

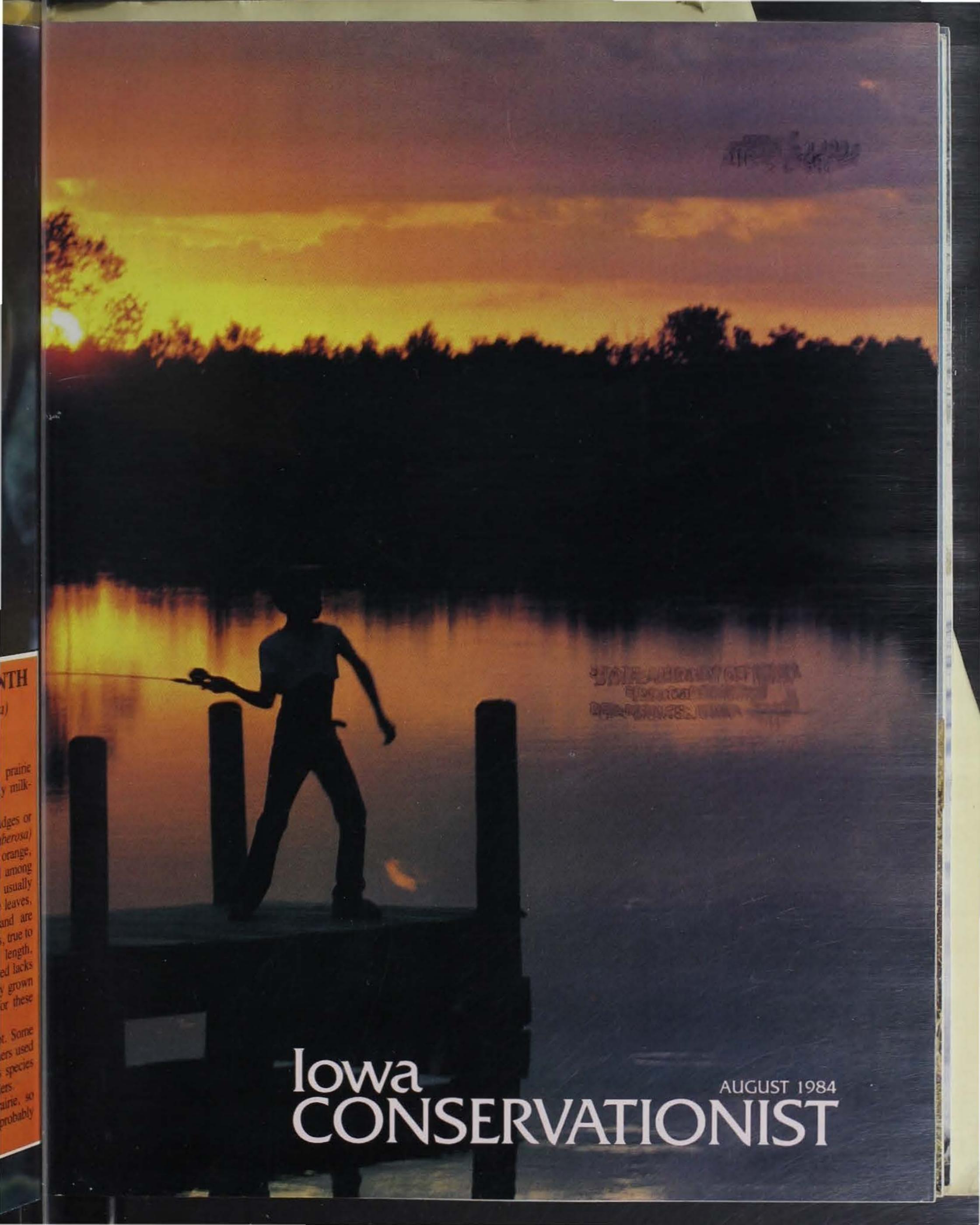
WITH

a)

prairie  
y milk-

edges or  
(herosa)  
orange,  
among  
usually  
leaves,  
and are  
s, true to  
length,  
ed lacks  
y grown  
or these

t. Some  
ers used  
species  
ers  
rairie, so  
probably



Iowa  
CONSERVATIONIST

AUGUST 1984

# Iowa CONSERVATIONIST

Volume 43 No. 8 • August  
1984

## STAFF

Roger Sparks, *Editor*  
Julie Holmes, *Assistant Editor*  
Ron Johnson, *Photographer*  
Kenneth Formanek, *Photographer*  
Larry Pool, *Graphic Artist*

## CONTENTS

- 2 Steel Shot in Iowa
- 6 Environmental Education
- 7 Wildflower of the Month
- 8 Stamp Prints on Sale
- 9 Conservation Update
  - 1984 Hunting Seasons
  - 1985 License Changes
  - Big Creek Gun Range
  - Calendar of Events
  - Leaders in Conservation
- 15 Warden's Diary
- 16 Nature Tale
- 17 Classroom Corner
- 18 Reptiles and Amphibians
- 20 Profile of Threatened Species
- 21 Hawthorn Lake
- 23 Tiger Muskies

Photo by David Anderson

FRONT COVER: Photo by Dave Menke

## THE IOWA CONSERVATION COMMISSION

Donald E. Knudsen, *Eagle Grove, Chairman*; Baxter Freese, *Wellman, Vice Chairman*; John D. Field, *Hamburg*; Marian Pike, *Whiting*; F. Richard Thornton, *Des Moines*; William B. Ridout, *Estherville*; and Thomas E. Spahn, *Dubuque*.

**DIRECTOR:** Larry J. Wilson.

**DEPUTY DIRECTOR:** Robert Fagerland.

**DIVISION CHIEFS:** Allen Farris, *Fish and Wildlife*; Stanley C. Kuhn, *Division of Administration*; John M. Stokes, *Lands and Waters*.

**SECTION SUPERINTENDENTS:** Tom Albright, *Engineering*; Doyle Adams, *Parks*; Robert Barratt, *Wildlife*; James Mayhew, *Fisheries*; Roy Downing, *Waters*; Lester Fleming, *Grants-in-Aid*; Gene Hertel, *State Forester*; Rick McGeough, *Law Enforcement*; Gene Geissinger, *Accounting*; Arnie Sohn, *Planning*; John Beamer, *Land Acquisition*; Judy Pawell, *License*; Ross Harrison, *Information and Education*; Robert Walker, *County Conservation Activities*.

\*\*\*

**IOWA CONSERVATIONIST** (USPS 268-780), is published monthly by the Iowa Conservation Commission, Wallace State Office Building, Des Moines, Iowa 50319. Second class postage paid in Des Moines, Iowa, and additional mailing offices. Send changes of address to the Iowa Conservationist, Wallace State Office Building, Des Moines, Iowa 50319.

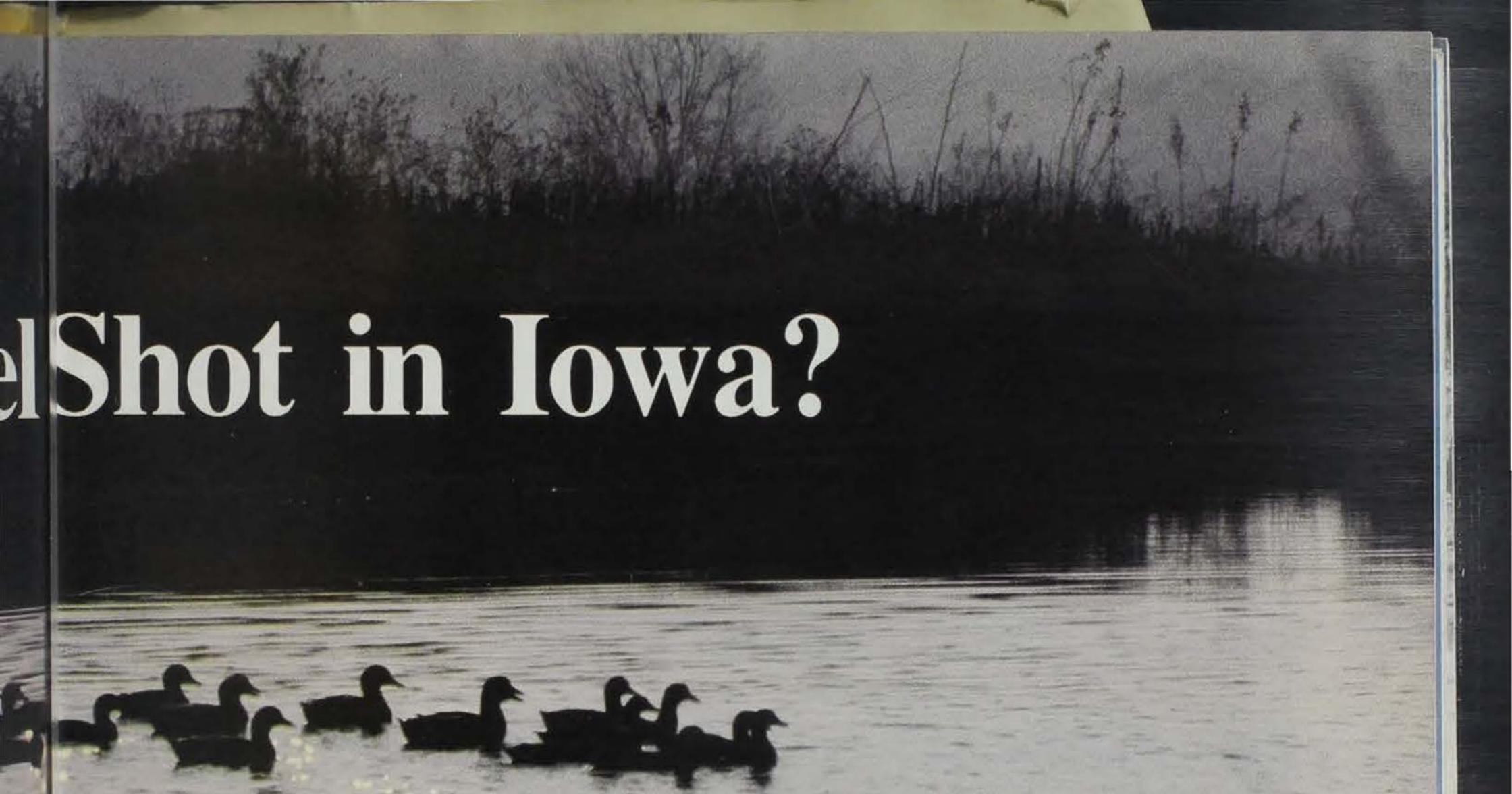
Send subscriptions — one year, \$5.00; two years, \$8.00; or 3 years, \$10.00 — to the address above.

The Iowa Conservation Commission provides equal opportunity regardless of race, creed, color, sex, national origin or handicap.

# Why Steel S



E  
Iowa  
prov  
to re  
fowl  
ried  
water  
acres  
width  
shot  
eye  
man  
water  
Aug  
prov  
THE  
W  
shot  
lead  
years  
lead  
wild  
Ea  
Unit  
lead  
this  
geese  
size  
food  
water  
wors  
low  
mall  
shot  
divin



# el Shot in Iowa?

*By James Hansen  
Waterfowl Biologist*

Earlier this year the seven-member Iowa Conservation Commission approved a "Notice of Intended Action" to require steel shot statewide for waterfowl hunting in 1985. The notice carried the provision that temporary sheet water, farm ponds smaller than two acres and streams less than 25 feet in width would be excluded from the steel shot requirement. This notice caught the eye of Iowa's duck hunters as well as many others who are interested in waterfowl and other wildlife. At the August meeting the commission approved the final steel shot rule.

## THE PROBLEM

Why are we even talking about steel shot in Iowa? What's wrong with the lead shot we've been using all these years? The problem is lead shot causes lead poisoning of waterfowl and other wildlife species.

Each year waterfowl hunters in the United States deposit over 3,000 tons of lead shot in the environment. Much of this shot falls on areas where ducks and geese feed. Most lead pellets are the size of grit or of seeds that are preferred foods, and they are picked up by waterfowl as they feed. Some of the worst sites are heavily shot-over shallow areas where dabbling ducks such as mallards can feed on the bottom. Lead shot in deep water can be a hazard to diving ducks, and shot deposited in dry

cropfields has caused some lead poisoning in both Canada geese and snow geese.

After lead pellets are ingested by a duck or goose, they are broken down by gastric juices and the grinding action of the gizzard. Soluble lead salts enter the blood stream and are then carried to other parts of the body. Lead inhibits the production of hemoglobin, reducing the ability of the blood to carry oxygen. It interferes with the breakdown of glucose and other carbohydrates, leading to a severe weight loss. The nervous system is often affected, causing a paralysis of the lower part of the esophagus. This results in impaction of food in the esophagus, since the food remains there as the bird continues to feed. Another symptom of lead poisoning is a green staining of the gizzard lining. Often lead pellets in various stages of erosion will be found in the gizzard, but in some cases the pellets will be completely eroded away by the time a bird dies of lead poisoning. External signs include droopy wings, the inability to fly and green staining of the vent area. Birds become very thin in the latter stages of lead poisoning, lose the ability to walk or stand, and death is the end result. One lead pellet is enough to kill, especially if the bird is on a hard diet such as corn or wheat.

It is difficult for many waterfowl hunters to believe that ducks and geese are dying of lead poisoning when they don't see birds that have died from it.

Sick birds hide in heavy cover, where they are hard to find, however, so it's not surprising that most people have never seen a lead-poisoned duck or goose. Most carcasses are eaten by scavengers within a day or two.

Some of the worst times of the year for lead poisoning are after the hunting season and in the spring. At these times waterfowl can feed undisturbed in areas that were heavily hunted and received a good supply of lead shot. These are also times when few people are out in Iowa's wetlands to see what is happening. Losses occurring late in the winter or during spring migration are especially serious because the birds are about to begin nesting. Therefore each bird lost is probably a direct subtraction from the nesting effort. Even if ingested lead shot doesn't kill a bird, a small dose at this time can keep it from reproducing.

So if lead-poisoned waterfowl are so hard to find, how do we know they exist? There are well-documented cases of large lead poisoning die-offs in Iowa, especially at Riverton and Forney Lake in southwestern Iowa. In the winter of 1965, an estimated 2,500 mallards died of lead poisoning at Forney Lake, and thousands of ducks and geese have died there in other years. Lead poisoning as the cause of death was confirmed by the Veterinary Diagnostic Lab at Iowa State University. Smaller lead poisoning die-offs, including mallards and canvasbacks, have been documented from many other parts of the state. While the

large die-offs attract more attention, the small, day-to-day, unnoticed lead poisoning losses are no doubt more important.

It has been estimated that two to three percent of the fall waterfowl population in North America, or about two million birds, die each year from lead poisoning. This two to three percent annual mortality figure is based on research done in the 1940's and 1950's by noted biologist Frank Bellrose of the Illinois Natural History Survey. A large number of mallards were trapped and force-fed varying numbers of lead pellets, the birds were then banded and released. Analysis of band returns clearly showed

***Mallards are susceptible to lead poisoning.***



Ron Johnson

that mallards dosed with lead shot died sooner, and in greater numbers, than undosed birds. Even one lead pellet increased the rate of mortality.

Some people have criticized Bellrose's work because it was done so many years ago. However, it was a good study, and there certainly is no reason to believe that mallards or the effect of lead on mallards have changed over the years. There is also no reason to believe that Iowa mallards are any different than Illinois mallards.

Secondary lead poisoning may occur in other species that feed on waterfowl. Lead poisoning has been found to be the fourth leading cause of death of bald

eagles. Eagles ingest pellets while eating waterfowl shot with lead, and they also get lead by eating waterfowl tissues having a high lead content. One recent case of a lead-poisoned bald eagle in Iowa was one found in January of 1983 along the Mississippi River north of Clinton.

**THE SOLUTION**

There are several ways in which serious lead poisoning areas can be identified. The most obvious way is to see where large die-offs have occurred in the past. Southwestern Iowa had experienced such die-offs. Thus, Iowa's first steel shot zone was established in Fremont and Mills counties in 1977.

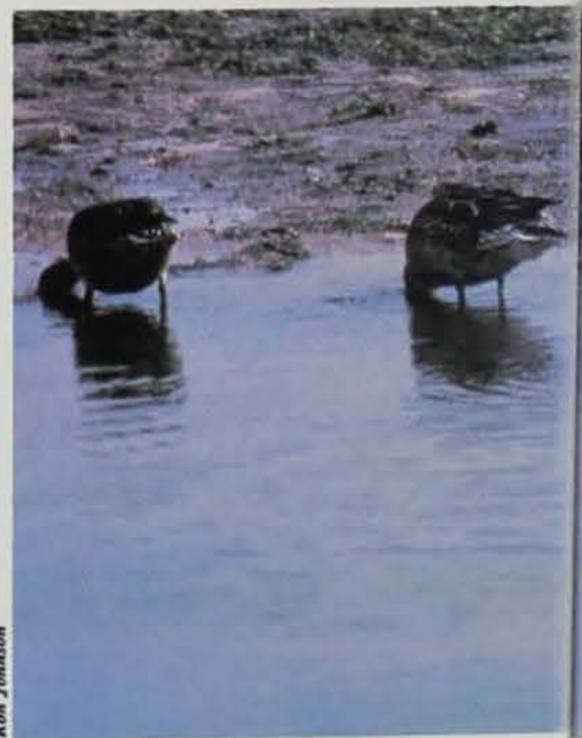
Another method of identifying potential problem areas is through bottom sampling. Collecting and washing bottom samples in order to count pellets is very time-consuming, but it can provide some useful information. Bottom samples from Forney Lake, Green Island, Princeton, and Sweet Marsh Wildlife Areas in Iowa showed very high lead shot densities, some of which exceeded 100,000 pellets per acre. Even the refuge area at Sweet Marsh, which had not been hunted for six years, showed high lead shot densities.

Waterfowl gizzards collected from hunters throughout the state by Conservation Commission employees also have provided important information necessary to determine potential problem areas. The gizzards, mostly from mallards, were cut open to expose the contents. These were examined visually to determine the presence of lead or steel shot. Biologists found that of the 13,000 mallard gizzards collected from 1977 through 1981, one out of every 18

Table 1. Percent of mallard gizzards with ingested lead and steel shot in some Iowa steel shot zones, 1977-81.

AREA	1977	1978	1979	1980	1981
<b>RIVERTON AND FORNEY LAKE COMBINED</b>					
Lead	5.9	12.5*	7.5	8.2	2.5
Steel	0	1.8	2.7	8.6	3.9
Both	0	0	1.5	3.7	1.4
<b>UPPER MISSISSIPPI NWR</b>					
Lead	5.3	6.7	7.2*	1.4	1.1
Steel	0	0	5.6	7.0	3.4
Both	0	0	2.4	2.8	0
<b>BIG MARSH</b>					
Lead	5.4	15.2	10.5	5.4*	4.0
Steel	0	0	0	3.2	3.1
Both	0	0	0	0	0.8
<b>SWEETS MARSH</b>					
Lead	5.2	13.4	8.3	10.0*	4.9
Steel	0	0	0	3.3	0
Both	0	0	1.2	1.7	0

\*First year steel shot was required. Requirements were for 12 gauge only through 1979; no gauge exemptions after that time. Steel was required in 1977 at Riverton and Forney Lake for only the first eight days of the season.



Ron Johnson

had ingested shot. As a result, additional problem areas were zoned for steel shot.

Data giving the percent of gizzards with ingested shot are conservative. In examining the gizzards visually we probably find about 75 percent of the shot actually present, according to some studies. Ingested shot will remain in the gizzard an average of about 21 days, it has been found. After that time, the shot has been passed, worn down until it disappears with the bird surviving, or it kills the bird. A duck's gizzard on the day it was shot represents only one of the 21-day periods in that bird's annual cycle.

An interesting finding of the gizzard collections was that when an area became a steel shot zone, steel shot began showing up in mallard gizzards from that area immediately after the change (Table 1). On some of the steel shot zones we reached the point where more gizzards contained steel shot than lead. The gizzard data in Table 1 provide strong evidence that shot is being ingested locally in Iowa, rather than being picked in another state by ducks which then migrate to Iowa and are shot. The data also indicate that shot is being ingested in Iowa during the *same* hunting season in which it was deposited. This means that siltation which occurs on some areas between hunting seasons will not eliminate the potential for lead poisoning. The high percentage of ingested steel shot on some areas indicates that we, the Iowa waterfowl hunters, have already saved some ducks from lead poisoning.

The only practical way to reduce lead poisoning losses is to reduce the amount of lead shot deposited on waterfowl

areas, and we can do that by switching to nontoxic steel shot.

### LEAD VS. STEEL

There are some differences between lead and steel shot of which sportsmen should be aware. These involve different pattern size, the aiming point used, and shot size selection. When used in similar shotguns with the same choke, steel shotshells throw a tighter pattern and have a shorter shot string than lead, because the pellets do not deform. As a result, a more open choke should be used when shooting steel.

Steel is lighter, and as a result the shot slows down faster than lead. To compensate, steel shotshells have a higher muzzle velocity, requiring an adjustment of the aiming point. At close range, use a shorter lead. At medium ranges the lead angle is about the same as with lead shot. A slightly greater lead should be taken at longer ranges, but those long shots with either lead or steel are cripplers.

The lighter weight of steel also requires the use of a larger shot size. If you normally use #6 lead, you should use #4 steel; or if you use #4 lead, select #2 steel.

Many hunters are fearful of using steel shot for a variety of reasons. The possibility of gun damage, derived from stories told about some of the first experimental steel shotshells produced in the 1960's, is a common fear. Improvements in today's steel shotshells have all but eliminated this problem. Stiff, thick, high-density polyethylene wads are now used which prevent steel pellets from scratching the barrel. Steel shot is also much softer than most people think. Commercially-available steel shotshells are much softer than air rifle BB's, for example. Even though barrel damage is a rare problem with today's steel loads, it is possible that its use could damage a fine old double-barrel having thin, soft barrels. If you have any doubts whatsoever, check with the manufacturer of your gun.

Another concern of hunters is that steel shot costs more than lead. Experience in other states which have extensive steel shot zones indicates that the price will drop as the demand for steel increases. For the majority of waterfowl hunters, the small extra cost is really a tiny portion of the total spent for waterfowl hunting each year.

Reloading components for steel shotshells are not yet widely available, and those that are on the market are somewhat expensive. Components should be

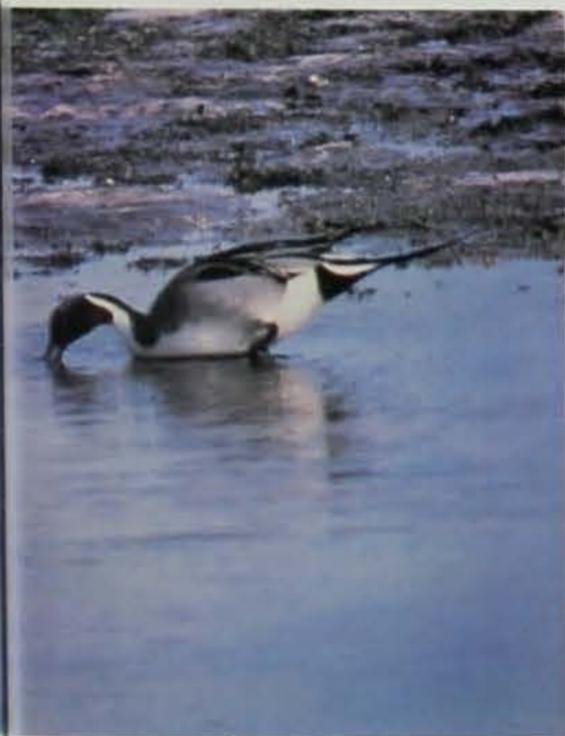
available and less expensive in the next couple of years. Note: One should *not* attempt to reload steel using lead reloading components because of the possible danger to the shooter and the shotgun.

Steel shot is now available in 10-gauge, 12-gauge, and 20-gauge. At least one company has started marketing 20-gauge steel shotshells in 2 $\frac{3}{4}$ -inch. Steel shotshells probably will never be available in other gauges because the market would be too small to justify the research required by the shotshell manufacturers.

Perhaps the greatest concern to hunters is the fear of crippling with steel because it is ballistically different than lead. Many studies have compared the crippling rates of steel and lead; including ballistical studies under laboratory conditions, in semi-controlled field studies, and through field evaluations. With the exception of one recent study in Louisiana, this research has shown no significant differences in crippling rates between steel and lead shot. Even though most tests have shown no increase in crippling with steel shot, just suppose, for the moment, that increased crippling did occur. Calculations of "worst-case" estimates of the possible increase in the number of ducks downed but not retrieved that might occur if only steel shot were permitted for waterfowl hunting are much less than the most conservative estimates of the annual losses of ducks to lead poisoning. Skybusting with either steel *or* lead results in crippled waterfowl. Hunters who allow birds to come within range will find steel very satisfactory. Some Iowa hunters having tried steel, actually prefer it over lead and use it even where they were not required to do so.

Perhaps there was a time when we could tolerate the waste of a large number of waterfowl to lead poisoning, but that time is past. The loss of habitat in all parts of the flyway only places more emphasis on unnecessary lead poisoning losses. These losses *can* and *must* be reduced. Even though lead poisoning is not as destructive to waterfowl as habitat losses, it is something we can more easily control. And the remedy is also something to which we can all contribute.

Even if steel shot isn't required in your favorite hunting area this fall, why not try shooting a couple of boxes? It may take a little getting used to, but you might discover that you like it. In the process, you could save a few ducks from lead poisoning.



*Fifth-graders learn about stream inhabitants during aquatic studies.*

# *Environmental Education*

## *County Board Style*

*By Mary Duritsa*

"Hey!" "Come here!" "Look at this!" "What IS it?" "It has 14 legs and it's moving!"

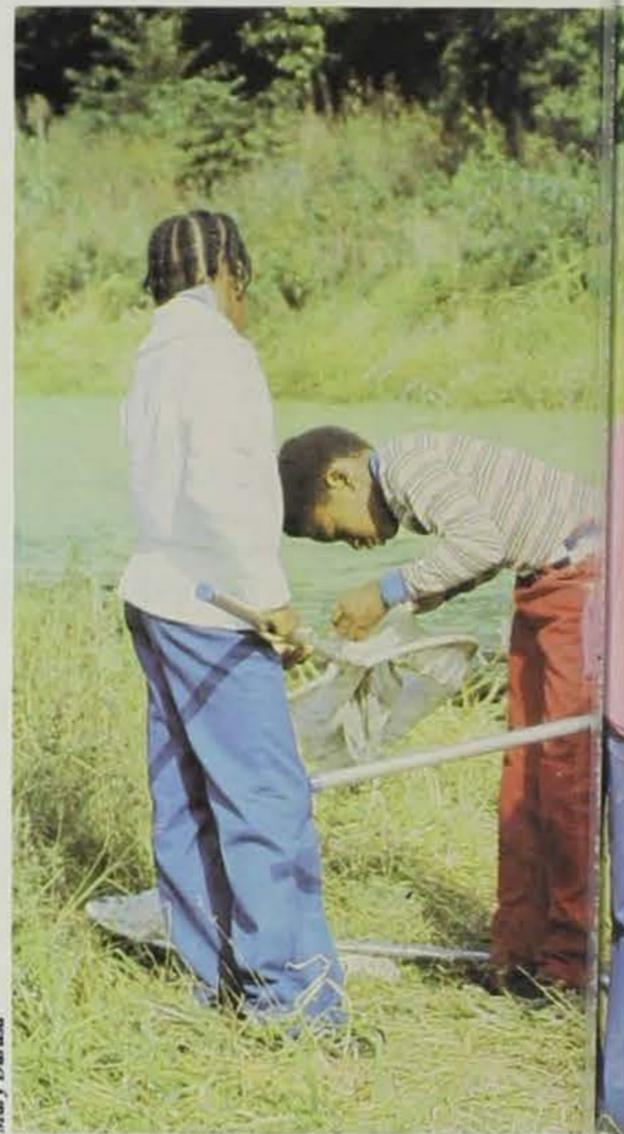
This flurry of exclamations is not from a sci-fi movie but is the expression of surprise, curiosity and excitement that accompanies field trips in over 35 Iowa counties. This trip could have been an aquatic study with third graders in Carroll County, or it could have been a forest study with sixth graders in Des Moines County. Or it could have been part of a family program in a Polk County campground. Literally thousands of field trips and other environmental education activities are conducted annually by county conservation boards who have made public education a part of their daily operations. To conduct these activities, the boards have hired part-time or full-time naturalists.\*

The programs they conduct are diverse, tailored to suit the needs and resources of each county. Many county environmental education programs emphasize activities with and for school children and teachers. Some devote a portion of their energy to public programs during the school year and/or during the summer months. Special events and projects are undertaken by many, for example: maple syrup making, heritage days, prairie education and volksmarches. Several counties operate nature centers.\*\*

No matter what the specific topic and audience may be, several general threads run through all of these programs. First, a framework of conservation education was already in place sixteen years ago when Clayton County Conservation Board became the first to dedicate itself to educational efforts. The most notable components of this structure were Iowa State

Teachers Colleges (now the University of Northern Iowa), Iowa Teachers' Conservation Camp and the Iowa Conservation Education Council and its workshops. New and innovative science education programs were also being initiated such as Ames' Project Eco and Bettendorf's Outdoor Education Program. The pioneer program of Clayton County was followed in the early 1970's by endeavors in Jasper, Story, Polk and Dubuque counties. All of these have served as an inspiration and example to the state network of county conservation boards. Today the continuity of this tradition is maintained through the participation of many conservation board employees in Iowa Conservation Education Council (ICEC) meetings and workshops. In recognition of the vital role which boards play in the environmental education process throughout the state, the ICEC instituted a County Conservation Environmental Education Award in 1980. Recipients have been: 1980 — Clayton, 1981 — Warren, 1982 — Black Hawk and 1983 — Marshall.

Second, as the knowledge of ecological relationships has broadened, the practice of conservation and management have been modified and renovated. A sense of ecological awareness and responsibility is more prevalent today in both the conservation field and in the general public. The county education programs stress to their audiences the relationships which occur in nature and the fact that elements and actions are affected by one another. As John Muir has said, "When we try to pick out anything by itself, we find it hitched to everything else in the universe." County boards have come to realize that their work is incomplete without the support and understanding of the public they serve. Because the area each board encompasses is relatively small and well



*Mary Duritsa*

defined, boards are in a unique position of being able to have direct contact with a high percentage of their citizens.

Third, the majority of environmental education programs are conducted outdoors. Direct experience is the best teacher. How better to learn about the life of ponds than to observe aquatic organisms first hand? (Have you ever seen and held a dragonfly nymph?) How better to illustrate the life cycle of trees from seed through decay than to visit a well stratified forest? We have learned that such first-hand experiences can do more teaching than thousands of words in a textbook. Under the guidance of knowledgeable people, outdoor activities provoke a curiosity and excitement about the world and a desire to know more. Teachers consistently evaluate school field trips highly by noting that the enthusiasm and interest generated on a trip lasts for weeks afterward. To preschoolers through adults, county education programs strive to explain as directly as possible the nature of our "own backyards" — the towns and country sides in which we spend our everyday lives.

Ultimately, the goal of each conservation board is to cultivate good citizenship and promote a conservation ethic. The environmental education programs are intended to promote and develop an appreciation and an understanding of the world. It is only with a heartfelt concern

*Mary Duritsa is a naturalist for the Black Hawk County Conservation Board and supervises the Hartman Reserve Nature Center.*

# WILDFLOWER

## OF THE MONTH

### Pale Touch-Me-Not (*Impatiens pallida*)

By Dean M. Roosa  
and William P. Pusateri

All flower enthusiasts are acquainted with the word "impatiens." This is because a popular cultivated flower bears this name. Botanists and naturalists are also acquainted with the word because an exceedingly attractive wildflower also bears this genus name. *Impatiens pallida*, the pale touch-me-not, is a common wildflower of marsh edges, moist woods, and alluvium.

The individual plants grow to a height of over four feet and have a pale green, easily crushed, almost translucent appearance. The leaves, when submerged in water, take on a silvery hue, giving rise to a second common name "jewelweed."

The flower hangs on a rather long flower stalk, or peduncle and begins to blossom in late July. It is a member of the plant family Balsaminaceae.

The common name comes from the characteristic of the seed capsule to "explode" upon being pinched when ripe, hurling the seeds away from the plant.

The spotted touch-me-not, *Impatiens biflora*, is very similar, differing only by the color and spotting on the flower. Both species are reputed to diminish the effects of poison ivy, if the leaves are crushed and rubbed on the skin shortly after contact.

These are common and interesting members of our native flora, and well worth risking mosquito bites and wet feet to see.



Ken Formanek

and a rational understanding of our lands, waters and wildlife (both plant and animal) that intelligent and responsible decisions can be made about our uses of the environment. We are striving to attain Aldo Leopold's "state of harmony between man and land." Much of the education activity is geared for young people for it is here that a love and a concern for nature and its relationships must be fostered. With an early basis of awareness and then later in concepts, we can hope for responsible decision makers in the future.

Iowa's county conservation boards are unique. The education programs are highly visible functions of many boards. This network of county conservation agencies across the state gives Iowa residents a system of information and education unmatched in other places.

\*Counties with full-time naturalists: Black Hawk, Carroll, Cerro Gordo, Clayton, Clinton, Des Moines, Dubuque, Fayette, Hamilton, Jasper, Jefferson, Marshall, Muscatine, Polk, Poweshiek, Warren, Washington and Winneshiek.

Counties with part-time naturalists: Benton, Buena Vista, Cass, Dallas, Grundy, Hancock, Linn, Mitchell, Kossuth, Monona, Palo Alto, Page, Scott, Shelby, Story, Webster, Winnebago, Floyd, Worth, Dickinson and Madison.

\*\*Counties with nature centers: Black Hawk, Cerro Gordo, Clayton, Clinton, Des Moines, Dubuque, Muscatine and Winneshiek. Scott County has an Area Education Agency Nature Center in Scott County Park. Several boards operate historical museums.



# Stamp Prints On Sale



## *Winning designs by Iowa artists available.*

Limited edition collector prints of Iowa's 1984 waterfowl, habitat and trout stamp designs are on sale from the artists. About twenty percent of the revenue from the sale of these quality prints goes to the Iowa Conservation Commission to be used to help fund trout, waterfowl and habitat programs.

All prints are available from the artists. Order them directly from:

**Larry Zach** — *Wood Ducks*. 1984 Iowa Waterfowl Stamp design. Price: \$120 unframed; \$200 remarked; \$5 stamp. Order from Larry Zach, 1202 SW 2nd, Ankeny, Iowa 50021.

**Tom Carter** — *Brook Trout*. 1984 Iowa Trout Stamp design. Price: \$100 unframed; \$175 remarked; \$5 stamp. Order from Tom Carter, 3523 McClain Drive, Cedar Falls, Iowa 50613.

**Kenneth Wind** — *Great Horned Owl*. 1984 Iowa Habitat Stamp design. Price: \$110 unframed; \$190 remarked; stamp not available from artist. Order from Kenneth Wind, 320 South 2nd, Laurens, Iowa 50554.

**Note:** Please Add 4% State Sales Tax.

**1984  
IOWA  
HUNTING — TRAPPING SEASONS AND LIMITS  
HUNTING SEASONS**

Game	Season Dates	Shooting Hours	Daily Bag Limit	Possession Limit
<b>RABBIT</b>				
(cottontail) .....	Sept. 1-Feb. 28 .....	Sunrise to Sunset .....	10 .....	20
(jackrabbit) .....	Nov. 3-Dec. 16 .....	Sunrise to Sunset .....	3 .....	6
<b>SQUIRREL</b>				
(fox and gray) .....	Sept. 1-Jan. 31 .....	None .....	6 .....	12
<b>DEER (bow)</b> .....	Oct. 6-Nov. 30 .....	½ hr. before Sunrise to ½ hr. after Sunset .....		One
*DEER (shotgun)...All zones, 2 seasons	Dec. 1-Dec. 4 .....	Sunrise to Sunset		
	Dec. 8-Dec. 14			
*DEER (muzzleloader) .....	Dec. 15-Dec. 21			
*TURKEY (gun) .....	Oct. 16-Oct. 28 .....	½ hr. before Sunrise to Sunset .....		One
*TURKEY (bow) .....	Oct. 6-Nov. 30 .....	½ hr. before Sunrise to ½ hour after Sunset .....		Per License
*GROUSE (ruffed) .....	Oct. 13-Jan. 31 .....	Sunrise to Sunset .....	3 .....	6
*Check Regulations For Open Areas				
<b>CROWS</b> .....	Oct. 15-Feb. 15 .....	½ hr. before Sunrise to Sunset .....	None .....	None
<b>RAILS (Sora &amp; Virginia)</b> .....	Sept. 1-Nov. 9 .....	Sunrise to Sunset .....	15 .....	25
<b>SNIFE (Wilson's - Jack)</b> .....	Sept. 1-Dec. 16 .....	Sunrise to Sunset .....	8 .....	16
<b>WOODCOCK</b> .....	Sept. 15-Nov. 18 .....	Sunrise to Sunset .....	5 .....	10
<b>WOODCHUCK</b> .....	June 15-Oct. 31 .....	None .....	None .....	None
<b>COYOTE</b> .....	Continuous Open .....	None .....	None .....	None

**TENTATIVE HUNTING SEASONS**

*Season dates as well as limits and hours will be finalized Sept. 1*

<b>PHEASANT</b> .....	Nov. 3-Jan. 6
<b>QUAIL</b> .....	Nov. 3-Jan. 31
<b>PARTRIDGE (gray)</b> .....	Nov. 3-Jan. 31
<b>GEESE</b> .....	Sept. 29-Dec. 7
<b>DUCKS (split season)</b> ..	first season: Sept. 15-19 or Sept. 22-26 second season: Oct. 20-Dec. 3 (North of I-80), and Oct. 27-Dec. 10 (South of I-80)
<b>COOT</b> .....	Same as ducks

**TRAPPING SEASONS**

<b>MINK AND MUSKRAT</b> .....	Nov. 3-Jan. 20
<b>RACCOON, BADGER, OPOSSUM AND STRIPED SKUNK</b> .....	Nov. 3-Jan. 20
<b>RED AND GRAY FOX</b> .....	Nov. 10-Jan. 20
* <b>BEAVER</b> .....	Nov. 3-April 14

\*except for the federal Upper Mississippi River Wildlife and Fish Refuge.  
In this area, the open season will be from 12:00 noon December 29-  
February 24.

# 1985 HUNTING, TRAPPING AND FISHING

## A Few Changes and Higher Fees

Hunting, trapping, and fishing license fees will increase in 1985 and the following changes in policies will be implemented.

Licenses will be valid from *date of issue* to January 10 of the succeeding calendar year. A license will not be issued before December 15 of the preceding year. For example, a 1985 license may be sold on December 15, 1984 or later and is valid from date of issue up to January 10, 1986.

Hunting licenses will no longer be valid for hunting furbearers, except coyote or groundhog.

Trapping licenses will be discontinued and replaced by fur harvester licenses which will be required to *hunt* all furbearers except coyotes and groundhogs, and to *trap* all furbearers. A hunting license will not be required to hunt furbearers, except coyote and groundhog. All fur takers

will be required to have a fur harvester license regardless of age. A hunter safety certificate will not be required to purchase a fur harvester license. The following are furbearers under Iowa Code: beaver, badger, mink, otter, muskrat, raccoon, skunk, opossum, spotted skunk or civet cat, weasel, coyote, wolf, groundhog, red fox and gray fox.

There will be two separate 3-day fishing licenses — one for residents at \$4.50; and one for nonresidents at \$5.50.

Residents under 16 and nonresidents under 14 will be required to possess a valid trout stamp to fish for trout or they must fish for trout with a licensed adult who possesses a valid trout stamp and limit their combined catch to the daily limit.

All *annual* and the lifetime *hunting* licenses for disabled

or 65 and older will be discontinued. Nonresident pheasant and raccoon stamps will no longer be required.

*Depositaries* designated by the county recorder or the conservation commission will retain \$.25 from the total cost of the license as a writing fee. For example, the price of a fishing license is \$8.50. The depositary sends \$8.25 to the recorder or commission and keeps \$.25.

*County recorders* will retain \$.50 from licenses sold in their office and \$.25 from licenses sold by their depositaries. For example, the price of a fishing license is \$8.50. The recorder sends \$8.00 to the conservation commission and keeps \$.50 for an in-office sale or \$.25 from sale by a designated depositary.

No fee will be retained from the sale of duck, trout or habitat stamps.

## STAMP WINNERS ANNOUNCED

Winners of the Iowa Conservation Commission's waterfowl, habitat and trout stamp design contests were recently announced.

Jack Hahn's painting of a drake mallard and decoy won first place in the 1985 state migratory waterfowl competition. Hahn, of Middle Amana, took the top honor from a field of 45 entries.

Bruce Morrison of Sheldon won the 1985 trout stamp competition. Morrison's brook trout took top honors in a field of 18 entries.

Bethany Caskey won the habitat stamp competition with a cottontail rabbit painting. There were 33 entries in the 1985 habitat stamp category.

The waterfowl design will be used on more than 40,000 1985 duck stamps. Revenue collected from the sale of the \$5 stamps is used for acquisition, development, restoration and maintenance of wetlands in Iowa.

The trout painting will be used on about 50,000 1985 trout stamps. Iowa's trout program is primarily supported by revenue from the sale of these \$8 stamps which are required for all licensed trout fishermen.

The habitat design will appear on over 300,000 1985 habitat stamps. The revenue from these \$3 stamps will be used for wildlife habitat development within the state.

In the duck stamp competition, Paul Bridgford of Altoona and Steve Carter of Cedar Falls tied for second place. John Bald of Davenport finished second and Tom Walker of Council bluffs took third in the habitat stamp contest. Bridgford also placed second in the trout stamp competition, and Ted McElhiney of LeClaire placed third.

### 1985 License Fee Schedule

License Type	Total Cost to Customer in All Cases (includes the appropriate writing fee)
Resident fishing	\$ 8.50
Resident hunting	8.50
Resident combination	15.50
Resident lifetime fishing disabled or 65 and older	8.50
Resident lifetime combination disabled or 65 and older	15.50
Resident 3-day fishing	4.50
Nonresident 3-day fishing	5.50
Nonresident season fishing	15.50
Nonresident hunting	47.50
Nonresident shooting preserve hunting	5.00
Resident fur harvester under 16	2.50
Resident fur harvester 16 and older	15.50
Nonresident fur harvester (available only at State Conservation Commission, Wallace Building in Des Moines)	150.50
Waterfowl (duck) stamp	5.00
Trout stamp	8.00
Habitat stamp	3.00
Deer bow and arrow license	20.00



## BIG CREEK GUN RANGE TO OPEN

The Big Creek Shooting Range and Hunter Education Center near Big Creek Lake will open about August 1.

The grand opening for the facility will be held August 24-26. The secluded, outdoor range is intended for novice shooters as well as seasoned hunters and other gun enthusiasts.

The facility, located at 11652 N.W. Nissen Drive, off Northwest Madrid Drive northwest of Polk City, has three ranges — two of them 50 yards long, the third 100 yards — and 10 sheltered shooting stations which provide room for a total of 30 people.

All three feature baffles made of four inches of pea gravel sandwiched between heavy wood slabs over and under the range to catch errant shots. Earth berms provide added safety and sound-proofing.

One range officer will be present for each 10 shooters, a step above the usual 1-to-30 ratio.

Dave Parsons, a National Rifle Association representa-

tive who designs and inspects similar ranges, has called the Big Creek facility "one of the finest shooting ranges in the U.S."

The range is open to all for gun-sighting, practice and hunter-safety classes. A \$2-per-hour fee will be charged. Adult supervision is required for those under 15 years of age to shoot most rifles, and for those under 18 to shoot handguns. Also, shotgun users may shoot only slugs.

The range will be open weekly Wednesday through Sunday from 10 a.m. until one-half hour before sunset through November 15 and for two weeks prior to each deer season.

Ankeny and Polk City businessman Steve Long, has signed a 3-year agreement to run the state-owned facility and share the profits with the Iowa Conservation Commission.

The staff will include manager Todd Stills and gunsmith Chris Olson, both employees of Polk Station Guns. Snacks, ammunition and gun accessories will be sold.

## FISHING FUN!

A fisherie was held at Pleasant Creek Recreation near Palo on June 3. It was the first summer fisherie held at the 410-acre lake and the first sponsored by the local Palo Jaycees.

Cash prizes were awarded to anyone catching the specially-tagged fish. The tagged bass was worth \$1,000; catfish, \$500; and a bluegill and crappie, each worth \$100. Prizes were also given for the longest fish in each category, and finally a grand prize drawing for a new 9.9 horsepower Evinrude outboard motor.

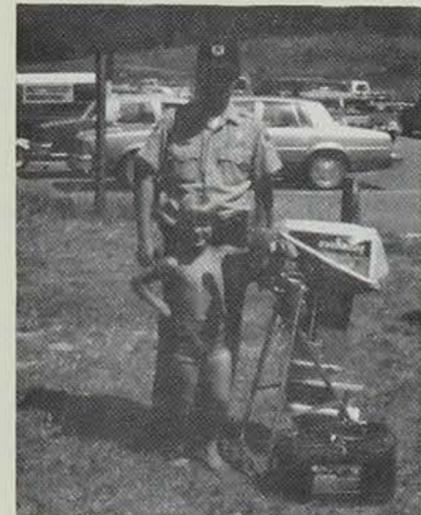
The weather was perfect and the crowd great. Winners included:

- 17 $\frac{3}{4}$ -inch largemouth bass caught by Chuck Phelps;
- 17 $\frac{1}{2}$ -inch walleye caught by Cody Walker;
- 9 $\frac{1}{4}$ -inch crappie caught by Tom Daniels;
- 6 $\frac{7}{8}$ -inch bluegill caught by Theresa Ambrose;
- 25 $\frac{1}{4}$ -inch channel catfish caught by Rodney Schneider.

None of the tagged fish were caught this particular day; however, concessionaire Ken Davis offered to pay 10 percent of the original value

of the tagged fish until September 1 should any of them be caught. (On June 23 Jim Willott of Marion landed the tagged bass and was given a check for \$100 by Mr. Davis. Congratulations Jim!)

A special thanks goes out to all who participated in the fisherie. A particular thanks to the Palo Jaycees for their time and efforts which made the event a great success. Another will be held next summer.



*Grand prize winner of the 9.9 h.p. Evinrude outboard motor — five-year-old Jason Trout with Pleasant Creek Park Ranger Randy Edwards.*



A full color cacheted envelope (first day cover) is being issued by the National Association of State Foresters to commemorate the 40th anniversary of the Smokey Bear Cooperative Forest Fire Prevention Campaign. A Smokey Bear stamp will be affixed and cancelled on the first day of issue. The cost of the covers is \$2.50 each, which includes postage and handling. To order, complete this form and mail to Allane Wilson, Alabama Forestry Commission, 513 Madison Ave., Montgomery, AL 36130. Checks and/or money orders should be made payable to the National Association of State Foresters. **(Please Print)**

Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

No. of Covers: \_\_\_\_\_ Amount Enclosed \_\_\_\_\_



# CALENDAR

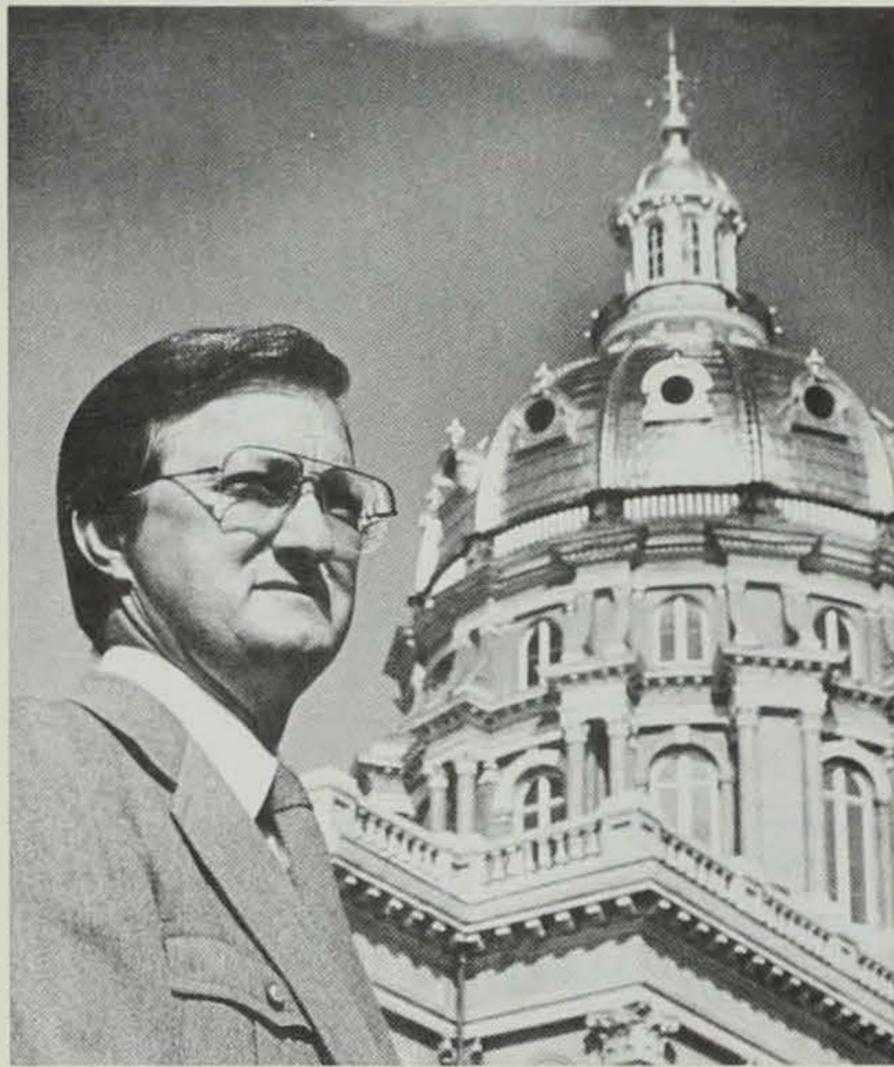
## August - October

August	Ashton Observatory	Ashton Park Jasper County 515/792-9780	August 26	Mixed Best Shot	Briggs Woods Hamilton County 515/832-1994
August 3-4	Tallgrass Prairie Gathering	Cooper's Cove Park Pocahontas County 712/335-4395	August 26	Nature Hike	Twin Valley Nature Center Plymouth County 712/947-4270
August 3, 4 & 10	Naturalist Program "Snakes Alive"	Linn County 319/398-3505	August 26	Winemaking (demonstration)	Lake Meyer Nature Center Winneshiek County 319/534-7145
August 5	Artist in Nature Program Ross Sutter, Musician	Pinicon Ridge Park Linn County 319/398-3505	September	Ashton Observatory	Ashton Park Jasper County 515/792-9780
August 5	Canada Hunting and Fishing Films	Lake Meyer Nature Center Winneshiek County 319/534-7145	September 1	Palo Alto County Canoe Day	Palo Alto County 712/837-4866
August 5 & 19	Wagaman Mill Tours	Lynneville Jasper County 515/792-9780	September 2	Astronomy (slides and telescope viewing)	Lake Meyer Nature Center Winneshiek County 319/534-7145
August 11, 24 & 25	Naturalist Program Indian Legends	Linn County 319/398-3505	September 2	Stone City Music Festival	Stone City Linn County 319/398-3505
August 12	Artist in Nature Program Bill Horine, Writer and Storyteller	Squaw Creek Park Linn County 319/398-3505	September 2	Tour of Wagaman Mill	Lynneville Jasper County 515/792-9780
August 12	Insects (film and demonstration)	Lake Meyer Nature Center Winneshiek County 319/534-7145	September 2	Bluegrass Band	Hickory Grove Park Story County 515/377-2229
August 12	Raccoon River Canoe Float	North Raccoon River Carroll County 712/792-4614	September	Prairie Heritage Week 2-8	
August 15-25	Iowa State Fair	Des Moines Polk County	September 3	Fishing Contest	Pinicon Ridge Park Linn County 319/398-3505
August 18	Explorers Winged Creatures	Lost Island-Huston County Park Palo Alto County 712/837-4866	September	Czech Village Festival 7-9	Cedar Rapids Linn County 319/398-3505
	Evening-In-The-Park	Lost Island-Huston County Park Palo Alto County 712/837-4866	September 8	Prairie Heritage Day	Palo Alto County 712/837-4866
August 19	Indians of the Midwest (films)	Lake Meyer Nature Center Winneshiek County 319/534-7145	September 8	Prairie Pride Workshop	University of Northern Iowa Cedar Falls Black Hawk County 319/277-2187
August 24-26	Marion County Music Festival	Knoxville Marion County 515/828-2213	September	Engine at Usher's Ferry 8-9	Seminole Valley Cedar Rapids Linn County 319/398-3505
August 26	Artist in Nature Program Vernon Windsor, Dancer	Morgan Creek Park Linn County 319/398-3505	September 9	Annual Pioneer Craft Fair	Grundy County Museum Morrison Grundy County 319/345-2688
August 26	Incredible Edibles (natural foods)	Otter Creek Conservation Area Warren County 515/961-6169	September 9	Art on the Fence	Brucemore Grounds Cedar Rapids Linn County 319/398-3505
			September 9	Endangered Species (slides and discussion)	Lake Meyer Nature Center Winneshiek County 319/534-7145
			September 9	Hopeville Rural Music Reunion	Hopeville Square County Park Clarke County 515/342-3960
			September 9	Prairie Caravan	Swan Lake Carroll County 712/792-4614

September 13	Golden Spike Ceremony	Cedar Valley Nature Trail Linn County 319/398-3505	October 6	Cinder Path Bicycle Ride	Lucas County's Cinder Path Clarke County 515/342-3960
September 16	Ducks (films, slides and discussion)	Lake Meyer Nature Center Winneshiek County 319/534-7145	October 6	Second Annual Clarence Pickard Memorial Bike Ride	Pickard Park Warren County 515/961-6169
September 16	Fifth Annual Hickory Hills Hoedown	Hickory Hills Warren County 515/961-6169	October 7	Duck Hunting (films and discussion)	Lake Meyer Nature Center Winneshiek County 319/534-7145
September 16	Three Man Best Shot	Briggs Woods Hamilton County 515/832-1994	October 7	Third Annual Family Volksmarch	Hartman Reserve Nature Center Black Hawk County 319/277-2187
September 22	National Hunting and Fishing Day		October 7-14	Forest Color Hikes	Swiss Valley Dubuque County 319/556-6745
September 23	Edible Plants (slides, collection and preparation)	Lake Meyer Nature Center Winneshiek County 319/534-7145	October 7, 14 & 21	Sipping Cider	Hartman Reserve Nature Center Black Hawk County 319/277-2187
September 23	Migrating Hawk Watch	Swiss Valley Dubuque County 319/556-6745	October 9	Timber Management Field Day	Siegelkov County Park Black Hawk County 319/277-2187
September 24	All County 6th Grade Assembly Featuring Crittman	Iowa Lakes Community College Auditorium Palo Alto County 712/837-4866	October 12-13	Trapping Clinic	Thorpe Park Hancock County 515/923-2720
	Public Program Featuring Professor Avian Guano	Iowa Lakes Community College Auditorium Palo Alto County 712/837-4866	October 12-14	Mines of Spain Autumn Seminar	E. B. Lyons Nature Center Dubuque County 319/556-0620
September 27-30	Midwest and Regional Environmental Edu- cation Conference "Harmony of Land and People"	Iowa Conservation Commission Conservation Educ. Ctr. Springbrook Guthrie County 515/747-8383	October 12-14	Wapsiketa District Camporee	Central Park Jones County 319/487-3541
September 28-30	Bow Hunting Clinic	Thorpe Park Hancock County 515/923-2720	October 13-14	Heritage Weekend	Osborne Conservation Ctr. Clayton County 319/245-1516
September 29	Beginning Trapping Clinic	Hillview Park Plymouth County 712/947-4270	October 14	Apple Cider Making (demonstration and sampling)	Lake Meyer Nature Center Winneshiek County 319/534-7145
September 29-30	Fort Atkinson Rendezvous	Fort Atkinson Winneshiek County 515/281-5629	October 14	Public Nature Hike	Twin Valley Natural Area Plymouth County 712/947-4270
September 29	Memorial Dedication to Eugene N. Hastie	Dallas County 515/465-3733	October 14	Sorghum Making Festival	Fontana Park Buchanan County 319/636-2617
September 29	Young Trappers School	Hartman Reserve Nature Center Black Hawk County 319/277-2187	October 20	Don Berry Trail Bus Tour (scenic bus tour through Warren County)	Warren County 515/961-6169
September 30	Bow Hunting (films and discussion)	Lake Meyer Nature Center Winneshiek County 319/534-7145	October 20	Fourth Annual Cedar River Turkey Trot	Black Hawk Park Black Hawk County 319/277-1536
September 30	Waterfowl Identification Workshop	Swiss Valley Dubuque County 319/556-6745	October 21	Landscaping for Wildlife	Swiss Valley Dubuque County 319/556-6745
October	Ashton Observtory	Ashton Park Jasper County 515/792-9780	October 28	Fourth Annual Hickory Hills Orienteering Meet	Hickory Hills County Park Black Hawk County 319/277-2187
October 5-6	Fall Environmental Educ. Teacher Workshop	Hartman Reserve Nature Center Black Hawk County 319/277-2187	October 28	Little Maquoketa Indian Mounds Hike	Dubuque County 319/556-6745

# LEADERS IN CONSERVATION

## Rep. Dennis Black



How do people become interested in conservation? Dennis Black of Newton came by it quite naturally. "I knew what I wanted to be even in grade school. I was always interested in science, soil and what the soil could create." This kinship with the land began while Black lived in Yellowstone and the Tetons where his parents were employed by the National Park Service. He has continued to build upon this interest in search of his professional niche in life. Each step has found him actively participating in conservation programs.

Black received a Bachelor of Science degree from Utah State University in forest management, with minors in economics and botany. He had a research graduate assistantship in which he studied the "Economic Feasibility of Private Outdoor Recreation" and acquired his master's degree in resource economics in 1965.

Black initially began working for the Nebraska Game, Forestation and Parks Commission where he wrote the Nebraska Outdoor Recreation Plan. From there, he joined an outdoor recreation planning firm where he designed large recreation and tourism complexes for the economic development of the Hualapi Indians of Arizona and the Uintah-Ouray Ute of Utah. The private firm also introduced him to the county conservation board system when he was hired as a consultant to write five-year comprehensive plans for numerous boards.

This required a great deal of travel, however, and Black still wanted to "implement" and not just plan. "I accepted the challenge of working for the Jasper County Conservation Board so I could see things happen." As director, he developed conservation and recreation plans, but also had a budget to acquire land for conserva-

tion, recreation, and environmental education. He was finally able to see a great many projects completed.

"These could not have been possible if the local taxpayers had not been willing to make a commitment to conservation," Black said. "The taxpayers should be commended for providing the money to accomplish the job." Since 1970, the Jasper County Conservation Board has increased the number of areas managed from one to twenty-two, and has increased the acreage from 92 to 1,608. This includes river bottom timber, upland timber and prairie. "The county conservation board insures the preservation of these areas for future generations," he said. "I know that if the county conservation board had not acquired these areas they would be gone today. We saved one 20-acre prairie from being plowed, and 600 acres of timber from being cleared." Many citizens of Jasper county have also made significant donations to the county conservation board. One major donation inspired by Black was a 370-acre farm which is now being used as a nature preserve and conservation education site.

Dennis Black began to see that some of our conservation problems were being greatly affected by political decision, and he felt the need to become directly involved. He was elected to the House of Representatives in 1982. He currently serves on the Natural Resources Committee as vice-chairman, the Energy Committee, the Local Government Committee and on the Natural Resources Appropriations Subcommittee.

Black laments the loss of our railroad right-of-ways. He worked to gain support for the Bondurant to Baxter segment the Conservation Commission recently agreed to purchase, in cooperation

with the Polk and Jasper county boards. He explained that these areas provide wildlife habitat, a seed bank for native plant species and an area for hiking and bicycling. "Who knows, they may even be needed for transportation in the future."

Black has also been instrumental in the promotion of soil, water and hazardous waste bills. He thinks that the disposal and transportation of hazardous waste in Iowa is "providing a time bomb for future generations that continues to tick away until these wastes return through our water supply or by some other method."

Black has also introduced a bill allowing private non-profit groups such as the Iowa Natural Heritage Foundation the opportunity to accept lands in lieu of state inheritance taxes; a bill providing Chickadee Checkoff donation opportunities for those with tax liabilities, not just those who receive refunds (the bill passed); and a bill creating an outdoor recreation and open spaces improvement fund and a county conservation board fund within the Iowa Conservation Commission. Monies from these funds would be used for the purpose of land acquisition and capital improvement (the bill passed, but no money is yet available; however, an interim study has been directed by the Speaker of the House related to tourism and the funding of recreation programs).

Bills such as these would aid in the conservation and preservation of our resources, but it will take a strong effort by many Iowans to get them passed. One thing is certain — Dennis Black will continue to develop practical programs and provide strong legislative guidance. He has earned his place among Iowa's foremost conservation leaders.

## WARDEN'S DIARY *By Jerry Hoilien*

### Iowa Conservation Education Council

The Iowa Conservation Education Council is organized to stimulate the development of conservation and environmental education. The council works for close cooperation among agencies, institutions and individuals interested in conservation and assists schools and other groups in conservation education.

The council conducts teacher workshops throughout the year and state. In 1983 there were three fall workshops, three winter workshops and one summer workshop.

The council also has produced booklets of teaching activities. These include Iowa Forests, Iowa Soils, and Prairie. In the future there will be a video tape on planning and conducting a field trip with students.

The organization has a quarterly publication, "ICEC Agenda." It contains news of upcoming workshops, program ideas, plus lots of features related to the many facets of education.

The council encourages growth of conservation and environmental education by providing awards for excellence in this area.

The Iowa Conservation Education Council is open to anyone interested in conservation and environmental education (annual dues are \$3). The organization's home address is: Conservation Education Center, R. R. #1, Box 53, Guthrie Center, Iowa 50115.

Members include organizations, public agencies, professional educators and many concerned citizens who recognize the need for leadership in this critical area.

This last weekend was something to think about. It started out great with the fish biting good and nice weather. I checked a lot of licenses and saw a lot of nice fish. I was motoring up the Mississippi River in the main channel, when suddenly a boat roared by me with no registration on its side. When I finally caught up to him, he seemed very disgusted that I had stopped him. After all, he *had* registered the boat, but didn't have time to put the d--- things on. Matter of fact, he was in such a hurry to get out on the river, he had left his life-jackets and fire extinguisher in the car (but I noticed he hadn't forgotten the case of beer). Now to top it all off, some "brush cop" was giving him a ticket. He wasn't in the mood for much conversation either it seems.

As I got away from him, I caught sight of a canoe paddling upstream and making poor headway against the current. As I approached to see if I could help, I couldn't believe the numbers on the bow. Printed out with brand new letters was IA-0000-3. I asked the fella in the stern if I could see the registration, as I couldn't hardly believe that number. "I told the gal at the recorder's office I had a poor memory and that is the number she gave me. I took the old numbers off and put these on. Pretty neat — huh?" It took me a minute or two to figure that one out. But sure enough, if you look at the "example" the department prints on the edge of your boat registration, you'll see where *he* got the number. To show an example of the position to put your numbers and decals on the bow of your boat, it shows "IA-0000-E." How about that? He had even transposed the E into a 3. A poor memory was only one of his problems.

One of the officers told me about one houseboat he checked with *all* of the numbers (including dates and serial numbers) that were on the *whole* certificate, nicely pasted on each side of the boat. When he tried to explain she had way too many numbers on there she got very irate. She told him she had spent \$27 on those numbers and no one was going to take them off. Such is life!

It was after dark when I got home. I was tired and hungry, and the wife was too, so I took her out to supper (good way to stay in good with the cook). On the way home we came across the Yellow River Bridge, and crawling out from under the bridge were two of the muddyist characters I had seen in a long

time. I stopped and asked what the problem was. "We're stuck in the mud about two miles back up this awful road, and we ran over our buddy!" "Is he hurt bad?" I asked. "I don't live too far, I'll take my wife home and be right back." They assured me he wasn't hurt too bad, and he was back at the Jeep. I picked up my 4-wheel drive and hurried back. They got in, mud and all, and we headed back into the brush. Bouncing through the mud holes and trees in the dark on an old abandoned road is not my idea of fun, especially in the middle of the night, but their buddy could be hurt bad.

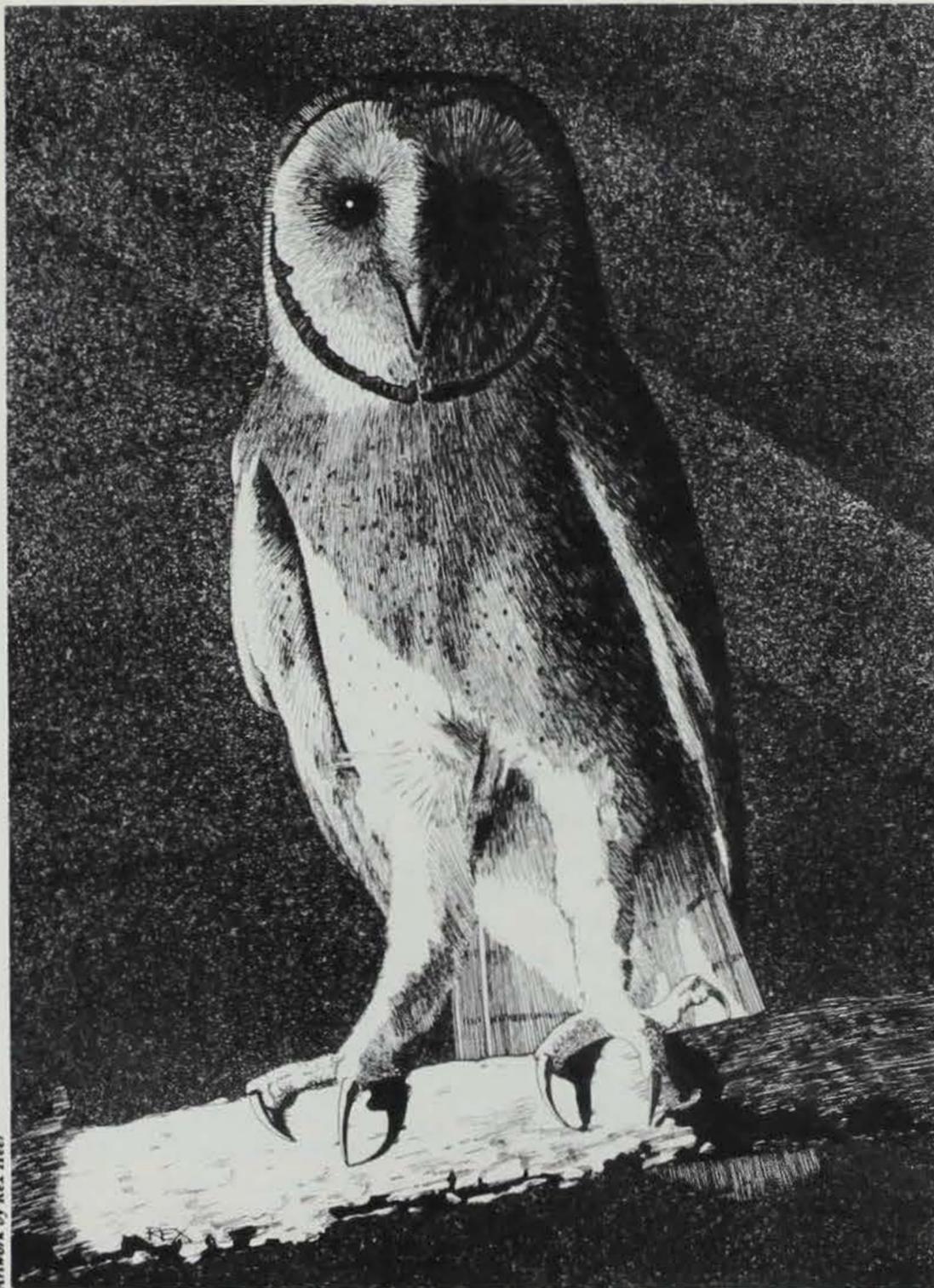
Finally we found the Jeep, almost buried with the front-end sticking out of a huge mud hole. There were branches sticking out of the mud on both sides where they had tried to get out, and mud was everywhere. The Jeep was completely covered with mud inside and out, but their buddy was nowhere in sight. They hollared and yelled, but no answer. "He must have wandered off," they thought. I called the sheriff's office to PBX (telephone) the people that lived the closest and see if anyone had wandered in. One of our other officers, Jerry Hass, heard me on the radio and told me he was headed my way. I got them pulled out and Jerry radioed he had just found the other guy walking along the highway, about a mile south of us. He wasn't hurt. We got them all together at the bridge and sent them on their way home — a bit smarter, I hope.

I just pulled into my driveway when Jerry came on the radio again, asking for assistance on a possible drowning. Arriving at the scene, it was explained that a city police officer had surprised two young subjects on a houseboat which didn't belong to them. One jumped overboard to get away and hadn't been seen since. To make a long story short...we finally located him, in the water, hiding under another houseboat. He was O.K.

I just got in bed at 1:30 a.m. and the phone rang. The sheriff's office had an emergency message for someone camping in the Yellow River Forest. I was lucky and located them right away, but by the time I got them to the phone and back to their camp it was getting on towards daybreak. I was bushed!

Sure enough the phone rang about 6:30 a.m., and the voice on the other end inquired if I was *still* in bed, and then remarked — "But I don't suppose you guys have much to *do this time of year!*"





Artwork by Rex Heer

## Nature Tale for Kids

### Ty — The Timid Barn Owl

By Dean M. Roosa

Ty, a baby barn owl, hatched one stormy night in April. It was an unusual day — snow was falling, but strokes of lightning brightened the night sky and claps of thunder rumbled through the nearby woodland and down the broad valley. These were the conditions that ushered Ty into the world as he struggled out of the egg. His worried mother jumped to the edge of the nest box, then flew to the small window in the barn, peered into the fiery sky, and worried about her new family and the weather. But the storm passed, as storms always do, and peace settled on the nest box, its contents, and the old barn.

Ty was the last of the clutch of five to hatch; in fact, he hatched five days after the next youngest, just as his parents had given up all hope of seeing a fifth owlet. For the first week, it seemed as though Ty would be smothered by his

larger nest-mates and was often stepped on by the big feet of the oldest. He hated that, but it was more than offset by the warmth and safety he felt when he snuggled under the wing of his mother. When she left the nest box to hunt, he retreated into a corner.

Soon he was covered with soft down feathers and from then on was able to keep himself warm. His father brought in mice which his mother tore into bits and fed to the five owlets. Ty was always last to be fed because he was small and timid.

The nearby woodland was called Castle Woods — no one knew why anymore, least of all the owls that hunted the edge and nearby grassland. The old barn which stood nearby was owned by a young biology teacher who had read about barn owl nest boxes and decided to try it the previous autumn. He often checked the barn for owls and

was discouraged when he did not see any. They were present but very secretive. In March, as he entered the barn just at dusk, he came face-to-face with the male owl leaving to hunt. It was a draw who was most surprised, but the young teacher was by far the most pleased. Although he acknowledged it was not the best idea in the world, he simply had to get a ladder to check if there was a family of owls. As he peered into the nest box, he became very pleased and nearly burst out laughing. Young barn owls are either ugly or beautiful, depending on whom you ask. Most people would say "ugly", but parent owls and young biology teachers would not agree. He hurried down the ladder and left the barn so life in the nest box could return to normal. The next day the teacher showed pictures of barn owls to his class and told them the story because barn owls were not known to nest in this part of Iowa; however, the old man who lived on the far side of Castle Woods remembered seeing a family of "monkey-faced owls" in a hollow tree many years before.

The young owls were growing fast because theirs were exceptional parents and brought in a varied menu from the nearby grasslands and woods. The young were eagerly grabbing the prey their parents dropped. There was, generally speaking, unsportsmanlike conduct at mealtime in the nestbox. Except for Ty, that is. Timid Ty didn't like all that pushing and shoving, biting and clawing. He would wait in the corner of the box and often be the only one awake when his father came in with a late catch.

In late May, Castle Woods was teeming with life. Everyone was gone from the nest box except Ty. Nearly as large as his parents now, and wanting to try his wings, he flew to the small window and sat there a long time gathering courage. Then he launched himself toward the woodland.

Boy! This was different! He headed for the old oak tree and tried to land gracefully on a limb, but his inexperience caused him to crash clumsily into the branches and fall stunned to the ground. Though he wasn't badly hurt, he could not launch himself again.

Suddenly, a huge black dog from the nearby town came upon the terrified owl and circled warily. Fortunately, the young teacher arrived in time to frighten the dog away and took the young owl home. Here Ty was fed to the point of bursting and taken to the classroom for

# CLASSROOM CORNER

Bob Howe, coordinator of Iowa Natural Areas Inventory has provided the following quiz about amphibians and reptiles of Iowa.

1. How many different kinds of frogs and toads occur in Iowa?  
a) 5 b) 9 c) 16 d) 23
2. Bullfrogs are expanding their range in Iowa and in some cases can be considered a threat to other native amphibians.  
True or False
3. Does handling toads cause warts?  
True or False
4. What is a "herp?"
5. What is the most common type of salamander in Iowa?
6. What is the difference between a lizard and a salamander?
7. What is the largest snake species found in Iowa?  
a) garter b) bullsnake c) water d) rattlesnake
8. How many kinds of "garter" snakes occur in Iowa?  
a) 3 b) 9 c) 12 d) 1
9. Are reptiles and amphibians always "cold-blooded?"  
True or False
10. How long do turtles live?  
a) 7 years b) 20 years or less c) 10 years d) 20 years or more
11. Do poisonous snakes occur in Iowa?  
True or False
12. Are any of Iowa's reptiles or amphibians listed as threatened or endangered nationally?  
True or False

*Read more about Iowa's reptiles and amphibians on pages 18 — 20.*

## ANSWERS:

1. (c) 16 are known. The wood frog, possibly present in northeastern Iowa would make 17.
2. True — bullfrogs are voracious predators and their tadpoles are able to out compete other small species.
3. False — however, toads have numerous skin glands that can produce irritating secretions. You should wash your hands after handling toads.
4. A herp or herptile is a general term used to describe a reptile or amphibian. The study of reptiles and amphibians is called herpetology.
5. Tiger salamander. The small mouthed salamander is locally common in southern Iowa, but all others (blue-spotted salamander, central newt, and mud puppy) are very rare in this state.
6. Lizards have scales, claws on their toes and do not require an aquatic habitat for development of young. Salamanders have smooth, moist skin, no claws, and the young pass through a larval stage, usually in water.
7. (b) bullsnake — the record length is over eight feet.
8. (a) three closely related species, the eastern/redd-sided garter snake, plains garter snake and western ribbon snake, all occur in Iowa. At least two other, less common species, the northern lined snake and Graham's water snake, can be mistaken for garter snakes. All are harmless and beneficial to humans.
9. False — the blood and body temperature of reptiles and amphibians generally follows the temperature of their immediate surroundings. On warm, sunny days, their blood may actually be warmer than that of so called "warm-blooded" mammals and birds.
10. (b) — Most of Iowa's turtles probably live for 20 years or less. Species like the snapping turtle, however, do not even reach maturity until they are seven years old. The ornate box turtle, an uncommon inhabitant of Iowa's prairies, may live for 50 years or more, possibly even as long as 100 years.
11. True — four species. The massasauga, copperhead, and prairie rattlesnake are extremely rare and are protected by law. The unprotected timber rattlesnake is more widespread but is not common.
12. False — two species, the Illinois mud turtle (a subspecies of the yellow mud turtle) and massasauga currently are under review for listing.

ne students to observe. Ty hated this because he was timid and just wanted to be left alone. He especially hated it when people tried to pet him and would nap with his beak and grab with his talons.

Soon he had completely recovered. The entire class went to Castle Woods to watch his release. Oh, how nice to be home! He was stronger now and flew to a dead snag, shook his feathers, glanced at the young teacher and his class and was gone.

Ty lived in Castle Woods for the rest of the summer. He often saw his family, but they were not friendly and Ty hid because he was timid. He slowly learned to hunt, although some days he longed for the easy life in the nest box — pushing, shoving, big feet, and all. One day he chased the farmer's pet rabbit into a shed and the door blew shut. The farmer threw a coat over the young owl and took him, hurt pride and all, to the young teacher. Once again he was petted, photographed, fed and released.

Late that fall, his family gone, Ty was the sole owner of the old barn. He stayed there all winter, to the delight of the teacher, who even raised mice to release in the barn to assure Ty a good diet.

Early the next spring, a big owl howled up in the window of the old barn; it was Ty's father, but neither recognized the other. Ty, being timid, left through the lower door and flew deep into Castle Woods, where he was attacked by a great horned owl. He barely escaped and flew from the woods to a nearby barn but it was full of cattle, then on to another barn where a pair of great horned owls were nesting. He finally found the perfect barn — vacant, lots of mice and rats, and even a nest box! Ty immediately claimed it for his own.

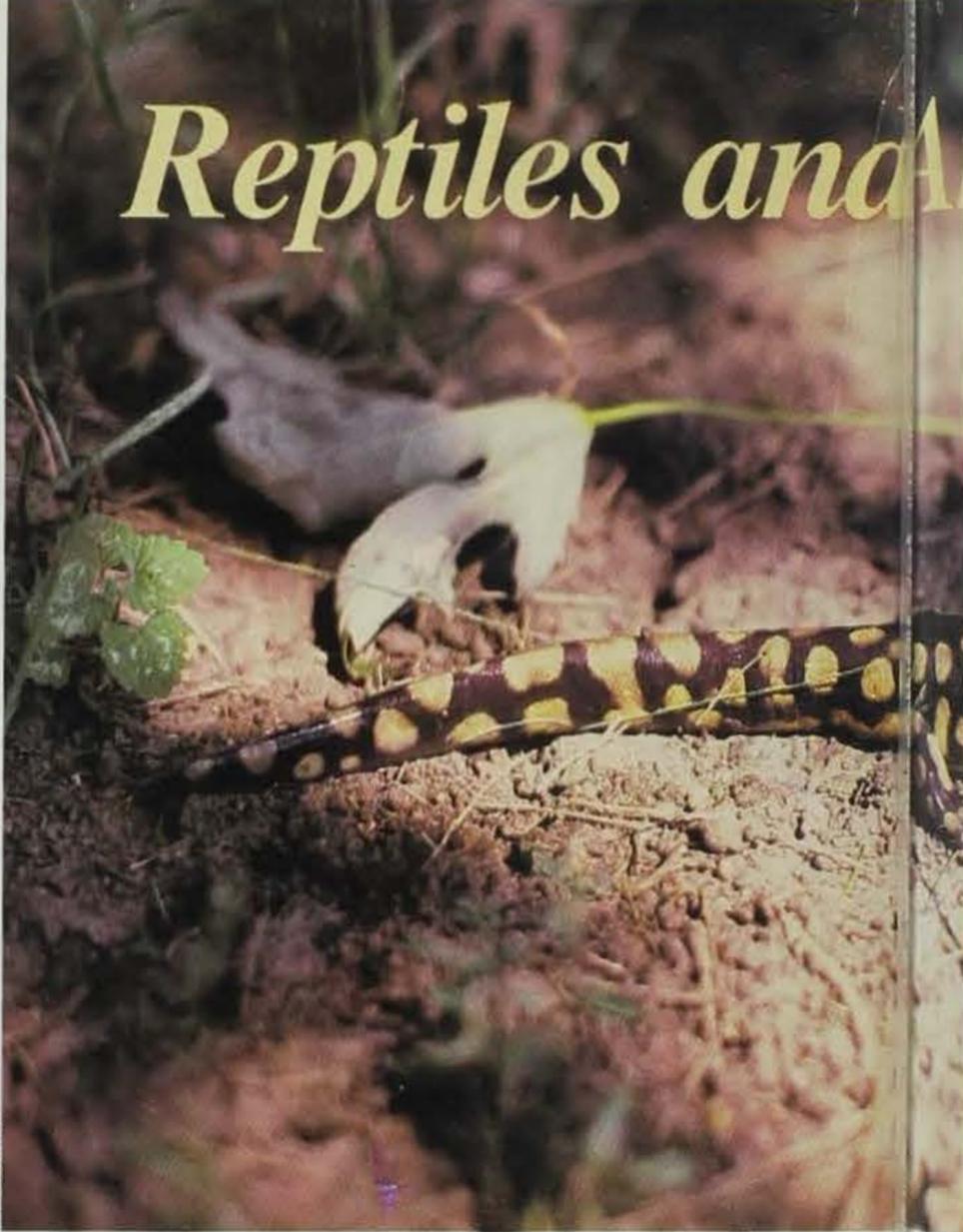
One night another barn owl flew to a tree near the barn. Ty, the timid owl, hid for two days. But when it was plain the female owl was going to stay, he came out and became acquainted. The two became mates and soon had a clutch of five eggs that became a meal for a raccoon. They re-nested, and this time four young owls hatched — the final one on a stormy night in April. The wind, rain, lightning, and thunder didn't faze Ty because he, now the head of his family, was no longer timid. But, when he fed the youngsters, he noticed one owlet which stayed in the corner until the others were through. Ty looked at the young owl and understood.

# Reptiles and

Plains garter snake



Mark Rouw  
Don Perichau



The seventy-seven kinds of Iowa reptiles and amphibians include representatives of eastern, western, northern, and southern species, as well as a number of intergrades. These animals occupy a variety of habitats and participate in many different food chains. This makes Iowa a kind of herpetological crossroads through which the traffic can be as beautiful as it is interesting and exciting.

In the Mississippi and Missouri rivers, their backwaters and their main tributaries are a number of species such as the mudpuppy, the map turtles, and the Illinois mud turtle. These aquatic animals are not likely to be seen by the casual visitor to the river. They stay mostly to the backwaters, riverbanks and snags, feeding on small fish, carrion, and various invertebrates. The alligator snapping turtle (which can grow to over one hundred pounds) is a rare resident of southeast Iowa's Mississippi river banks. Other reptiles and amphibians found only in or along the border rivers include the delightful little stinkpot turtle, the red eared turtle, and the smooth and spiny softshell turtles. Two water snakes, the yellow-bellied and the diamond back, are also native to riverside habitats in the southeastern part of the state.

Iowa's western border offers the unique and fascinating loess hills. These

hills of fine, wind-blown soil contain the only short grass prairie in the state. Much of this habitat is relatively undisturbed and still harbors some western species of reptiles and amphibians that are very rare in this state. One such animal is the prairie rattlesnake, which, while abundant to the west of the state, is found only in a very restricted range within Iowa north of Sioux City. Another very rare reptile found only in the loess hills is the great plains skink. The skink, one of only a few Iowa lizards, can be found in the far southwestern corner of the state. The spadefoot toad, the northern prairie skink, the great plains toad, the Woodhouse toad, and one of the fastest lizards in Iowa, the prairie racerunner, are found in the loess hills. All of these animals are common in states to the west of Iowa but are only found in Iowa because of the short grass prairie habitat. Visitors who drive by but never stop to visit the unique and beautiful hills may never get to meet the equally unique and beautiful animals that live there.

The great glaciers that visited Iowa four times were responsible for more reptile and amphibian habitat than just the loess hills. The prairie potholes and marshes that developed as the glaciers melted are home to a wide variety of herpetological life. The painted turtle and snapping turtle as well as the cricket frog and leopard frog are distributed

statewide wherever there is water. Joining these residents in the ponds and low wet areas of eastern Iowa are the rare and delicate central newt and the large and not-so-delicate green frog. In southern Iowa the muddy bottom lands and shallow ponds harbor the endangered small-mouthed salamander, a close relative of the very common tiger salamander. Other widespread amphibians of Iowa's wetlands include the chorus frog, the toxic-skinned American toad, and the bullfrog which is rapidly extending its range throughout the state at the expense of anything small enough to fit in its enormous mouth. Wetlands in the east and southeast of Iowa are home to the little known pickerel frog, Fowler's toad, and the crayfish frog which hides in crayfish holes.

Two other turtles are found in the streams and marshes of the state. The spiny soft-shelled turtle keeps to the stream bottoms and sandbars across the whole state while the severely threatened Blanding's turtle prefers undisturbed marshland. Pollution and habitat destruction are the two main enemies of these turtles.

Where you find frogs and other food you will also find their predators. Three snakes frequent the wet places hunting in and near the water. These are the rapidly disappearing Graham's water snake, the nasty and aggressive north-

# Amphibians of Iowa

By Don Perachius



*Tiger salamander (left)*

*Blue-spotted salamander (below)*



Ted Crawford

ern water snake (often mistaken for the water moccasin not found in Iowa), and the very common red-sided garter snake which can also be quite aggressive. Several marsh areas harbor the small, attractive, but poisonous massasauga rattlesnake. The massasauga is so restricted to these few areas that it is listed as threatened by the Iowa Conservation Commission.

Iowa is not thought of as a forested state. However, the great deciduous forest that once covered the eastern United States extends into eastern Iowa along the river valleys. In this cool, shady environment, plants and animals live a secret kind of life. Rare five-lined skinks can sometimes be found under a piece of bark or sunning on a fallen log. Small, semi-burrowing snakes like the brown snake are sometimes encountered in the leaf litter and in rotting logs. The gray tree frog is moderately common in the woods, though its small size and protective coloration make it difficult to find. The endangered wood turtle is also a secret resident of the northeast and northern Iowa forest lowlands.

In slightly drier parts of the wooded areas, particularly where erosion has exposed limestone or sandstone rocks, one can find a number of snakes. The worm snake, red-bellied snake, prairie ringneck snake, and earth snake hide

under protective rocks and feast on the worms and other invertebrates that also live there. Black rat snakes hunt the mice that live in the woods. It pays to look where you walk though because this is also the kind of habitat preferred by the dangerous timber rattlesnake. The shy and venomous copperhead also likes this kind of home ground but it is only found in the southeastern corner of the state. Mixed among all of this

danger and anonymity is the most beautiful of all Iowa snakes, the milk snake.

The amphibians of the forested parts of the state (mostly in the east and southeast) are some of the same as those found in Ohio, Kentucky, and other more eastern states. These include the blue-spotted salamander, the gray tree frog, and the American toad. The endangered spring peeper is much less common.

*Continued*



Mark Rouw

*Bullfrog*

Most of Iowa was not originally forest. Frequent fires and slightly less rainfall prevented the expanse of trees yet allowed for the fast growing luxuriant grasses of the tall grass prairie. The prairie supported abundant food. All of this food (small mammals and insects) attracts a number of predatory snakes which are adapted to a prairie life style. Examples include the common garter snakes, the bullsnake, fox snake, red-sided garter snake, and the racer. Most of these are often seen and recognized by farmers and other residents.

Some other medium to large snakes are rare or secretive enough to be relatively unknown to those who live nearby. These snakes are the black rat snake, the prairie kingsnake, and, in the northwest corner of the state, the prairie rattlesnake. The eastern hognose snake, a resident of southern Iowa, is famous for its fearsome display, harmless nature and its favorite food, toads. Two rare and little known residents of the southern Iowa prairies are the legless slender glass lizard and the speckled kingsnake which has beautifully contrasting yellow spots. In central Iowa, the brightly colored but difficult to spot smooth green snake is a prairie resident that feasts on grasshoppers and other insects. The ribbon snake and the lined snake, both similar to garter snakes, are also insect predators.

In eastern Iowa there is a small area of living sand dune. This area is home to some very unusual plants and animals. Most of these are western and dry area species such as the western hognose snake. The hognose will hiss, spit, strike, rattle its tail, and eventually play dead when bothered by an enemy. Another resident of the sand mound area is the ornate box turtle which is difficult to find in the rest of its southern Iowa range. The six-lined racerunner also lives here. These remnant populations add to the interest and diversity of Iowa's animal life.

Reptile and amphibian life is beautiful, secret, sometimes dangerous, and varied. These animals are well adapted to the climate and habitats, and they are an important thread in the interwoven fabric of nature in Iowa.

*Don Perschau is a science teacher in West Des Moines and president of the Iowa Herpetological Society.*

# WANTED!

## Information on New Location of This Turtle



Dean Roosa

### PROFILE OF A THREATENED SPECIES...

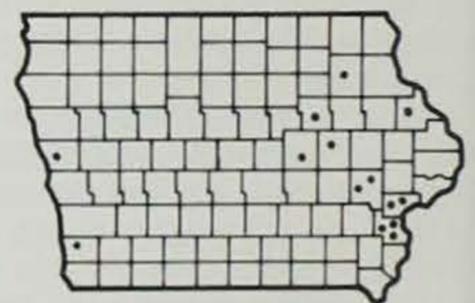
#### Ornate Box Turtle

(*Terrepena ornata*)

By Dean M. Roosa

The ornate box turtle (*Terrepena ornata*) is an inhabitant of semi-arid regions and, in Iowa, is normally found in sandy habitats, less commonly in loess soil. It is one of the "dry land turtles" that have the ability to close their shells tightly when threatened. This is accomplished by hinges on the plastron which provides moveable lobes on the front and back. It seldom, if ever, enters water voluntarily.

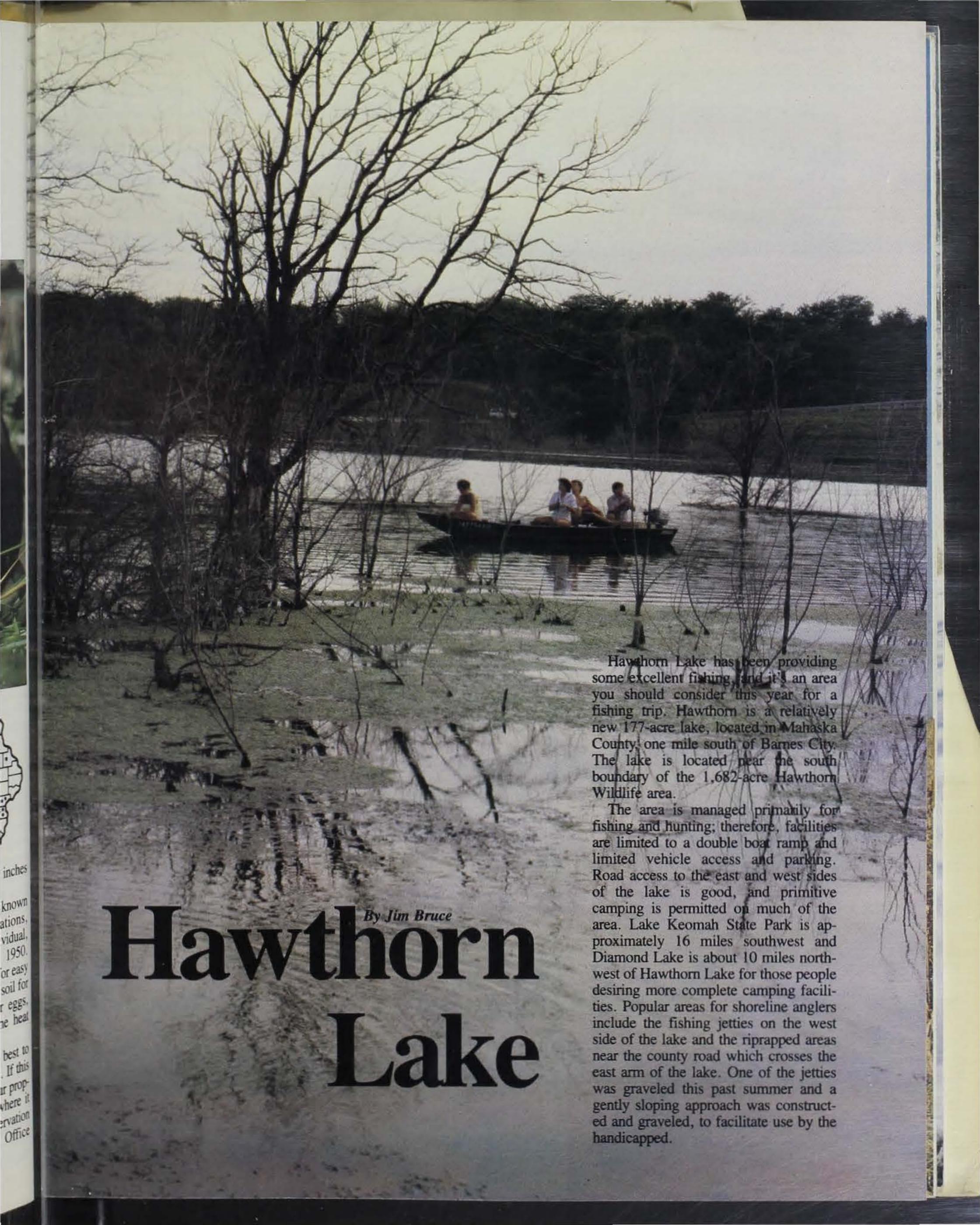
This species is very attractive, with a deep brown to reddish colored shell ornamented with yellowish radiating lines. The plastron is patterned with light lines; the head and legs are spotted with yellow. It is small, achieving a



length of approximately five inches as adults.

The map shows the areas of known populations. Fourteen populations, some known by a single individual, have been documented since 1950. They require sandy or loess soil for easy burrowing. They use this friable soil for hibernation, for depositing their eggs, and for burrowing to escape the heat in summer.

If a population is found, it is best to leave all individuals undisturbed. If this interesting species occurs on your property, or if you know of a site where it exists, write me at the Conservation Commission, Wallace State Office Building, Des Moines, 50319.



Hawthorn Lake has been providing some excellent fishing, and it's an area you should consider this year for a fishing trip. Hawthorn is a relatively new 177-acre lake, located in Mahaska County, one mile south of Barnes City. The lake is located near the south boundary of the 1,682-acre Hawthorn Wildlife area.

The area is managed primarily for fishing and hunting; therefore, facilities are limited to a double boat ramp and limited vehicle access and parking. Road access to the east and west sides of the lake is good, and primitive camping is permitted on much of the area. Lake Keomah State Park is approximately 16 miles southwest and Diamond Lake is about 10 miles northwest of Hawthorn Lake for those people desiring more complete camping facilities. Popular areas for shoreline anglers include the fishing jetties on the west side of the lake and the rippapped areas near the county road which crosses the east arm of the lake. One of the jetties was graveled this past summer and a gently sloping approach was constructed and graveled, to facilitate use by the handicapped.

*By Jim Bruce*

# Hawthorn Lake

inches  
known  
ations,  
vidual,  
1950.  
or easy  
soil for  
r eggs,  
ne heat  
best to  
If this  
r prop-  
where it  
ervation  
Office



Ron Johnson

The dam for Hawthorn Lake was completed in the summer of 1979, and the headgate was closed at that time. Adequate water had gathered behind the dam to permit fish stocking in the spring of 1980; however, the lake did not fill until the spring of 1982. Fish species introduced in 1980 were largemouth bass, bluegill, channel catfish, and tiger musky. Black crappie and grass carp were added in 1981, as were additional bluegill, channel catfish, and largemouth bass. Redear sunfish were stocked in 1982. Additional channel catfish were stocked in 1982 and 1983. Stocking this year will consist of channel catfish and tiger musky.

The initial growth of fish was excellent, as is expected in a new lake, and the largemouth bass stocked as 1½-inch fish in June of 1980 had grown to 9 to 15 inches in length by the spring of 1982. These bass had been protected from angler harvest during this period by a 14-inch minimum-length limit. In the spring of 1982 the bass length limit regulation was changed to a protected length range, or slot length limit. The 12- to 16-inch slot-length limit permits harvest of bass under 12 inches in length or over 16 inches in length; all bass 12 to 16 inches in length must be returned to the water immediately.

This regulation permitted anglers to harvest over 2,000 bass at Hawthorn during the spring and summer of 1982.

Most of these fish were 10 and 11 inches in length. In addition, over 3,000 bass in the protected slot (12"-16") were caught and released. The heavy harvest of small bass (less than 12") in 1982 greatly reduced the harvest of this size bass by 1983. The heavy harvest in 1982 was aggravated by failure of the 1981 stock of bass to survive and grow to the extent that they entered the 1983 harvest in significant numbers. Harvest of bass over 16" in length was significant in 1983 and catch and release of bass in the protected slot (12" to 16") provided considerable recreation. Largemouth bass fishing in 1984 should be similar with some improvement in numbers below the 12" slot.

The slot length limit is being tested at Hawthorn Lake to determine its value as a fisheries management tool. It is designed to increase largemouth bass catch rates and quality size.

These objectives are met by permitting the harvest of bass under 12 inches to reduce the numbers of small bass. This reduces the competition for food between bass and results in a bass population that is fast growing with a high number of larger bass. The bass are again allowed to be harvested as they grow out of the protected range at 16 inches. The protected 12- to 16-inch bass which are caught must be returned to the water. The bass population produced by this regulation also help keep

the panfish numbers under control.

The results of the study at Hawthorn Lake will be a factor in determining if the slot length limit will be extended to other lakes in the state. This unique length limit can work only if anglers abide with the law and release bass in the protected range.

A creel survey conducted during the spring and summer of 1982 and 1983 shows that bullheads contributed greatly to the catch during the year. This fish species was present in the lake's watershed prior to construction of the dam and got an early start at populating the lake. Eight- to twelve-inch bullheads will continue to be an important part of the angler catch this year; however, their contribution to the harvest will decrease as predators reduce their numbers.

As was previously mentioned, tiger musky were stocked in 1980 and, while only a few were harvested in 1982, their contribution increased in 1983. These fish are now from 17 to 42 inches in length. Anglers should remember that there is a possession limit of one and a 30" minimum-length on tiger musky.

Bluegills comprised 28% of the fish creeled in 1982 and 32% in 1983 with the majority being seven- and eight-inch fish. It is anticipated that bluegill fishing will remain good this year as well.

Other fish which have added to the angler's creel include channel catfish, green sunfish, redear sunfish, and crappie. While these fish have spawned, their numbers and size are not yet significant.

At Hawthorn, most trees were not cleared during construction. This not only reduced construction cost, it improved the fishery by providing natural fish shelter. It also increased the food available to fish by providing substrate for attachment of insects and other food organisms.

While a great deal has been accomplished since Hawthorn Lake was completed in 1979, a good deal remains to be done. This year biologists will continue evaluation of the slot length limit and monitor fish populations. Management will aim at maintaining the good fishing which presently exists.

*Jim Bruce is a fisheries biologist located at the Rathbun Fish Hatchery. He holds a B.S. degree in fish and wildlife biology from Iowa State University.*

# TIGER

## A Musky for Southern Iowa

By Bruce Adair

In 1978 an exciting new fish was introduced into nine southern Iowa lakes. The tiger musky, a fearsome looking hybrid from northern pike and muskellunge parentage was stocked into lakes historically more noted for their largemouth bass, panfish, and catfish angling. The program has expanded over the years to a total of 27 lakes totalling 22,650 acres in 1983.

Southern Iowa impoundments are capable of supporting 400 to 1,000 pounds of fish per acre, largely made up of bluegill, crappie, largemouth bass, and channel catfish. These lakes are capable of carrying less than 10 pounds per acre of tiger musky. Obviously, the tiger cannot become an everyday occurrence on the stringers of Iowa anglers. This fact is reflected in the regulations governing the taking of this unique fish. The daily and possession limit of the tiger musky in Iowa is the same as the muskellunge — one fish. A 30-inch minimum length limit provides additional protection and further reinforces the status of the tiger musky as a trophy species.

The tiger musky program provides an extraordinary trophy species for the Iowa angler. With few exceptions the fish are being caught or observed by anglers within a year or two following their introduction. Conditions throughout their newly introduced range vary widely of course, but on an average we know these fish typically reach a legal length during their fourth year of life in Iowa. While a 30-inch, 8-pound tiger musky is an impressive looking creature, it certainly cannot be classified as a trophy and is often released back to the lake by many anglers. Since our tiger musky program is relatively new, we can only guess how large tigers will grow in Iowa waters. Our current state record is 24 pounds-1 ounce set in 1983 and is already larger than records from most midwestern states. They grow larger, however; Wisconsin and Michigan have a record tiger musky taken in 1919 on the boundary waters of the two states which tipped the scales at a scary 51 pounds-3 ounces.

Tiger muskies begin their lives at the Spirit Lake Fish Hatchery, the result of

hybridization between the female northern pike and the male muskellunge, both netted from the Iowa Great Lakes region. The fry are transferred from there to the Rathbun Hatchery where they are grown to the fingerling size, suitable for stocking.

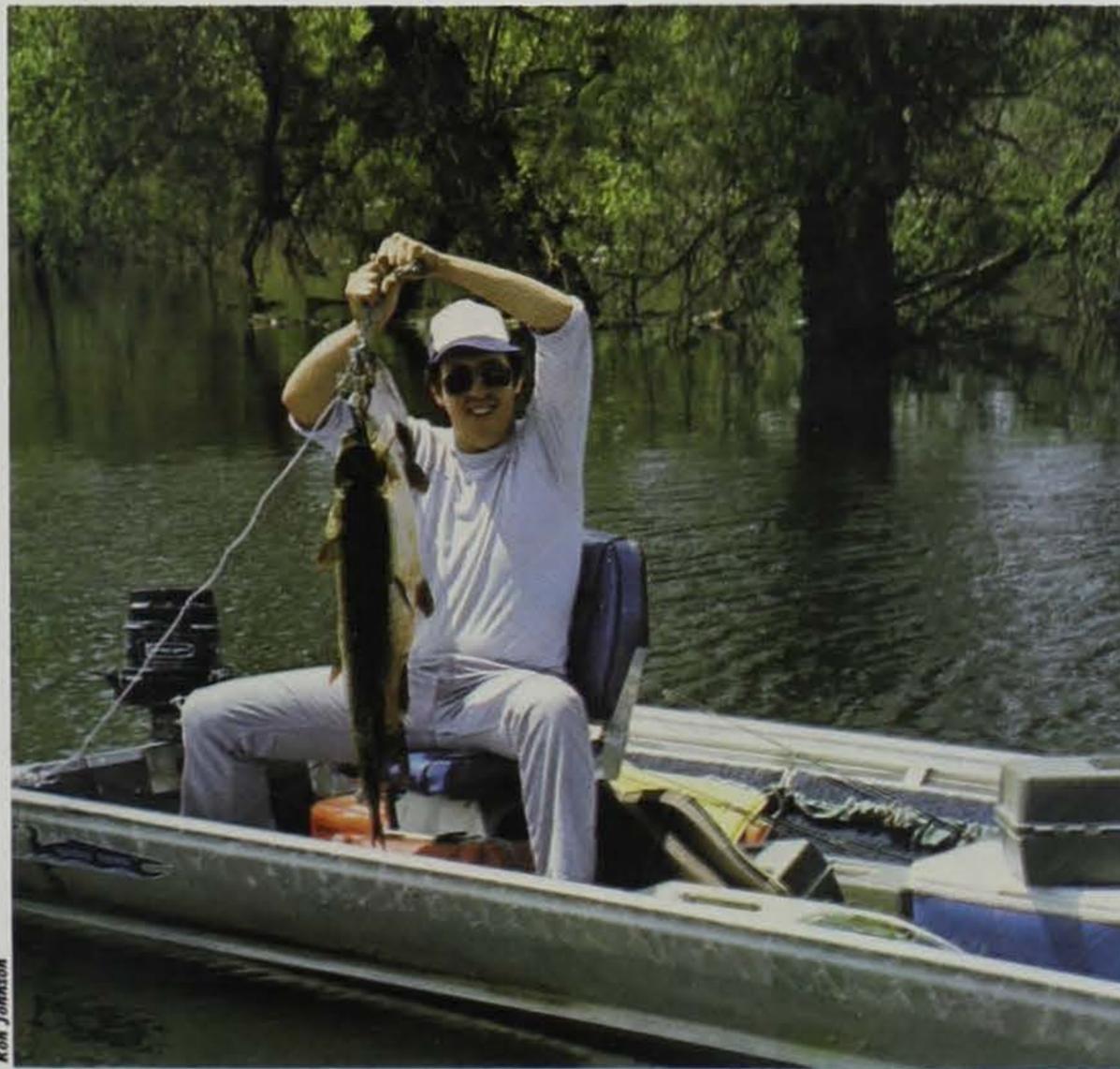
Generally 6- to 8-inch fingerling tiger muskies are stocked at the rate of one per acre in lakes greater than 100 acres. This is a relatively low maintenance stocking rate. Channel catfish for instance are stocked each fall in public lakes at the rate of 10-100 fingerlings per acre.

The following is a list of Iowa lakes containing tigers. Although the tiger musky program is still quite young, plenty of thrills have already been experienced at many of these areas with, no doubt, more to come. Most are caught "accidentally" by bass or panfish anglers. However, as these fish grow and the tales of their fighting ability become common, "tiger hunters" may begin roaming southern Iowa in search of the elusive beast. May luck be with them.

Lake	County	Years Stocked
Icaria	Adams	78-83
Rathbun	Appanoose	78-83
Don Williams	Boone	79-83
Storm	Buena Vista	79-83
North Twin	Calhoun	79-83
Anita	Cass	79-83
Wapello	Davis	80-83
Nine Eagles	Decatur	81-83
Beeds	Franklin	83
Little Wall	Hamilton	83
Geode	Henry	82-83
Rock Creek	Jasper	83
MacBride	Johnson	81-83
Pleasant Creek	Linn	78-83
Badger Creek	Madison	81-83
Hawthorn	Mahaska	80
Viking	Montgomery	78-83
Big Creek	Polk	79-83
Easter	Polk	78-83
Gray's	Polk	80-83
Manawa	Pottawattamie	78-83
Black Hawk	Sac	79-83
West Park Lake	Scott	81
Prairie Rose	Shelby	83
Hickory Grove	Story	78-83
Three Fires	Taylor	81-83
Green Valley	Union	78-83
Indian	Van Buren	81
Ahquabi	Warren	78,82,83
Darling	Washington	80-83

*Bruce Adair is a fisheries biologist located at Cold Springs. He holds a B.S. degree in fish and wildlife biology from Iowa State University.*

*Many legal-size tigers are present in Hawthorn Lake.*



Ron Johnson

