stop the wind and you also stop some other frustrations. Snow won't blow into buildings. Livestock can stay drier and warmer. Snow won't

drift over the fence, inviting your stock to take a hike. With less snow in your lots, there will be less mud in the spring. Even in summer, a properly designed shelterbelt adds beauty and value to your home.

What about the wild creatures that live around your farm? These, above all, will benefit from a shelterbelt. Following the next big snowstorm, take a drive around your neighborhood. Pheasants, squirrels, rabbits and songbirds will be seen around solid, evergreen shelterbelts. You won't see any in the open country, because there just is not enough cover there to allow them to survive.

I am often asked why there are no songbirds or pheasants around a certain farm. The answer is almost always the same — there isn't enough cover to protect them in winter storms. A chickadee must maintain a body temperature above 100 degrees Fahrenheit. It simply can't do so with a minus 100-degree wind-chill factor, unless it has shelter. I've seen pheasants, rabbits and songbirds frozen solid where they slept, for the simple reason they didn't have shelter from the wind.

Look at it this way — your farm may provide everything that pheasants and other wildlife need, except one. That one thing is a place to

survive the worst blizzard of the winter. If you can't get them through that blizzard, nothing else matters.

Now that you're convinced you need a shelterbelt, let's talk about how much it will cost and how to go about getting it started. The first thing a shelterbelt will cost is land, perhaps an acre. I believe the benefits outlined previously will pencil-out to a higher profit on this acre than either corn or soybeans.

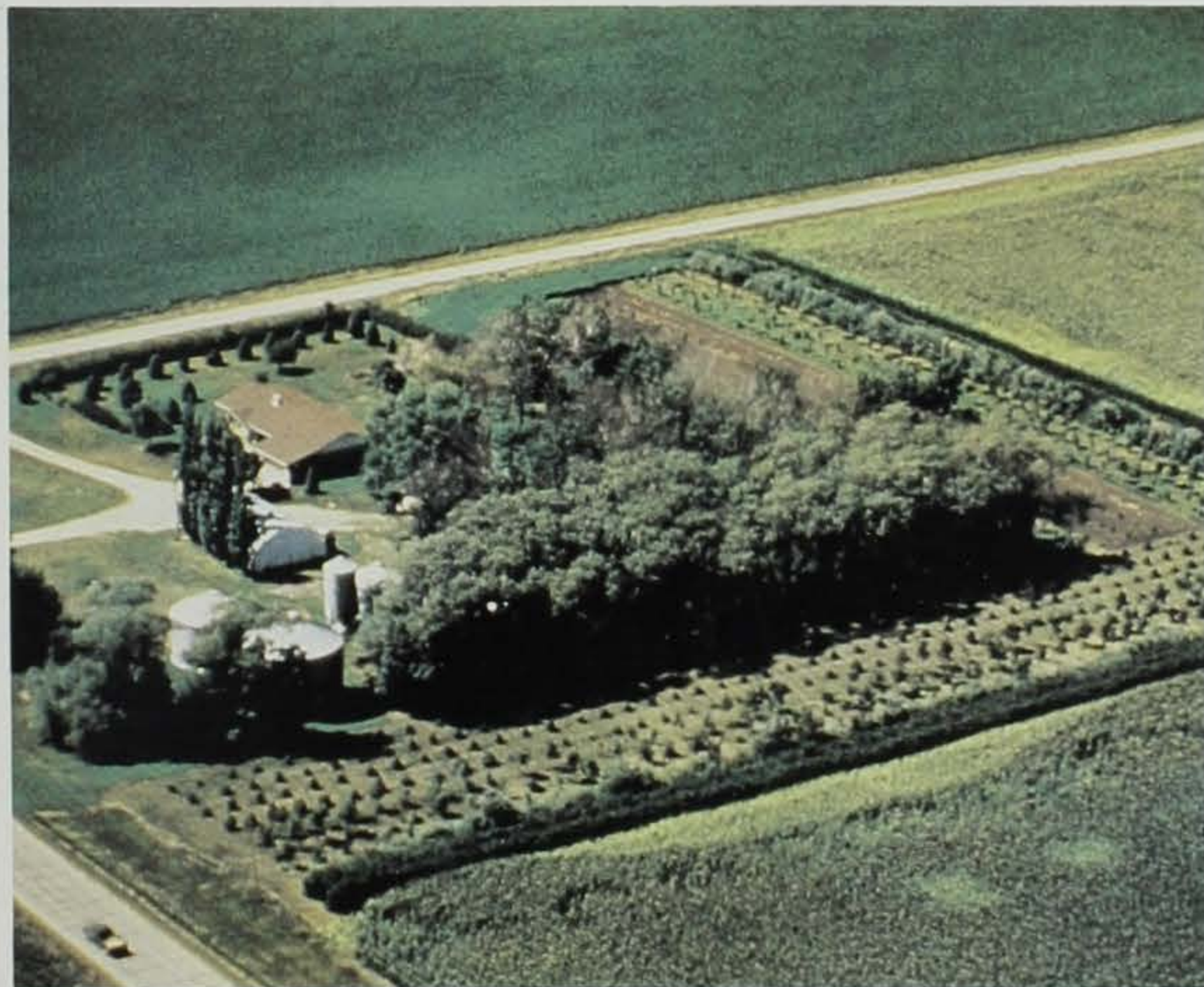
Second, you will have to buy trees. Trees and planting may cost from \$200 to \$2,000 for a typical shelterbelt. The Department of Natural Resources will pay 25 percent of the cost if you plant at least eight rows of trees and meet certain other requirements. This cost-sharing is available to all rural residents in the northern half of Iowa, even if you receive other cost-sharing on the tree planting.

Cost-sharing is probably also available from your ASCS office (typically 50 to 75 percent) but in no case will total cost-share be allowed to go over 90 percent. So, if you're really serious about a shelterbelt, you can build one without spending a great deal of money.

Iowa wildlife has already benefited from various government programs to take land out of crop production. With set-aside fields providing nesting cover and waste corn and beans providing food, many animals need only one more thing to survive and thrive in the state. They need protection from winter blizzards. You can supply that critical need by planting a shelterbelt. Contact your Soil Conservation Service office or wildlife biologist, or write the Department of Natural Resources for a free publication on shelterbelts and windbreaks. It will be a smart move for wildlife and you.

Tom Neal is a wildlife biologist located at Spencer.

A good shelterbelt, like the one at left, will add beauty to a home's landscape in the summer. Of course the real benefits of shelterbelts are noticed in the winter months. The rows of trees and shrubs act as natural snow fences, while wildlife find refuge from open fields and harsh winter elements.



Lottery's Outdoor Jackpots

by Stan Kuhn



WHENEVER WE PLAY THE IOWA LOTTERY, VISIONS OF NEW CARS, EXOTIC vacations and early retirement come to mind. Usually, these visions are postponed for another week when our "Lotto" numbers are not drawn, or when we scratch the ticket and do not find the hoped-for winning combination.

Yet, all is not lost. Those dollars used to play the lottery do not simply disappear but are simply returned in another manner. They are used to benefit many Iowa economic and tourism-related projects. During the first two years of the Iowa Lottery, nearly \$3 million have been directed to a variety of outdoor recreation and conservation projects.

Under the "Iowa Plan" authorized by the General Assembly, lottery dollars appropriated to the Department of Natural Resources may be used for four programs. The first program involves the purchase of forest, fish, wildlife and park lands. Under this program, the DNR has established as the highest priority the establishment of the Loess Hills Pioneer State Forest. As envisioned by the DNR, this forest will ultimately include 17,190 acres in five separate units in Monona and Harrison Counties.

During the first two years, the DNR has spent \$800,000 from lottery funds and \$184,600 from a federal Lands and Waters Conservation (LAWCON) grant to purchase more than 2,300 acres of the forest. This investment in the future will demonstrate the economic benefits of good timber management to private landowners. Additionally, this area will provide significant outdoor recreational opportunities including hiking, hunting and nature study.

The General Assembly also saw the lottery revenues as a way to involve the private sector in conservation. A second program, authorized under the appropriation of lottery dollars to the DNR, provides that lottery funds may be used to match, on a 50/50 basis, any available private funds for the purchase of unique, natural areas.

Perhaps Iowa's outdoor heritage is best demonstrated by native prairies. Working with The Nature Conser-

vancy, a 200-acre virgin area in Cherokee County, known as the "Steele Prairie," has recently been acquired. Other conservation-minded groups have been quick to see the opportunities in this approach. A Pheasants Forever chapter in Dickinson County donated \$7,000 to match an equal amount from the lottery to purchase a 34-acre natural area near Diamond Lake. The Iowa Turkey Federation recently cooperated in a similar manner with the purchase of a 120-acre timber tract in Guthrie County. A number of similar projects are currently being pursued by other private organizations.

Iowa's county conservation boards play a very important role in providing outdoor recreation and conservation opportunities for the public. Recognizing the importance of county conservation board programs, the lottery legislation authorized a grant program to the counties for projects that provide substantial economic and tourism benefits. Initially, the Natural Resource Commission approved nine county projects for the 75 percent lottery cost — share program.

More than \$994,000 have been allotted to counties during the first two years of this program. The highest priority, the Indian Creek Lake project in Van Buren County, involves the use of lottery grants, federal aid from the Soil Conservation Service, donations, county funds and other state funds for the acquisition and development of a 574-acre fishing and recreation lake. Acquisition of the 1,500 acres for this project is well underway.

The authorizing legislation for the county grant program directed the DNR to emphasize trail acquisition and development. Accordingly, the portion of the Cedar Valley Natural Trail in Black Hawk County has been acquired by the Black Hawk County Conservation Board with a \$300,000 grant from lottery funds. The Grundy County Conservation Board is in the process of acquiring and developing a trail from Holland to Reinbeck with a \$43,535 lottery grant.

The Cerro Gordo County Conservation board received a grant of

\$79,635 to assist with the acquisition and development of the Easy Access Trail. The Linn County Conservation board received \$50,625 to assist with the development of their portion of the Cedar Valley Nature Trail, and Jasper County received \$46,800 to surface and improve the Chichauqua

During the first two years of the Iowa Lottery, nearly \$3 million have been directed to a variety of outdoor recreation and conservation projects.

Valley Recreational Trail.

The Natural Resource Commission has approved a \$287,887 grant to Wapello County for the construction of the Pioneer Ridge Nature Center. Louisa County has received a grant of \$15,000 to plan the Louisa Recreation and Environmental Education Center. Crawford County has received project approval for the development of Yellow Smoke Park, but actual provision of the grant is dependent upon future lottery revenues.

During the 1970s, the State Conservation Commission undertook development of a number of new park and recreation areas and redevelopment of several existing areas. A sagging state economy in the early 1980s found several of these areas with basic infrastructure in place but few facilities for public use. With extremely tight state budgets and major reductions in federal aid for outdoor recreation, the lottery revenues made it possible to continue development of these areas.

The lottery dollars authorized for state development of recreation areas were first directed toward Pleasant Creek State Recreation area near Cedar Rapids and Lake Manawa State Park near Council Bluffs.

At Pleasant Creek, lottery dollars have been used for the past two years, in combination with federal grants, to construct more than \$654,000 worth of new facilities.

Included were modern latrines, a modern shower and toilet building and electrical system for the campground, a beach facility and parking area and park shelters. This attractive area has become one of the most heavily used recreation areas in Iowa, and these new facilities have helped accommodate the visitors.

In a similar manner, lottery revenue has made it possible to complete the first phase of redevelopment of Lake Manawa State Park. More than \$370,000 from the lottery and federal grants have been used to construct a shower and toilet building, modern latrines, shelters and the beach. Construction of a beach facility and development of park facilities on the north side of the lake is programmed for this year.

As additional lottery dollars become available, development of recreation and park facilities will occur at Brushy Creek near Fort Dodge, Volga River near Fayette, Mines of Spain near Dubuque and other areas. Not only will these lottery dollars provide quality recreational facilities and encourage tourism, the construction of these facilities will provide jobs for the local communities.

With heavy demand on the Iowa General Fund from other priorities and the more than 90 percent reduction in federal aid for outdoor recreation projects, the Iowa Plan funded by lottery dollars has provided a means for both the Department of Natural Resources and the county conservation boards to acquire and develop quality conservation and recreation areas and facilities.

Even though you may not have purchased a winning lottery ticket, or selected the matching "Lotto numbers," support of the lottery program has made possible a number of very worthwhile conservation and recreation projects — projects that would not have been accomplished without your support.

In a sense, the purchase of a lottery ticket is a ticket to many unique areas and outdoor opportunities in Iowa.

Stan Kuhn is head of the Administrative Services Division.

CONSERVATION UPDATE

IOWA TROPHY DEER RECORDS

Deer hunters who successfully bagged a deer with trophy-sized antlers are encouraged to enter the rack in Iowa's annual big game records registry. Award certificates and patches will be issued to eligible entries which meet minimum standards by the Iowa Department of Natural Resources. A list of the deer taken and measured each year will be printed in the *Iowa CONSERVATIONIST*.

In order to qualify for an award, however, a rack must be measured and scored by an official scorer for the Boone and Crockett (firearms) or Pope and Young (archery) Clubs, or by a wildlife biologist, conservation officer, or other individual certified by the DNR. The scoring system used for Iowa records will be identical to that used by the Boone and Crockett or Pope and Young Clubs.

Award certificates will be presented in four classes. The classes, with minimum scores for each are:

Shotgun - Muzzleloader

Typical 150 Points
Nontypical 170 Points

Archery

Typical 135 Points
Nontypical 155 Points

Deer hunters possessing trophy racks which have not been officially measured, may contact the Iowa Department of Natural Resources, Wallace State Office Building, Des Moines, Iowa 50319-0034, (515)281-5145.

Because of shrinkage in varying degrees, racks taken during the recent hunting season cannot be measured for at least 60 days in order for the antlers to dry out properly.

WINTER BIRD FEEDER SURVEY

The fifth annual Winter Bird Feeder Survey will be conducted Jan. 28-31, 1988. Volunteers are asked to count birds which come to their backyard feeders during two consecutive days during the survey.

"Remember that you don't have to be glued to your window for 48 hours to conduct this survey. Just try to count the birds several times throughout each day," said Laura Jackson, urban biologist for the Department of Natural Resources.

Being conducted by the Iowa Ornithologist Union and the Iowa Nongame Program, the survey is used to document population and habitat information about some of Iowa's winter birds. People who live on farms, in cities or suburbs are encouraged to participate.

For more information on the survey, request a 1988 bird feeder survey form from:

Iowa Nongame Program
Department of Natural Resources
Wallace State Office Building
Des Moines, IA
50319-0034

For additional information, call Laura Jackson at (515)281-4815.

IOWA RECEIVES ENERGY AWARD

An energy management program administered by the Department of Natural Resources was honored Oct. 27 in Washington, D.C., and will serve as a model for other states. The program is expected to save Iowa taxpayers more than \$1 million per year through lower utility costs in state government facilities, said Iowa Representative Tom Tauke, who accepted the Department of Energy (DOE) award for

"The state of Iowa came up with a creative way for financing energy improvements which will be a significant boon to conservation efforts in this age of budget austerity. The DOE is touting Iowa's idea for other states, and the program can be used by cities, counties and school districts," said Tauke, a member of the U.S. House Energy and Commerce Committee.

The idea evolved when Senator Charles Bruner of Ames and Iowa energy officials developed legislation which allowed for financing of energy improvements in state buildings without dipping into state coffers.

In 1985, a statute was approved by the Iowa Legislature authorizing alternate financing by state agencies. The Iowa Facilities Improvement Corporation, a nonprofit corporation, was created and bonds were issued to finance and install energy improvements in state buildings. According to Tauke, the bonds will be

repaid with money saved through lower energy costs.

"A decline in energy consumption by the public sector will reduce the burden of escalating energy costs on taxpayers," said Larry Bean, Energy and Geological Resources Division administrator.



ANDREWS NAMED TOP CONSERVATIONIST

Ron Andrews, furbearer specialist for the Department of Natural Resources, has been named Wildlife Conservationist of the Year by the Iowa Wildlife Federation.

Andrews was presented with the award at the federation's annual banquet held in October in Cedar Rapids. According to the federation, the award was given in honor of a kestrel nest box program that Andrews initiated in 1983 along Interstate 35 in Cerro Gordo County. This landmark nongame wildlife effort has now been expanded throughout Iowa, and based on its success here, the program has also been adopted by conservation agencies in eight other states.

STATE WILDLIFE REVENUES INCREASE

A recently published survey by the Wildlife Conservation Fund of America (WCFA) reveals that revenues received by state agencies for fish and wildlife programs have nearly doubled during the past seven years, the Wildlife Management Institute reports. In 1979, the revenues were a little more than \$612 million. Last year, they were \$1.152 billion.

"While the period between the two surveys was one of exceptional inflation," WCFA said, "increase in the sportsman's level of support through payment of license fees was greater. The \$615 million in hunting and fishing license fees paid in 1986 is 77 percent greater than the 1979 figure."

WCFA said that the notable difference between the previous findings and the current ones is the increase by more than \$100 million in state general funds going into fish and wildlife conservation.

According to the survey, state hunting and fishing license revenue increased from \$346 million to \$615 million between 1979 and 1986. However, the license fee percentage of the states' total budgets decreased from 56.6% to 53.4%.

Federal payments, which include the Pittman-Robertson, Dingell-Johnson and Wallop-Breaux programs financed by sportsman excise taxes on hunting and fishing

equipment, increased from \$111 million in 1979 to \$197 million in 1986. These programs' percentage of the states' total budgets also fell during the seven-year period, from 18.2% to 17.1%.

General fund monies, those appropriated by state legislatures, had the greatest percentage increase, from 9.4% of the states' budgets in 1979 to 14.2% in 1986. The total amount appropriated jumped from \$57 million to \$162 million.

Interest income to state wildlife agencies from deposited license fees and the like increased from \$8 million in 1979 to \$22 million in 1986. And other revenue, such as tax checkoffs and income from lands, rose from \$89 million in 1979 to \$155 million in 1986.

WCFA stresses that inflation gobbled up most of the increased revenue. "Between 1979 and 1986, the Consumer Price Index rose more than 50 percent, a fact that takes much of the gloss from a remarkable revenue increase."

WATERPROOF DUCKS

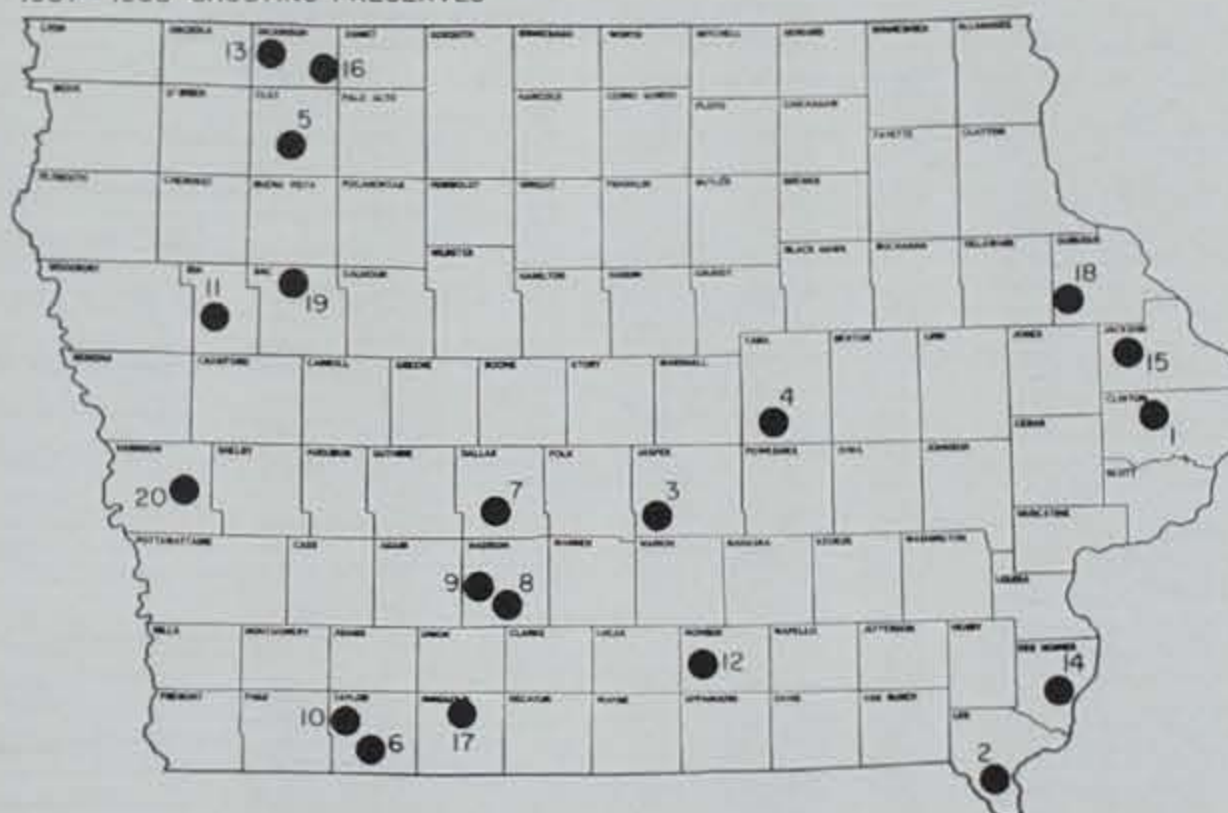
Waterfowl have an oil gland used in preening that does more than provide them with a well-groomed appearance. A preening duck passes its bill over the rump, where the preen or uropygial gland is located. This action squeezes out the oil, which the duck wipes over its feathers. The preening process waterproofs the duck, enabling it to float, and maintains the feather structure that ducks need for heat insulation and protection against exposure.

PRIVATE LICENSED SHOOTING PRESERVES

Hunting on private licensed shooting preserves is permitted from September 1 through March 31 of each year. A resident hunting license or a special nonresident shooting preserve license (\$5) is required to hunt on an area. Nonresidents must also purchase a habitat stamp for \$3.

The map below shows the locations of the private licensed shooting preserves in Iowa. For more information, contact the preserve direct.

1987 - 1988 SHOOTING PRESERVES



- | | |
|--|---|
| 1 Arrowhead Hunting Club
(319)577-2267 | 11 Triple Creek Shooting Preserve
(712)364-2497 |
| 2 Wingover Ranch
(319)524-5757 Ext. 334 | 12 Judge Upland Game Preserve
(515)726-3485 |
| 3 Oakview Hunting Club Kennels
(515)994-2094 | 13 Diamond Lake Hunting Club
(712)838-4890 |
| 4 North Star Shooting Preserve
(515)492-6159 | 14 Triple H Ranch Hunting Preserve
(319)985-2253 |
| 5 Outdoorsmen Hunting Club
(712)838-4890 | 15 Rock Ridge Game Preserve
(319)652-5407 |
| 6 Finn Wing Shooting Club
(712)537-2576 | 16 Spring Run Shooting Preserve
(712)336-5595 |
| 7 Doc's Dog Kennel and Hunt Club
(515)993-3711 | 17 Hunter Hide-Away Lodge Inc., Preserve
(515)464-2953 |
| 8 Winterset Shooting Preserve
(515)224-0869,
(515)462-4051 | 18 Ron Miller Shooting Preserve
(319)852-3933 |
| 9 Pheasant Ridge Hunting Club
(515)765-4759 | 19 Ringnecks Unlimited Inc.
(712)275-4729 |
| 10 Sleepy Hollow
(712)585-3642,
(712)585-3285 | 20 Lazy H Hunting Club
(712)647-2877 |

THE RING CYCLE

Counting tree rings, as everyone knows, reveals a tree's age. Scientists now understand, however, that tree rings tell a much larger story: what the weather was like hundreds of years ago, how to predict droughts, or how to date accurately the construction of an ancient temple when no historical documents exist.



Tree rings reveal more than just the tree's age. The rings can provide scientists with weather information and help improve the accuracy with which human history is dated.

According to *National Wildlife* magazine, tree rings hold the answers to these questions and more, now that the science of dendrochronology has entered the computer age. Dendrochronology, the analysis of the biological archives that are warehoused in tree rings, was born in the Arizona desert in 1901.

A.E. Douglass, an out-of-work astronomer, was attempting to determine the effect of sunspots on weather. Taking samples of hundreds of trees and

stumps, Douglass observed that trees from the same era and region shared patterns of narrow and wide rings, patterns that were as characteristic as thumbprints. Douglass also recognized that by matching inner rings of a young tree with outer rings of an old one, he could compile an accurate tree-ring calendar covering many years. This process, known as cross-

dating, laid the foundation for dendrochronology.

Douglass, however, was limited in his analysis by the sheer tediousness of his method. With the help of computers, however, modern scientists can now analyze hundreds of samples simultaneously, thereby making dendrochronology both simpler and more enlightening.

Today, tree rings provide researchers with extremely reliable information on past and present air quality and environ-

mental problems. Storing records of rainfall, air temperatures and changes in the chemical composition of the atmosphere, tree rings allow researchers to look at the earth as it existed hundreds, even thousands, of years ago.

Documenting more recent environmental phenomena, scientists at the University of Arizona have plotted changes in trees, reflected in stunted growth and in the chemical composition of their rings, that occurred in parts of the state of Washington after a lead smelter began operation in British Columbia.

Tree rings are also improving the accuracy with which human history is dated. Tree ring studies 20 years ago conclusively demonstrated that atmospheric levels of carbon-14 varied considerably rather than remaining constant as had been previously believed.

Armed with these findings, researchers eventually prepared a revised radiocarbon dating schedule that upended many modern suppositions. For example, the ancient British astronomical observatory Stonehenge was found to be centuries older than previously assumed, and was inspired not by Mediterranean civilizations but by native Britons.

The longest tree-ring sequence, based on living and dead bristlecone pines, goes back nearly 9,000 years. A particularly venerable bristlecone played a critical role in developing the sequence. At 4,900 years, it was consid-

ered the oldest living thing on Earth — until about 20 years ago when a researcher climbed Nevada's Wheeler Peak and cut the tree down to study its rings.

Although many people were outraged by this scientific hubris, most dendrochronologists consider the sacrifice well worth it.

DONATIONS

State Bank of Fayette	Savings bonds and cash prizes valued at \$210 for state park photo contest at Volga River State Recreation Area
Fayette County Union	
West Union	
Northeast Iowa Bass Club	Labor and materials valued at \$260 for fish habitat structure at Volga River State Recreation Area
Fayette	
Marcus Rust	Building rafters valued at \$300 for park construction at Pammel State Park
Winterset	
Don Squires	Volunteer labor valued at \$100 for Brush Creek Canyon State Park
Arlington	
Howard Easton	Volunteer labor valued at \$188 for Stone State Park
Sioux City	
Charles Hackett	Mounted screech owl and tanned muskrat study skin for nature center at Stone State Park
Kingsley	
Walkers Office	\$100 for purchase of copy machine at Lake Wapello State Park
Supplies, Inc.	
Fairfield	
Izaak Walton	\$150 for the purchase of copy machine at Lake Wapello State Park
League	
B. F. Carroll	
Chapter	
Bloomfield	
Outdoor Ventures	Prizes for the Buckskinners Rendezvous at Lake Wapello State Park, valued at \$60
Fairfield	
Coca-Cola Bottling	Prizes for Buckskinners Rendezvous at Lake Wapello State Park, valued at \$92
Ottumwa	
Gerda Hartman	50 hours of volunteer labor at E.B. Lyons Nature Center, valued at \$167
Dubuque	
Keith Wieland	90 hours of volunteer labor at E.B. Lyons Nature Center, valued at \$300
Dubuque	
Friends of	120 hours of volunteer labor at E.B. Lyons Nature Center, valued at \$400
E.B. Lyons	
Prairie	
Woodland	
Dubuque	

Topographic Maps

Getting Oriented In Iowa's Outdoors

A map is a representation of the earth's surface. Topographic maps are similar to highway maps in that they include towns, rivers, lakes, railroads and other "signs" that help us to figure out where we are or where we want to go. But the most unique aspect of topographic maps is the information they show about the terrain — the physical features of the land. Topographic maps are the most accurate and detailed maps of the land surface that are available to Iowans. These maps are made for each state by the U.S. Geological Survey, a part of the Department of the Interior. The USGS has recently completed topographic coverage of Iowa at the popular 1:24,000 scale.

What we see on a topographic map can be divided into three categories: (1) relief — including hills, valleys, ridges and plains which are printed in brown; (2) water and woodlands — including rivers, lakes, ponds and marshes which are printed in blue and timber areas which are printed in green; and (3) cultural features — including roads, buildings, railroads, quarries, political boundary lines and geographical names which are printed in black or red.

These maps give us a reduced or smaller picture of a specific geographic area. Scale is a way of describing how much smaller the features shown are than their actual size. If the scale of a topographic map is 1:24,000, this means that any of the features that you see on the map, such as a house or barn or gravel pit, are pictured at 1/24,000 of their actual size.

Topographic maps are special because they show us information about the shape of the land. This is accomplished by the use of contour lines or lines which connect equal points of elevation. Using these lines, we can see how rugged or hilly the land is or how flat and gentle, and



whether we are going uphill or downhill.

At the bottom of each map, a contour interval is given. The common interval for Iowa maps is 10 feet. If the contour lines are very close together, the elevation is changing rapidly over a given distance and the steeper the land will be. If the contour lines are more widely spaced, the changes in elevation are more gradual and the land is more level. With a little practice, we can learn to read these lines and get a picture of the landscape shown.

The standard topographic maps of Iowa cover a rectangular area that is bounded by parallels of latitude and meridians of longitude. Topographic maps, or quadrangles as they are also known, cover an area of 7.5 minutes of latitude and 7.5 minutes longitude. In Iowa, a 7.5 minute map covers about 55 square miles. Each of these maps is easily identifiable by a quadrangle name, usually a town located within the mapped area.

Another system of coordinates is also used on topographic maps. The basic unit of this system is the section — a rectangular block of land one-mile long and one-mile wide. An area containing 36 sections is called a township. One section of land contains 640 acres. A standard township consists of 36 square-mile sections.

The north-south lines marking township boundaries are called range lines and the east-west boundaries are called township lines.

Another topographic map product which should prove equally popular among Iowans is the County Map Series. This new series, initiated in part as a response to strong public demand, will ultimately lead to production of 99 maps, one for each county. These maps are at a scale of 1:100,000. Approximately one-half of the state's counties are complete.

Topographic maps may be confusing at first glance, with all their letters and numbers, detailed lines and colors. But everything on the map has a specific meaning. As you become familiar with a map of your own area, you will find yourself being able to understand the maps of places totally unfamiliar. And with a little practice, you will be able to "see" what a faraway place looks like — how the river curves around a forest, or how the hills overlook a town. You can find a scenic campground for the weekend, locate a promising stretch of river to fish, plan an interesting route to bike or hike, keep a record of good morel collecting sites or scout unfamiliar hunting territory. With a little concentration and some imagination, you will soon realize how easy it can be to "travel" to new places and discover Iowa's outdoors.

Topographic maps of Iowa, ordered by quadrangle name, can be purchased from the Geologic Survey Bureau, Iowa Department of Natural Resources, 123 N. Capitol Street, Iowa City, Iowa 52242. The 7.5-minute series maps cost \$2.50 each, plus \$1.15 postage and handling for every five maps purchased. The county series costs \$4 each, plus \$.40 postage and handling. An "Index to Topographic Maps of Iowa" and a price list with "Information on Ordering Maps," are available without charge.

A Visit With Woman of the Woods

by Cele Burnett

The uniformed naturalist talks to the first graders seated Indian-style at her feet about the shy and secretive friend she has brought with her to the classroom today. Eyes open wide as a woman dressed in old jeans, red plaid flannel shirt, boots, black hat pulled down over her eyes and a deer skin draped over her shoulders steps slowly and cautiously into the classroom.

Woman of the Woods has arrived, and, for the next hour, usually-fidgety first graders will sit amazingly mesmerized as the naturalist and *Woman of the Woods* speak quietly about the animals of the woods and their special habits and adaptations that help them survive.

A creation of naturalists Cele Burnett and Linda Zaletel with the Story County Conservation Board, *Woman of the Woods* becomes a wonderful teaching tool to help small children understand and remember the forest community.

Creative dramatics is just one of a naturalist's many tricks. Creative

characters - from the *Soil Witch* and *Critterman* to *Treesa Tree* and *Freida Fire* - make learning fun and easy for children of all ages. Dramatics help participants feel an emotional response to some scientific fact or intelligent thought, and people learn and retain more of what they feel and experience first-hand.

There are many advantages to using creative dramatics in teaching conservation and environmental education. Creative characters can make the most trite or mundane subject spring to life. Characterization involves the audience and can be used with all ages. It requires audience attention and gets it. And dramatics communicates the message so well that the audience becomes emotionally wrapped up in what the creative character is saying and doing.

On the other hand, characterizations require a great deal of research and planning, prep time, props and costumes, and the speaker must be prepared - for anything.

The first graders sit and listen quietly to *Woman of the Woods* and the naturalist. They learn about the red fox with its large ears and good "smeller" and the gray fox that can climb trees. They hear about the great-horned owl that regurgitates pellets, the tiny screech owl that whistles, and the red-headed woodpecker that has a tongue so long that it wraps around its head. The students learn about the cute raccoon that doesn't make a good pet and the little mouse that doesn't eat cheese, but seeds!

These are lessons the children will remember for a long time, just as they will search the forests of Story County for a long time to catch a glimpse of the shy and secretive *Woman of the Woods*.



Story County Conservation Board

Cele Burnett is a naturalist with the Story County Conservation Board.

CALENDAR

JANUARY

January Weekends	Cross-Country Skiing Lessons (Weather Permitting)	Hamilton County (515) 832-1994
Jan. 2	Beginning Cross-Country Ski Clinic 1:30 p.m.	Carroll County Swan Lake State Park (712) 792-4614
Jan. 9	Cross-Country Skiing Workshop	Clinton County Eden Valley Refuge (319) 847-7202
Jan. 9	Seasons of Palo Alto County Hike-Snowshoeing 1-3 p.m.	Palo Alto County (712) 837-4866
Jan. 9	Winter Treasure Hunt	Wright County Pikes Timber (515) 532-3185
Jan. 9	Ice Fishery- Izaak Walton	Benton County Rodgers Park (319) 472-4942
Jan. 10	Cross-Country Skiing 1-3 p.m.	Palo Alto County Lost Island-Huston (712) 837-4866
Jan. 16	Bird Feeder Construction Day	Benton County Izaak Walton (319) 472-4942
Jan. 23	Beginning Cross-Country Ski Clinic 1:30 p.m.	Carroll County Swan Lake State Park (712) 792-4614
Jan. 24	Cross-Country Skiing 1 p.m.	Jackson County Blackhawk Wildlife Area (319) 652-3783
Jan. 26	Snowshoe Making Workshop 6:30 - 9 p.m.	Black Hawk County Hartman Reserve Nature Center (319) 277-2187
Jan. 28	House Concert Bob Boyce and Gail Heil	Clinton County Eagle Point Nature Barn Clinton (319) 847-7202
Jan. 29-30	"Winter of the '80s: The 1880s" Camp Wyoming Environmental Education Workshop	Clinton County Camp Wyoming (319) 847-7202

FEBRUARY

February Weekends	Cross-Country Skiing Lessons (Weather Permitting)	Hamilton County (515) 832-1994
Feb. 6	Heritage Day 9:30 a.m.-3:30 p.m.	Black Hawk County Hartman Reserve Nature Center (319) 277-2187
Feb. 6	Ice Fishing Workshop	Clinton County Killdeer Rec. Area (319) 847-7202
Feb. 7	Winter Fun Day 1-4 p.m.	Carroll County Swan Lake State Park (712) 792-4614
Feb. 7	Cross-Country Skiing 1 p.m.	Jackson County Big Mill Wildlife Area (319) 652-3783
Feb. 13	Seasons of Palo Alto County-Hike 1-3 p.m.	Palo Alto County Lost Island Marsh (712) 837-4866
Feb. 14	House Concert Lauren Pelon	Clinton County Eagle Point Nature Barn (319) 847-7202
Feb. 14	Owl Calling 7 p.m.	Jackson County Historical Museum (319) 652-3783



Tip-ups Are For Trophy Northern

by Gary L. Ackerman

OLD SAM SCRAPED FROST AWAY FROM A SMALL WINDOW OF THE SHACK to view the desolation of an Iowa winter. Shading his eyes from the brightness of the snow and ice-imprisoned lake, he exclaimed, "Deal 'em, darn it, no flags." Quietly, the three men resumed their game of cut-throat pinochle.

All was peaceful. The ice fishing shack was comfortable, heated by an old coffee can partly filled with sand and blackened by the slow burning charcoal. It provided enough heat for dealing cards and some protection from the elements. The old shack leaked air at many places from the wear and tear from years of use, so there was little danger from an accumulation of carbon monoxide gas. A small folding table and three old nail kegs laid out a field for competition. The game was fierce. The noise and language that erupted from that ice fishing shack was like a stag party for Minnesota Fats. No one could believe the three were close friends and were really fishing!

Sam was the quiet one, a really sharp pinochle player who liked the bite of Jack Daniels. Carl was loud and boisterous. He didn't need alcohol for incentive; nonetheless, he always brought a half-pint. He had fun wherever and whenever. Buck was the backbone of the trio. It was his ice fishing shack. He and his boys hauled it out in the middle of the backwater lake each December as soon as the ice was safe. He and his boys seined the golden shiners in summer and stockpiled them in his horse tank. It would be unthinkable to pay \$1.50 per half-dozen to the bait shop. He bought the very best tip-ups and modified them to fit his fancy. He kept the ice auger sharp and the gaff hook handy. He maintained the ice shack daily, keeping the charcoal dry and the refresh-

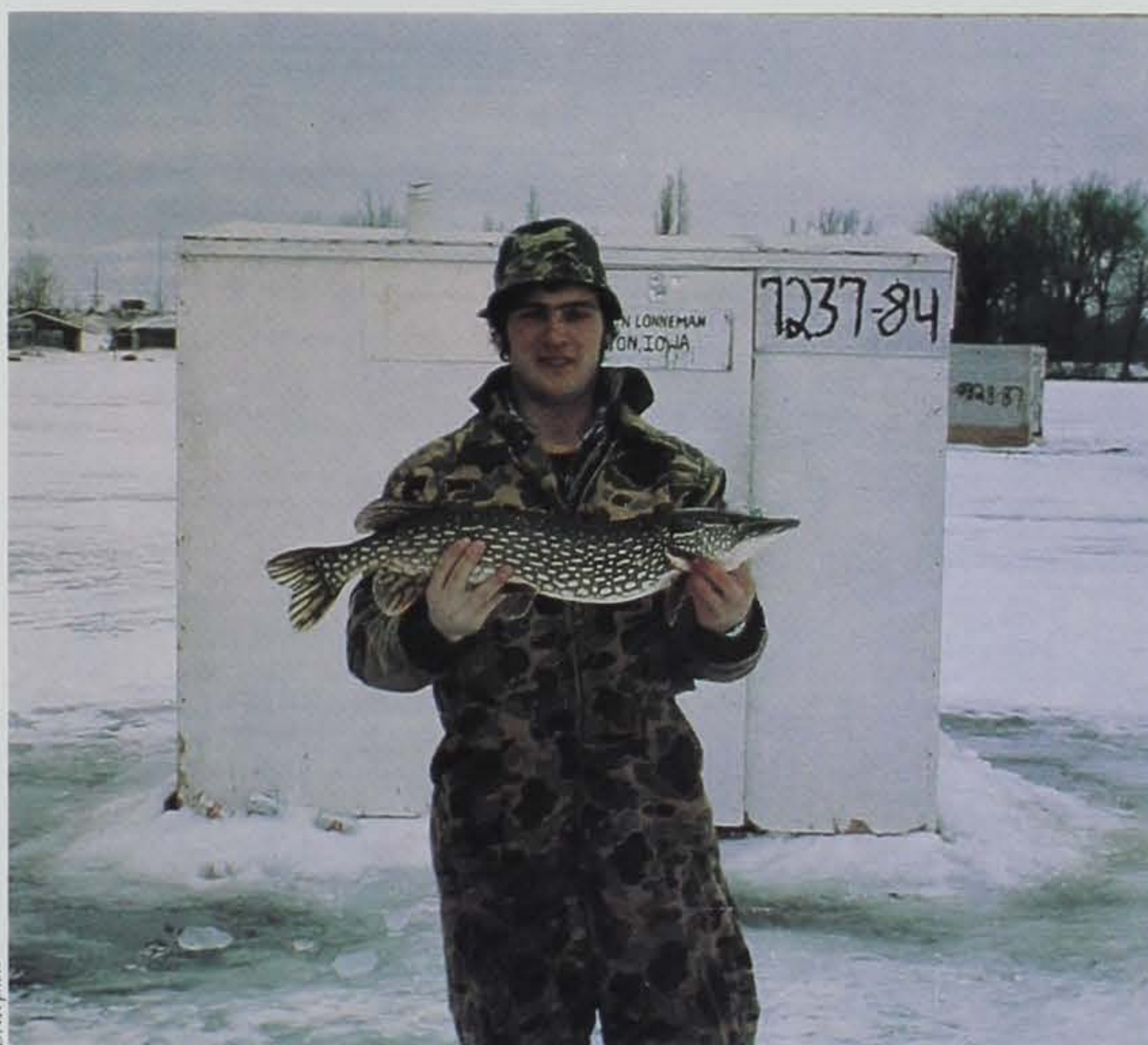
ments handy. He, too, nipped a bit. He liked the competition of pinochle, the stories, the truths, the lies, the comradeship and the fishing. In fact, he loved every minute of it. This Saturday morning began like many had before.

Opening bid was 250, then auctioned off to the highest bidder. Sam was already at 310. Carl passed and probably had little power or meld. Buck looked closely at his hand and thought, "A yard-and-a-half and 40 pinochle... let see, that's 190 meld and dice making 200, a good and strong diamond suit. I bid 350, and that's my final bid."

Meanwhile, Carl scraped away the frost on the window to check the tip-ups. He bellowed, "Got two flags!" That would be the end of pinochle for awhile.

All three men crashed the door. Sam tripped over the door sill, belly-flopping on the slippery, snow-covered ice. No ill effects, so he picked himself up and ran quickly to a flag. Carl already had a tip-up on the ice. Buck followed the action like a watchful referee.

Carl slowly and carefully allowed the heavy dacron line to smoothly flow from the small reel until it stopped. He counted slowly to 10 and then set the hook with a long and sweeping pull on the line. The northern had run out over 50 feet of line before it stopped to swallow the large golden shiner. The pike was hooked for good. Slowly Carl played the pike under the ice, hoping it wouldn't tangle in the dense aquatic weeds. The tip-ups had been set along the edge of a large bed of lily



DNR photo

Many areas of the Mississippi River can have tremendous ice fishing for panfish, but the real bonus may be the area's abundance of northern pike.



Gary Ackerman

pads, so one always faced this obstacle. Luck was with him. Soon the head of the pike appeared alongside the ice hole. He gaffed it under the jaw, carefully pulling it from the thick ice to safety.

"Look at that beauty," Buck praised while still clutching his winning hand. "It must weigh 12 to 14 pounds. It's a large female, for sure."

Sam wasn't so lucky as his northern ran 20 feet of line off and then spit out the shiner.

"Oh well, that's the luck of northern fishing," he exclaimed as he re-wound the small reel with line, rebaited the stainless steel hook with lively golden shiner. He then carefully set the tension on the spring and re-set the flag.

"About five-feet deep is right for depth?" he questioned Buck. Buck nodded in agreement as the trio went back to the ice shack to resume their game of pinochle.

The game resumed.

"My last bid was 350," reminded Buck. "Can anyone top that?" He gathered in the three-card blind.

"Buck, I'll give you five to one odds on a ten-spot you can't top my fourteen-pounder," challenged Carl, as Buck nodded an affirmative to the bet.

Five more northern pike and one big largemouth bass were taken, but none were to top the first fish of the day.

And so it is with tip-up fishing. Tip-ups are a passive ice-fishing gear for taking large, trophy fish like northern pike, walleye, largemouth bass and on the Mississippi River, bowfin. Tip-ups consist of a frame of wood or plastic which supports an underwater reel. A tripping device connects the reel with a spring loaded flag which signals a bite whenever line is pulled from the reel. The small reel is loaded with 20-pound dacron line, a heavy-weight monofilament leader is attached to a larger, stainless steel hook (3/0 or 4/0 is usually large enough). A couple of split-shot is all that is needed to keep the live minnow swimming about at a pre-set depth. Some use a two-hook rig employing a large, frozen smelt or sucker suspended just under the ice. Supposedly, this bait is to get the pikes' attention while a lively golden shiner lures an aggressive pike into hitting.

Tip-ups offer wintertime fishermen a distinct advantage for they enable fishermen to cover large expanses of habitat. The flags can be seen for great distances, so a few fishermen

can easily operate several tip-ups effectively and efficiently. The Mississippi River has vast areas of unexploited habitat. The impounded water located immediately upstream of the navigation dams offers vast areas of unexplored and unexploited habitat for wintertime angling.

The Upper Mississippi River contains a large and under-harvested population of northern pike. Iowa studies indicate that most northern pike die of natural causes rather than due to sport fishing mortality. Studies also show that northern pike are most abundant in the uppermost pools of the Mississippi River along Iowa. Northerns prefer the shallow backwater ponds, sloughs and lakes which contain an abundant growth of aquatic vegetation.

Characteristically, northern pike ambush prey from weed beds or from the security of submerged, deadfall trees. They prefer a lazy-life in dead water or in very slow moving current. And they often seek out thermal niches where springs enter along the hillsides or where spring-water creeks empty into shallow bays or sloughs. Their major food items are gizzard shad or silver chubs from Mississippi River observations, but they will feed upon bluegill, crappie

or whatever unwary fish presents an opportunity for an easy meal. The pike prefers a large and long, cylindrical-shaped prey that does not have spiny fins; thus, suckers and chubs are good choices for bait fish.

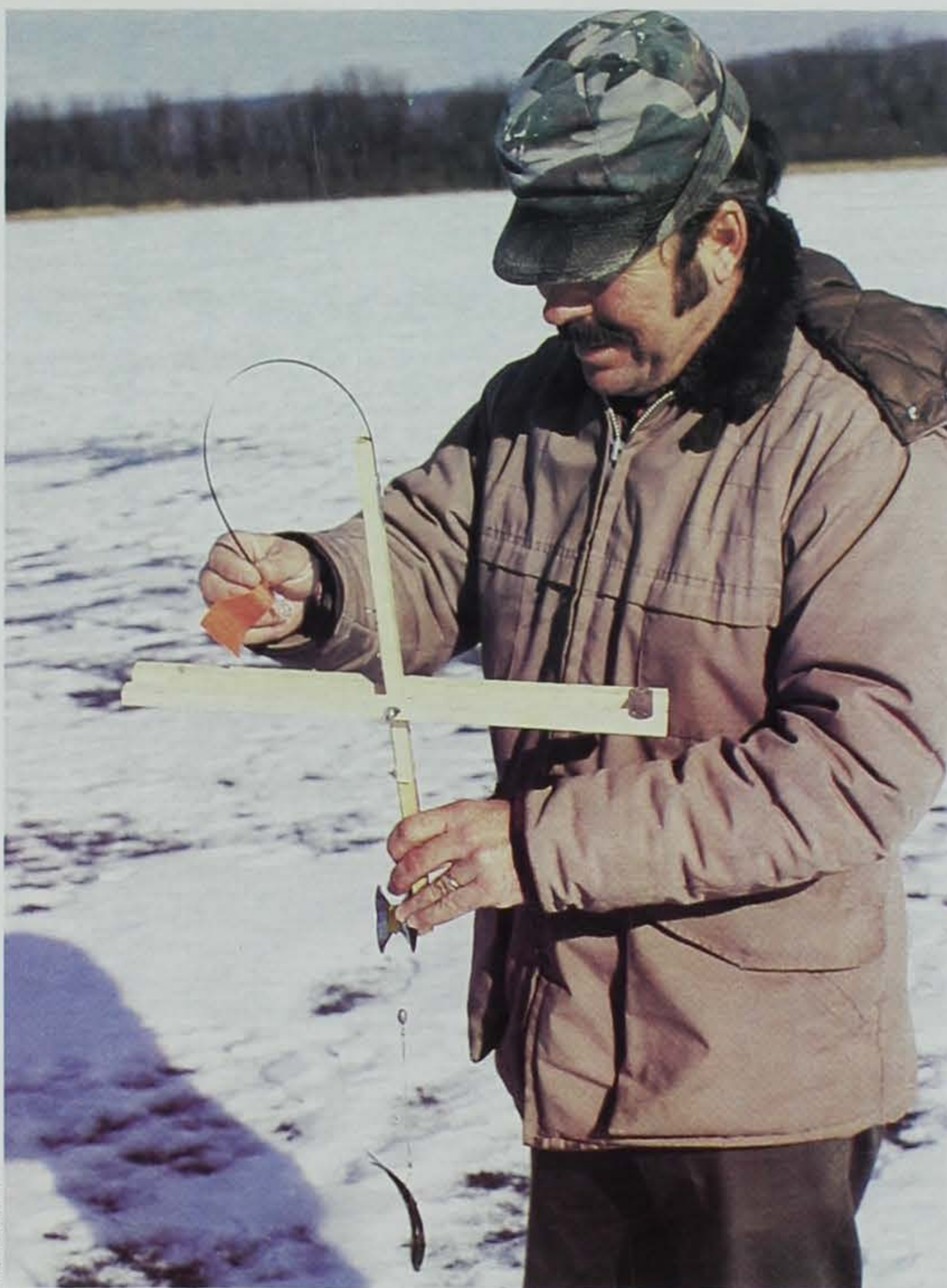
An Iowa study conducted several years ago found northern pike were most actively feeding and more easily taken by anglers when the ice was thin and snow cover lacking. So it is correct that the early ice angler reaps the rewards. But, one has to be most cautious when fishing these conditions because river fishing can be dangerous as fluctuating river stages often cause changes in currents which can rapidly erode ice. Some of the best catches have occurred in shallow backwater sloughs along the edges of weed beds when the ice first becomes safe enough to support a person. Then as the ice becomes thicker and snow cover becomes heavy, northern fishing seems to slow down as winter progresses. In short, one needs patience when fishing northern pike with tip-ups, so a good and competitive game of pinochle helps shorten the time between bites.

Ice fishing on the Mississippi River is some of the finest in the United States. Anglers are attracted from all over the Midwest to catch panfish from the backwater habitats. Although the Mississippi lacks the glamour of muskies or tiger muskies, there is an abundance of large northern pike for that additional bonus trophy fish.

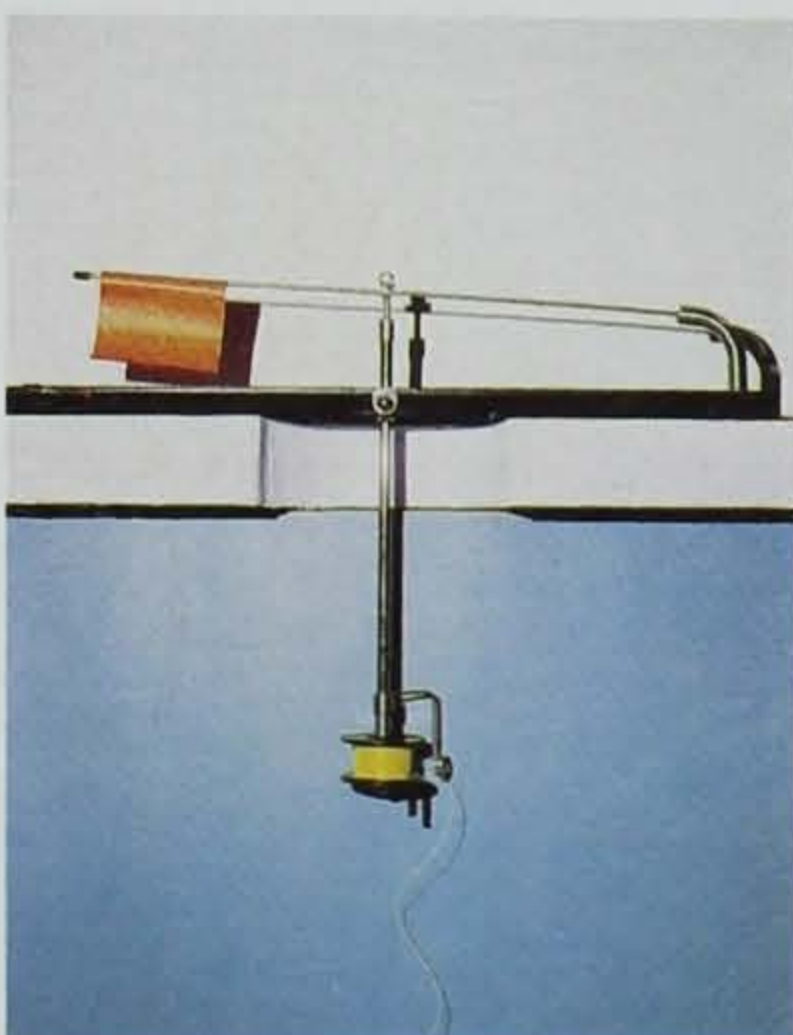
It is no big deal to catch bluegill and crappie by the bucketful from the Mississippi River, but it will take patience and perseverance to take your limit of northern pike. With an abundant northern pike resource which is vastly under-used, what is needed is more anglers willing to pit their skill and patience against a strong population of trophy-size northern pike.

Like the pinochle player, we have a winning hand that needs to be played, and the place to play is in the winter along the Great Mississippi River.

Gary L. Ackerman is a fisheries management biologist located at Guttenberg.



Gary Ackerman



Ron Johnson

Tip-ups allow the winter angler to cover a large fishing area. The simple structure can be a real advantage to catching trophy northerns through the ice.

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