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# Iowa CONSERVATIONIST

March 1988

Department of Natural Resources

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# Iowa CONSERVATIONIST

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**FRONT COVER:** Winter's evergreen. Photo by Ron Johnson.

# Creating A Balance

MULTI-SPECIES MANAGEMENT IS THE CHALLENGE  
OF TODAY'S WILDLIFE BIOLOGIST

Story and photos by Douglas C. Harr

It has been fewer than twenty years since the art of game management in Iowa became the science of "wildlife" management. In some states this profession is still known by its old name.

The Iowa Department of Natural Resources today realizes that in the agency's responsibility to conserve all our natural resources, traditional game species cannot be singled out at the expense of those many creatures for which there are no hunting or trapping seasons — songbirds, reptiles, mice, butterflies and a myriad of other animals. Some old concepts have been thrown out the window during this transition from game management to wildlife management.

Multi-species management now frequently takes precedence over single species when it comes to looking after Iowa's public wildlife lands. To understand what this means and the direction wildlife management must take in the future it might be helpful to first examine some roots of the profession.

The very idea that wild birds and animals might be managed is not entirely new. History records that Kublai Khan established managed hunting preserves in China during the late 13th century. Game management had also been practiced in feudal Europe. But these early practices were aimed primarily at propagating game without great regard to protecting or improving habitat.

Modern wildlife management really came about when Iowa native Aldo Leopold, a forester by profession, took a keen interest in the relationship of animal life to its habitat. His 1933 book, *Game Management*, was the first thoughtful consideration of how to manage wildlife, especially game, by manipulations of food, cover and water. Leopold was later named to the nation's first college professorship in this special field at the University of Wisconsin.

By 1935, early hunter-funded wildlife management efforts were underway, and they logically focused on traditional game species. Here in Iowa there were probably four groups of wildlife receiving the most emphasis: ring-necked pheasants, bobwhite quail, waterfowl and white-tailed deer. Ducks, pheasants and quail were quite

*A variety of habitats can serve several species of game and nongame wildlife, given proper consideration of each species.*



*The marsh habitat required by overwater nesters such as canvasbacks and redhead ducks can also provide for the needs of yellow-headed blackbirds.*



plentiful and caught much hunter attention and support. Deer were nearly extirpated from Iowa but were still of great concern to hunters who hoped populations might be restored.

Conservation officers, or wardens as they were then called, often conducted much of what management work went on in the early days. The Iowa Conservation Commission (forerunner of today's DNR) eventually began employing trained game managers, so that officers could attend the very important work of game and fish law enforcement. These new game managers spent many years propagating and stocking game for restoration of depleted species such as white-tailed deer, and for improved hunting opportunities for more plentiful species. Leopold's ideas on habitat management were certainly heeded, and much effort was concentrated on planting trees for game shelter, growing crops for wildlife food and seeding some grasses or legumes for nesting cover.

The 1960s and 70s brought a new environmental awareness by the general public. Many people kindled new interests in conservation and the outdoors but did not always care about hunting or fishing. Nevertheless, they still wanted the opportunity to see wild creatures in natural settings. Game managers, who were generally trained in some very broad ecological principles, were able to shift some of their work to aim at species which previously had received scant individual attention. Their job titles were soon changed to wildlife management biologists, in recognition of this more important overall responsibility. Eventually, Iowa and other states set up special staffs and funding mechanisms to work specifically with so-called "nongame" wildlife. That brings history about up to date.

## MANAGING THE ECOLOGICAL COMMUNITY

While increased work with nongame species was needed and has done much to benefit some of those creatures in a few short years, some confusion has resulted among the public. Hunters sometimes wonder



why the DNR is paying so much attention to nongame when hunting license revenues foot most of the wildlife management bill. Nonhunters, in turn, often bristle at an agency they might perceive as slighting their interests and perceptions of conservation.

Iowa's wildlife biologists have walked the line between these opinions for some time. The fact that they have made significant progress towards reaching every user group's desires may come as a surprise to those few people who might believe there are conflicts.

Among long-term wildlife managers there has tended to be a feeling that what's good for game must also be good for nongame. In other words, if shrubs are planted as pheasant winter shelter, the practice will also benefit songbirds. That's true, to an extent. But perhaps where the shrubs were planted there had once been grassland habitat used by savannah sparrows, now forced to find living space elsewhere. Some species would certainly benefit while others might suffer.

This fact has forced wildlife managers, in recent years, to look at all wildlife species that live in a particular area to be managed. In the science of ecology, of which wildlife management is a specialized field, a large variety of plants and animals living in close association with each other is known as an ecological community. It might even be compared to our own cities and towns in which people have greatly differing needs and lifestyles, but who still rely upon each other for support through businesses, schools, churches, clubs and civic groups.

Modern wildlife managers must consider the needs of the entire ecological community in order to keep it healthy. A vigorous community will support many game and nongame species alike, but some consideration must be given every species living there. That is what multi-species wildlife management is all about.

In days gone by, a game manager might have considered that white-tailed deer would thrive if clearings were made in woodlands. Any clearcutting done certainly would have benefitted deer, along with ruffed grouse, if they happen to be in the same range. But ovenbirds, small warblers which require large, unbroken forest tracts, would dwindle in number or even disappear. Today's managers would likely realize this and probably consider the ovenbird's needs of great importance, especially since we now know many other ways to improve deer habitat.

That's a very simple example of multi-species management. As wildlife research biologists discover even more information about the survival requirements of many species, managers are finding there are now more species to be accounted for and more exacting needs to be considered than ever before. Fortunately, research is also revealing that some game species are more tolerant of a wide range of habitat conditions than previously thought possible — the wild turkey being an excellent Iowa example. Thus, many potential conflicts between species' needs are being eliminated by gathering more complete information with which to manage wildlife. Given enough background on each animal's life requirements, it becomes feasible to manage for many different creatures without causing undue harm to game species.

Even if nongame species were totally ignored, multi-species wildlife management would still be necessary. With the dearth of habitat on private lands, a wildlife manager in Iowa is forced to get as much out of public lands as possible. Some larger wildlife management and public hunting areas are composed of several habitat types. There might be grasslands, forest and wetlands all in close proximity. It would be almost unthinkable today to clear the woods in order to create grassy pheasant habitat, or drain a duck marsh in order to plant trees for deer. Each tract of public land is, therefore, vital to every duck or deer, pheasant or quail in the vicinity.

## TOWARDS THE FUTURE

To be sure, there are some challenges to be met in multi-species management. One is that we should try to abandon the concepts of "game" and "nongame" species. It is all wildlife. Trained professionals have the ability to manage a wide array of creatures on relatively small portions of land, given the opportunity to do so. Although the current definitions for game and nongame may be necessary for a while, at least until better funding methods for all wildlife can be found, it is necessary that we someday rid ourselves of these relatively meaningless terms.

That brings up perhaps the greatest challenge to be met — a crying need for additional money. Everything today costs more than it did a few years ago, and wildlife management is no exception. But tight government budgets all too frequently require restricting expenditures at a time when wildlife needs are greatest.

Iowa has traditionally relied upon hunters for income with which to conduct a wildlife management program. In recent years a voluntary donation program known as the Chickadee Checkoff has helped start up the DNR's special nongame activities. Iowa taxpayers can contribute any amount to the Chickadee Checkoff, which appears as the

Fish and Wildlife Fund on Iowa tax forms. However, both license revenue and Chickadee Checkoff funds are pinched. Wildlife management in Iowa could be greatly improved with new infusions of money.

Where should these dollars come from? There have been suggestions on taxing the sale of bird seed, binoculars and bird books — much the way hunters pay a hidden excise tax on sporting arms and ammunition. Given annual sales of these recreational items this method might tap a large revenue source.

Others have suggested bonding programs to supply a large amount of money for land acquisition while Iowa land prices are still relatively low. Simply enlarging a public land base will facilitate multi-species management by easing the crowded habitat conditions on the tiny fraction of land presently managed as Iowa public wildlife areas.

A sales tax increase is another option, with a portion of such an increase being reserved for land acquisition and management. Missouri has a highly successful program using such funding. And the idea certainly has some merit in Iowa.

Of course, hunting license and stamp fees could be raised, as done in years past. Hunters might grumble a bit, but historically they are always willing to put up the money if it means more wildlife and continued hunting opportunities. Hunters should ask, however, why they alone must carry the burden of wildlife management when so many other creatures, not to mention people, are served.

It is likely there are no sure sources of new funding on the immediate horizon. Nevertheless, if we wish to continue wildlife management based on sound ecological principles, something must be done to increase spending for multi-species management and research. If future budget cutbacks are required it could become necessary to enact greater restrictions on how the public uses or enjoys our wildlife resources. No one, least of all wildlife managers, wants that to happen. But if we lose the ability to manage wildlife effectively, then managing people is about the only option left. When you think about it, that kind of puts us back into the field of single species management. Only this time it would be the human species.

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*Douglas C. Harr is a wildlife management biologist at northwest Iowa's Big Sioux Wildlife Unit.*

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# What Is A Trophy Turkey?

by Terry Little



KEN FORMANEK

**A** WILD TOM TURKEY CHALLENGED ON ITS OWN GROUND IN THE SPRING woods and called to the gun by a skilled hunter is one of North America's premier trophy animals. Noted for its outstanding physical reflexes, vision, hearing and a suspicious nature matched only by a white-tailed buck's, an experienced old gobbler is more than a match for most hunters. A wild turkey can fly 50 miles per hour, run 35 miles per hour, hear the slightest twig snap and has vision exceeded only by that of birds of prey. What really sets a gobbler apart from other game birds, however, is his suspicious nature. He has the ability to spot and identify danger in an instant and can use his impressive physical gifts to run or fly away faster than most hunters can react.

Judging from turkey hunters' success, or lack of it, this reputation is

well deserved. The special skills demanded of a turkey hunter — woodsmanship, camouflage and calling ability — keep all but the most dedicated hunters from taking up the sport. In Iowa, just eight percent of our hunters pursued gobblers in spring 1987. In an average year, just one-third of these hunters will bag a gobbler and around a fourth of the birds bagged will be less wary yearling males (commonly called "jakes" to distinguish them from older "toms"). These statistics reveal the cold, hard facts — only two percent of all hunters have the skills and dedication to take home a potential trophy year after year. This places the consistently successful turkey hunter among the elite of the hunting fraternity.

Considering this, *any* wild turkey, jake or tom, should be considered a trophy. Humans being the competitors they are, however, have devel-

oped criteria to recognize exceptional gobblers from run-of-the-mill specimens. The most highly regarded toms are the old harem masters that have survived several years and probably more than one encounter with the hunter. Turkeys generally get larger with age, so trophy value is based on three physical characteristics — weight, length of the beard and length of the spurs which increase as toms get older.

## Weight

The wild turkey is North America's largest and most spectacular upland game bird. Mature toms can occasionally tip the scales at 30 pounds, but there is considerable variation geographically and with age. In the southern United States, a 20-pound gobbler is rare, while in Iowa, average spring weights run 21 to 22 pounds. Even in the Midwest, however, where winter food in agricultural fields is plentiful, a 25-pound tom is an exceptional specimen. Jakes will weigh 12 to 19 pounds in the spring.

A gobbler's weight is supplemented by a "breast sponge," a globular, fatty tissue weighing several pounds that forms in the hollow "V" in front of its breast. Toms feed heavily in late winter and early spring to build up their sponge which is used as an energy reserve during the long mating season.

Weights generally increase as turkeys get older, but there is so much variability that it is not an accurate way to determine the age of a gobbler that passes its second spring. I have seen very old toms that weighed just over 17 pounds in the spring and very fat two-year-old gobblers that weighed 25 pounds.

## Beards

The beard is a brush-like appendage that emerges from the breast feathers at the base of the neck. It is the primary source of bragging rights for successful hunters. "How long was the beard?" is often the first question asked by hunting companions. Beards are secondary sex characteristics that appear mostly on males but also on a small percentage of hens. Each beard consists of up to 600 bristle-like feathers that continue to grow

throughout life. Constant wear and tear keep the bristles broken off and limits the length of most beards to about 12 inches. Occasionally, beards as long as 14 inches have been recorded. Multiple beards are sometimes found on gobblers and hens. In such cases, one beard is usually dominant with one to several other smaller ones attached just above or below it. Hen beards may be long but are thinner and wispier than those of males.

Beards first become visible on males in their first fall but may not extend beyond the breast feathers until late in the year. By spring, young jakes generally have 2- to 6-inch beards that stick straight out like an old-fashioned shaving brush. By their second spring, beards will average 9 inches in length and continue to grow thereafter.

### Spurs

Gobblers have an elongated spur on the back of each lower leg that is used for fighting. Spurs appear as small bumps on the legs of young birds of both sexes but grow with age only on males. Hens with developed spurs and spurless gobblers are rare.

Spur growth is keyed to the development of sex hormones as males mature. Since this occurs at different times in individual turkeys, yearling males may have spurs ranging from just a bump to one-half-inch long in the spring. By the time gobblers mature at two years old, most will have three-fourths- to one-inch spurs that are pointed or coming to a point. By their third spring, spurs will have reached one to one and one-fourth inches and have a noticeable upward hook and a razor-sharp point.

Beyond the second year, spur growth is so variable that using spur lengths to age older toms is not reliable. Spurs seldom exceed one and one-half inches.

### National Wild Turkey Federation Records

The National Wild Turkey Federation (NWTF), headquartered in Edgefield, South Carolina, has kept trophy records based on all three trophy characteristics to give a more balanced rating to a turkey's trophy value. Their system combines the fac-

tors of weight, beard length and spur length into a single trophy score. The equation used to do this is: Score = Weight + 2 (Beard Length) + 10 (Sum of Spur Lengths). Beard and spur lengths are multiplied by a factor of 2 and 10 respectively to give them a numerical value comparable to that of the weight. The top 10 Eastern wild turkey gobblers entered in the NWTF records score from 77 to 82.5 points on this scale. The top overall bird currently registered scored 82.5 and was taken in Ohio. The heaviest tom so far is a 33-pound 7-ounce bird taken in Illinois. The longest beard is 16 <sup>7</sup>/<sub>8</sub> inches taken in Arkansas, and the longest spur is two inches from New York.

### Trophy Turkey Awards

Since 1978, the Iowa Department of Natural Resources has recognized hunters that bagged large gobblers with a "Trophy Turkey Award." To qualify, a tom must weigh 23 pounds or more when shot and be weighed on a scale legal for trade with at least two witnesses. Since 1978, about 10 percent of the birds taken each year have qualified. In order to qualify for the current list of the 10 heaviest turkeys, a bird must now weigh at least 29 pounds, 10 ounces. The top bird listed so far is a 30-pound 8-ounce gobbler shot by Dr. David Randall of Lucas. Big gobblers have been entered from all over the state, and no one area has produced an exceptional number of trophy birds.

Since a more comprehensive scoring and record-keeping system is available with the NWTF, the DNR will switch to their criteria beginning this spring. We will still keep individual lists of exceptional beards, spurs and weights so the current top ten trophy birds won't lose their status entirely. New entry forms are being developed and will be circulated this spring, along with instructions for measuring and contest rules. Iowa gobblers are some of the largest in the United States, so many of our hunters' names should soon begin appearing on the national record list.

*Terry Little is the wildlife research supervisor for the department.*

# 1987 Top 25 Turkeys

Name/Address	Weight	Date	County Taken
*C. L. Current Monroe	30 lb. 5 oz.	4-21	Marion
*Delmer Fulk Sanborn	29 lb. 15 oz.	4-14	O'Brien
*Duane Frey Winterset	29 lb. 10 oz.	4-25	Madison
Terry Hazen Muscatine	29 lb. 9 oz.	4-13	Muscatine
Richard Pauley Mystic	29 lb. 9 oz.	4-14	Appanoose
Robert L. Flynn Boone	29 lb.	4-14	Boone
Brian Cox Grand River	29 lb.	4-30	Decatur
Mike Weigert New London	29 lb.	4-18	Henry
James McInroy Solon	29 lb.	4-16	Van Buren
Mark E. Walleser Lansing	28 lb. 15 oz.	4-16	Allamakee
David Plotz Amana	28 lb. 10 oz.	4-15	Johnson
Don Mecker Des Moines	28 lb. 8 oz.	4-13	Monroe
Ronald Lane Des Moines	28 lb. 5 oz.	5-07	Clarke
William Foth Algona	28 lb. 4 oz.	4-26	Kossuth
Bill Neebel Raymond	28 lb. 2 oz.	4-16	Winneshiek
Ken Elam Council Bluffs	28 lb. 1 oz.	4-14	Pottawattamie
Joe Kurimski Lovilia	28 lb. 1/2 oz.	4-28	Monroe
Stanley Orton Shenandoah	28 lb.	5-09	Fremont
Steven Tank Manning	28 lb.	4-29	Guthrie
Nathan Ellefson Wyoming	28 lb.	4-28	Jones
Jack Moyer Cedar Rapids	27 lb. 14 oz.	4-19	Wapello
Steven Courtney Knoxville	27 lb. 13 oz.	4-26	Davis
Tracy Busch Boone	27 lb. 12 oz.	4-13	Boone
Larry Thompson Decorah	27 lb. 11 oz.	4-22	Winneshiek
Ron Spengler Ocheyedan	27 lb. 9 oz.	4-13	Monroe

### ALL-TIME TOP TEN TURKEYS

Name/Address	Weight	Date	County Taken
Dr. David J. Randall Lucas	30 lb. 8 oz.	4-21-82	Lucas
*C. L. Current Monroe	30 lb. 5 oz.	4-21-87	Marion
Dennis Moore Sherrill	30 lb. 4 oz.	4-17-81	Clayton
Eldon C. Sear Zwingle	30 lb. 4 oz.	4-15-85	Clayton
Donald Marshall Leon	30 lb. 3 oz.	4-25-86	Decatur
*Delmer Fulk Sanborn	29 lb. 15 oz.	4-14-87	O'Brien
Sally A. Fruechte Cedar Rapids	29 lb. 14 oz.	4-24-86	Allamakee
C. Current Monroe	29 lb. 13 oz.	4-21-86	Marion
Dwight D. Schumann Spencer	29 lb. 12 oz.	5-02-82	Monona
James Reihmann Amana	29 lb. 10 oz.	4-21-82	Iowa
*Duane Frey Winterset	29 lb. 10 oz.	4-25-87	Madison
*New records			

# Our Environment - Your Health



*Were dinosaurs the first victims of air pollution?*

by R. Runge

There was a time when we didn't think much as our children ran down to play in the creek, when mom worked in the garden, or dad went off to work in the factory. But when dad became deaf at 50, when mom developed liver problems and when the kids died of a rare form of cancer, we began to think maybe something was wrong.

ODDLY ENOUGH, specialists were beginning to study occupational diseases and the savages of the so-called "dangerous trades" as far back as 1910. Although the problems associated with the felt hat and lead industries were documented, the health workers in the early part of this century came to a startling conclusion. As new chemicals were developed, they could only sit back and see what happened to the people who worked with them. Good luck guinea pig, goodbye.

Danger in the work place was one thing, but who thought the threat would come from the air we breathed and the water we drank.



THE FIRST DOCUMENTED case of air pollution occurred some 65 million years ago at the end of the Cretaceous Period. It was serious enough to wipe out all the land animals of any size and most of the larger animals in the sea. This catastrophe was the gigantic dust cloud raised when the earth collided with an asteroid or barrage of comets. The resultant "smog" was so vast it blocked out the sun for decades.

In modern times, the air we breath has been largely affected by man's favorite machine — the automobile. Originating mainly from leaded gasoline exhausts, lead is now 10 times more concentrated in the North Pacific than before the industrial age. The amount of lead in the top 10 meters of the Greenland ice cap was about 10 tons in prehistoric times. Today the top 10 meters contain 4,000 tons of lead.

Have we learned our lesson? The Clean Air Act of 1970 resulted in cars being equipped with catalytic converter/mufflers and unleaded gasoline. Even now backyard terrorists are ripping off the converters and prying wider the gas tank openings in order to use leaded fuel.

Lead isn't the only villain. Other by-products of combustion such as carbon monoxide and nitrogen dioxide may aggravate alcoholism, brain tissue malfunction and certain mental illnesses. Even those of us not involved in politics should be concerned with these things.

FOR SOME REASON, we as a nation always felt we could dump it in the river and it would go away. Even when the United States became the most productive nation in history and industrial wastes became monumental, we still proceeded with little concern for our lakes, streams and groundwater.

Even today various government agencies estimate that up to 37,000 landfills across our nation are contaminating groundwater. In addition, there are 26,000 more known to contain toxic chemicals which lie directly atop valuable underground water supplies (see "Landfills" page 10). The Environmental Protection Agency estimates there may still be a half million underground tanks leaking gasoline and other petroleum products. Chemical contamination of our water supplies has become the most serious environmental problem of our time.

In Iowa we have an additional reason to worry. Previously it had been thought that pesticides and other agricultural chemicals could not move very far through the soil. Wrong again. Rainfall not only washes these chemicals into our lakes and streams but also carries them through the ground to underlying sources of water. This is known as non-point pollution. The Groundwater Protection Act which was passed by the state Legislature and signed by the governor last year, is beginning to address these problem areas but further research and legislative action will no doubt be needed to make our state a better place to live.

AS WITH ALMOST anything, the quest for a safer environment boils down to simple economics. The work place becomes safer when the workers demand it; the air becomes cleaner when industries can no longer make a profit while fouling it; and our water can safely be used when it becomes too expensive for polluters to continue.

Our environmental laws did not come about without public demand. If you want to see a strong program protecting the air, the water and the overall environment in which you live and work...become involved. All across our country people are beginning to voice their opinions and desires. Things are beginning to happen.

### Center for Health Effects of Environmental Contamination

The Groundwater Protection Act provided that the State Board of Regents will establish and maintain an environmental health effects center at the University of Iowa in Iowa City. This center will determine the levels of environmental contamination which can be specifically associated with human health problems. The center will be involved in research and activities designed to:

- Assemble all pertinent laboratory data on the presence and concentration of contaminants in the soil, air, water and food, and develop a data retrieval system to allow the findings to be easily correlated with existing health outcomes.
- Make use of data from the existing cancer and birth defect statewide recording systems and develop similar recording systems for specific organic diseases which are suspected to be caused by exposure to environmental toxins.
- Develop registries of persons known to be exposed to environmental hazards so that the health status of these persons may be examined over time.
- Develop highly sensitive biomedical assays which may be used in exposed persons to determine early evidence of adverse health effects.
- Perform epidemiologic studies to relate occurrence of a disease to contaminant exposure and to ensure that other factors known to cause the disease in question can be ruled out.
- Foster relationships and ensure the exchange of information with other teaching institutions or laboratories in the state which are concerned with the many forms of environmental contamination.
- Implement programs of professional education and training of medical students, physicians, nurses, scientists and technicians in the causes and prevention of environmentally induced disease.
- Implement public education programs to inform persons of research results and the significance of studies.

*R. Runge is an information specialist for the department located in Des Moines.*

# BURYING THE PAST

## *Alternatives to Landfills*

by Pete Hamlin



**T**HIS YEAR WILL BE A YEAR OF TURMOIL AND CHANGE FOR LANDFILLS in Iowa. The primary reason for change is the Groundwater Protection Act which was passed in the last legislative session. Because of the concerns which Iowans have for protecting groundwater, the Iowa Legislature decided that solid wastes should not be buried if a reasonable alternative exists.

The act establishes a hierarchy of alternatives and requires all landfills to develop a plan on how to dispose of waste without burying it. By 1991 all landfills will be required to have a plan, and by 1997 the plan must be

implemented. The hierarchy states that five different alternatives must be examined in these plans.

The first alternative, or the one which is most desirable, is source reduction. This simply means taking less solid waste to the landfill. We all realize that Americans produce tremendous quantities of solid waste (almost a ton per person per year) and that we should be able to change existing habits to make better use of our resources. Many of these changes do not require spending great amounts of money and can be implemented easily.

For instance, large quantities of yard wastes (grass clippings and

leaves) are hauled to landfills each year. By having town compost areas these wastes can be turned into a useful material. Tree limbs are hard to handle and require a large amount of space in a landfill. Setting tree limbs in a specific area so that people can cut their own firewood has proven to be a popular alternative, and tree chippers can be used to make wood chips. With some careful thought and possibly some local ordinances much of the waste that is produced today can be easily eliminated in the future.

The second alternative is recycling. Most of what we discard is of value — perhaps not to us but possibly to someone else. Garage sales are an excellent example of recycling. Iowa needs to develop a better means of connecting discards with a user. This means developing markets for recycled material. Presently private enterprise can use items such as plastics or paper or metallic products. We have to learn how to develop more sophisticated garage sales whereby garbage is separated so that it can be reused.

Individual households will play a big role in recycling. In the future it is easy to foresee a time when three or four containers will be placed at the curb. Papers will be in one container, aluminum in another, iron products in a third. This will make recycling that much easier. Curbside separation has been successfully tried throughout the country. Rockford, Illinois, has a very successful program in which each household that separates its solid waste at the curb is eligible for a randomly drawn prize of \$1,000 each week.

The third alternative is burning solid waste to produce energy. Much of what we throw away contains



ROSS HARRISON

*Each person in America generates nearly one ton of solid waste per year.*



DNR PHOTO

*One alternative to landfills is recycling. Iowa's Bottle Bill required the recycling of aluminum cans, as well as certain plastic and glass bottles. In the future, individuals could be required to separate other components of garbage.*

combustible material. Ames has been producing energy from solid waste for a number of years. Waste-to-energy projects require substantial expenditures for these technically advanced systems. In a time of diminishing reserves of petroleum this approach has considerable merit, but there is one drawback — careful control of the emissions from incinerators is required. Municipal solid waste can and does contain material, which if burned, can produce serious concentrations of toxic air pollutants.

The fourth alternative is to burn solid waste simply to reduce the volume of material going to the landfill. No attempt is made to recover energy from these systems and care has to be exercised about toxic air emissions. The residual ash would then be taken to a landfill.

The final alternative is landfilling. If none of the previous four alternatives are feasible, then a landfill is acceptable.

This hierarchy is not the only cause for change among landfills. The DNR is in the process of adopting a strict set of new rules regarding groundwater monitoring. These rules will be expensive for landfills to follow but are necessary to protect this valuable resource.

The Groundwater Protection Act mandates that all landfill operators monitor the site for 30 years after the landfill is closed. Financial assurance must be established prior to closing which will guarantee the resources to do this monitoring.

The act mandates control systems to prevent water in landfills from reaching groundwater, and it establishes a surcharge of \$3.50 per ton of solid waste brought to the landfill. This surcharge will raise revenue for a variety of projects which are designed to protect Iowa's groundwater.

All of these requirements mean that the cost of disposing solid waste will increase substantially. This in turn will mean that many existing landfills will be closing and that solid waste, in the future, will be taken to regional centers for processing and disposal.

In the next 5 to 10 years Iowa's solid waste will be handled in a variety of ways; all of which are designed to protect our unique environment and one of our most valuable resources — our groundwater.

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*Pete Hamlin is the chief of the air quality and solid waste protection bureau.*

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# WILDFIRES

Story and photo  
by Roy Hatcher

Fire can be good or bad. Fire heats our homes, gives us light and cooks our food. This type of fire is beneficial because it is under control. When fire gets out of control, it is damaging and can be disastrous.

Wildfire is the term used to identify uncontrolled fires that burn over the different types of surface vegetation that cover the land - forests, brushlands, grasslands, rangelands and croplands.

Wildfires in Iowa do not receive a lot of attention unless someone dies or several structures are destroyed. Iowa does not experience the kind of wildfires we hear about in California and other states. Nevertheless, thousands of dollars in damage result from wildfires in Iowa each year. Agricultural crops are destroyed by fire. Vegetative cover such as grass waterways, roadside ditches, forested watersheds or field windbreaks are destroyed creating erosion problems. Wildlife is lost either directly or through destruction of food and cover. Recreation area developments are destroyed, eliminating their use for years to come.

In addition to these losses, thousands of dollars are lost by business and industry when volunteer firefighters have to leave their jobs to fight a wildfire.

Iowa has two wildfire seasons, spring and fall. The majority of fires occur in the spring season which can begin as early as February and run into early June. However, the normal season is mid-March to early May. The fall fire season runs from mid-September to late November. The main factor in determining the wildfire season is weather. An open win-



ter means an early spring fire season while a wet spring may mean a short spring season. The same applies to the fall fire season. If the fuels are dry, they will burn more readily than if they are wet. Weather plays an important part in determining the intensity of the wildfire season.

In Iowa over 99 percent of all wildfires are caused by individuals, with less than one percent being caused by lightning. This means that the problem can be prevented. But in order to prevent a wildfire, it has to be determined how one starts.

Records on wildfires have been kept for the past 35 years, and the major causes of wildfires have not changed much. The three major causes of wildfires are debris burning, sparks from railroads and smoking, in that order. In 1987 a total of 2,556 fires were reported to have burned approximately 4,260 acres of land in Iowa. Debris burning accounted for 51 percent of the wildfires reported while railroads and smoking accounted for 9 and 7 percent respectively. The remaining percentage of fires are caused by arson, use of equipment, fireworks, electricity and campfires.

Because over half of Iowa's wild-

fires get their start from individuals burning debris, here are a few tips to remember when burning:

- Check with your local authorities to be sure that there are no ordinances that ban the type of burning you want to do.
- Check the weather forecast. Don't burn on windy days; wind should be less than five miles per hour.
- Be sure to have other combustible material away from the area you are burning.
- Stay with the fire until it is completely out. Do not leave it unattended.

If we are to reduce the number of wildfires in Iowa, we must understand the proper use of fire. Nearly all fires in Iowa are caused by humans; therefore, nearly all are preventable when a little common sense is used. It is a lot easier to prevent a wildfire from starting than it is to put one out. Smokey Bear's saying, "Only You Can Prevent Wildfires," is the best fire prevention message today.

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*Roy Hatcher is the protection forester located in Ames.*

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# Minnows, Crawdads, Worms and Leeches

by Jim Wahl

*Collecting your own bait and keeping it fresh could be the key to a successful fishing trip.*

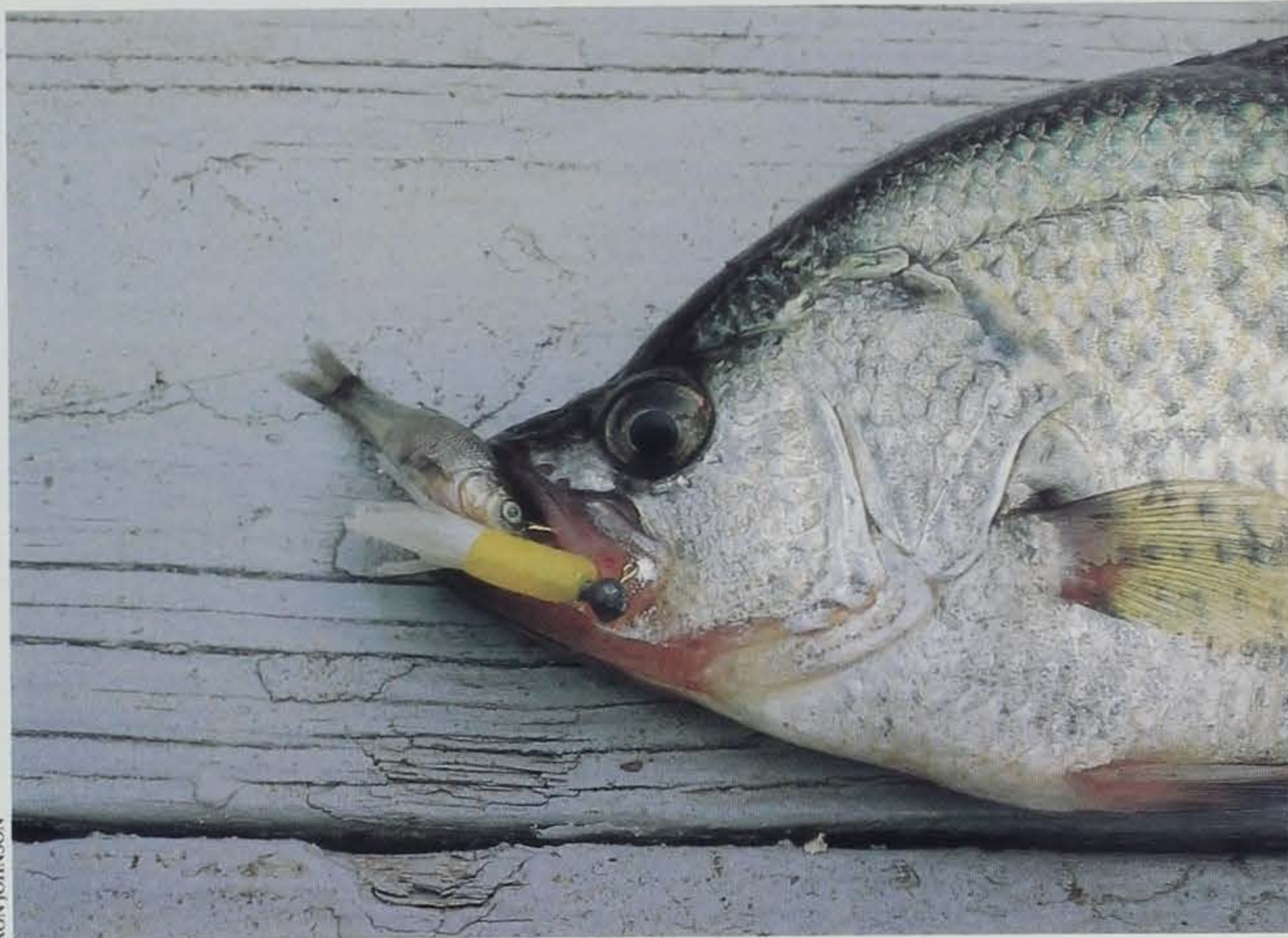
**T**HERE IS A POPULAR ADVERTISEMENT THAT USES THE SLOGAN, "IT'S the real thing." This same phrase could be used in the fishing industry when making comparisons between live bait and artificial lures. Fishermen could debate for hours over which bait will catch more and larger fish. Obviously both baits can be equally effective, but when fish are difficult to catch, anglers who prefer artificial lures generally switch to live bait. Even with the new fish scents, an artificial lure cannot duplicate the smell, action and texture of the real thing.

Most baits can be purchased from the local bait shop, however, some of the best live baits may not be available. Under those circumstances collecting your own bait is necessary. There are a variety of methods and equipment for capturing live bait and knowledge of each bait's natural habitat is essential to effectively collect them. Probably more important to most fishermen than knowing how to collect their own bait, is how to keep it fresh and lively. This will not only save money, but will also ensure that what you offer is in good condition and more apt to catch fish.

I believe it is safe to say the most universally used live bait is the minnow or other small fish. Minnows are relatively easy to catch and found in nearly all creeks, ponds and marshes. Minnows also thrive in shallow natural lakes, if predatory sportfish are not present.

Minnows will readily move into traps baited with a few pieces of bread or crackers. Minnows will move to shallow water during early morning and evenings, so set the traps overnight and check them the next day. In a stream, face the trap downstream to catch minnows moving upstream.

Seining is also an effective means of capturing baitfish. Most tackle shops sell inexpensive seines. A



RON JOHNSON



TED LAGRANGE

*Collecting live bait can be an enjoyable past time in itself. Many anglers know that fishing with a fresh minnow or worm can mean the difference between an empty or full fish basket.*

seine 10- to 15-foot long by 4-foot deep with a quarter-inch mesh is sufficient to collect minnows under most situations. The most durable nets are made of nylon, but these should not be exposed to bright sunlight. Seining generally requires two people, one on each pole or brail. Care should be taken to keep the lead line on the bottom and the floats on or above the surface. Pulling the seine too fast will raise the lead line and allow the fish to escape.

Not all baitfish are equally hardy. Some will tolerate fluctuations in temperature and oxygen as well as handling stress, while others will not. Generally the hardiest species are also the liveliest on the hook. Some of the more tolerant baitfish are fathead and bluntnose minnows, creek chubs and suckers. By contrast, shiners and shad are extremely difficult to keep alive.

Minnows can be kept alive between fishing trips if you are willing to take some precautions. Baitfish should not be overcrowded in bait buckets. As a general rule, one gallon of water will support one to two dozen small or medium-sized minnows. If the water is above 50 degrees Fahrenheit, it should be aerated. A small aquarium pump aerator will provide enough oxygen for several dozen minnows. During very warm conditions minnows will keep best in a refrigerator. The cold water will hold more oxygen and will also slow the fish's metabolism, eliminating the need for aeration. When holding baitfish for several days, water should be changed frequently to prevent the build up of waste products.

The earthworm or nightcrawler may rival minnows in popularity by fishermen using live bait. By comparison nightcrawlers are easier to collect and keep, with very little equipment required. Nightcrawlers feed on the surface after dark, particularly on damp, calm nights. At this time, the worm will anchor its tail inside its burrow, and extend its head above ground in search of food. Lawns, parks and baseball fields are good places to collect crawlers.

Nightcrawlers are easily located using a flashlight. Cover your lens with a white or red plastic bag and wear tennis shoes to avoid spooking

crawlers back into their holes.

Nightcrawlers should be kept at temperatures between 40 degrees and 60 degrees Fahrenheit. This can be accomplished by keeping them in the coolest area of your basement or in a refrigerator. Crawlers will keep best in a styrofoam or porous container with a tight-fitting lid. A variety of commercial and home-made beddings are available for long-term storage. Most beddings consist of finely ground newspaper mixed with soil. One square foot of bedding is adequate to store about 50 crawlers.

Leeches have become a very popular live bait in recent years, particularly for walleye fishermen. Leeches are generally available at bait shops throughout the summer months. A variety of leeches exist, but the ribbon leech is the most widely used. At water temperatures below 50 degrees Fahrenheit, leeches are dormant and difficult to catch. Leeches are most often trapped from shallow, nutrient-rich ponds that have extensive shoreline vegetation. Coffee cans or gunnysacks baited with fresh beef kidneys or liver will attract leeches and they will collect in the darkness of the container. Leeches will keep for long periods of time held in a styrofoam cooler or plastic container

filled with water and stored in the refrigerator.

Frogs are not as popular as they once were with fishermen. Increased use of pesticides and wetland drainage have reduced their numbers. Despite this, frogs are still available and can be an extremely effective bait. Leopard frogs are the most commonly used. They are frequently caught by hand or with dip nets. Likely spots include wet meadows, marshy areas and the edges of streams or creeks. During the fall, look for leopard frogs at night along roads separating marshes and lakes.

Frogs are relatively difficult to keep. They require space, fresh water, food, places to hide and resting platforms. A large cooler with an inch of water and pieces of broken clay pots works well if the water is changed weekly. Stored frogs should be fed live crickets or other insects about three times per week and kept at room temperature or slightly cooler.

For the smallmouth bass an opportunity to inhale a soft-shelled crayfish is irresistible. Many other species of fish will readily feed on this crustacean. Crayfish, frequently referred to as crawdads are a popular summer bait. Crawdads are found in all types



RON JOHNSON

of freshwater habitats including lakes, ponds, streams and sloughs. Generally they are associated with a rocky habitat.

Because crayfish avoid bright sunlight most are caught at night when they feed and move about. Crawdads can be caught in minnow traps baited with any type of unspoiled meat that will give off a strong odor. A pole-mounted, perforated coffee can or hardware cloth bag works well at night, also. Locate crawdads in shallow water with a flashlight and chase them backwards into the can or net. A small minnow seine can also be used in collecting crawdads in small ponds or streams. In creeks,

stretch the seine across the width of the stream and turn over rocks upstream to chase crayfish into the net.

Crawdads, like minnows have gills, but unlike minnows, they can obtain oxygen from the air as long as their gills are wet. Crawdads will stay alive for extended periods when kept cool in a refrigerator. Alternating layers of wet newspaper and crayfish in a styrofoam cooler works well.

Ice fishermen who fish for bluegills, crappies and perch use the larval stages of terrestrial insects for bait. Waxworms, silver wigglers, goldenrod grubs, mousees and mealworms are the most popular

among Iowa anglers. Waxworms are the larvae of the bee moth and are found in debris at the bottom of a hive. A beekeeper may be able to help you find stored or discarded beehives. The goldenrod grub is a fly larvae or maggot. The goldenrod grub can be collected by gathering galls of the goldenrod plant during the winter months. Look for the plants in woodlands, meadows and fields and remove the grub by carefully slicing the gall open and prying out the larvae. Mealworms are the larvae of darkling beetles and can be found in piles of rotting grain around elevators, farms and feed mills.

All insect larvae can be kept in containers with wood shavings, cornmeal or bran. Waxworms should be stored in a dark place at room temperature, while the others will hold better in a refrigerator.

Of course, there are many other live baits. However, those mentioned are the most widely used by Iowa anglers. Check the current fishing regulations before collecting your own bait. A fishing license is required to capture minnows, frogs and crayfish for your own use. More specific restrictions as far as gear type and method of capture are also covered in the regulations.

If you do a lot of fishing, it pays to have an old refrigerator in the garage or basement for storing live bait between trips. Nearly all live baits will last longer if kept in a cool environment. The old refrigerator will not only save you time and money spent on bait, but may save an argument or two. Nightcrawlers and leeches were tolerated in our kitchen 'frig, but not so when it came to fly maggots. With the old refrigerator, the maggots now have a home in the garage right next to my soda pop.

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*Jim Wahl is a fisheries biologist located in Clear Lake.*

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*Goldenrod grubs can be found in the gall of the goldenrod plant. Grubs are a favorite bait of many ice anglers.*

*Proper care of live bait after it is collected is important. A cooler will help keep the bait fresh while fishing.*



LOWELL WASHBURN



RON JOHNSON



LOWELL WASHBURN

# FEN

## *A special kind of wetland*

by Mark Leoschke and John Pearson

**WHAT THE HECK IS A FEN? IS A COMMON RESPONSE TO HEARING** this term for the first time. Despite their obscure name, fens are a distinctive part of Iowa's natural heritage. Fens are a special kind of wetland characterized by quaking organic soils infiltrated by cold groundwater seepages. Typically, they are cloaked by sedges and other water-tolerant herbs, and dotted with such wildflowers as blue lobelia, sneezeweed and flat-top aster. Shrubs and trees are generally uncommon on fens.

Fens are sometimes called "hanging bogs" because they are frequently found on hillsides in association with springs and seeps. Some fens and fen-like areas also occur on low stream terraces and in small basins. Like bogs, fens are composed of highly organic soils constantly saturated with water. But the soil of a fen is muck, dead plants so thoroughly rotted the soil looks like lake-bottom silt. In contrast, crumbling a handful of bog soil, or true peat, shows recognizable bits of plant stems. Bogs have very acidic water, but the groundwater in fens is alkaline, neutral or only slightly acidic. Fen plants get most of their nutrients from groundwater, but bog plants must scrape by with the nutrients in rain and snow.

Iowa has three types of fens. Nutrient-poor fens, or poor fens, are very bog-like because they are permeated with slightly acidic water. Dead Man's Lake, a state preserve in Pilot Knob State Park, is the only example of this type in Iowa. Nutrient-rich fens, or rich fens, are permeated by water that is circumneutral (neither particularly acid or alkaline). This type occurs mostly in eastern Iowa, but only a few examples are in parks or preserves. The Rowley Wildlife Area,

owned by the Buchanan County Conservation Board and the Cedar Hills Sand Prairie State Preserve, owned by The Nature Conservancy contain nutrient-rich fens. Very nutrient-rich fens, or very rich fens, are permeated by alkaline water and occur primarily in the Great Lakes region of northwestern Iowa. The most famous example, known throughout the Midwest, is the Silver Lake Fen State Preserve, a portion of a large wildlife management area owned by the DNR. Iowa naturalists have long known these very nutrient-rich fens with their distinctive calcium carbonate ("tufa" or tiny bits of limestone) deposits. Only in recent years have scientists recognized the presence of the other two types in the state.

Aside from the values attributed to wetlands in general — wildlife habitat, scenery, watershed protection — fens are home to more than 200 species of wildflowers; some live only in fens. Considering that there are only about 1,500 native plant species in Iowa, conservation of fens alone could mean preserving about 13 percent of our state's heritage of wildflowers. Fens are also home to animals, ranging from game birds such as the common snipe to rare butterflies such as the Baltimore checkerspot.

Iowa fens have over 20 species of plants considered rare in the state. Some of these are totally restricted to fens, while others can also be found in wet-mesic prairies and sedge meadows. Several of these rare species that are restricted to fens in Iowa are more common further north and find that only the cool, circumneutral muck of fens mimics their northern habitats. If you are lucky as you walk on the bouncy fen soil, pushing aside the drabber sedges and grasses, you may find some of the following floral jewels.



*Hooded Ladies' Tresses*

BRUCE MORRISON



#### HOODED LADIES' TRESSES

(*Spiranthes romanzoffiana*) The name ladies' tresses refers to the fact that the flower stalk of this and other species of orchids in the genus *Spiranthes* resemble a woman's braided hair. Blooming in late June to mid-July, hooded ladies' tresses are less than six inches tall and have white flowers. They are restricted in Iowa to fens and have never been common. Now found on a single fen in northwest Iowa, it is one of the state's rarest plants, with less than 50 individuals seen in recent years.

#### YELLOW-LIPPED LADIES' TRESSES

(*Spiranthes lucida*) Iowa's flora has been studied for well over 100 years, so we must know all the species by now. Not so! In May 1987 John Nehnevaj of Lansing, Iowa, found a flowering ladies' tresses orchid he had never seen before. Botanists were delighted to identify it as yellow-lipped ladies' tresses, a species new to Iowa. It gets its name from the yellow dot on the lower lip of the flower, the rest of which is white. This plant is also called shining ladies' tresses due to its shiny, linear, green leaves. The orchid is only known from a single fen in northeast Iowa; the next closest known site is in northern Indiana.

#### SMALL WHITE LADY'S SLIPPER

(*Cypripedium candidum*) The common name of this spring-blooming orchid refers to the fact that its white flowers, about the size of your thumb nail, resemble a slipper. This species frequently reproduces vegetatively, with up to 50 or more stems arising from the base of a single plant. Each stem usually has a single flower, but occasionally stems with two flowers are found.

Small white lady's slipper once occurred in most, if not all, of Iowa's 99 counties. Habitat destruction has led to a drastic decline, reducing it to perhaps two dozen sites in Iowa. Although primarily a species of the tallgrass prairie and sedge meadow, the orchid also occurs on several fens in northwest Iowa. This lady's slipper prefers alkaline soils and so is at home in the very nutrient-rich fens of northwest Iowa.

*Small White Lady's Slipper*

MARK LEOSCHKE





Silver Lake Fen State Preserve

**LARGE ARROW GRASS** (*Triglochin maritima*) This plant can reach a height of about two feet and has small green flowers in late summer. Large arrow grass has an unusual property — it produces poisonous cyanide when its tissues are crushed. In the western United States, where large arrow grass is more abundant than it is in Iowa, this plant has provided fatal meals for cattle in overgrazed pastures.

**KALM'S LOBELIA** (*Lobelia kalmii*) This plant has small blue flowers with white centers and blooms in late summer to fall. It is related to the much larger and showier cardinal flower, whose large red blossoms grace the edges of marshes, streams and rivers. The species' name, *kalmii*, is an honor bestowed upon Peter Kalm by the great Swedish botanist Linnaeus. Kalm explored eastern North America's flora in the eighteenth century.

**BOG BIRCH** (*Betula pumila*) Another native shrub of Iowa's fens is the bog birch. It is related to the paper birch and river birch of eastern Iowa. Unlike these trees, bog birch in Iowa only reaches heights of 10 to 12 feet; sometimes mature plants may be as short as two feet. This shrub has rounded, toothed leaves and can dominate portions of eastern Iowa fens.

**ROUND-LEAVED SUNDEW** (*Drosera rotundifolia*) People normally think of animals eating plants, but sometimes the tables are turned! Such is the case with the sundew, one of several carnivorous plants in Iowa. The sundew is about the size of a quarter and one to two inches tall. It has spoon-shaped leaves with sticky hairs. When an insect lands on the hairs, it becomes trapped in the sticky fluid. Other nearby hairs move toward the insect and attach themselves to it; this strengthens the plant's hold, making escape impossible. The sundew then releases enzymes through the hairs and slowly digests the internal organs of the insect, providing nutrients the plant needs. Sundews occur on top of sedge clumps in a single fen in north-central Iowa.

**SPHAGNUM MOSSES** (*Sphagnum* spp.) Iowa also has some rare nonvascular fen plants, those that lack conducting tissues. The best known of these are certain mosses, particularly those in the genus *Sphagnum*. While normally thought of as occurring in acid bogs like those of Minnesota and Wisconsin, certain species of *Sphagnum* also occur in fens. Sphagnum mosses are best known for their ability to hold large quantities of water in "barrel cells," hundreds of dead cells in each living sphagnum plant. Nurseries use sphagnum mosses to keep plants moist during shipment.



Cottongrass

**TALL COTTONGRASS AND SLENDER COTTONGRASS** (*Eriophorum angustifolium* and *E. gracile*) The flowers of these spring-blooming sedges are small and inconspicuous, but the fruits are very eye-catching, with long white hairs like cottonballs caught on the tips of their triangular stems. The long hairs on the fruits make them buoyant and allow them to be carried away by the wind. Slender cottongrass has a slimmer stem and smaller fruits than tall cottongrass.

**SAGE WILLOW** (*Salix candida*) Fens in western Iowa have no native shrubs or trees that are true members of the fen community. However, fens in eastern Iowa have several native shrubs that may dominate large parts of a fen. The showiest shrub, only one to three feet tall, is the sage willow. The white color of the stems and leaves is produced by thousands of small scales that cover the plant, particularly on the underside of the leaves. This makes the shrub resemble the sage of the Great Plains and hence the name sage willow.

**GRASS OF PARNASSUS** (*Parnassia glauca*) This member of the saxifrage family blooms in late summer and has flowers about the size of a quarter. The creamy white flowers with green veins are carried on thin stalks above rounded, slightly fleshy basal leaves.



*Small-Fringed Gentian*

RON JOHNSON



*Sage Willow*

MARK LEOSCHKE



*Grass of Parnassus*

MARK LEOSCHKE

**FRINGED GENTIAN AND SMALL FRINGED GENTIAN** (*Gentianopsis crinita* and *G. procera*)

Perhaps the biggest thrill in visiting a fen in the late summer or fall is pushing back the taller vegetation to reveal the gorgeous cups of these two gentians. Fringed gentian has triangular leaves and up to 60 or more flowers. Each flower has long hair-like projections on the end of its petals, giving it the name fringed gentian. The small fringed gentian has narrow leaves and generally has fewer than 15 flowers. The flowers are smaller than those of the fringed gentian and have narrower fringes. Both of these plants are among the last species to bloom on a fen.

Very few fens are presently owned by conservation agencies such as the Department of Natural Resources, county conservation boards or The Nature Conservancy. Of some 75 fens known to exist in Iowa, only seven are contained within parks, preserves or wildlife areas. Most of Iowa's fens are on farmland and are often adversely affected by some agricultural practices, such as overgrazing, drainage and indirect effects such as pesticide drift. Typically, fens on private land are located in pastures and sometimes serve as a source of water to cattle. Severe trampling is common in pastured fens, resulting in a very hummocky terrain and the disappearance of rare species. Fens are often the target of drainage improvements to expand cropland or to remove impediments to the movement of farm machinery. Pesticides applied to cropland may inadvertently kill wildflower species in nearby fens. Many fens are endangered by several of these threats.

Despite these problems, there are many opportunities for the conservation of fens in Iowa, ranging from the continued maintenance and monitoring of existing protected fens to acquisition of new areas by conservation agencies and improved stewardship. At Silver Lake Fen, The Nature Conservancy acted to enhance this DNR-owned state preserve by acquiring a conservation easement on adjacent private land and relocating a water source for cattle. In Osceola County, the Jeff Kleve family fenced a fen they owned against cat-

tle trespass and ceased spraying herbicides near the fen.

An inventory of the best remaining examples of fens is currently being conducted by staff of the DNR's preserves and ecological services bureau and cooperating naturalists. Fens can be systematically inventoried through the combined use of county soil surveys, aerial photographs and selective field checking. Because their distribution is restricted to areas of organic soil, potential fens are identified by scanning county soil surveys published by the U.S. Soil Conservation Service (SCS) for locations of soil units mapped as "muck" or "muck spots." Aerial photographs available through the U.S. Agricultural Stabilization and Conservation Service (ASCS) offices are consulted to eliminate from consideration those sites that are obviously drained or cultivated. Remaining sites are visited on foot after obtaining the landowners' permission, often with the assistance of local county conservation boards. Following this procedure, 20 new fens and rare plant habitats were located during 1987. We are always interested in leads to potential fen sites. If you know of a possible fen, please contact us: Preserves and Ecological Services Bureau, Iowa Department of Natural Resources, Wallace State Office Building, Des Moines, Iowa 50319-0034.

Fens are an important part of Iowa's natural heritage. We encourage you to enjoy their intrigue, learn more about their natural history and support their conservation.

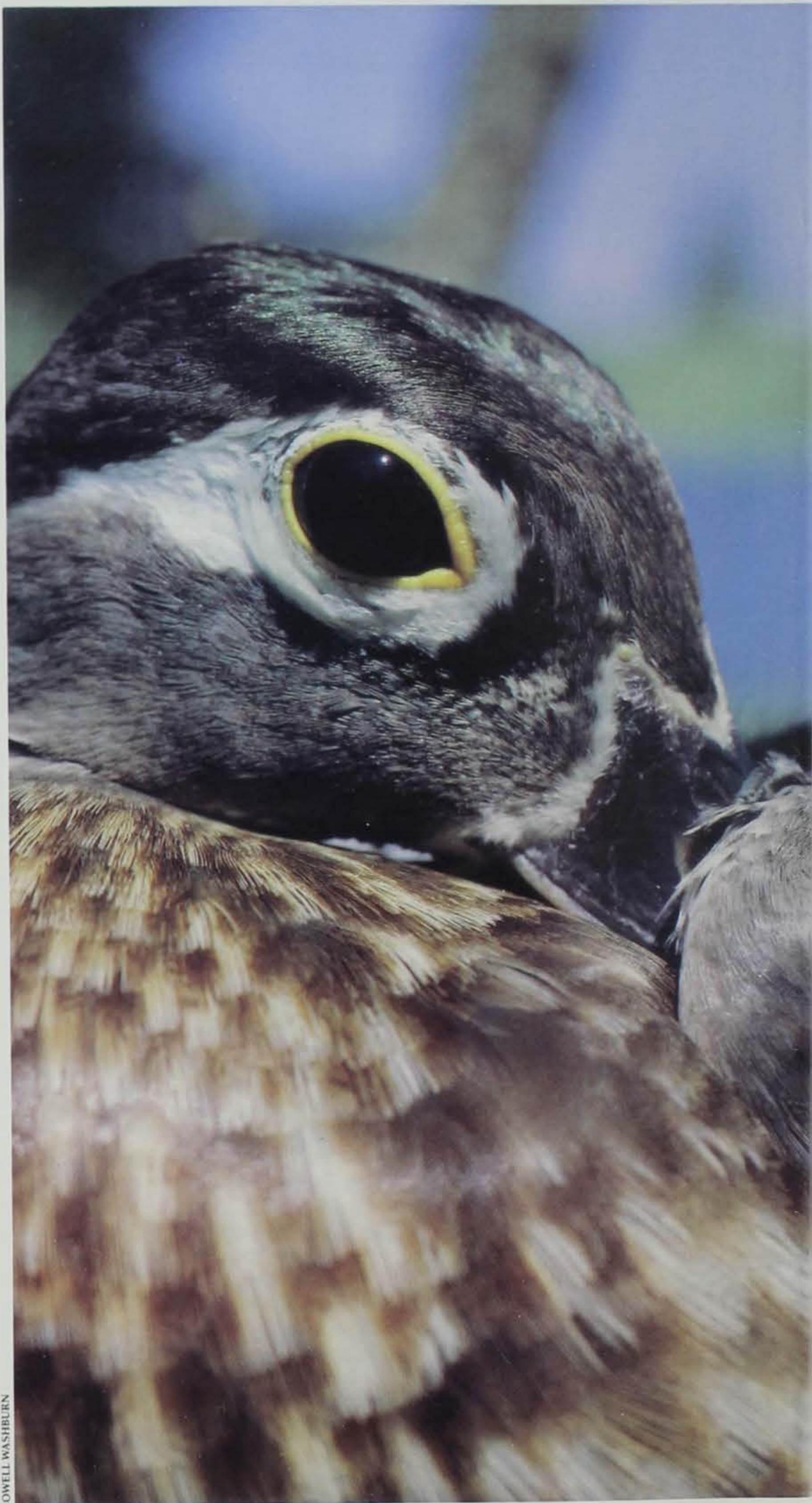
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*Mark Leoschke and John Pearson are environmental specialists, located in Des Moines, working on the DNR's natural areas inventory.*

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# THE *Saga* OF #502

by Lowell Washburn



LOWELL WASHBURN

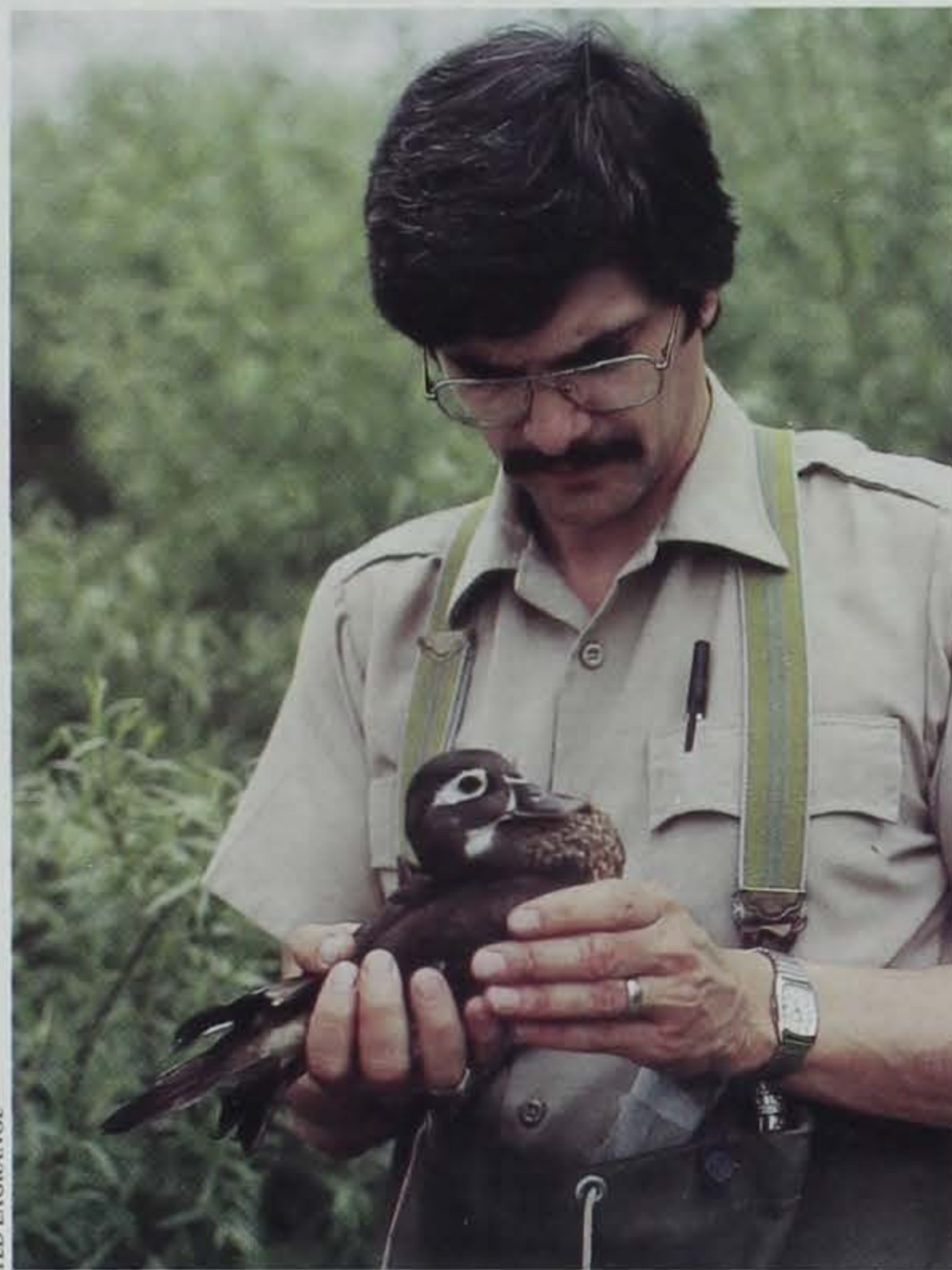
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**I** FIRST MET #502 ON MAY 30, 1982. AT THAT TIME SHE WAS JUST AN hour-old, one-ounce ball of fuzz. The duckling, along with seven of her nest mates, was snuggled deep into the dark recesses of a wood duck nest box located at Cerro Gordo County's Mallard Marsh.

My brother and I had begun the nesting box colony in the early 1970s, and since that time, it has become a routine spring pastime to keep tabs on the wood ducks using our boxes. However, the purpose for the visit to this particular nest was different. We had come here to capture and mark each duckling before the hen led them from the nest. By identifying the individual brood members with a tiny, aluminum web-tag, we hoped to gain additional insight into the ecology of Iowa wood ducks. This nest was to represent the initial tagging effort, and #502 was the second duckling marked from that first brood. Although I could not know it at the time, this was the first in a long series of encounters with this amazing bird.

In the spring of 1983, #502 popped up in a wood duck box just 50 yards from where she had hatched the previous year. (Neither her mother or nest mates were seen again.) Even though such a feat may indeed seem incredible, it is not especially surprising since female wood ducks exhibit an unusually strong tendency to return to the place of their birth.

As a yearling nester, #502 successfully hatched a clutch of 12 eggs. As I made frequent visits to the nest to candle and record the development of her eggs, the hen became increasingly tolerant of the disturbance. And on the last few visits she had become broody to the point of refusing to flush from the box. Instead, she would simply hiss and grudgingly move aside. On the day her clutch hatched, I web-tagged the brood carrying the project into its



TED LAGRANGE

second generation.

In the spring of 1984, #502 returned to the same box and was soon contentedly incubating a clutch of 13 eggs. Several boxes were not being monitored, but I paid especially close attention to this nest for #502 and her offspring were to be key players in yet another wood duck project.

In 1982, I had aided the Winnebago County Boy Scouts in beginning a nest box project at Thorpe Park located five miles west of Forest City. Thorpe Park contained some excellent wetland habitat, but apparently had no female woodies homing to the area. Consequently, the boxes remained unused. To speed the process of discovery, we had decided that a brood transplant was in order. To accomplish this task, we needed a very tractable and broody hen with a large number of ducklings. It appeared as if #502 might fit the bill on both counts.

On the day of hatch, #502 and her brood were placed into a dark

wooden box fitted with a special trap door lid and immediately transported to the park. To minimize the risk of having her abandon the brood, #502 was wing clipped. Upon our arrival at the area, I attached the box to an over-the-water post and retreated to the concealment of a nearby blind. As I pulled the lid's ripcord, the wood duck family tumbled to the water. After making two decidedly unsuccessful attempts at flight, #502 suddenly settled down and began to call her brood, eventually leading them into the protective cover of the wetland vegetation. In theory, the 13 ducklings would now believe that they had been hatched at Thorpe Park. Hopefully, any surviving females would return here to nest. During the summer molt, #502 could shed her clipped wing feathers and be free to join the autumn migration.

I guess I really never expected to see #502 again. Nevertheless, in April 1985 she showed up right on schedule back at Mallard Marsh. This time, however, she was left to rear her family in peace.

The tenacious #502 returned to the marsh again in 1986, and again in 1987. The web-tagging was revealing that most hens disappeared after one to three nesting seasons, and it was becoming obvious that this hen had indeed been blessed with a long and productive life. During the course of five nesting seasons she had incubated a total of 84 eggs. Some of these had been dump nests where more than one hen contributes to a clutch, and her largest brood had come in 1986, when she successfully hatched 28 of 30 eggs.

March is nest box cleaning time, and I am already wondering if #502 will return once more to her favorite box on Mallard Marsh. If so, I am certain that I am the absolutely last thing she hopes to see.



RON JOHNSON

# Visiting Lake Icaria

by Jamie Green and Dan Carl

**T**HE 1,900-ACRE LAKE ICARIA RECREATION AREA IN ADAMS COUNTY IS A recreational dream-come-true for the people of southwest Iowa. It is also a good example of what organizations, communities and individuals can accomplish with a dream and a spirit of cooperation, dedication and perseverance.

Located four miles north of Corning on Highway 148, Lake Icaria was officially dedicated in 1978, 22 years after the first organization meeting of landowners within the Walter's Creek watershed. Eventually, sponsoring agencies for the project would include the Soil Conservation Service, the Iowa Conservation Commission (now the Iowa Department of Natural Resources), the City of Corning and the Corning Water Board, and the Adams County Soil Conservation District, Board of Supervisors and Conservation Board.

In the late 1970s, these sponsoring agencies, communities and individuals developed four goals for the project — watershed protection, flood control, a reliable water source for the City of Corning and a multi-use recreation area for southwest Iowa. Today, the 700-acre lake with its 1,200-acre adjoining recreation area provides the people of Iowa with tremendous recreational opportunities and more.

In 1965, federal funds were granted for the project under the Watershed Protection and Flood Prevention Act. Landowners within the watershed contributed tremendously to the fulfillment of this project through development of terraces, farm ponds, contour farming and other soil-saving practices, bringing soil losses down to meet specific guidelines. Construction of the lake began in 1976.

Lake Icaria is unique among public recreational facilities in that it is owned by the State of Iowa, but is jointly managed by the Department of Natural Resources (DNR) and the Adams County Conservation Board. The conservation board manages the development of the high-use park areas such as the campgrounds and picnic areas, while the DNR manages the majority of the public hunting areas. Lake Icaria is not a state park, but rather a county park and a state recreational area.

Throughout the development stages, an important goal was to meet the recreational needs of as many people as possible. The main body of the lake is zoned for water skiing, while the other three major arms are zoned "no wake" to allow plenty of quiet places to fish and sail. There is a 200-horsepower limit on boat motors with no inboards (jet boats or ski boats) allowed. Five public boat ramps provide easy access to the lake.

Fishing at Lake Icaria is good year-round. It is not at all uncommon to see buckets full of crappie, especially in the spring and fall. The lake provides excellent catfishing, and bluegill, walleye, bass, bullhead and an occasional tiger musky make fishing interesting at Lake Icaria.

Two campground areas provide camping at 166 sites. For those who prefer to be near the lake, the primitive campground offers both walk-in tent sites and gravel pads. The modern campground consists of 50 sites with electrical hookups. Both campgrounds provide rest room, shower and drinking water facilities.

A beach, marina, bathhouse and several picnic shelters are also available at the recreation area.

The majority of the remaining areas are managed by the DNR for



RON JOHNSON

wildlife habitat and public hunting where pheasants, deer, squirrels, rabbits, ducks and geese as well as many nongame species, may be found. The DNR manages more than 40 acres of switchgrass to provide nesting cover for pheasants and winter cover for many different bird species.

Fifty-five acres of cropland, which is cropped on a rotation basis of corn, oat and hay, are farmed at the lake. A portion of the crops is left standing to provide wildlife shelter and food during the winter months.

The DNR has set aside one area as a wildlife refuge. The refuge encompasses the north arm of the lake and adjacent property. This area is closed to hunting year-round and closed to visitors between September 15 and December 15 each year to encourage waterfowl to use the lake on their fall migrations.

Canada geese are protected at the lake and for a five-mile radius around the lake as the DNR and the Adams County Conservation Board try to establish a resident flock of geese in the county. A fenced nesting pond with nesting structures has been constructed for the geese to help prevent predation on goslings and eggs. As a result, many successful hatches have

been recorded each year at the lake.

As beautiful and successful as Lake Icaria is, it is not without its problems. The depressed agricultural economy has led to intensively row-cropped fields within the watershed. In 1985, heavy rainfalls during spring planting time demonstrated just how susceptible the lake can be to siltation as tons of soil washed into the upper end of the lake. The water was so muddied that fishing was ruined for the entire year, while some species of fish, if able to spawn at all, suffered greatly reduced hatches. Many crappie showed signs of malnutrition as food became unavailable or became so obscured by murky conditions that foraging was difficult.

To prevent this from occurring again, the DNR lowered the levels of the lake during the fall of 1987, and construction crews built silt retention structures across each of the three major arms. At the same time, five fishing jetties were constructed to provide better access for shoreline fishing, as well as helping to break up wave action which had been eating away at the shoreline. In addition, one pile-driven fishing pier with full handicapped access was constructed near the main boat ramp.

Riprap will be placed on some of the more vulnerable points to protect them from damaging waves. The DNR also intends to extend the main boat ramp to allow access for boaters during this low water stage.

The fisheries bureau of the DNR took advantage of the drawdown to improve fish habitat in the lake. Stake beds, rock piles and cedar trees were placed throughout the lake to help make fishing trips even more successful.

Without the dedication, perseverance and cooperative spirit of the individuals, communities and agencies involved, Lake Icaria could easily have become a good idea which fell through the cracks of red tape and bickering. But cooperation prevailed, and that spirit still plays an important part in the management of this important recreation area. ▶

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*Jamie Green is director of the Adams County Conservation Board.*

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*Dan Carl is a park ranger for the Adams County Conservation Board.*

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## CALENDAR *of Events*

### MARCH 5

**Maple Syrup Festival.** Hartman Reserve Nature Center in Cedar Falls is sponsoring its second annual maple syrup festival. Pancakes and sausage will be served followed by a maple syrup making demonstration. Fee charged. For more information, contact Vern Fish, Hartman Reserve Nature Center, 657 Reserve Dr., Cedar Falls, Iowa 50613, (319)277-2187.

### MARCH 12

**Madison County Maple Syruping Demonstration/Pancake Feed.**

Middle River County Park is the location of this pancake feed and maple syrup demonstration. The activities include tapping of maple trees and a self-guided tour through a black maple forest. Fee charged. For more information, contact Jim Liechty, Madison County Conservation Board, P.O. Box 129, Winterset, Iowa 50273, (515)462-3536.

### MARCH 13

**Grundy County Museum 9th Anniversary Celebration.** Maple syrup making demonstrations, quilt displays, museum displays

and refreshments at Grundy County Museum, Morrison. For more information, contact Kevin Williams, Grundy County Conservation Board, Box 56, Grundy Center, Iowa 50638, (319)345-2688.

### MARCH 19

**Conservation Education Fair.** Conservation booths, guest speakers and giveaways at the Youth Center, Monticello. For more information, contact Dean Frankfurt, Jones County Conservation Board, Rte. 1, Center Junction, Iowa 52212, (319)487-3541.

# CONSERVATION UPDATE

## INDOOR AIR MAY BE HAZARDOUS TO YOUR HEALTH

Americans have spent some \$200 billion trying to improve the quality of the air they breathe outdoors. They have spent billions more tightening up their homes and offices to conserve energy. Only now are they beginning to realize that the air they breathe indoors is often more dangerous than the air outside.



According to an article in *National Wildlife* magazine, the quality of air indoors may well become the country's biggest environmental issue in years to come.

After the 1973 Arab oil embargo, when fuel prices skyrocketed, office building managers began seeking ways to create tighter, more energy-efficient environments. In offices, windows that opened were replaced by mechanical ventilation systems. Meanwhile, homeowners, spurred on by utility companies, spread caulking

and weather-stripping around windows and doors.

Tightening up the *envelope*, as engineers call it, did reduce fuel bills — in many cases substantially. But it also banished the natural ventilation that, in years past, diluted stale and contaminated indoor air. In many cases, the results have been devastating.

Workers in Washington, D.C., for example, discovered that slime in the

air conditioning drain pans of a government-managed building was producing airborne fungus at levels roughly equivalent to those found in a chicken coop. Nearby, employees working in offices in a converted portion of a parking garage began suffering from headaches and other health problems. Indoor carbon monoxide levels proved to be almost three times higher than federal limits allowed for outside air. The office space, now abandoned, was being used by the Environmen-

tal Protection Agency (EPA).

In fact, the number of people claiming to be victims of "building sickness" has tripled in this country since the early 1970s, and health care costs from indoor pollution are now thought to run as high as \$100 billion a year.

Tightness alone does not cause indoor air pollution. The problem, say experts, is the chemical contents of many modern buildings. Formaldehyde, for example, is a colorless gas found in thousands of products ranging from carpeting and drapes to particle-board. It causes nose, eye and upper respiratory tract irritation, as well as nausea.

Pesticides, cleaning solvents and fumes from many other items can make people ill. Glue, varnish, paint and liquid spot remover frequently contain toluene, a toxic chemical that can cause fatigue, muscle weakness and liver and kidney damage. Paint strippers and aerosol sprays may contain methylene chloride, a suspected carcinogen.

Because buildings are sealed tighter, tobacco smoke has become a greater problem than ever. An EPA scientist calculated that from 500 to 5,000 deaths occur annually in this country from "passive smoking" — tobacco smoke inhaled by non-smokers. The National Council for Clean Indoor Air goes even further, saying that involuntary exposure to tobacco smoke may lead to as many as 46,000 deaths a year.

Finally, authorities have only recently realized that radon, a naturally occurring odorless gas, is threatening millions of Americans, contaminating one in eight homes. Radon seeps into home basements from soil and stays in houses that are tightly sealed.

What can people do about indoor air pollution? According to experts, you might determine whether an illness is related to your work place by asking the following questions:

- Do the symptoms go away when you leave your office? If so, there's a chance you are being exposed to some irritant.
- Are the symptoms worse as the week progresses, better on the weekend, and then worse again on Monday? Such a cycle could indicate a work place problem.
- Do any co-workers suffer?
- Is your office new? New carpeting and furniture may emit formaldehyde or plasticizers for a few months.
- Has your office recently been painted, remodeled, cleaned extensively or exterminated? Any one of these can leave high levels of irritants.
- Do you work with smokers?

For homeowners, one of the first places to look for help is the city, county or state health department. Many can either supply information about common problems in the region or places to go for help. In some cases, offi-



cials will even evaluate homes at no cost.

Family physicians can also help. By doing blood tests and culturing nasal, throat or lung secretions, they can sometimes tell what agent, if any, is causing the symptoms.

In the final analysis, many experts are beginning to wonder why we have started to clean the air outdoors, while the air inside has gotten worse.

## RURAL WATER, HEALTH SURVEY TO BEGIN

A statewide survey of wells providing drinking water to rural Iowa families, coupled with a survey of the health of those families, will be conducted to provide new information to the state's effort in groundwater protection.

Coordinated by the Iowa Department of Natural Resources, the survey began in February. About 700 water supply wells will be analyzed for nitrate, bacteria and the most commonly used pesticides and other chemicals. Statistically chosen wells will be picked from map coordinates. From 4 to 25 sites per county are expected, according to Dr. George Hallberg, environmental geology supervisor for the DNR's geological survey bureau.

Hallberg said that DNR or county extension personnel will contact families at the sites for voluntary participation which will include providing information about their health history, their well

and local water problems and chemical use practices in the area. He said no information will be reported that identifies specific participants and that all testing is free of charge.

In addition to the Extension Service, major assistance in this first-of-a-kind Iowa survey is coming from several University of Iowa departments, including: the Institute of Agricultural Medicine, Department of Preventive Medicine, the University Hygienic Laboratory and the new Center for Health Effects of Environmental Contamination. The study will be completed by the summer of 1989.

## SPRING AND FALL BURNING

The agricultural practice of burning dead vegetation from fields and marsh edges in order to prepare the land for planting crops often wreaks havoc with the nesting attempts of many species of ducks and songbirds. Early nesters such as mallards and pintails use this cover to build their nests in the spring. Burning destroys the vegetation, and the ducks are then forced to use inadequate nesting cover, which increases their visibility and makes them easy prey for predators. Many times burning is carried out during late spring, destroying the nests.

While spring and fall burning negatively impacts nesting success of waterfowl, it also has a detrimental effect on the health of our natural re-



## NEW STATE RECORD DEER RACK

*Harold Dickman, Sr., of Woodbine now holds the state record for a typical shotgun deer rack with a score of 200 2/8. The previous state record was held by Wayne A. Bills of Des Moines whose rack scored 199 5/8. The new record rack was taken by Dickman in December 1963 in Harrison County. According to Lee Gladfelter, wildlife research biologist with the DNR, the rack will probably score in the top 10 in the national Boone and Crockett records.*

sources. Burning removes the soil's top layer of organic matter, robbing it of nutrients that are valuable to growing crops. Stripping off this protective top layer may also cause soil and water erosion. Nearby lakes and marshes will become muddier, resulting in less emergent vegetation and fewer microorganisms for ducks to feed on.

Zero-tillage is an alternative to the traditional practice of burning that will benefit farmers without disturbing the nesting efforts of waterfowl. This method involves planting seeds in unprepared soil instead of in tilled soil (soil that has been turned and broken up) before seed-

ing. The benefits of this farming method have already been proven, reports Ducks Unlimited. Studies show one nest per 20 acres with a 60 percent success rate on zero-tilled fields, compared to one nest per 135 acres with no success on cultivated fields.

## BIRD SONG

*The songs of marsh birds in spring play an important role in communication, according to Ducks Unlimited. Each species has its own distinct call, recognizable to all members. The songs are signals that attract males, warn off rivals or announce that a bird has established a territory and will not tolerate trespassers.*

# FORESTS ARE MORE THAN TREES

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## NURSERY STOCK STILL AVAILABLE

Nursery seedling stock is still available from the State Forest Nursery in Ames. To find out what stock is available, call (515)233-4110 for a recorded message.

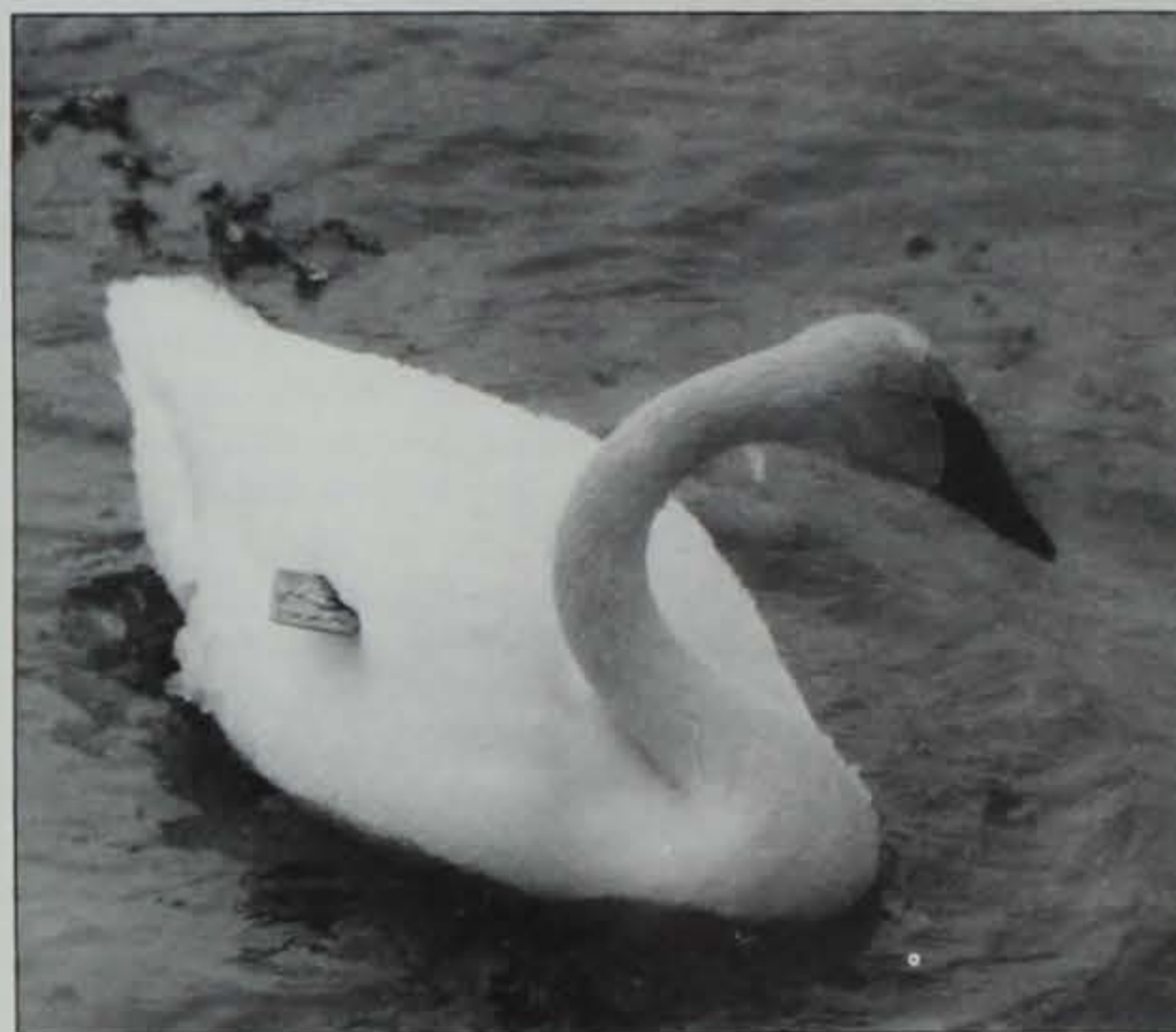
For orders of more than 5,000 seedlings, the nursery will give a 15 percent discount, and for orders of more than 2,000 seedlings, a 10 percent discount is available. These discounts have been initiated to help landowners reach a goal of 3,000,000 acres in forest cover in Iowa.

Payment should not be included with the application. The order will be checked against stock available, and a bill will be sent as acknowledgement of the order. If the nursery has insufficient stock, substitutions will be made. The bill must be paid within 15 days or the order will be cancelled.

To receive an application, write the State Forest Nursery, 2404 S. Duff Ave., Ames, Iowa 50010, or call (515)233-1161, Monday through Friday, 8 a.m. to 4 p.m.

## FREE-FALL DUCKS

*Young wood ducks jump from their tree trunk nest at mother's urging, dropping sometimes 20 feet or more, according to Ducks Unlimited. Bouncing like rubber balls and usually none the worse for this incredible fall, they soon follow mother on their first outing.*



## TRUMPETER SWANS VACATION IN IOWA

Four trumpeter swans from Minnesota have been seen in the Des Moines area along the Des Moines River. It is not known exactly when the swans arrived in Iowa or how long they will stay. The swans were first reported to Iowa Department of Natural Resources' officials on Jan. 24, and at the time of this publication, they were still in Des Moines.

Each swan has a patagial (wing) tag which enabled Iowa DNR biologists to trace the swans' origins to Minnesota. The swans are a part of the Minnesota DNR's trumpeter swan reintroduction program. Minnesota has been obtaining 50 eggs each year from a naturally occurring population in Alaska in hopes of establishing a breeding population.

The trumpeter swan is North America's largest swan, with a wing span of

approximately seven feet. The male is the larger of the two sexes and can weigh up to 38 pounds. With the establishment of a migrating flock in Minnesota, visits like Iowa could become a common occurrence in Iowa.

## WHAT IS THE ENDANGERED SPECIES LIST?

Listing a species as "endangered" means that it is in danger of extinction throughout all or most of its range. A species listed as "threatened" is likely to become endangered within the foreseeable future.

The single greatest reason certain wildlife populations and their ranges have decreased is habitat destruction or loss. Unwise agricultural practices, poorly planned industrial and residential development and pollution have degraded prairies, forests, wetlands and other ter-

restrial and aquatic habitats.

Unrestricted market hunting and commercial trapping in the 1800s also took a toll on certain wildlife populations. Some species such as the passenger pigeon were eliminated from their entire range because of habitat depredation and market hunting, but far more species are in danger now from habitat destruction.

However, the federal Endangered Species Act was passed in 1973 as a measure to help prevent wildlife extinction. This federal law deals with seriously dwindling wildlife populations first by officially classifying the species as endangered or threatened, thereby drawing attention to the problem.

Next, wildlife managers and biologists extensively research the species to determine its specific habitat needs for food, water, space and cover. Population dynamics is also a key issue in a wildlife management plan — researchers must know a listed species' reproductive and mortality rates.

By understanding an endangered or threatened species' needs and characteristics, wildlife managers can begin recovery planning. Management programs to maintain and improve habitat are important factors in wildlife conservation. Prescribed burning, planting food plots, protecting and creating wetlands and other methods of habitat manipulation provide food, nesting and cover

for well-balanced populations.

Restrictions on illegal trade of a federally listed species as well as penalties for hunting, collecting, killing, injuring or harassing are punishable by up to \$20,000 or a year in jail.

Since the federal act was passed, about 320 plants and animals have been listed as endangered or threatened within the United States.

## DONATIONS

Wal-Mart Stores, Inc. Anamosa	Prizes, advertising and labor valued at \$350 for state park special event at Wapsipinicon State Park
Thermogas of Monticello, Inc.	Prizes valued at \$50 for state park special event at Wapsipinicon State Park
Muddy Waters Tackle Anamosa	Artificial lures and labor valued at \$50 for state park special event at Wapsipinicon State Park
Doug Eden Iowa City	Plastic buckets valued at \$90 for fireplace construction at Wapsipinicon State Park
Kay Hill Cedar Rapids	Truck rims valued at \$150 for fireplace construction at Wapsipinicon State Park
Mr. & Mrs. Don Driskell Creston	VCR valued at \$359 for interpretive program at Green Valley State Park
Pleasant Creek Field Trial Advisory Council	Windows and labor valued at \$476 for enclosed shelter construction at Pleasant Creek State Recreation Area
Anonymous	Power saw valued at \$140 for park maintenance at Lake Ahquabi State Park
Anonymous	Sunflower seed valued at \$2260 for wildlife management at Springbrook State Park
Rick Boyer Stanton	Volunteer labor valued at \$150
Robert Snodgrass Allerton	Volunteer labor valued at \$110

## CLASSROOM CORNER

by Robert P. Rye

Recently students from Lewis Central High School in Council Bluffs were given a chance to cook and eat deer liver patties and pheasant green bean casserole. Much to their surprise, they enjoyed both of them. Along with information on how to handle wild game and preparation tips, the students were provided with ethics on hunting and other uses of wild game.

Test your knowledge of wild game by matching these questions and answers:

### Questions

- Besides your taste buds, what other sense has a great affect on your food likes and dislikes?
- Venison is taken from what wild animal?
- What other meat can be added to deer liver to enhance the flavor?
- What factors affect meat spoilage between shooting and preparation of the meat?
- What is the most tender part of a pheasant?
- What could a pheasant be used for besides meat?
- What other wild fowl besides pheasant is popular?
- What can you do to wild meat to improve the taste?
- What method of meat cookery is best for pheasant breasts?
- Name the most important aspect of meal planning/preparation that helps to insure reception?

### Answers

- Decorations or jewelry
- Steam
- Table appearance
- Pork sausage
- Waterfowl, quail, partridge
- Breasts
- Smell
- Care for it properly and mix it with other foods
- Heat, dirt and moisture
- Deer and members of the deer family

### Answers:

1. G 2. J 3. D 4. I 5. F 6. A 7. E 8. H 9. B 10. C

# WARDEN'S DIARY

Story and photo by Jerry Hoilien

This call came early one spring morning and the young officer was real excited. "I've got dead and dying geese all over the place. I don't know how many. They got 'em on a pond! I need help!" Getting him calmed down wasn't easy, but, in a bit, I understood there had been a shooting of geese, and he had come upon it.

It didn't take long and there were five wardens hovered around his table looking over the hastily gathered evidence of a spring goose shooting. An estimated 60 geese

were dead with lots of cripples struggling around the area. He had gathered over four dozen empty shotgun casings in five different spots around the pond. Unbelievable but true. It appeared they hadn't carried off a single bird. "Any suspects or ideas? None! Let's go to work!"

Twenty-four hours later, five individuals were in jail. It took round-the-clock efforts from five investigating wardens, a cooperative sheriff's deputy, an inspired county attorney and a dedicated magistrate who stayed with us all night long. The

case got real sticky when, during a search of one of the culprit's homes, some dynamite was found and seized. Where do you store *that* kind of evidence? That problem was quickly solved for a short time when it was stolen from the back seat of my station wagon. Then we located another of the culprits and learned that it had been thrown in a ditch. We all grew a few more

gray hairs. Fortunately the dynamite was located and picked up before someone else could accidentally find it and get hurt. Nice guys we were dealing with.

The magistrate handed out maximum penalties with some time in the county jail for the ones with previous violations. What a night! But it was all worth the effort, when after a good breakfast the young officer looked at his fellow wardens and said, "Gosh, you guys were great! Thanks!"

Who thanks the wardens? Let me tell you who thanks them. Every man, woman and child, hunter and

non-hunter, who looks up in the sky and searches the blue when they hear that haunting sound of wild geese headed north for their nesting grounds. I remember attending a funeral of a retired warden a few years back. As we stood by the grave, head bowed, each one silently saying his last goodbye, somewhere up high in the huge blue sky, came that call from a flock of wild geese passing by... saying thanks...

## Pickled Gizzards

Bill Hiebing, retired Wisconsin game warden, waterfowl extraordinary, gave me this recipe for pickled gizzards.

Boil gizzards (and hearts) after removing the hides (easier to peel after cooking). Cut into  $\frac{3}{8}$ - to  $\frac{1}{2}$ -inch cubes.

Make a mixture of  $\frac{1}{2}$  white vinegar and  $\frac{1}{2}$  water and bring to boil. (A good whiff will clear up your sinuses about now.)

Add: 2 handfuls regular pickling spice  
 $\frac{1}{2}$  dozen Bay leaves  
some pepper corns  
a few dill and celery seeds

In a crock or plastic ice cream bucket, place a layer of gizzards, then a layer of sliced onions, another layer of gizzards, then onions, and gizzards, until you're out. Pour the hot liquid over this and let cool. Refrigerate and bring out at the bewitching hour. "Doctor Bill" says the onions are good and the juice makes great cough medicine.

Believe me it's great. Whenever I think of gizzards and such delicacies, I remember Phil Rice, long-time friend and warden from Missouri who was carefully dressing a prized ruffed grouse and skinning out the gizzard and heart when in walked Dennis Nelson, well-known Iowa warden, and tactfully remarked, "We don't eat the guts!" It brought us all to our knees.



# How'd That Fish Become a Grandpa?

by Larry Mitzner

**T**HERE ARE CERTAIN EVENTS FROM YOUR CHILDHOOD DAYS THAT you never forget. For me, one of those memories was fishing. The place was usually a shallow, natural lake in southwestern Minnesota and the catch was usually yellow perch or bullheads. And, like all children in those young and impressionable years, many of the details are remembered, sharp and clear. One such memory was my Uncle Albert's statement, "Wow, that fish is old enough to vote." And, another was that the biggest fish of the day always carried the designation of grandpa fish. I could tell, even without formal training in fisheries science, that the grandpa fish had gotten so much bigger because it had grown faster and had survived much longer than those too small to be called keepers.

Why do some fish survive and live longer? Or, on the other hand, why do some perish so much sooner? It is a fact some fish, such as minnows, are short-lived while other fish, such as sturgeon, are long-lived. In fact, lake sturgeon have roamed some lakes and rivers for as many as 50 years or more. A good understanding of the life span of different species of fish is vital to wise resource conservation and therefore to the angler. The average number of years in the life of a fish is a key factor in determining size and possession limits of certain species. In general, harvest regulations of longer-lived fish are more restrictive than those regulations established for shorter-lived species. The shorter-lived species are generally present in much greater



KEN FORMANEK

numbers, and consequently, sustain heavier harvest rates.

The ridiculous thought of no fish dying would soon be met by an even more ridiculous event of fish becoming so numerous in a lake there would be no room for water. So it is true, as with all life forms, death is inevitable. But, we don't often see many dead or dying animals, maybe an occasional road-kill, or from time-to-time a dead fish lying along the shoreline. Fish death by natural causes is to a large extent unnoticed.

What are the primary causes of fish death? Of course, there are always those that end up as a delicious platter of fillets. But, there are certainly other causes of a fish's demise. These can be categorized into the following: predation, starvation, accidents, parasites and disease, drought, toxic chemicals and suffocation (winter or summer kills).

By far the most tenuous struggle for survival begins even while fish are developing in the egg-stage. Eggs may be eaten by other fish. It is well known that too many bluegills in a pond can devour bass eggs to the point of near obliteration. Carp also have the nasty habit of destroying fish nests and consuming the eggs.

Then too, some eggs are laid or washed into areas which are unsuitable for incubation. Random spawning species, such as walleye and northern pike, do not construct nests, nor do they offer parental care to the eggs and young as channel catfish and bass do. Eggs strewn at random may be drawn by the current and carried to muddy areas devoid of oxygen, they may be covered by silt where they will perish by suffocation. At this delicate stage, disease will take its toll too, mainly in the form of parasitic, aquatic fungi. Eggs

must be kept clean to remain healthy. Nest spawning species have an advantage in that the male fans the eggs with his pectoral fins and tail. Eggs laid by random spawners, on the other hand, are cleaned only by the natural currents in the lake or river. Still other eggs, whether deposited in nests or at random, are sometimes left high and dry by receding water levels. Thus, the incubation period is the most critical time in the life of a fish. This is one of the primary reasons for fish hatcheries. In a hatchery, it is easier to protect the delicate eggs and young fish from the onslaught of natural calamity.

Nature has endowed most fish species with the ability to produce an abundance of eggs. This is nature's way of countering the high losses of eggs and delicate young. Walleye, for example, produce vast quantities of eggs. A single, 30-inch female may lay about 600,000 eggs. Yet, under ideal spawning and incubation conditions, only about 50 percent of these will hatch. Under less ideal conditions (which is usually the case) as few as four percent will hatch. Again, the importance of the fish hatchery is evident. Survival under hatchery conditions is normally greater than 65 percent and may range as high as 90 percent.

After eggs hatch, a very critical stage has been hurdled; however, life doesn't necessarily get a lot easier for the very young fish. Now the hunt for food and the chance of falling victim to a larger predator are the major road-blocks to survival. Predation of the smaller fish by larger fish and insects can be devastating, and the only escape is growth to a size large enough to avoid the many hungry mouths that lurk in the shallows. This period may take two years for some fish species.

Investigations on food habits of adult walleye, white bass, crappie and largemouth bass, all top-of-the-line predators, show they will consume any fish small enough to swallow. Anglers know very well the value of small fish or minnows as bait, particularly for walleye and crappie. And, these fish are not particular. They will feed on any small fish. Little distinction is made by the predator as to whose family is being eaten. Crappie were sampled at Lake

*In a normal lake or stream situation disease can take its toll on the critical egg stage of fish. Even those that hatch to small sac-fry (right) face many hazards. However, survival can increase greatly under hatchery conditions.*



DNR PHOTO



RON JOHNSON

Macbride in the immediate area where walleye fry were stocked. Not surprisingly, the stomachs contained walleye fry; several crappie had eaten as many as fifty larval walleye.

At the small, larval stage in life food also becomes critical. Once their yolk supply is gone, young fish must eat or perish. The food they require must be plentiful and small enough for the tiny fish to consume. Obviously, these small, fragile fish can't swim great distances to find the food they desperately need. And if the needed food (tiny microscopic plants and animals) is not present because the lake or stream has become muddy, the small fish perish in catastrophic numbers. Under such conditions, starvation can eliminate an entire year of reproduction.

Some years zooplankton is abundant and available to fry. During such years, survival of the young fish is quite good. Walleye fry stocked in Rathbun Lake in 1986 are a good example. The abundance of tiny microscopic plants and animals was nearly ten times greater than in previous years. Likewise, walleye fry survived in greater numbers than ever before. During periods of food abundance young fish eat well, are healthy and grow rapidly. Such fish are less susceptible to death caused by disease and predation.

Life should become a bit easier for fish once they become large enough to avoid most predators and are strong enough to find and eat a variety of food. However, it is about this time that death from another source can occur — harvest by the angler. A survey of Iowa anglers in 1986 showed about 50 million fish were caught during that year. That is a lot of fish. However, the percent removed from any particular lake or stream rarely exceeds 50 percent. And, rarely more than 20 percent of the more abundant species, like crappies or bluegills are removed from a population.

Fish loss results from either angler harvest or natural causes. Natural mortality is always present and must be monitored along with angler harvest. Several species of fish are easily caught and heavy fishing pressure will result in excessive loss of these species to the angler. Largemouth bass in a newly stocked farm pond

provide a good example. Loss of bass due to natural causes is relatively low for bass larger than 12 inches; and, if the population were unfished, many bass would make it to old-age.

Studies have proven, however, that the angler can harvest the majority of fish greater than 12 inches in a short period of time. Largemouth and smallmouth bass are extremely vulnerable to the angler. Thus, the angler is often the primary cause of loss of larger fish from a population. Under these conditions, harvest regulations (minimum size limits and creel limits) are used to control excessive loss. The purpose of these regulations is to maintain higher densities of larger fish and to maintain higher quality angling.

What can be done to help improve survival and prosperity of the fish that swim in our lakes and streams? Although much has been accomplished, much remains to be done. For the young and fragile fish, we must keep the choking and suffocating sediments from our lakes and streams. It is the millions of tons of

Iowa's precious top soil that suffocates the tiny aquatic organisms in our waters before they have a chance to grow and contribute to a potentially valuable resource. For the older yet vulnerable, we must abide by the harvest regulations imposed to protect the quality size fish. Good sound land stewardship ethics, cooperation among sportsmen combined with education of young people will combine to ensure catastrophic loss of fish and other aquatic resources does not occur.

So, maybe you know a young person who is amazed at the size of a grandpa bluegill, crappie or bullhead. Or maybe this is the year you caught a wall-hanger bass. The wonder and excitement is there and the reasons for such large fish are fairly simple. That fish grew fast and survived many perils.

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