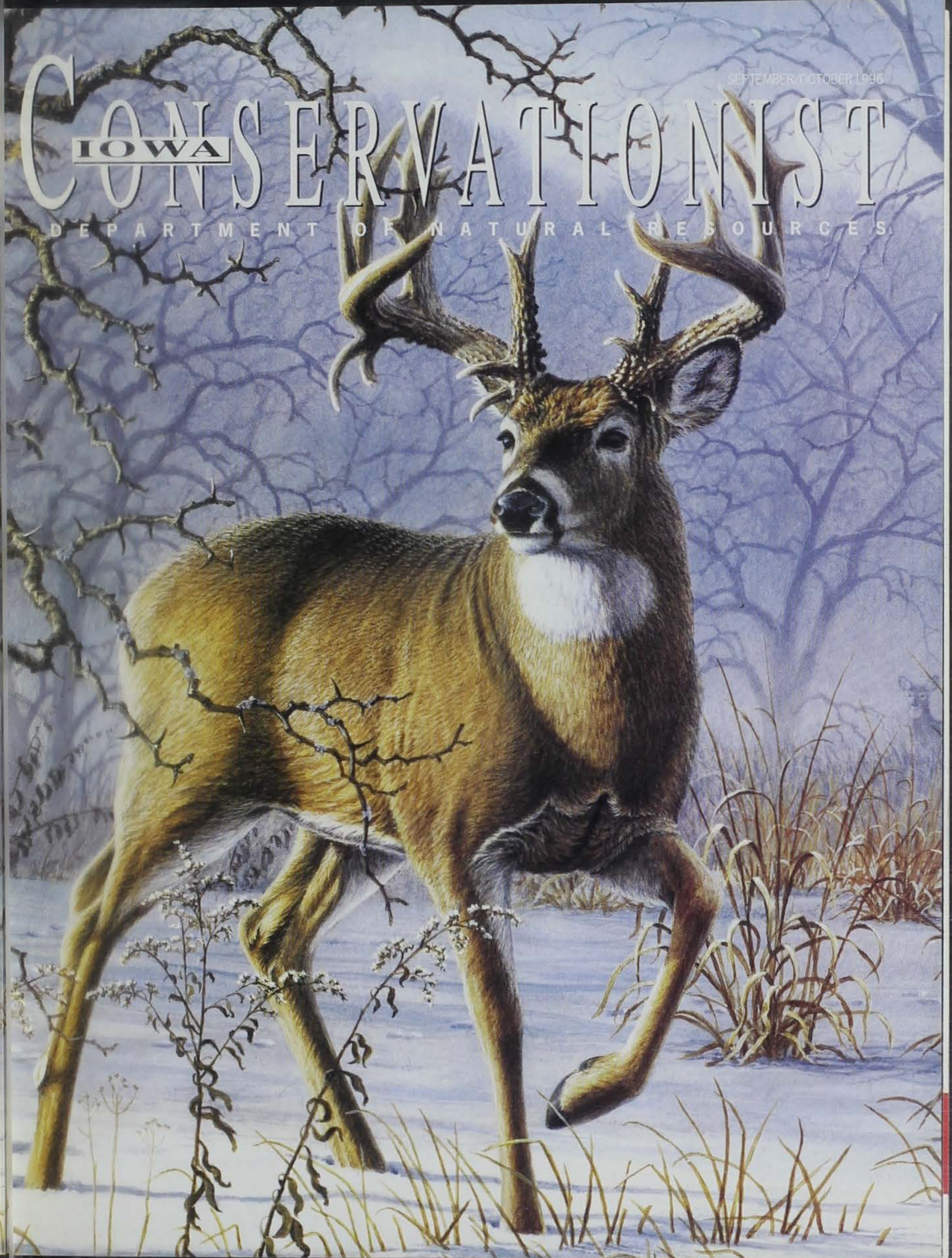


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Front -- is from the painting "Winter Sunrise - Whitetail" by Larry Zach. For more information on Zach's work, call (515) 964-1570.



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1996 HUNTING FORECAST OVERVIEW

A Look at Past and Future Seasons



Roger Hill

Last year in a nutshell. By nearly any measure, 1995 was one of the best hunting seasons Iowa nimrods have experienced in quite some time. The numbers tell the story -- pheasant hunters took home just shy of 1.5 million gaudy roosters for the dinner table, tops in the nation again. Deer hunters harvested 97,000 whitetails, the third-highest in history and just shy of an all-time record. Spring turkey season produced in excess of 10,000 gobblers for record numbers of turkey hunters, in spite of miserable weather during the hunting season. Fall turkey season was opened over most of the state last year because of better production in most turkey flocks the past two summers -- providing hours of additional turkey hunting previously denied since when seasons were closed in all but northeast Iowa. Canada goose hunters bagged 35,000 honkers, mostly homegrown giant Canadas available only because of the DNR's aggressive, 30-year restoration program. And a spring snow goose season was opened for the first time in a half-century to allow additional take of super-abundant blue and snow geese that are damaging their breeding grounds in the Arctic and threatening their own long-term existence.

Duck hunters had reason to mourn, because a predicted "best in a decade" duck season didn't pan out. Snow and rain returned to the vast prairie pothole duck factory two springs ago, restoring nesting and brood cover that had been dried out and unproductive for nearly 10 years. Duck numbers responded -- many species had nearly returned to their long-term average numbers after just two nesting seasons -- but Iowa waterfowlers weren't able to reap the dividends. Severe, early winter snowstorms and an unusually early freeze-

up blanketed the northern U. S. and southern Canada at the same time in early November, causing a once-or-twice-in-a-lifetime "grand passage" of waterfowl. Nearly all of the mid-continent's ducks and geese migrated through and over the Midwest in just two days. During peak flights, several major airports had to suspend operations temporarily because vast flocks blocked their radar systems. Duck hunters could only mourn what might have been, and wait until this year.

What's ahead for 1996? While the outlook for 1996 is generally good, nature has pulled out enough surprises to keep us guessing about exactly what is in store.

One of the worst winters in recent memory was followed by drought in early spring, and then a cold and wet nesting season. Unsettled weather nearly always reduces the nesting success of game birds and generally results in lower-than-expected populations.

But wildlife populations are nothing if not resilient. They can bounce back rapidly from the worst setbacks and are doing so even as this is written. The wet springs that hurt pheasants and quail actually favor waterfowl production. Deer and furbearers are hardy enough to come through the worst weather Iowa has to offer with little impact on their numbers. And remember, weather-related setbacks tend to be spotty. Seldom do winter losses or poor nesting seasons coincide all across the state in the same year. So where *you* hunt may be much better than average again this year. Read on for specific forecasts for your favorite type of hunting and get ready for a good, if not great hunting season in 1996!

DEER

Let's start with the best news first. This should be a great year for deer hunters of every persuasion. Whether you plan to start by introduc-

1996 HUNTING FORECAST 1996 HUNTING FORECAST

ing a young hunter to the sport during the youth season in September, are tuning up your bow and shooting muscles for the bow season October 1, like to bask in the glorious mid-October weather generally found during the early muzzleloader season, or are planning to wait for the colder days associated with the traditional December and January firearms seasons, this should be another great year.

Deer populations are excellent in all parts of the state and are approaching the previous peak numbers recorded in the late 1980s. Through careful management, the DNR has been successful in rebuilding herds to reach its long term objective of maintaining a deer population that can sustain a kill of 90,000 to 100,000 deer annually. Deer numbers are at acceptable levels in most areas and will provide excellent viewing and hunting opportunities for the many Iowans who like to see and pursue deer.

A few troublesome hot-spots have developed, however, where local citizens want to drastically reduce deer numbers. These are generally in areas where deer hunters haven't had access to the deer herd in sufficient numbers to keep populations from growing unchecked -- mostly in urban areas, around state parks or where a landowner or neighbors will not allow enough hunting to control a local herd.

The DNR has adopted several procedures to stop the growth of the deer herd and handle local problems before they get out of hand. Deer hunting regulations have been liberalized in 1996 -- most of the state is open to any-sex deer hunting during the second gun season; hunters will again be allowed to hunt during the second gun and late muzzleloader seasons; the special antlerless-deer-only zone has been enlarged; legislative changes make it possible for landowners and tenants to take more deer on the land they farm; and special hunts will be held in Waterloo/Cedar Falls, Cedar Rapids/Marion, Scott County Park, F. W. Kent Park (Johnson County) and Lake Darling, Springbrook and Viking Lake state recreation areas. The special hunts allow hunters to get extra licenses above their normal limit to take antlerless deer so deer numbers can be quickly reduced.

But none of these changes will control deer numbers on private land unless hunters and landowners work together to address local problems. To help in this effort, the DNR has convened a deer management committee made up of representatives of traditional agricultural support groups (Farm Bureau, Corn Grower's Association, Iowa Horticultural Society, tree farmers and many others) and traditional wildlife conservation groups (Iowa Bowhunter's Association, Pheasants



Roger Hill

Forever, Iowa Wildlife Federation and others) to find workable solutions acceptable to all. While several approaches are being discussed, the most likely to be quickly implemented is an effort to match hunters looking for places to hunt deer with farmers who would like more deer taken from their land. Procedures have not been worked out as of this writing. If you are interested in participating as a hunter or a landowner, contact your local conservation officer or wildlife biologist to see what can be done.

The development of these local hot spots casts a pale over an otherwise rosy picture for deer hunters. While trouble spots are few, persons affected by large deer herds, as landowners or motorists, tend to be very vocal. The "coffee shop network" in rural Iowa rivals CNN's ability to spread the news, without adhering to the professional newscasters' standards of factual reporting. Isolated incidents have been rumored into statewide devastation that simply is not occurring, yet the message reaching decision makers in the DNR and the legislature are uniformly bad -- "Reduce the deer herd!" To try and put a factual handle on the situation, the DNR and the Farm Bureau will be conducting a statewide survey of landowners this fall to find out the real scope of the problem. But deer hunters can't afford to be complacent. Unless they speak out -- strongly relay their feelings about the importance of a healthy deer

herd to the decision makers -- the DNR's ability to maintain statewide herds at current levels will be in jeopardy. (See "The Biology and Sociology of Deer Management" by deer biologist Willie Suchy on page 16).

WILD TURKEY

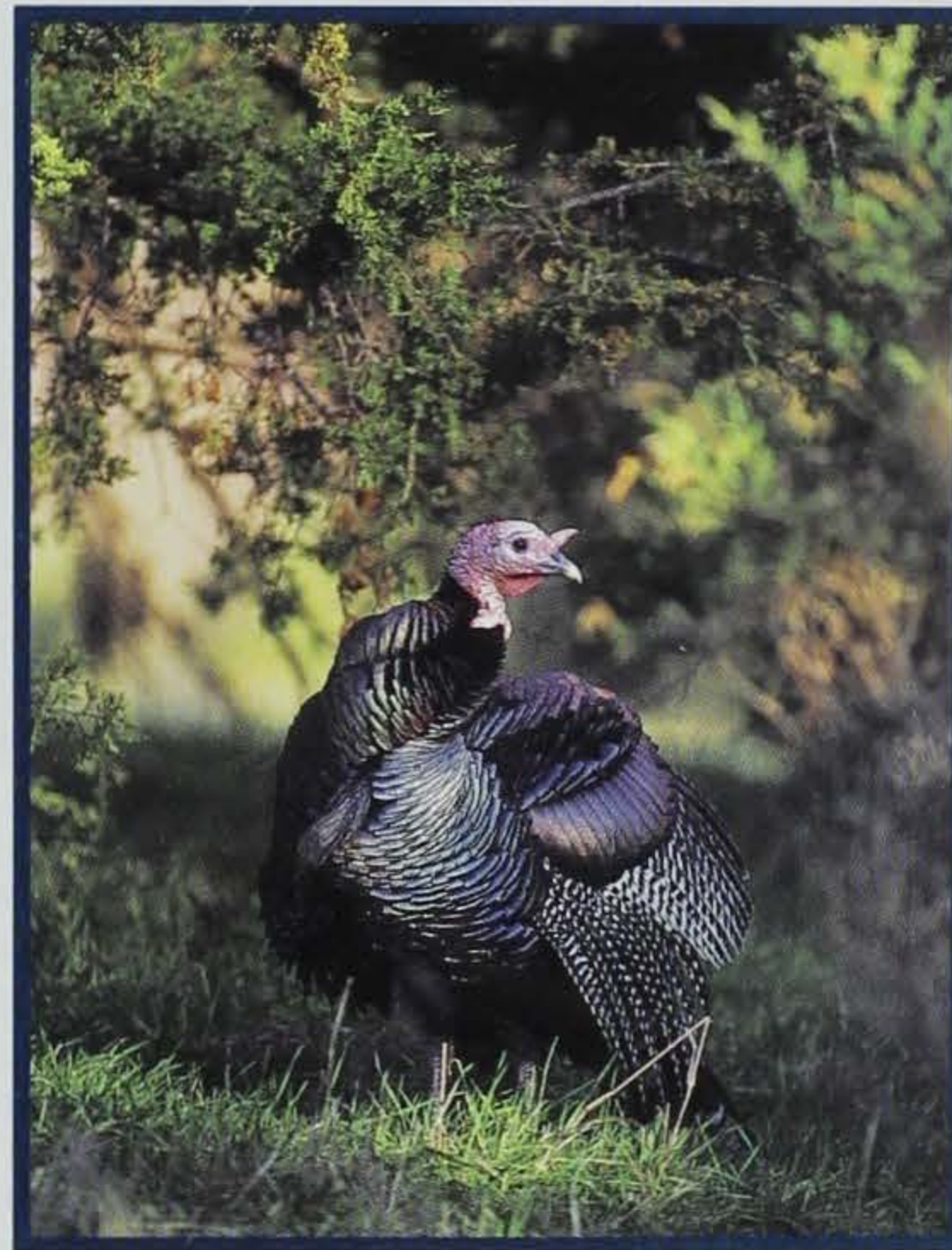
To show how bad last winter was, starvation of wild turkeys was recorded in southern Iowa for the first time in modern history.

Starved birds were found in isolated areas where several factors conspired to reduce food availability at the time it was most needed: CRP grass has replaced crops in many marginal fields adjacent to timber, 1995 had one of the poorest acorn crops in recent memory, and prolonged wet weather during the planting season idled many fields normally planted to corn or soybeans. Fortunately, the problem was not widespread -- turkeys living around crop fields apparently survived normally.

Poor spring weather took a toll, too. Turkeys hens on a research study in Lucas County simply sat out most of the nesting season when weather was least favorable. Although some began nesting nearly a month late, in mid-June, most were not successful - clutch sizes, nest success and poult survival all appear to be below normal. Production of turkeys north of Interstate 80, where weather was less of a factor, should have been better.

In spite of these problems, turkey populations are generally in excellent condition. Fall hunters will find plenty of birds, but perhaps not as many easy-to-hunt young poults in some areas. Where production was poor, expect to encounter woods-wise gobblers and old hens that are noticeably reluctant to come to calls. Fall license quotas are set so conservatively, even if a complete bust in production occurred statewide for a year or even two, turkey flocks would not be jeopardized.

It is easy to forget just how recently turkeys



Roger Hill

have been available for hunting in Iowa. Turkey populations grew so rapidly after they were first introduced, just three decades ago, they are important not only for our own hunting, but have become a key to restoring turkey flocks across the nation. (See Dale Garner's article "The Programs -- Past, Present and Future" on page 12)

WATERFOWL

Ducks. The chance of a good season for marsh stompers is very bright. The generally favorable habitat conditions that exist in the Dakotas and southern Canada were described in detail in the last issue of the *Conservationist* by waterfowl biologist Guy Zenner. Surveys conducted since then by the U. S. Fish and Wildlife Service and state wildlife biologists have produced nothing but glowing reports. The total breeding population of ducks in the major breeding areas was estimated at 37.5 million, up 5 percent from last year and 16 percent above the 40-year average. Mallards were estimated at 7.9 million ducks, 10

percent above their long-term average, and blue-winged teal were at an all-time record high 6.4 million. Impressively, seven of 10 duck species are above their historic average levels. And this after just two good breeding seasons when water finally returned to the prairies -- a testament to the incredible recuperative power of our natural ecosystems, given a reasonable chance to function as nature intended.

Duck production in Iowa also looks good to excellent. A combination of good water conditions in northern Iowa marshes, the Conservation Reserve Program and the DNR's continuing aggressive habitat acquisition and management programs through the North American Waterfowl Management Plan and North American Wetlands Conservation Act, have produced some of the finest nesting conditions of this century for local ducks. Early-season duck shooting on locally produced ducks should be excellent. (See "Have



Ty Smedes

We Turned the Corner" on page 10 for a summary of the accomplishments of the first decade of these incredibly productive habitat programs.)

Actual brood production surveys from prairie potholes have not yet been reported, but the excellent habitat conditions virtually assure a fall flight of ducks as great or greater than last year. Let's hope the fall migration returns to a normal pattern and Iowa's duck hunters get a reasonable crack at southward fliers this year.

Geese. Goose hunters are also in store for a good season. Production of locally-breeding Giant Canada geese in Iowa reached another new record of 30,000 goslings in 1996. Dry weather statewide before mid-April got goose nesting off on the right foot, and the geese took it from there. Wet weather since then just assured plenty of water in ponds and marshes for goslings, and survival should have been excellent.

While spring was late in the Arctic, and goose production there is expected to be just fair, it should have little impact on our goose seasons. Iowa-hatched giants now make up about 80 percent of our harvest of Canadas, so a good year is virtually set in stone. The abundance of adult snow geese assures a strong fall migration even with low production and more spring hunting opportunities are in store for 1997.

To take advantage of locally produced giant Canadas, a special two-day season has been proposed for Canada geese in Iowa's northern goose zone in mid-September, before migrant geese begin arriving. See the DNR's waterfowl regulations to see if this special season has passed.

FURBEARERS

The outlook for hunters and trappers of the furbearing denizens of our woods, fields and marshes remains equally as bright. Low pelt prices and the additional habitat provided by the Conservation Reserve Program continues to keep furbearer populations at modern-day record levels. The large number of raccoon, skunk and even coyote carcasses littering Iowa's roadsides attest to their abundance.

For the first time in years, some relief is in sight for both rural and urban landowners that have suffered with 'coons in their attics or garbage cans, beaver dams flooding cornfields and coyotes harassing livestock. There is at least some sign that the European Economic Union may soften its ban on furs taken with leghold traps. And the interest in furs is increasing again in fashion circles. Higher pelt prices will inevitably result, and generate renewed interest among furharvesters. (See "Fur Prices Show Signs of Strength" by Ron Andrews on page 14.)

On another high note, the outlook appears bright for successfully returning river otters to most of our major river systems. Ron Andrews discusses plans for expanding the restoration program with the help of trapper volunteers, and maybe, a limited trapping season in the not-to-distant future. (See "Otter Trapping Season - Maybe, Maybe Not" on page 15.)

UPLAND GAME

So far the predictions have been easy. Crystal-balling the outlook for the various upland game



Robert Hill

seasons presents a far greater challenge.

To start with, Iowa suffered through one of the longest and most severe winters for upland game birds in nearly two decades. Several major storms deposited near-record snow over most of the state, compounded by nearly two weeks of sub-zero temperatures when the snow was deepest.

The fact that some turkeys starved suggests that smaller birds, like quail, must have suffered more severely. Because of their small size, quail are more susceptible to bitterly cold weather than larger birds and must feed more frequently to maintain their body temperature. Deep snows make it difficult for them to reach food and requires them to spend more time foraging. This in turn makes them more vulnerable to predators, particularly against a solid-white snow background. But bobwhites sustain substantial winter losses even in average winters. The scarcity of whistling bobs noted in quail range this spring indicates last winter was simply more of a bad thing than usual.

Some reports of dead pheasants were received from northwest and western Iowa after major blizzards swept that part of the state, but ringnecks in the best habitats seemed to survive adequately. Severe winters are an occasional and unavoidable fact of life in the Midwest. Fortunately upland bird populations can produce prolifically in good springs and are well-adapted to recovering from periodic decimation.

But nature wasn't through yet. This spring's

prolonged, wet, cool weather does not bode well for banner production by ground-nesting birds. Most of Iowa sustained dreary, wet and colder-than-average weather from mid-April through mid-June, normally the peak nesting season. While this will have little effect on geese or ducks, both well-adapted to a cooler, more northerly climate, resident game birds will not have a great nesting season. Southern Iowa, south of Interstate 80, again went through the worst conditions. At least some part of southern Iowa has sustained consistently harsh weather during the last six years, and bird populations are generally below historic levels. South-central Iowa, in particular, seems to have suffered the worst.

The DNR's summer wildlife surveys won't be completed until well after this article is written, but preliminary indications are a less-than-stellar early reproductive effort occurred. Fortunately, pheasants and quail are persistent nesters. Numerous reports of very young pheasants were being received in late July from most of Iowa's best pheasant range, indicating a strong late-nesting effort is taking place. Quail will nest as late as September and may produce more than one brood in years when populations are very low, so there is plenty of time yet for quail to come through. A low breeding population going into the summer means quail numbers should be below average for at least this year. A good nesting season next summer could easily return quail numbers to pre-1996 levels.

Low quail numbers inevitably result in calls

from well-meaning, if misinformed, hunters to shorten or close the season or reduce bag limits. None of these actions is called for or will produce the desired result of increasing next year's quail numbers. (See "Quail: The Rest of the Story" by Willie Suchy on page 19 for an explanation of the role hunting plays in regulating quail numbers).

The uncertain fate of Conservation Reserve Program lands also complicates the pheasant, quail and gray partridge outlook. Conservationists everywhere hailed the inclusion of the CRP in the 1996 Farm Bill, stymieing early efforts to eliminate this incredibly important wildlife program. But there is no guarantee CRP will be as valuable in the next decade as it was in the last one. All CRP contracts will have to be re-bid as they expire, and some of the bidding criteria being discussed in Congress could move much of the CRP acreage out of the Midwest and into the Great Lakes and eastern seaboard states.

USDA rules also permitted some farmers to leave the CRP early this year to take advantage of anticipated record-high corn prices.

There is no information available yet on how many farmers took advantage of the opportunity, but the practice seems to be most common on the best soils in northern Iowa. Early estimates are as much as 70 percent of the qualifying fields may have been ripped up and returned to row crops in some areas.

And because of fears of drought early in the year, USDA rules permit haying and grazing on 75 percent of Iowa's CRP fields this year, even though later rains have eliminated the need for the extra forage. Haying and grazing inevitably reduce bird production on CRP lands.

So be sure to check your favorite hunting spot before the season opens. The CRP field that produced lots of birds on opening weekend over the last decade or so could be growing corn or soybeans this year, or be grazed down to the nubbins.

OTHER HUNTING OPPORTUNITIES

The hunting outlook for other, less-spectacular species, remains good. Iowa's small but dedicated cadre of ruffed grouse hunters will be happy to know grouse populations are clearly on the upswing of their classic 10-year boom-and-bust cycle. Breeding grouse populations in northern Minnesota and southern Canada increased 15 percent - 20 percent this year, and are thought to be just a year or two away from peak numbers. Iowa's ruffed grouse populations don't vacillate as

much as northern populations, but the signs are above average years are in the offing. If you've been waiting for grouse numbers to improve, now is the time to go brush busting again. Grouse numbers will literally be here today, but gone for a half-decade tomorrow.

Rabbits and squirrels continue to be abundant and are certainly Iowa's most under-used and under-hunted species. A couple of tips: With the resurgence of predator populations all across the state, late season rabbit hunters are sometimes dismayed to find that their favorite rabbit haunt, the one holding plenty of cottontails early in

the season, holds much fewer later on. Early season hunting seems to be more productive and a better bet than waiting for just the right snow conditions for a late-season hunt.

And with a cool spring, early-season squirrel hunters are likely to find that nut production will be poor again this year. Rather than search for young squirrels around nutless hickory trees, hunting later, around corn fields, may be more productive.

For season dates and detailed hunting and trapping regulations, see this year's *Iowa Hunting and Trapping Regulations* booklet available at most license vendors.

Terry Little is the DNR's wildlife research supervisor in Des Moines.

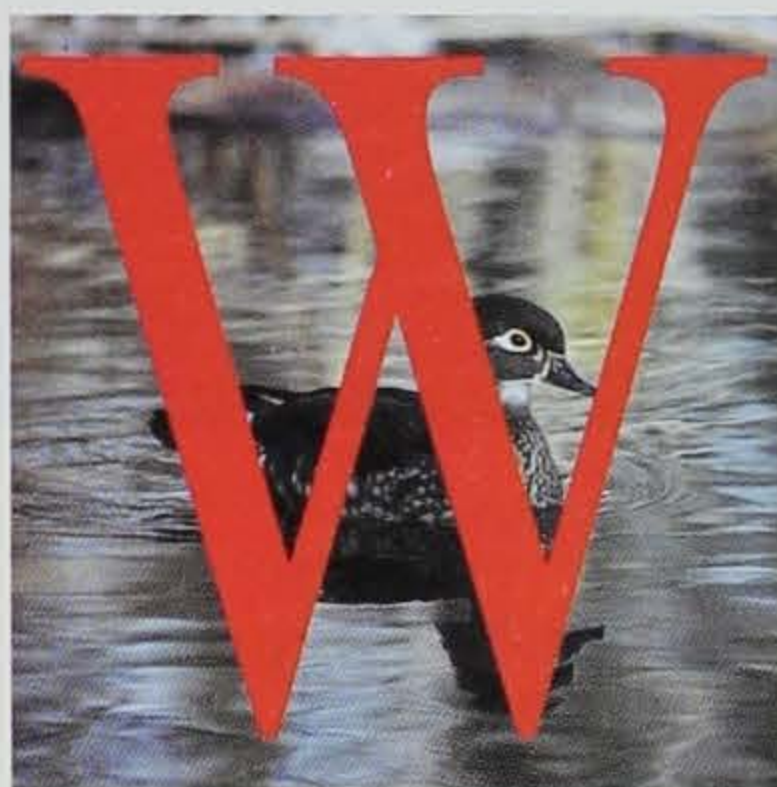


Roger Hill

1996 HUNTING FORECAST

WETLANDS

Have We Turned The Corner?



Lowell Washburn

What do the initials NAWMP, NAWCA, PPJV, and UMR & GLRJV stand for? They all stand for DUCKS! Even more than that, they stand for wetlands, for shorebirds, for muskrats, grasslands and bobolinks, for water quality and recreation. These initials stand for various plans, programs and efforts aimed at protecting, enhancing and restoring wetlands throughout North America.

The current modern emphasis on wetland restoration began with the writing of the North American Waterfowl Management Plan (NAWMP). The North American Waterfowl Management Plan provides a broad framework for waterfowl management and conservation efforts in the United States and Canada through the year 2000. It sets goals for duck, goose and swan populations on this continent. It identifies needed habitat conservation efforts in specific regions of the continent, and it recommends measures for addressing habitat-loss problems.

In the mid-1980s, biologists from the U.S. and Canada were greatly disturbed by what was happening to the waterfowl populations on this continent. Although waterfowl populations showed short-term rises and dips in total numbers, the long-term population trend was obviously downward. By 1985, the continued drought of the 80s coupled with extensive wetland drainage and ever-intensifying land use resulted in a fall flight of waterfowl at an all-time low. It was estimated that the flight was a full 40 percent below the level of only ten years earlier. These discouraging numbers prompted biologists from Canada and the U.S. and other concerned individuals to discuss ways to halt this long-term decline in waterfowl numbers. The resulting plan, the North American

Waterfowl Management Plan, was completed in 1986. It called for increasing the fall flight from the 62 million birds in 1985 to 100 million birds by the year 2000. Individual breeding pair and fall flight population goals were set for 32 species of ducks, geese and swans.

Habitat loss is the greatest threat to our waterfowl populations. Since colonial times, more than one half of the wetlands that existed in the United States have been destroyed. In Iowa, an estimated 99 percent of our wetlands have been drained during this same period. Even those wetlands that remain face problems. Intensive agriculture has resulted in soil erosion, water quality degradation, siltation, and chemical contamination.

In addition to the wetland loss, the loss of grasslands surrounding them is equally dramatic. In the last ten years more than one-third of these grasslands have been lost. This loss of upland nesting cover has concentrated the ducks and their predators in remaining patches of suitable habitat. As a result, in much of the prairie pothole region where most of this continent's ducks breed, nest success is too low to maintain or build increasing waterfowl populations.

One goal of this plan is to protect 6 million acres of wetlands and upland habitat across the continent. To be effective, this habitat protection must not only be in the production areas, but along the migratory routes and in wintering areas as well. The plan identifies key waterfowl habitat areas and calls for their conservation and protection. The aim of this continental habitat program is to ensure the preservation and management of enough high-quality waterfowl habitat to sustain waterfowl populations at the levels identified in the plan, and to maintain their distribution across North America.

Iowa lies in two of the important habitat areas identified in the plan. States and organizations

within these regions have organized into what are called "Joint Ventures" to carry out the North American Plan within their regions. Thirty-five counties in north-central Iowa are within the Prairie Pothole Joint Venture (PPJV). In addition, thirty-two counties in eastern Iowa are within the Upper Mississippi River and Great Lakes Region Joint Venture (UMR and GLRJV).

Projected costs to reach the goals of the North American Plan are estimated at \$1.5 billion. United States and Canadian governments, through existing wildlife programs, will provide much of the funding for this program, but only through increased support from state agencies, private organizations, corporations and individuals can these goals be realized.

NAWCA, the North American Wetlands Conservation Act is another important source of funds for wetland protection. Since 1989, this act has provided money on a matching basis for specific wetland protection and restoration efforts. In Iowa, we have successfully obtained a number of grants through this act for our wetland protection. Six major wetland protection projects in Iowa have received funding from this source. Approximately \$2.9 million in NAWCA funds have been received or approved to match \$4 million in funds provided by the DNR, conservation boards, soil conservation districts, sporting organizations such as Ducks Unlimited and Pheasants Forever, private organizations such as the Iowa Natural Heritage Foundation and many private corporations and individuals. These efforts will result in the permanent protection of 6,225 acres of wetland and associated uplands.

When all the ongoing wetland protection efforts are combined, the results are truly significant. In the past eight years, within the Prairie Pothole Joint Venture alone, 23,252 acres of wetlands and uplands have been acquired and placed under permanent protection through public ownership. On these public lands 3,079 acres of wetlands have been created at 544 different sites.

Through excellent cooperation from private landowners, an additional 2,347 acres of wetlands

have been created at 603 different sites. Grassland seedings have been completed around most of these newly created wetlands to protect the watershed and provide upland nesting cover for waterfowl and other wetland-associated species.

The multiple benefits of these wetland protection efforts are far reaching. Wetlands not only provide breeding habitat for waterfowl, but migratory rest stops and wintering areas as well.

They are important habitat for many shorebirds and other wetland-associated birds, as well as furbearers such as mink, muskrat and beaver. They serve as habitat for a host of reptiles, amphibians, small mammals and shellfish. Wetlands are important spawning areas for many fish species and often support unique plant communities found nowhere else. They serve as storage areas for runoff waters to temper both floods

and low-water conditions on our rivers and streams. They help filter sediments and pollutants from surface waters and provide a valuable recharge for groundwater systems. Wetlands are our richest habitat type in terms of the number of plant and animal species present as well as the total biomass produced by the system. This biological richness provides for Iowans unlimited recreational opportunity including hunting, bird-watching and other nature studies. The income provided by the fur harvest from wetlands and tourism dollars brought into an area by hunters can be considerable.

Have we "turned the corner" on wetland losses? Maybe not everywhere but at least we now have a plan and are proceeding in the right direction. In parts of Iowa, in fact, we have turned the corner and are restoring more wetlands than are being lost. The more we learn about wetlands the more we can appreciate their value.

James Zohrer is a special project coordinator for the Wildlife Bureau in Des Moines.



Ty Smedes

WILD TURKEY

The Programs -- Past, Present and Future

Imagine yourself some 150-plus years ago on a ferry crossing the mighty Mississippi, peering westward toward your new homeland, Iowa, a picturesque wilderness, a mosaic of virgin forest and prairie with abundant wetlands. Imagine, too, the variety of game present -- elk, buffalo, antelope, deer and wild turkey. Yes turkeys! In fact, the Eastern wild turkey was found throughout much of Iowa when the first settlers crossed the Mississippi River in the 1830s. At that time, Iowa's oak-hickory forests covered nearly 7 million acres and records indicate turkeys occurred where ever timber existed. Although turkeys may not have been as numerous in Iowa as in their primary range east of the Mississippi River, they were plentiful enough to be used as table fare and appears in markets for 50 cents apiece.

Unfortunately, wild turkeys were extirpated from Iowa by the early 1900s due to uncontrolled hunting and habitat loss. Turkeys were eliminated from some northeast Iowa counties as early as 1854, only 20 years after the first settlers arrived, and turkey populations were badly depleted in southern Iowa by 1900. Rugged topography protected some timbered parcels in northeast and south-central Iowa from mechanized clearing, and turkeys may have survived had indiscriminate hunting been controlled. However, hunting was not controlled and the last wild turkey harvested in Iowa was taken in Lucas County in 1907. The last verified sighting of a wild turkey was in 1910, also in Lucas County.

In 1920, the DNR began experimenting with turkey restoration using pen-reared birds. Releases were made over the next 18 years but all were uniform failures. Pen-reared birds simply did not survive well in the wild, presumably due to poor genetic quality resulting from the breeding out of truly "wild" characteristics over several genera-

tions in captivity, and to the increase of deadly diseases and parasites prevalent under confined conditions. What seemed like a logical approach to increasing turkey populations, raising and releasing pen-reared birds into the wild, actually slowed down the wild turkey's comeback for almost two decades.

By the late 1950s early 1960s, increased knowledge about wild turkeys and improvements in trapping techniques provided new opportunities to help reestablish turkey populations using wild captured birds. The first attempts at releasing transplanted wild turkeys by the DNR were made

in the early 1960s. Rio Grande and Merriam subspecies obtained from Texas and Nebraska, respectively, were released at several sites during the 1960s but ultimately their poor adaptation to Iowa's oak-hickory forests led to failures for both subspecies. However, encouraged by reports of successful restockings in Missouri using Eastern wild turkeys, the DNR obtained 11 birds from



Roger Hill

Missouri in 1966 and released them into Shimek State Forest in Lee County. The population response of these turkeys was phenomenal -- survival of released birds, reproduction, and poult survival were all excellent. The success of this Eastern subspecies stocking led to an additional stocking in 1968 in Stephens State Forest in Lucas County which also proved highly successful. Because of the huge success of these releases, it became evident the Eastern subspecies was the turkey to use in all future in-state restoration attempts.

Over the past two decades, restoration efforts have returned wild turkeys to about 95 percent of Iowa's remnant timber stands. All suitable habitat has received at least one release of Eastern wild turkeys and all stockings thus far are considered successful. Since the initial 1966 release, 3,063 Eastern wild turkeys have been released at 220

sites throughout Iowa. Iowa's turkey population presently numbers more than 100,000 birds.

Eastern turkeys have adapted so well to habitat conditions in Iowa that the DNR has traded turkeys for other extirpated wildlife and for money. Iowa turkeys have been traded for prairie chickens, ruffed grouse, river otters, sharp-tailed grouse and habitat moneys with eight states and one Canadian province. In 1987, the DNR (along with other states, federal agencies and corporate and private landowners) combined forces with the National Wild Turkey Federation to help restore and expand wild turkey populations on 65 million acres of suitable but unoccupied habitat throughout the United States by the turn of the century. Appropriately named, "Project 2000" has had overwhelming success and Iowa has played a key role. According to Dr. James Earl Kennamer, vice-president of conservation programs for the National Wild Turkey Federation "Iowa has been a leader from the very beginning of the wild turkey trap and transfer program. Without the involvement and contributions of the Iowa DNR the trap and transfer program would not have been possible . . . we could not have accomplished to date what we have done . . . 23,000 acres of wild turkey habitat have been stocked in Texas alone. It's a win/win situation for Iowa . . . land purchased provides habitat for all wildlife."

States receiving turkeys from Iowa have been extremely pleased. "We completed six releases this year with turkeys from Iowa," says Danny Timmer, turkey study leader for the Louisiana Department of Wildlife and Fisheries. "If we wouldn't have gotten turkeys from Iowa we would be way behind on our releases. We wouldn't have the success that we are having without Iowa's help . . . the birds are doing great." Similarly, George Wright, turkey program coordinator for the Kentucky Department of Fish and Wildlife Resources says "Turkeys from Iowa have meant the world to our program in Kentucky . . . the birds have done exceedingly well. If it had not been for the generosity of Iowa and several other states, we wouldn't have turkeys in Kentucky."

When asked what Iowa's contribution has meant to Texas, John Burk, eastern turkey program coordinator for the Texas Parks and Wildlife Department says "Turkeys from Iowa are our program . . . we are now opening the northeastern part of the state to turkey hunting which would not have been possible without Iowa's help. We're creating opportunities for people who would never have had the chance to

hunt turkeys, if it were not for Iowa's help. We're glad we're partners and we hope to continue our working relationship with Iowa."

What has Iowa gained from its cooperative efforts and where do we go from here? Since the out-of-state trap and transfer program began, Iowa has shipped 4,778 turkeys out and received approximately \$2.4 million in return. Moneys generated from the sale of wild turkeys have been used to purchase nearly 5,200 acres of habitat in Iowa (Table 1). The program is scheduled to continue for the next couple of years and addi-

Table 1. Tracts of land that have been purchased in whole or in part with funds collected from the sale of wild turkeys to other states

| Date | Wildlife Area | County | Acres | Amount |
|--------------|--------------------------|------------|--------------|--------------------|
| 9-88 | Stephens State Forest | Monroe | 260 | \$22,100 |
| 11-88 | Boone Forks | Webster | 236 | 59,000 |
| 11-88 | Indian Creek/Lake Sugema | Van Buren | 80 | 27,200 |
| 4-89 | Bloody Run | Clayton | 218 | 71,740 |
| 2-90 | Boone Forks | Hamilton | 520 | 100,000 |
| 3-90 | Forney Lake | Fremont | 343 | 120,000 |
| 5-90 | Hawkeye | Johnson | 212 | 150,000 |
| 5-90 | Clear Creek | Allamakee | 196 | 57,450 |
| 8-91 | Lansing | Allamakee | 354 | 141,600 |
| 5-92 | Coon Creek | Winneshiek | 112 | 38,714 |
| 3-93 | Stephens State Forest | Lucas | 370 | 88,000 |
| 8-93 | Shimek State Forest | Lee | 34 | 13,000 |
| 8-93 | Stephens State Forest | Lucas | 80 | 28,000 |
| 8-93 | Stephens State Forest | Lucas | 91 | 27,300 |
| 10-93 | Stephens State Forest | Clarke | 609 | 169,665 |
| 10-93 | Eldon | Davis | 215 | 86,000 |
| 11-93 | Hooper | Warren | 149 | 78,200 |
| 2-94 | Eldon | Davis | 172 | 46,383 |
| 6-94 | Redbird Farms | Johnson | 496 | 289,165 |
| 8-94 | Tubaugh | Appanoose | 30 | 8,550 |
| 9-94 | Boone Forks | Webster | 110 | 66,000 |
| 10-94 | LaHart | Monroe | 225 | 65,410 |
| 11-95 | Tyrone | Monroe | 40 | 7,225 |
| 2-96 | Sand Creek | Ringgold | 40 | 13,000 |
| TOTAL | | | 5,192 | \$1,773,702 |

tional lands will be purchased to help protect valuable wildlife habitat in Iowa.

The future looks bright for the wild turkey in Iowa and across the nation. Iowa was extremely fortunate to have had Missouri's help in reestablishing its turkey population. We are now sharing our good fortune with other states -- partners in conservation . . . the key to success.

Dale L. Garner is a wildlife biologist at the Chariton Research Station.

1996 HUNTING FORECAST TRAPPING



Roger Hill

Fur Prices Show Signs of Strength

Since 1986 the fur market has dropped substantially from the all-time record-high pelt prices of the early 1980s. During the past three years, besides the low demand for most fur, the European Union (EU) has annually threatened to discontinue buying furs from countries that still allow the use of the leg-hold trap. More than 70 percent of the U.S. fur has historically been purchased by European countries. With the threat of losing the European market, the U.S. fur market has been quite soft as well.

While the EU threat is still present, there is no particular deadline set at this time, so it appears some stability might be present for awhile. This, coupled with increased interest in furs and diminished fur pelt supplies around the world, have caused the fur market to strengthen considerably.

Fur hunters and trappers should once again oil their guns and boil their traps and pursue their favorite furbearers. There are ample supplies of

nearly all furbearers except muskrats. High water levels, muskrat vegetation "eat outs," and the normal boom and bust cycles of rats have depleted their numbers. Raccoon populations continue to be at near-record numbers. Coyotes are still thriving and numerous beaver continue to raise the ire of lots of landowners. Red foxes are on the increase, although their numbers are still down because of the mange outbreak of the early 1990s.

Fur pursuing enthusiasts should once again find the strengthening fur market reason to get out and pursue their favorite fur quarry. Besides the monetary side of fur hunting and trapping, always keep in mind the recreational opportunities and experience one can have with nature while pursuing the furbearers of Iowa. Many of these moments in the great outdoors can be priceless.

Ron Andrews is a furbearer/wetlands specialist in Clear Lake.

Otter Trapping Season -- Maybe, Maybe Not

In 1985, the DNR initiated an otter restoration project in an effort to bring back river otters to the interior rivers and streams of Iowa. By 1991, 222 otters had been released at 11 different sites across the state. Except for northeast Iowa, otters had all but disappeared in the rest of the state by the early 1900s. Channelization, wetland drainage sedimentation and water pollution, coupled with over exploitation of this unique fur resource were the main reasons for the otter decline.

The 222 otters released in Iowa are Louisiana otters and are part of a three-way trade with Kentucky. Kentucky wanted Iowa wild turkeys and in turn purchased otters from Louisiana and gave them to Iowa. Of the 222 otters, 48 of these animals were purchased through fundraising efforts of the Iowa Trappers Association, Iowa Furtakers and the Iowa State University Fisheries and Wildlife Biology Club.

The Iowa trapper groups have been very supportive of the river otter restoration efforts and also of our 10-yard no-trapping rule providing otters some protection in our release areas. They also realize that even if and otter trapping season never occurs in the state it will still be great to have been a part of returning an animal that once existed in abundant numbers throughout the state.

Those of you who read the May-June issue of the *Iowa Conservationist* magazine may recall an article by Pat Schlarbaum entitled "Iowa's River Otter." In that article, Schlarbaum notes that river otter sightings and reports indicate more than 65 of Iowa's 99 counties now have reported otter reproduction. That far exceeds what we actually expected to see one decade after we began our otter restoration efforts.

We have relied on the canoeists, anglers, trappers, hunters, DNR personnel and other outdoor enthusiasts to help us determine the expansion of river otter from the 11 initial release sites. Their observations have been essential in monitoring the success of otter restoration in Iowa to this time. We continue to need those observations as we monitor progress in the future.

There are plenty of reasons to be optimistic that otters will once again be found throughout the state. However, otter reproduction is generally a

long, slow process. Otters need to be at least 3-years-old before they are able to reproduce and they have an average of two to four young per litter. With that relatively low reproductive capability, we are still a few years away from being totally comfortable about "established" otter populations throughout the state, but the outlook is very optimistic.

Like wildlife turkeys, giant Canada geese, white-tailed deer and beaver, the very essence of a successful game animal's restoration is the ability to have some type of harvest on the species as occurred in the historic past. Are we to that point with otters? No, but if the current trend continues we are closer than most of us thought we would be at this particular time.

Because river otters are doing particularly well in some areas of the state, we are currently developing plans to capture some of our own otters

and transplant them to other otter-vacant watersheds in the state. This will hasten our effort to return otters to interior Iowa streams.

Currently, we plan to trap otters at Otter Creek, Sweet Marsh, Brushy Creek, Boone Forks, Rathbun and perhaps one or two other areas, and move a few of those otters elsewhere in the state. This same type of effort has occurred very successfully with wild turkeys, and giant Canada geese. Furharvesters have once again offered their assistance in capturing and transplanting otters to otterless watersheds in the state.

We will continue to monitor otter expansions in the state and if the population show the additional healthy increases as they have to date, it is possible within the next decade, the DNR will give strong consideration to establishing a conservative legal harvest of otters. Only time and continued upward population trends will dictate that. In the meantime, wildlife enthusiasts "otter" be celebrating the fact otter restoration is one of the many success stories of modern-day wildlife management.

Ron Andrews is a furbearer/wetlands specialist in Clear Lake.

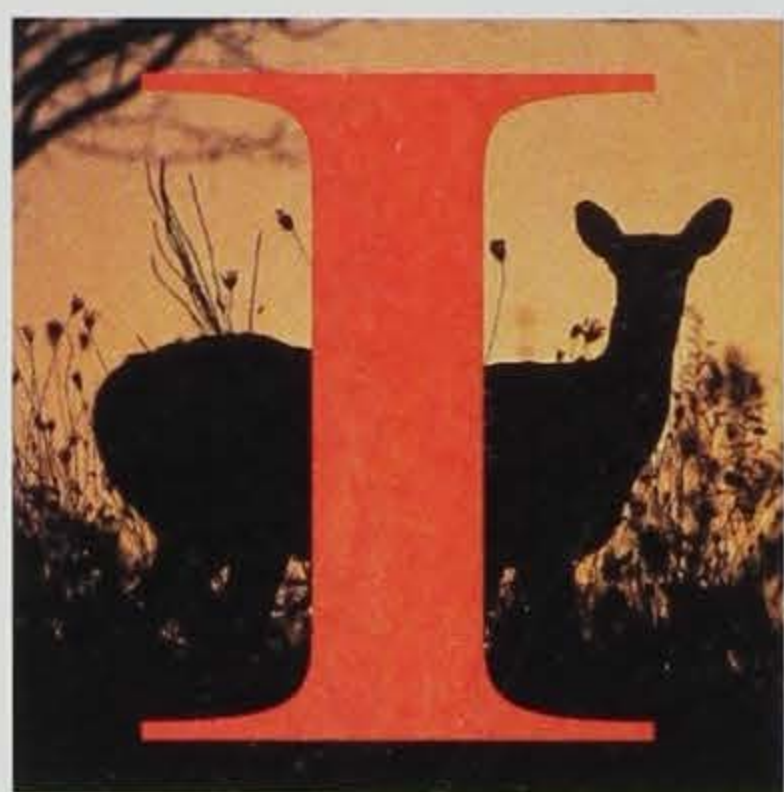


Ron Johnson

Roger Hill

1996 HUNTING FORECAST DEER

The Biology and Sociology of Deer Management



Roger Hill

In the not-too-distant past, I can remember sitting in class at Iowa State University. I had made it through my required freshman courses and was beginning to take more interesting courses in ecology and wildlife management. I remember lectures about concepts such as carrying capacity, competition and maximum sustained yields. I really enjoyed learning more about these concepts. However,

one thing sticks out in my mind, and it came from the first lecture in my wildlife management class. Wildlife management is the art and science of managing wildlife and their habitats. The art and science . . . I liked that, I liked that a lot! Well, if I had only known how much "art" was involved in managing deer, I would have taken more sociology, psychology and political science courses. As it turns out, they would have been really useful.

Don't get me wrong, managing deer does require a good understanding of deer biology. It's just that deer management requires communication with a large and diverse group we call "the public." In Iowa, as in most states, the wildlife is owned in common by the residents of the state. The DNR's legal mandate is to manage the wildlife and its habitat for the benefit of the people of the state -- "the public." The "art" part is in trying to find a balance which keeps most people satisfied.

CARRYING CAPACITY

Earlier, I mentioned carrying capacity. Maybe you thought I slept through that lecture? Can't we rely on nature to determine how many deer there should be in Iowa? Biologically, the answer is "yes" there is a limit to the number of deer a piece of habitat can support -- the carrying capacity.

However that level would be socially unacceptable to almost all Iowans.

Before Iowa was settled, deer numbers were primarily kept in some semblance of balance by predators and the amount of food available. Wolves, mountain lions and bears were probably the major predators that fed on deer. Kept in check by these predators and feeding on a fairly stable amount of food, deer numbers probably still cycled through highs and lows. With settlement, predators were eliminated and crops were planted in place of the natural vegetation. This eliminated the natural means of controlling deer numbers, while simultaneously increasing the potential carrying capacity for the deer.

Humans replaced the wolf, bear and lion as the limiting predator on deer, and the market hunting of the 1800s virtually eliminated the deer. Scientific wildlife management has allowed deer numbers to come back and now sport hunting is used to keep the population in check. I would estimate the potential exists in Iowa, biologically speaking, to have at least 40 times as many deer as we currently do before disease and lower productivity affected the population. Obviously, that many deer would not be acceptable to most Iowans, because it would be nearly impossible to grow any crops or avoid hitting them on the road.

The level for which we manage is sometimes referred to as a "cultural carrying capacity." This is the level that is acceptable to the majority of people. But how does the DNR determine what is acceptable?

PUBLIC OPINION

Knowing how many deer there are, how long they live and how many young they produce are the biological components of managing deer. The DNR conducts research projects to provide good current information on these aspects of the deer herd. Knowing how many deer people want (or

can tolerate) is the sociological aspect of deer management. Information on this issue can be much more difficult to obtain. This is partially true because these attitudes can change rather quickly.

For example, if a tragic accident occurs as the result of a car/deer collision, the subsequent news coverage generates a lot of comments about the number of deer being hit along the highway. Or, if a deer gets in an unusual situation, such as the deer that fell off the walkway at the State Historical Building in Des Moines, the incident gets press coverage and becomes a topic of conversation.

Another example of how attitudes change occurs whenever we experience a drought in the late summer. DNR biologists and officers will invariably get more complaints about deer damage to crops. This probably occurs for two reasons. First, because farmers are more worried about their crops, they probably spend more time in their fields trying to assess the damage from the drought. While they are out in the field they notice other damage and are probably concerned about any additional losses. Secondly, as the drought progresses, natural vegetation dries up and becomes less appealing to the deer. The deer shift more of their diet to crops, because these plants are still green and actively trying to grow. This double whammy can result in some very upset people. However, if the next year is more normal, attitudes return to a more benign state.

Trying to keep abreast of these changing attitudes is a challenge. No one source of information provides all the feedback necessary for making good decisions. There are several ways this type of information is received. Some of the processes are quite formal and scientific, while others are more informal.

The DNR regularly conducts public opinion surveys about deer. Every year we ask hunters about the number of deer they would like to see when we send out cards for our post-season harvest estimates. We are currently working with the Farm Bureau to repeat a statewide survey of landowners' attitudes about deer. Hopefully, periodic surveys like these provide us with a benchmark of people's attitudes, helping us plan our management efforts.

In Iowa's urban areas, the DNR has been working to form "task forces" to address deer management issues. These task forces are made up

of representatives from both public and private organization having an interest in the deer management process. The task force can then look at the local issues and try to develop recommendations that "fit" their problem. These partnerships can prove to be very successful at dealing with what is potentially a controversial and emotional issue.

Through out the year, the DNR holds public meetings to gather input about deer, the proposed deer seasons, as well as other wildlife issues. These meetings can be very beneficial, but too often not many people attend. This is unfortunate since this is probably the best way for someone to talk directly with the people responsible for setting the seasons.

On a less formal level, the comments our biologists and conservation officers receive are used to gauge public opinion. Since these people work with the public on a daily basis, they usually have a good idea of what people think about the issues. They also meet with sporting groups such as the Iowa Bowhunters Association and the Iowa Wildlife Federation to discuss deer and other wildlife



Roger Hill

issues.

ACCEPTABLE LEVELS

All of these sources of information provide the DNR with a gauge on how many deer are desirable. Biologically, the number we could have if we didn't control the population with hunting is so large it is almost meaningless. Determining a desirable level is the most difficult part of deer management. It takes as much effort as the biological concerns. It is when I deal with this aspect of deer management I wish I had taken those courses in psychology and political science. It is often difficult to find the "happy medium." Sometimes I think this point is achieved only when everyone has had to compromise and no one is all that happy.

You can help us find the "right number" by making your voice heard. Attend the public meetings or talk to your local conservation officer or biologist. Let them know what you think. Support your local outdoor groups, because there is strength in numbers. And remember, if you don't speak up, someone else will.

Willie Suchy is a wildlife biologist in Chariton.



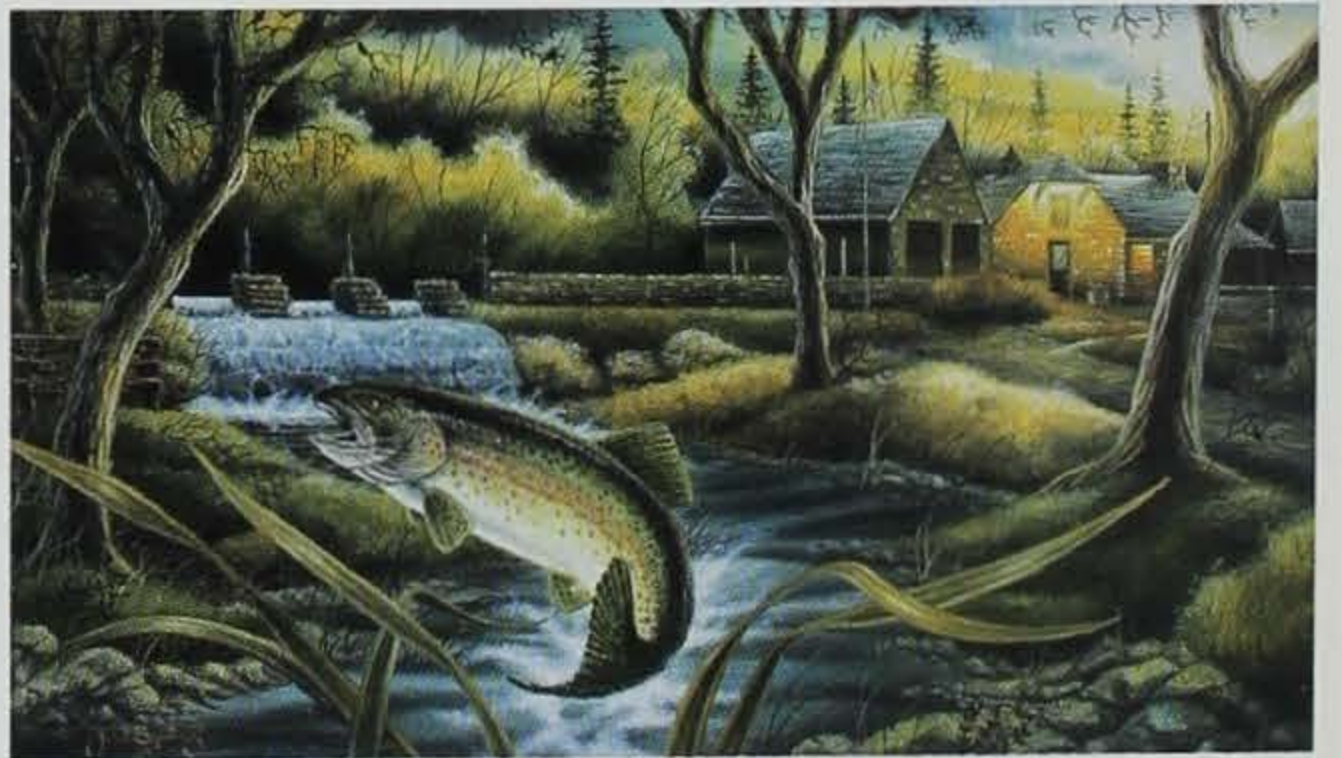
The **1997 Iowa Duck Stamp** was designed by Charlotte Edwards of Morse Bluff, Nebraska. Edwards is the recipient of numerous awards most recently including: 1996 "Wings Over the Platte," featured artist; Great Plains regional artist and National Flyway Print of Ducks Unlimited; and 1993 Indiana Game Bird Stamp. Edwards is a dedicated supporter of numerous wildlife conservation organizations. This year's design, sized at 6 1/2" x 11," is available for \$125 for prints and \$150 for artist proof by calling 1-800-331-5984 or by writing Marshfield Custom Framing, 1111 East River Drive, Davenport, IA 52803.



The **1997 Iowa Habitat Stamp** was designed by award winning artist Larry Zach of Ankeny. Zach also designed the 1997 National Wild Turkey Federation Stamp, the 1995 Arkansas State Turkey Stamp, and the 1984 Iowa Duck Stamp. Nationally known for his accuracy in painting whitetail deer, Zach chose a white-tail buck and doe in a classical Iowa setting as the design for this year's stamp and print. Signed and numbered prints are available for \$95 and artist proofs are \$125. Both prices include a \$5 mint stamp. Image size is 6 1/2" x 11." Prints are available through your local authorized White Oak Publishing dealer or by contacting Zach at 515-946-1570.



The **1997 Iowa Trout Stamp** print was designed by Iowa "industrial wildlife" artist J.D. Speltz. As a recipient of two previous national awards and four state stamp awards, Speltz has raised more than \$200,000 for conservation since 1988. This year's design displays a rainbow trout and the stone structures at Siewers Spring near Decorah. The print image is 6 1/2" x 11." Each regular edition print is \$39.95; artist proofs are \$49.95. Postage is \$6 for each order. There is a limited edition of 150 prints with 15 artist proofs. Stamps can be purchased for \$10. Prints can be purchased by calling Speltz at 712-864-3001, or writing Speltz Studio of Wildlife, Box 391, Armstrong, IA 50514



***This may be the last year for Iowa duck, trout and habitat stamps. See story on page 15 for more details.**

Quail

remember the record cold and deep snow that covered much of the state last winter? Who could forget?

It took me all day to shovel out the drive and then the wind blew it all back in again the next night! And then the cold settled in and the temperature stayed below zero for the next four days. It made life kind of miserable for a while. Now, imagine you were the size of a quail and had to survive out in that mess.

Although all wildlife species are remarkably adept at coping with the harsh weather, I'm sure last winter's blast will impact this year's population. Historically, quail numbers on the August roadside count plummet after a bout of severe weather. It should hold true again this year. And just as predictably when hunters go out this fall and find fewer birds, many will wonder what needs to be

done to bring the quail back. Some discussions will become heated as hunters debate the merits of releasing birds or closing the season for a year to help quail recover. But would these suggestions work and are they really necessary?

The issue of releasing pen-raised birds is pretty clear cut. Study after study has demonstrated stocking birds to supplement wild populations does not work. Stocked birds are usually inferior to wild ones, and stocking programs are always costly. In times of tight budgets, stocking would not only be a waste, it would keep a lot of good projects from being done.

So . . . what about temporarily closing the season? Hunting's impact on quail was not as clearly understood until the DNR conducted a study in the 1980s to look at how quail populations rebound after a harsh winter. The project was initiated in 1984, a year

similar to 1996. Quail numbers on the August roadside surveys averaged only two birds per 30-mile route in southern Iowa. Yet, by 1987 the average number observed had rebounded to nearly 12 birds per route. How does this happen? Does heavy hunting pressure hinder the recovery? To find some answers more than 1,100 quail were captured and banded on two study areas in Lucas and Wayne counties. Radio transmitters were placed on about 850 of these quail. Each bird was followed until it died. The bird's movements and cause of death were recorded. Nesting attempts were also recorded. This kind of effort produced some "eye opening" results.

Nesting

Probably the most astounding finding was some hens were responsible for multiple nests during a single season. An article appearing in the Nov. 1988 issue of the *Conservationist* described some of the findings. Following is a recap.

Of all the nests that hatched, 69 percent were the first nest incubated by a hen (see Fig 1). Only 4 percent of the nests hatched were by females attempting a second nest after the first nest failed during incubation. Surprisingly,

the rest of the story

by Willie J. Suchy

The issue of releasing pen-raised birds is pretty clear. Stocking birds to supplement wild populations won't work. Stocked birds are usually inferior to wild ones...

16 percent of the nests hatched were incubated by males (bobs). In most instances, the bob incubated the nest alone. In several cases the hen that laid the nest went on and hatched her own nest. Another surprising thing was 11 percent of the nests hatched were by hens that had already successfully hatched a nest. These hens produced two broods during one season. One of these hens was also responsible for a nest that a bob hatched. This hen produced three nests -- 54 chicks in all!

Most nests hatched early in the summer were by hens. Males, however, incubated more than 50 percent of the nests initiated after July 1. Since all second nests by hens were initiated after July 1, nearly three-fourths of all nests during this time were "nontraditional" nests. This "extra" effort may be one of the mechanisms allowing quail to produce a lot of young. This mechanism may be stronger when quail populations are lower. We observed more hens attempting "second nests" when quail numbers were lower early in the project than later when quail populations were higher. This suggests a density-dependent behavioral response allowing quail to produce more young when numbers are lower and most needed.

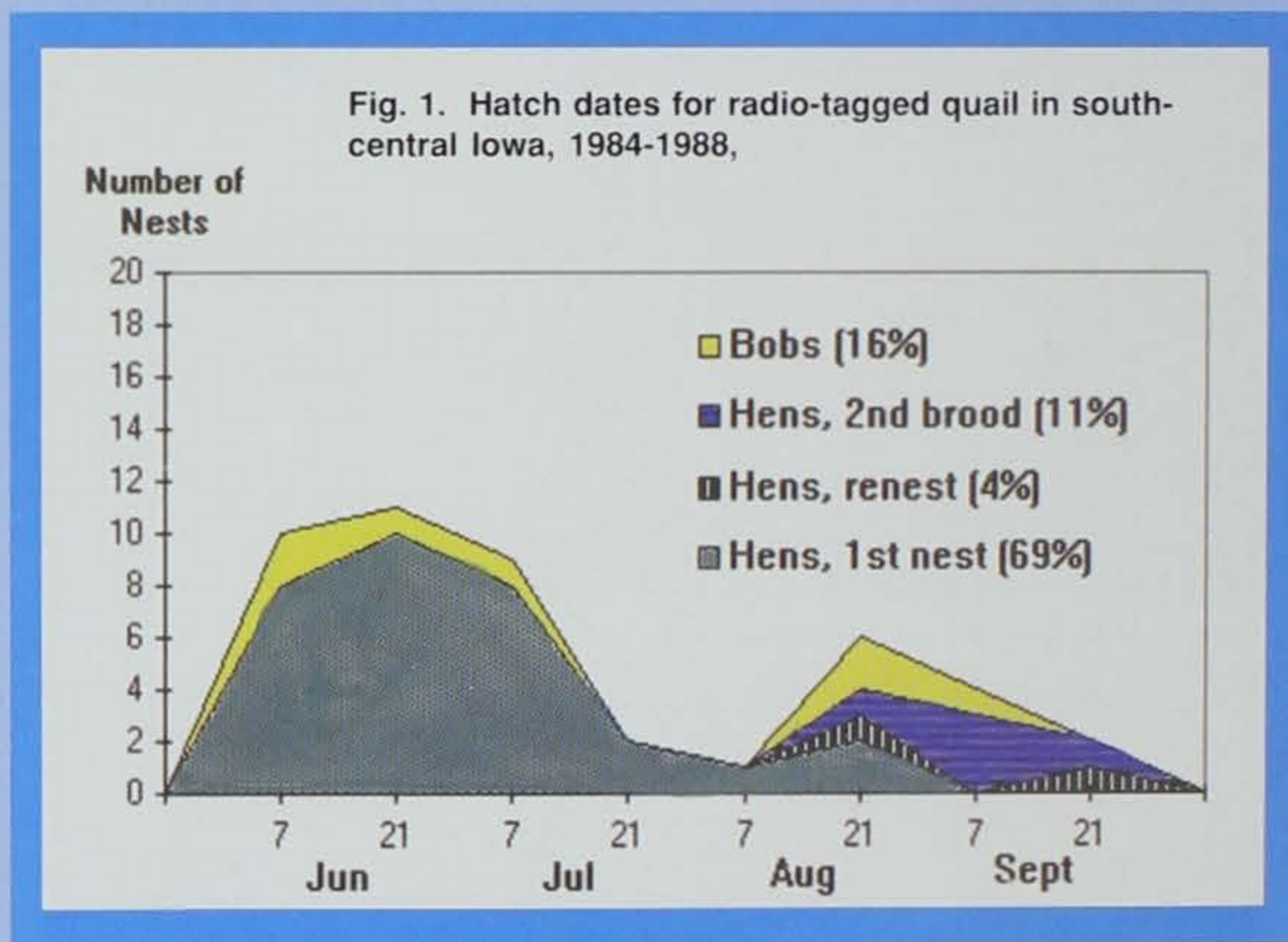
Survival

Quail need to produce a lot of young each year, since most don't live to see a second year. Of all the birds that are alive on Oct. 1 less than 20 percent on an average will make it through April 1 to begin the breeding season. Only one third of these birds will survive to the end of September, the end of the breeding season. This means only about 6 percent of quail on an average make it to their second winter. Even in our best year only 10% percent survived to become one year old. The "average" quail only lives

about six months. Although this is an odd statistic, it is biologically possible. Just enough quail have to live long enough to produce enough birds for the next year.

mortality, particularly on hens. Hawks and owls were the next largest cause of mortality. Other losses occurred to farm equipment, vehicles along roads and disease.

Fig. 1. Hatch dates for radio-tagged quail in south-central Iowa, 1984-1988,



The lowest overwinter survival rate was in 1983-84 when less than 5 percent of the birds survived until spring. The highest was in 1986-87 when 36 percent survived. Hunters accounted for about 21 percent of the birds lost, predators took 72 percent and the rest were lost to other causes such as disease, starvation or other accidents. Hawks and owls were the largest source of predation during the winter, followed by mammals such as coyote, fox or mink.

Survival during the nesting season didn't vary as much as winter survival. The worst survival recorded was 28 percent in 1987, the best 50 percent in 1985. Predators took 70 percent of the birds that died during this period. Mammals were the largest cause of

Hunting

Does hunting have an impact on the number of quail? If we didn't hunt them after a hard winter would the population recover more quickly? We attempted to answer this question by comparing survival rates for quail on a state-owned management area that received heavy hunting pressure, and on private land about 12 miles away. The private land received much less hunting pressure. We checked the bags of hunters on both areas to see how much pressure each area received and how many quail were taken.

*The bottom line is it isn't
won't produce more birds*

Study after study populations does not

We found the public area received an average of three times more hunting pressure (hunter hours) than did the private land. On the public land, hunting pressure was pretty steady from the opening weekend through the end of December. Hunting pressure on the private land was heavy on the opening weekend then tapered off through the end of December. Less than 5 percent of the hunting pressure on either area occurred during January. The number of birds killed on the public land was double that taken on the private area. Did this result in more birds making it into the nesting season the following spring?

Fig 2 illustrates the impact hunting had on the number of quail on the two areas. The initial number of birds on each area was arbitrarily set at 100 for purposes of comparison. From the figure we see numbers on the two areas stay about the same until mid-November. The extra hunting pressure on the public area caused that population to decline more rapidly. By the end of the hunting season there were only half as many birds present on the public area as on the private area. However during the next two months, numbers on the private area continued to decline while numbers on the public area stayed about the same.

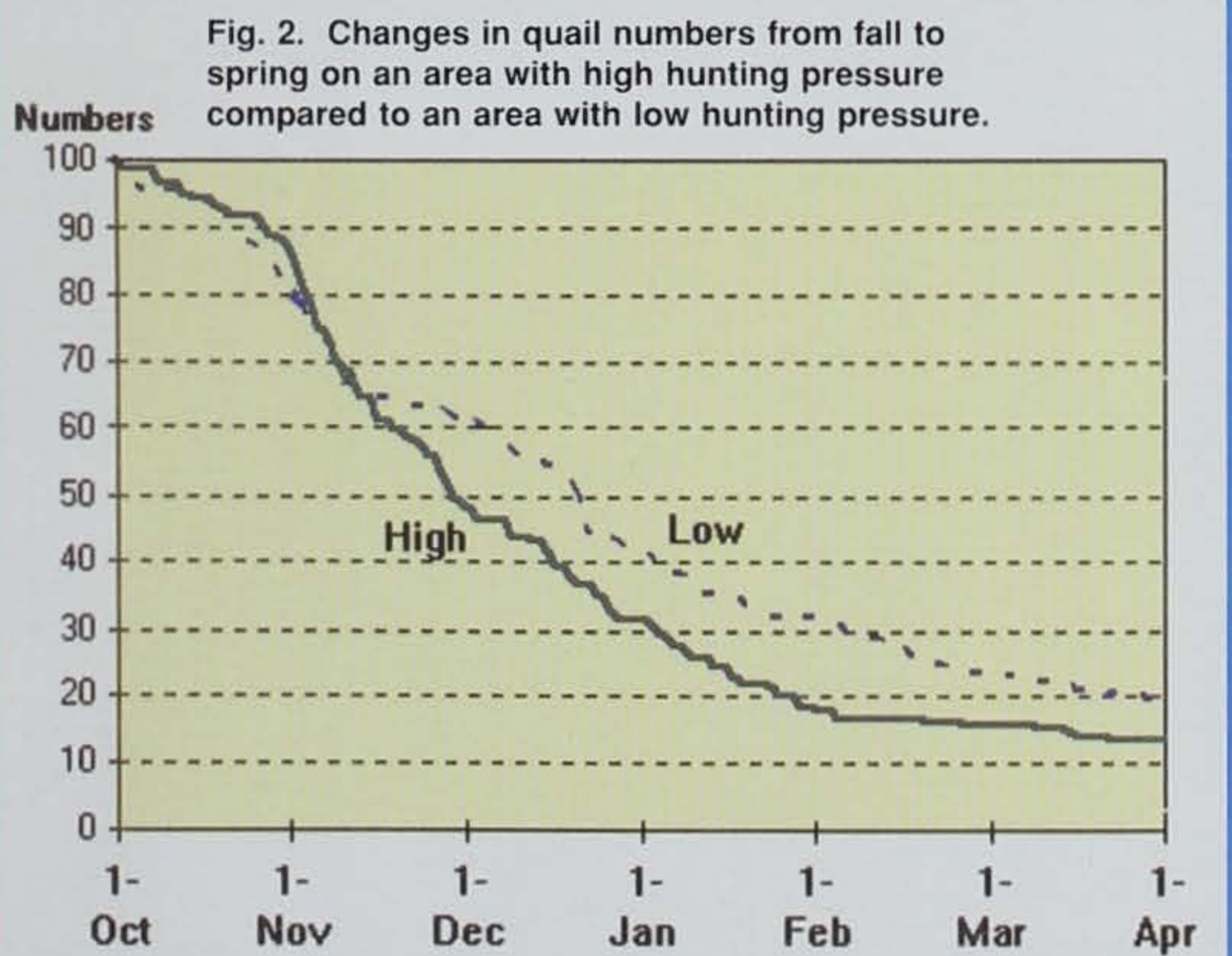
This example illustrates the concept of a "harvestable surplus" which was identified by Aldo Leopold more than 60 years ago. It is a key concept in small-game management. Many of the birds taken by hunters would not have survived to reproduce anyway. Hunters are not as efficient

predators as are hawks and foxes, and the quail season is always open for them. Why didn't predators take more birds on the public land? Probably because the birds left are in the "best" habitat and aren't as vulnerable to predators. On the private land, more birds are left in areas more vulnerable to predators. Predators also probably look for other sources of food as the number of quail available to them declines -- sort of the law of diminishing returns.

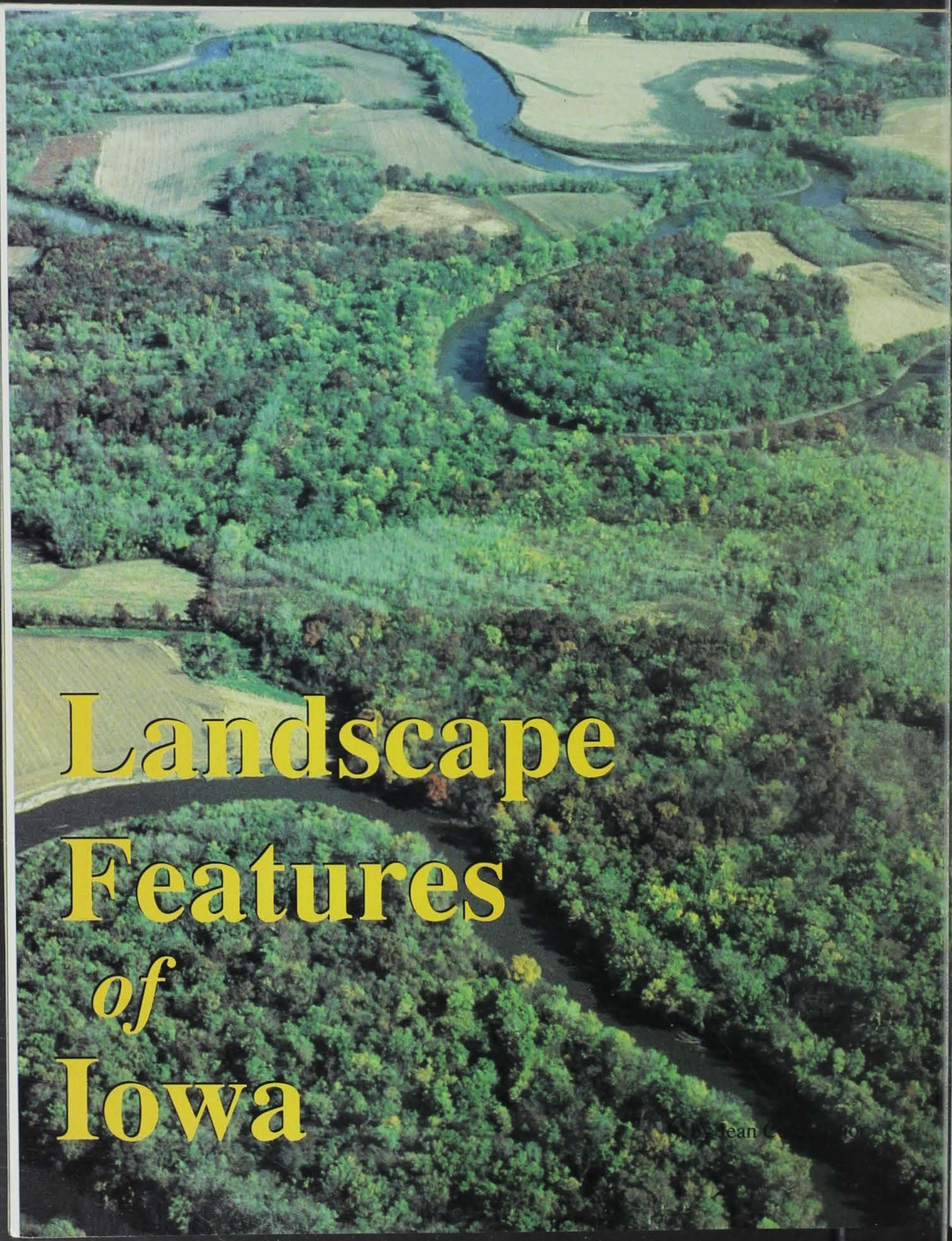
The bottom line is it isn't possible to "stockpile" quail. Closed seasons won't produce more birds the next spring. This doesn't mean quail can't be over-hunted, just that hunting, as we observed on our study areas, doesn't affect quail numbers to any degree. Hunters, as conservationists, should always make it their responsibility to leave enough birds in a covey for them to survive, and not hunt birds when the weather becomes too harsh.

Although prospects may appear bleak for this fall, it is comforting to know that given a chance, quail numbers can recover quickly since they do produce a lot of young. Ultimately however, having more quail will require having more good quality habitat. The best way to do this is to leave some areas with food and cover on your farm, if you own one, or work with groups such as Pheasants Forever to establish food plots and other habitat.

Willie J. Suchy is a wildlife biologist for the department in Chariton.



it isn't possible to "stockpile" quail. Closed seasons
more birds the next spring.



Landscape Features of Iowa

by Jean C. [unclear]

Right:
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Cary Hightshoe, Iowa State University

T

he topographic features seen on the following pages illustrate the range of picturesque diversity that is present across our state. In addition to their beauty, each of these landscape views reflects some aspect of Iowa's geologic history. Understanding the geologic setting of various types of terrain is essential for citizens concerned with farming, urban expansion, recreation, excavation of mineral resources, pumping of groundwater supplies, landfilling of waste materials, and other environmental and natural resource issues. Also, it is useful to think about these landscapes in terms of their influence on the distribution of native plant and animal habitats, on various soil types, on the potential for archaeological remains, and on patterns of historic settlement. Learning more about the features of Iowa's landscape increases our understanding and appreciation of the views around us and the ground beneath our feet.

Right: Shifting sand dunes occupy part of an abandoned channel of the Upper Iowa River in Allamakee County. The sand accumulated when water flowed through this meander much earlier in the valley's history. Wind also deposited sand here during later dry periods.



Jean Prior



Gary Hightshoe, Iowa State University

Left: The Iowa River forms sweeping meander loops as it flows across its floodplain in Tama County. Scars of earlier migration channels of the river are visible in the fields and woodlands. Floodplains are underlain by porous alluvial deposits that yield valuable groundwater supplies. These shallow resources are vulnerable to contamination from the land surface.

Above: The island-braided channel of the Mississippi River occupies the floor of a gorge eroded through steep rock-lined bluffs in Clayton County. The deeply entrenched river valley was shaped by glacial meltwater floods between 18,000 and 9,500 years ago.



Tim Kemmis

Above: Hump-backed ridges rise from the gently rolling landscape in southeastern Linn County. These ridges, known as *paha*, are always oriented NW to SE. They are all that remain of a once higher glacial plain and are often capped with wind-blown loess and sand.

Right: An outcrop of **sedimentary rock** displays horizontal layering, which reflects the rock's origins in a marine environment. Vertical fractures, caused by later earth stresses on the brittle dolomite, contribute a blocky appearance to the outcrop. These various planes of weakness are flowpaths for groundwater movement.

Jean Prior



Gary Hightshoe, Iowa State University



Right: The oldest bedrock formation visible anywhere in Iowa outcrops at Gitchie Manitou State Preserve in Lyon County. The distinctive reddish cast of the **Sioux Quartzite** is seen here along the edges of "Jasper Pool," an 1800's-era quarry on the preserve. These durable, quartz-rich rocks are 2.6 billion years old. Glacial erratics of this formation are easily recognizable and may be found for many miles to the southeast.

Pat McAdams



Above: Long continuous rock bluffs, called **palisades**, line the Upper Iowa River valley. These picturesque cliffs result from the river eroding against dolomite, a resistant rock unit formed 450 million years ago. Such scenic landscapes in northeastern Iowa reflect the presence of sedimentary bedrock formations close to the land surface.



Pat Lohmann

Greg Ludvigson



Above: A **glacial moraine** in Dickinson County appears as a series of irregular broken ridges crossing the landscape. These are the hummocky accumulations of pebbly debris that settled out of stagnant, slowly melting glacial ice about 13,000 years ago.

Left: This inside view of a **cave** entrance at Maquoketa Caves State Park illustrates an example of **karst topography**. Such features also include springs and sinkholes, landforms which result from groundwater movement slowly dissolving shallow limestone or dolomite bedrock.

Right: Crooked ridges with steep sideslopes characterize the **Loess Hills** of western Iowa. They are composed of thick deposits of silt carried by the wind from the adjoining Missouri River valley during seasons when glacial meltwater flood sediments were exposed. There is a sharp contrast between prairie and encroaching woodlands in this topographic setting.



Art Bettis

Left: The discharge of water from Cold Water Spring crosses a series of rock riffles as it flows away from a bluff of dolomite bedrock. Springs develop where groundwater flow is intercepted by the land surface, usually along the steep sides of valleys.

*Below: Ocheyedon Mound is an isolated, conical hill composed of sand and gravel. It is an excellent example of a **glacial kame**, formed as meltwater carried sediments off the glacier surface and deposited them into a cavity in the slowly melting ice.*



Doug Harr



Gary Hightshoe, Iowa State University

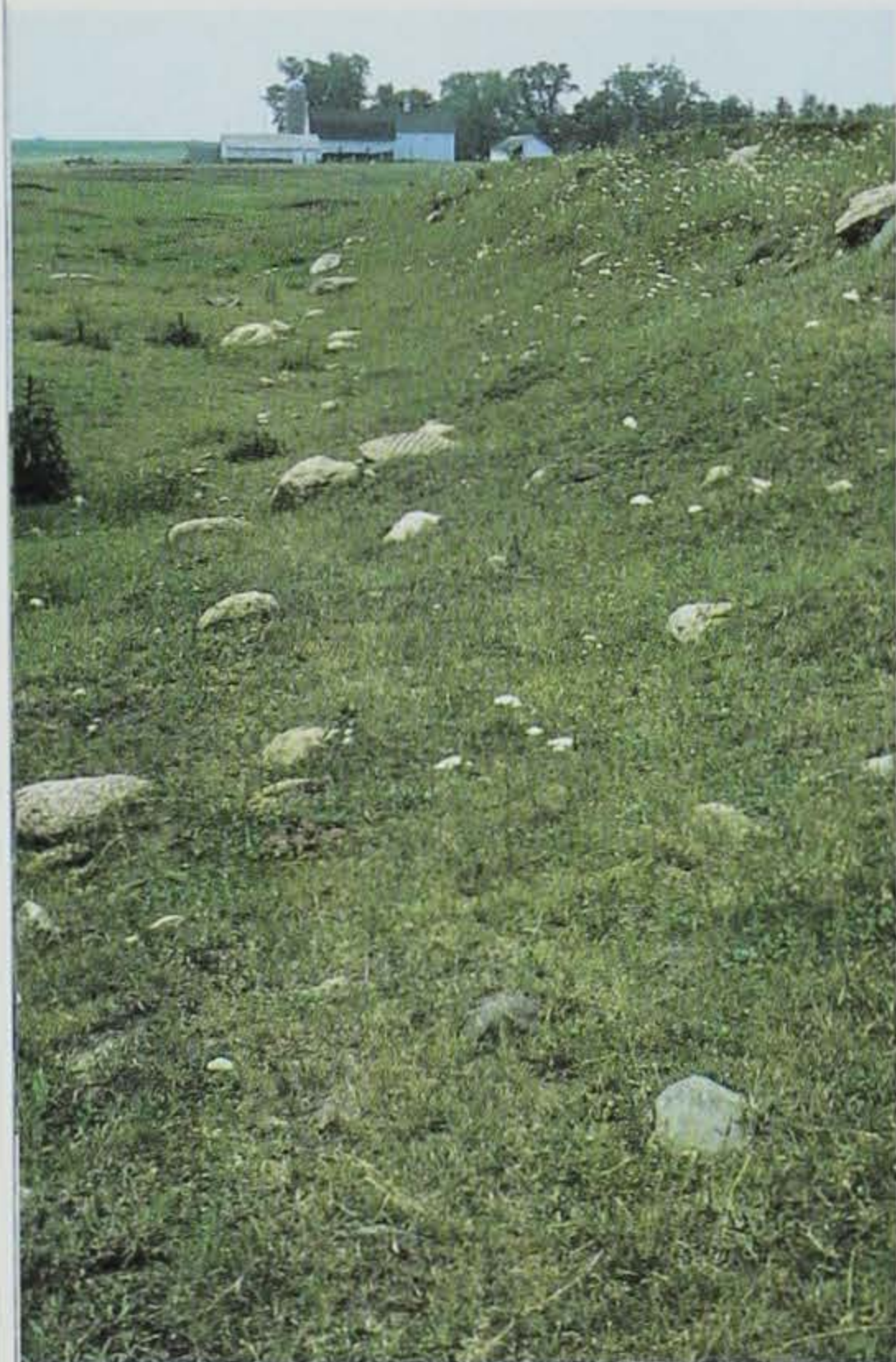


Stan Mirchem

*Above: **Gullies** are deep, narrow erosional cuts through the landscape. Their development and growth is an active geologic process within the silt-dominated Loess Hills topography of western Iowa. Gullies widen and lengthen headward (upslope), eroding quickly, especially after heavy rains.*



Gary Hightshoe, Iowa State University



Pat Lohmann



Gary Hightshoe, Iowa State University



Gary Hightshoe, Iowa State University

Clockwise from top: Circular depressions, some filled with water or clumps of trees, mark the location of sinkholes in this Clayton County aerial view. **Sinkholes** form by collapse of thin soil and unstable rock into underground crevice or cave openings. Shallow aquifers are vulnerable to contamination problems in this geologic setting. Though most common in northeastern Iowa, sinkholes are also seen in Floyd and Mitchell counties and in the Burlington area of southeastern Iowa.

These shallow wetlands are a series of **glacial kettles** on Doolittle Prairie State Preserve in Story County. A subtle drainage system connects them, as noted by the soil moisture and vegetation patterns. These linked "prairie potholes" mark a route taken by glacial meltwater through a maze of slowly disintegrating glacial ice about 13,000 years ago.

Dendritic drainage patterns crease these cropped fields with branching routes along which precipitation runoff is channeled into rills, creeks, and rivers. This effective drainage network has reshaped the glacial plains left after southern Iowa's last contact with glaciers, more than 500,000 years ago.

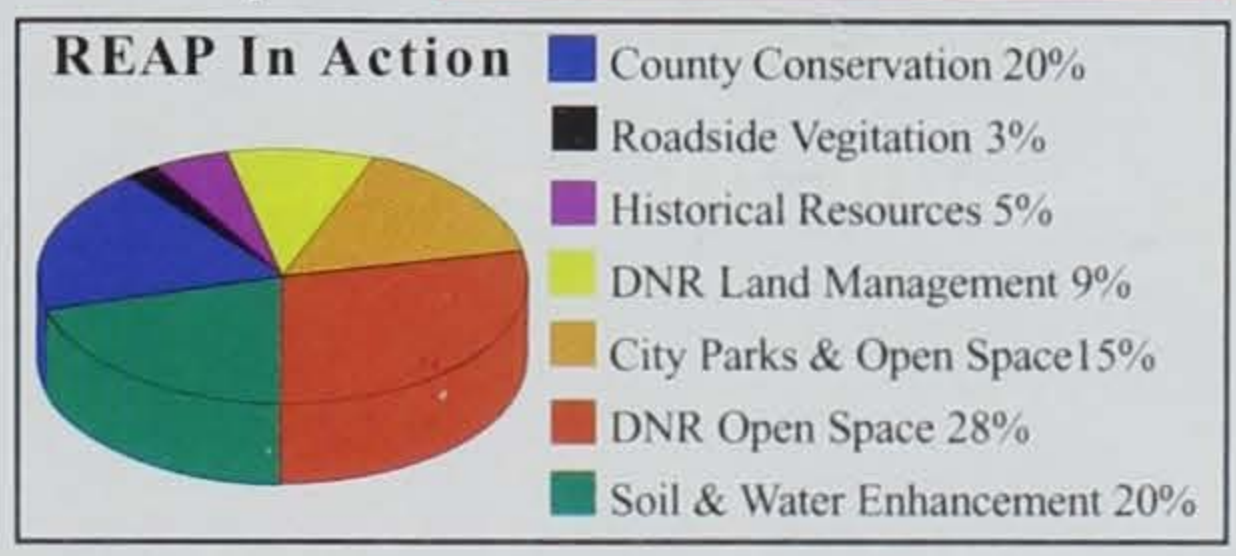
Glacial erratics are boulders of igneous and metamorphic rock, native to geographic regions well north of Iowa. The erratics in this Black Hawk County pasture were carried into Iowa by glacial advances more than 500,000 years ago. They were concentrated at the land surface by later erosion, which removed the fine-grained deposits once surrounding them.

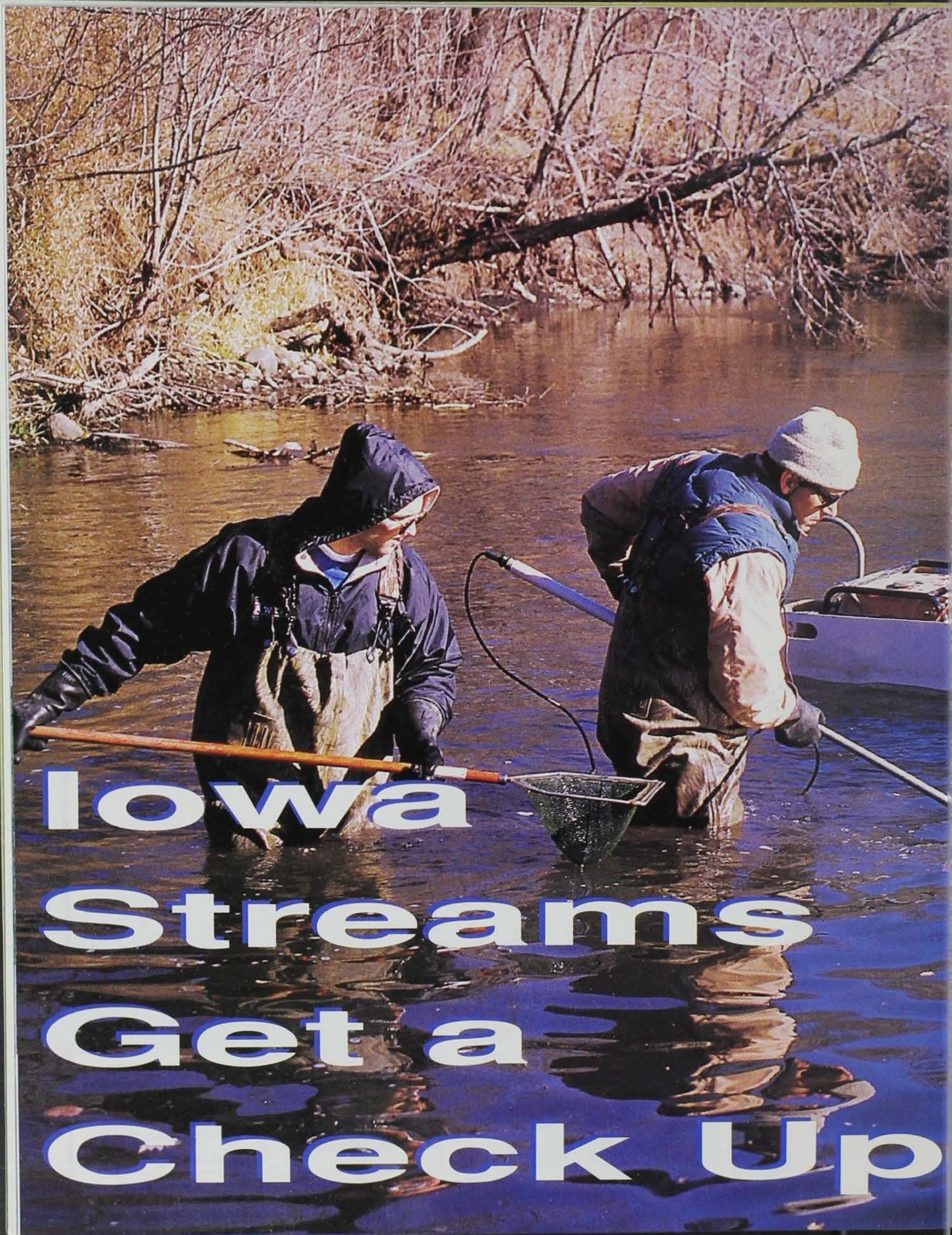
Jean Cutler Prior is a geologist for the Iowa Geological Survey Bureau and editor of *Iowa Geology*. Reprinted from *Iowa Geology*, 1995.



more than just a pretty plate

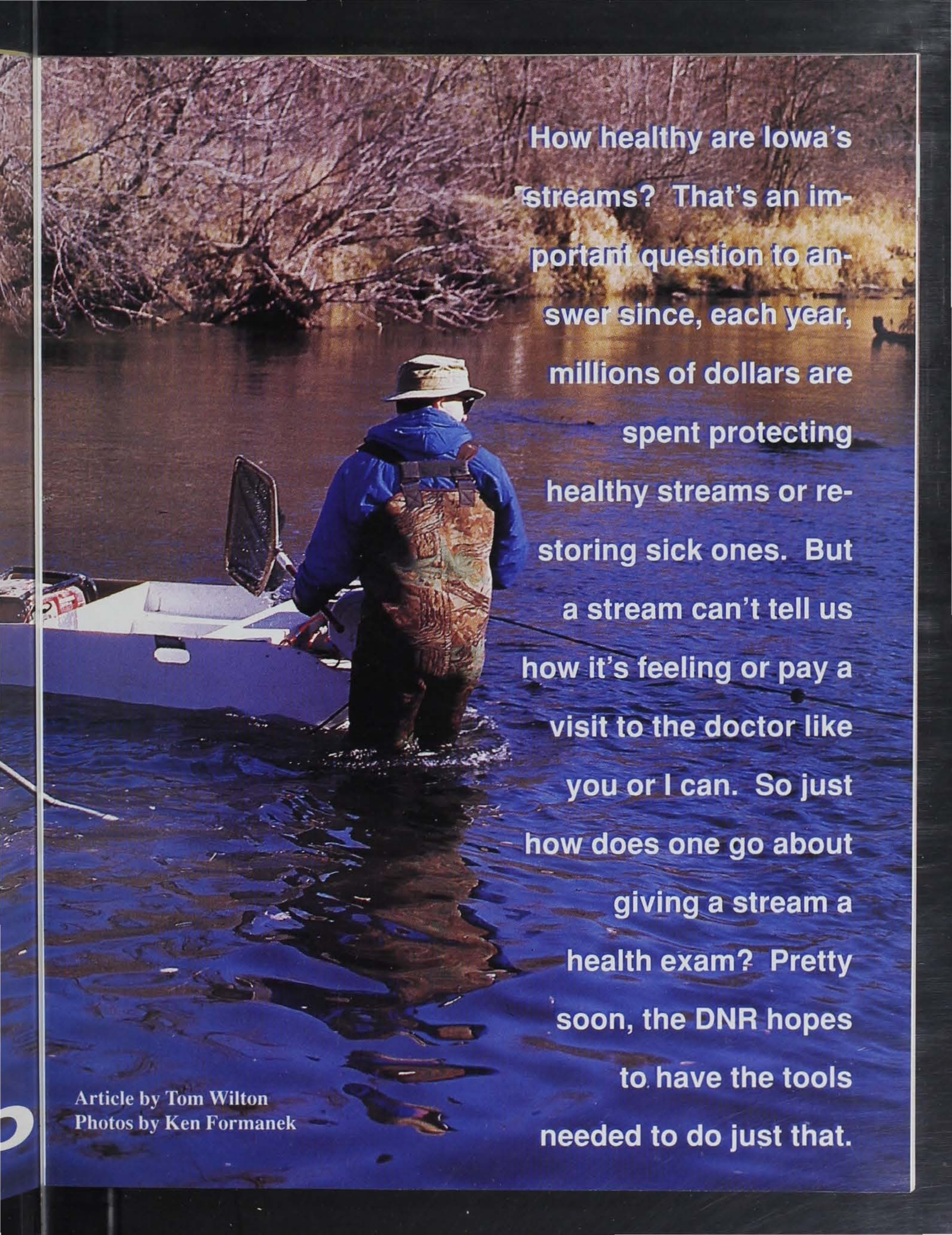
■ The money from natural resources license plates goes to the Resource Enhancement and Protection fund -- **REAP**. Created in 1989, REAP has received the highest national award for conservation programs. So far, it has generated \$70 million and rising. To buy a set of the \$35 plates, take your current plates and registration to your county treasurer and request the natural resource plates.





**Iowa
Streams
Get a
Check Up**

Artic
Phot

A person wearing a blue jacket, a tan hat, and waders stands in a stream next to a boat. The person is facing away from the camera, looking towards the water. The stream is surrounded by trees and brush, and the water is dark and rippled. The person's reflection is visible in the water.

How healthy are Iowa's streams? That's an important question to answer since, each year, millions of dollars are spent protecting healthy streams or restoring sick ones. But a stream can't tell us how it's feeling or pay a visit to the doctor like you or I can. So just how does one go about giving a stream a health exam? Pretty soon, the DNR hopes to have the tools needed to do just that.

Article by Tom Wilton
Photos by Ken Formanek

Working with the University of Iowa Hygienic Laboratory, the DNR's Environmental Protection Division is developing biological criteria for monitoring the health of Iowa's streams and small rivers. The project is supported with funds from the U.S. Environmental Protection Agency (EPA). Biological criteria, or *biocriteria*, are based on the simple idea that the numbers and types of animals living in a stream, such as aquatic insects and fish, are useful indicators of stream health. By measuring how many and what types of these organisms live in Iowa's healthiest streams, we can set health standards to compare other streams.

DNR water quality managers need

stream health. In practical terms, biocriteria will help insure water quality program dollars are targeted to streams that need help the most.

What will biocriteria look like? It will likely take the form of numbers and descriptions that define the biological characteristics of healthy streams. For example, a fish community health score of 7 on a scale of 0 to 10 might indicate a stream is in pretty good health, but has some minor ailments. On the other hand, a fish health score of 2 would indicate very poor health and the stream is in much greater need of help to restore it to health.

The scores could also be supported by a description of what types of fish you

The sampling routine in establishing biocriteria consists of four major parts -- water sampling, macroinvertebrate sampling, fish sampling and habitat evaluation.

Previous page:

■ To collect fish, biologists wade stream stretches using an electrofishing unit towed in a small boat with a live-well. After counting, identifying and examining the fish for disease or injury, they are released into the stream.

From above right:

■ Water-quality instruments are used to determine dissolved oxygen, acidity and temperature. Bottom-dwelling insects are collected, and forage fish counted and identified.

Opposite page from left:

■ Generally defined, benthic macroinvertebrates are "spineless" animals living on or near the stream bottom and can be seen with the naked eye. They are collected using various devices including sieves, fine-mesh nets and small, wood plates.

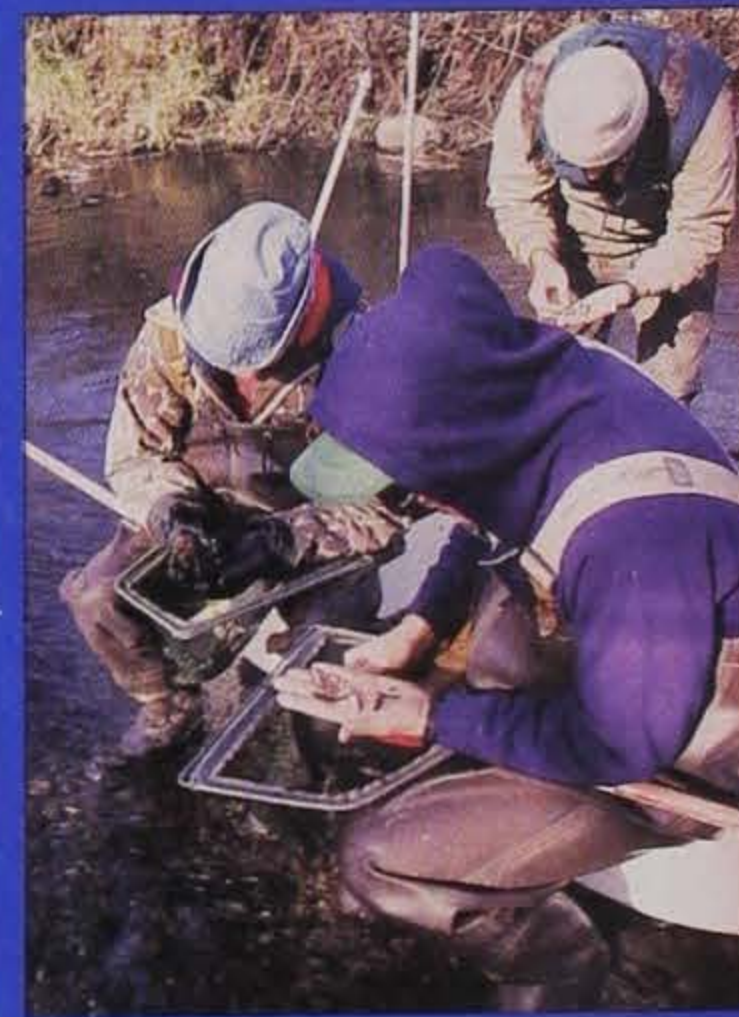
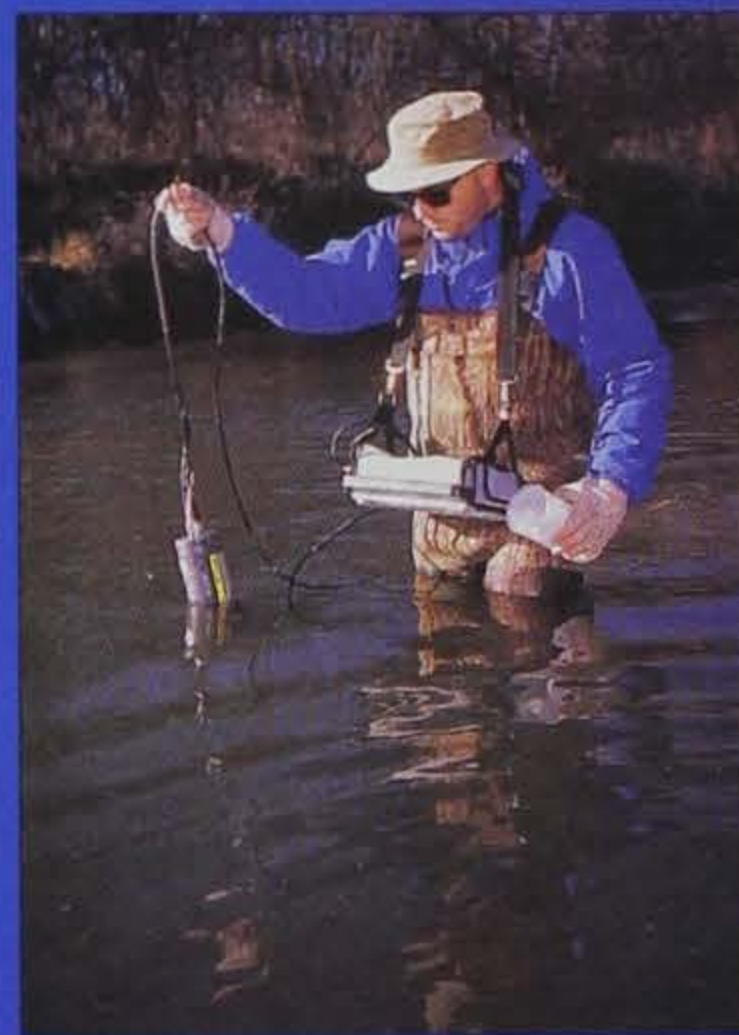
better tools to evaluate the health of Iowa's streams. Right now, only chemical-type criteria are available for this purpose. Chemical water quality criteria are based on research studies determining levels of pollutants that are not toxic to various aquatic species. While useful for regulating chemical pollutants, they are not helpful in detecting other forms of stream deterioration, such as sedimentation or habitat destruction. Biocriteria will provide water quality managers with the tools to identify these types of impacts.

Biocriteria will be also be useful in identifying ailing streams, evaluating the effectiveness of pollution-control actions, and for long-term monitoring of

would expect to find in healthy a stream. In north-central Iowa, for example, these might include the rosyface shiner, northern hogsucker and smallmouth bass. In other regions of the state, other fish species might be considered indicators of stream health.

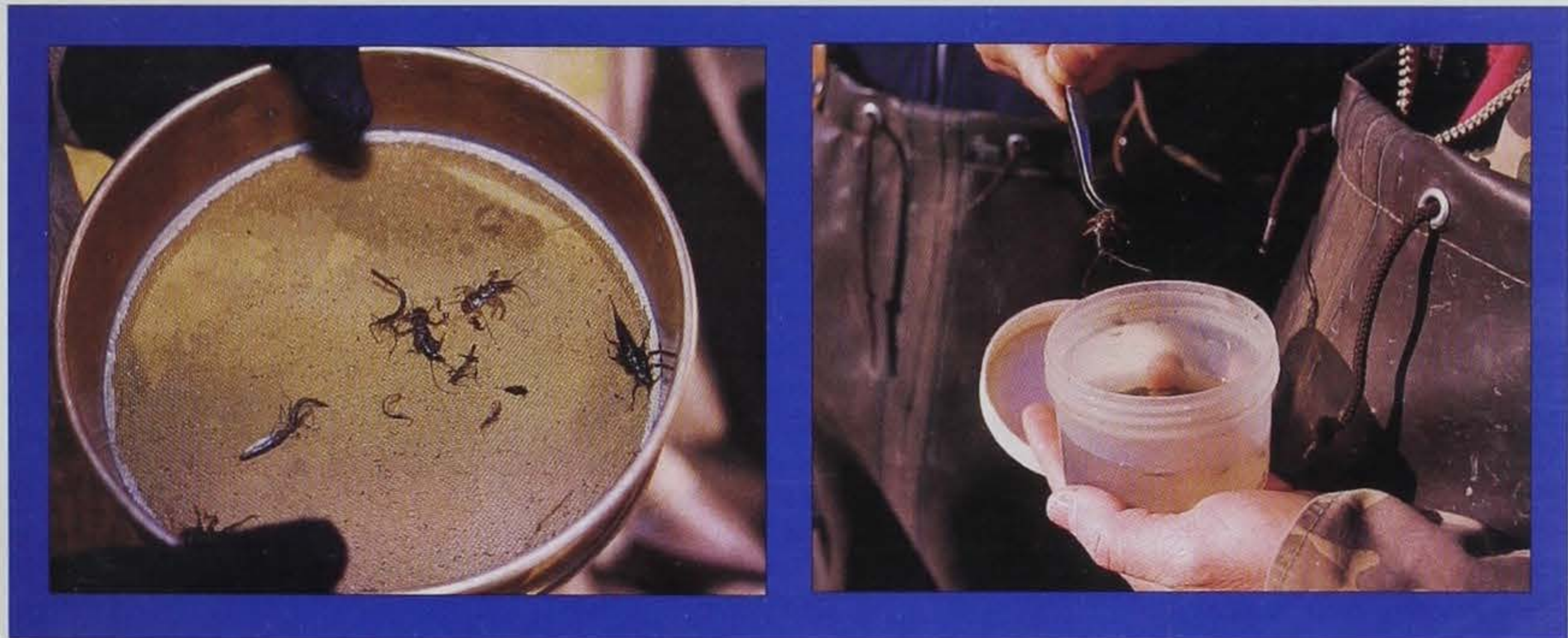
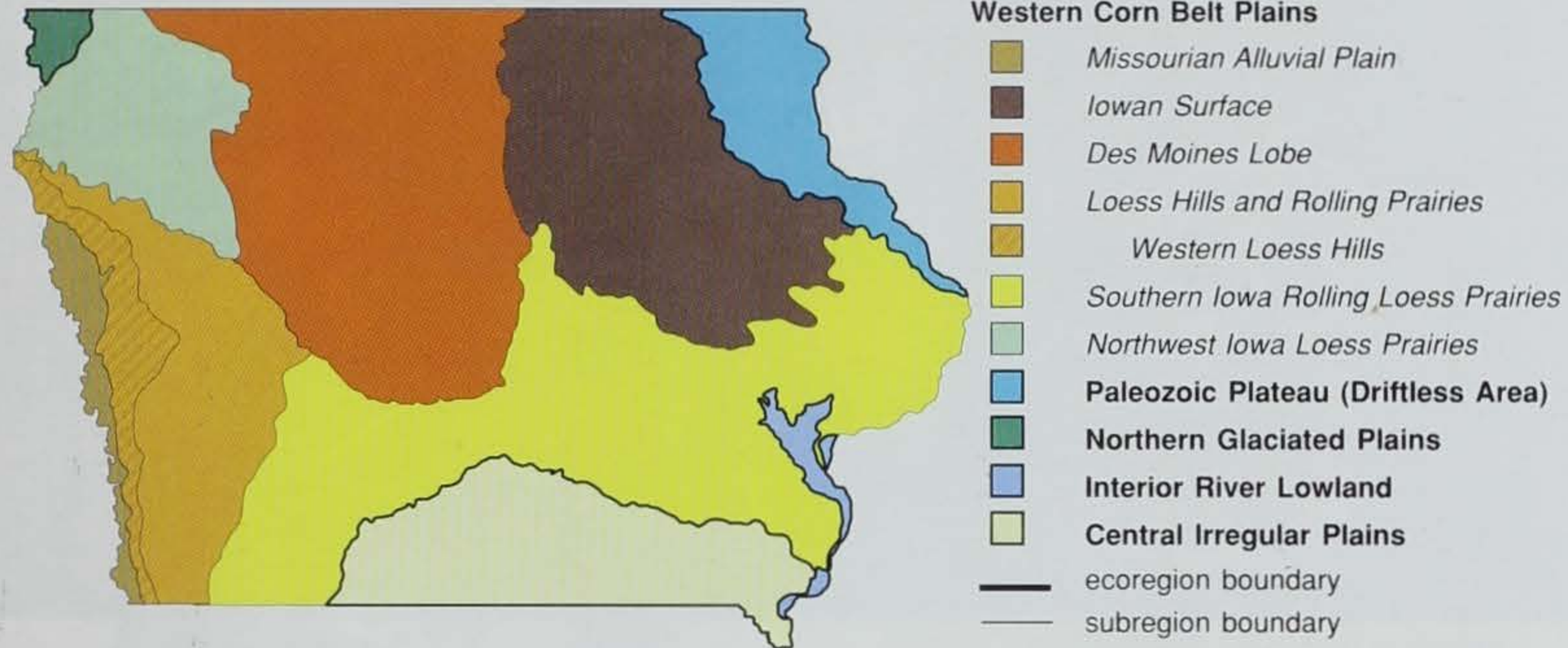
The stream ecosystem

Streams are ecological systems in which microorganisms, algae, higher plants, invertebrates and fish interact with each other and their environment. Healthy streams generally support a broad range of organisms occupying many different niches or types of habitat. Together, these organisms form a complex food chain in which energy, nutrients and organic matter are cycled



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Ecoregions and Western Corn Belt Plains Subregions of Iowa



and recycled in the stream ecosystem.

In a simple illustration of the stream food chain, algae and other microorganisms growing on rocks or logs in the stream become a food source for aquatic insect larvae and other invertebrates. In turn, these invertebrates become food for small fish such as darters and minnows. Large predator fish like bass or northern pike make a meal out of these smaller fish, thus forming the top link in the food chain. Water pollution and habitat destruction can disrupt the food chain and cause sensitive organisms to be replaced by those more tolerant of degraded conditions.

The DNR has chosen to use benthic macroinvertebrates and fish as stream

health indicators. Generally defined, benthic macroinvertebrates are "spineless" animals living on or near the stream bottom and can be seen by the naked eye. Examples include aquatic insect larvae, crayfish and freshwater mussels.

Benthic macroinvertebrates and fish are useful water-quality indicators for several reasons. First, they can be sampled using relatively simple equipment and methods. Second, they have relatively long life spans, so they are exposed to and reflect changes in stream quality over time. Because they occupy the higher levels of the stream's food chain, they also indicate how well the food chain is functioning. Last, there is

a fair amount of research information detailing their use as environmental indicators.

Building a foundation

Before any work on biocriteria development could begin in Iowa, a proper foundation needed to be built. Consisting of a map of ecological regions (ecoregions) and a list of possible reference streams, the foundation was completed in 1993. Ecoregions are geographic areas in which aquatic resources, such as lakes and streams, share many similarities in their biological, chemical and physical makeup. Natural and human factors shaping lakes and streams including climate, landform, soils and patterns in land use are rela-



John Olson



Tom Wilton

Above left:

■ **Decomposing organic matter, such as leaf packs, provides food and habitat for aquatic insects.**

Above right:

■ **Several habitat measurements are taken at regularly spaced intervals in the stream, including the erodibility of the bank.**

tively uniform within each ecoregion.

EPA geographers, working closely with DNR staff, created a new map of Iowa's ecoregions. Using a computerized Geographic Information System (GIS), the researchers were able to overlay several types of maps including landform, land use, soils, streams and natural vegetation. By examining the geographic patterns these superimposed maps created, the geographers were able to identify and draw the boundaries around ten distinct regions. (See page 31.)

The project also produced a list of 110 possible reference streams. Reference streams are representative of the natural characteristics found in other streams in the same ecoregion and are reasonably unaffected by human activities. Several sources of information are being used to evaluate the suitability of each reference stream on the list. The locations of wastewater treatment plants and livestock confinement facilities, as well as nearby land uses and stream habitat characteristics are taken into consideration. Selecting the best possible reference streams is important

because sampling data from these streams will be used to establish biocriteria for each ecoregion.

Sampling phase

The DNR and the University of Iowa Hygienic Lab began sampling reference streams in 1994 to gather data for biocriteria development. The plan calls for sampling 150 reference streams and test (non-reference) streams over a five-year period. Most stream sites are sampled once, however, a few sites are sampled in the spring, summer and fall to measure seasonal changes. By the end of the 1995 field season, 48 stream locations had been sampled.

Sampling procedures

Reference streams generally range from 10 to 60 feet wide and can be sampled by wading. A reach of stream usually between 500 and 1,200 feet long (depending on stream width) is used as the sampling area. To maintain consistency, the same sampling procedures are followed at all stream sites, and the sampling routine consists of four major parts -- water sampling, macroinvertebrate sampling, fish sampling and habitat evaluation.

Water samples are tested for routine water quality characteristics such as temperature, pH (acidity), dissolved oxygen, suspended sediment and nutrients. The amount of stream flow, an indicator of stream size, is also measured. Benthic macroinvertebrates are collected using various devices including sieves, fine-mesh nets and small, wood

plates. An electrofishing unit carried on a backpack or towed in a small boat is used to stun fish so they can be netted. After counting, identifying and examining the fish for disease or injury, they are released into the stream. The last step is habitat evaluation. Several habitat measurements are taken at regularly spaced intervals in the stream. The habitat features evaluated include stream width, water depth, stream bottom composition, amount of shade and cover for fish, stream bank angle and vegetation cover.

Sampling results

The first two years of sampling show reference streams support good numbers of fish and invertebrates. So far, 75 species of fish and 204 invertebrate species have been sampled. Minnows, suckers and darters are the most common types of fish encountered. Aquatic insects, namely mayflies, caddisflies and aquatic beetles, are the most common types of invertebrates sampled. Game fish including channel catfish, northern pike, smallmouth bass, trout and walleye are often found, indicating Iowa's creeks and streams harbor the kinds of fish valued by anglers.

Sampling results also demonstrate the value of using ecoregions to group similar types of streams. For example, reference streams in the Paleozoic Plateau region of extreme northeastern Iowa, tend to have rocky bottoms and cold water, with relatively low levels of silt. In comparison, streams of the Loess

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As for the near future, reference stream sampling will continue for the next few years in order to build a good data base for biocriteria development. DNR and University of Iowa Hygienic Lab staffs are testing various types of biological indicators to find out which ones are sensitive to stream pollution and habitat destruction. Indicators that respond predictably to changes in stream quality will be the most useful. Ecoregions and reference streams seem to be working well as a foundation for developing biocriteria. All in all, the biocriteria project is providing useful information and should provide the DNR with better tools to manage Iowa's streams and rivers.

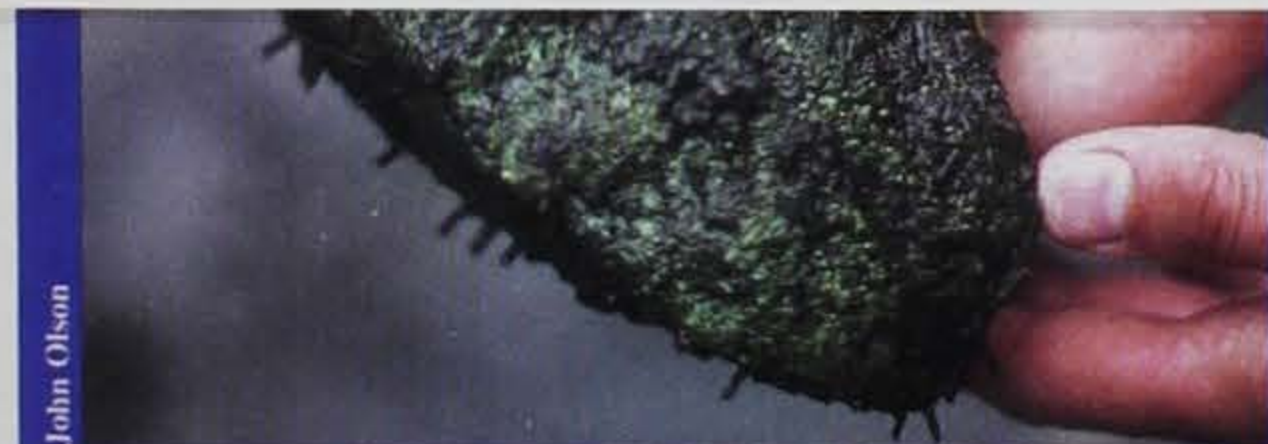
Tom Wilton is an environmental specialist with the department's Environmental Protection Division in Des Moines.

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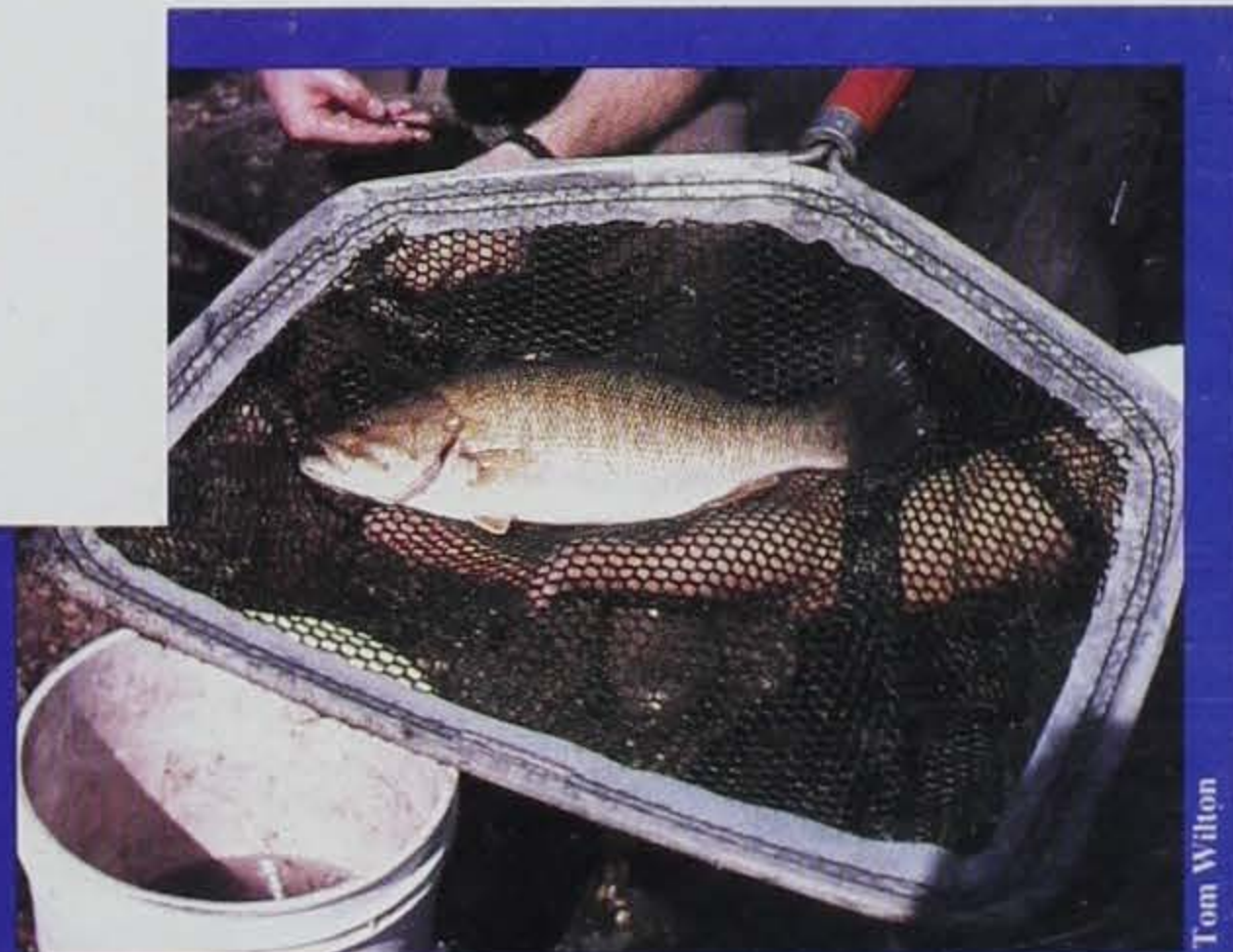
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■ Large predator fish like the smallmouth bass make a meal out of smaller fish, thus forming the top link in the food chain.



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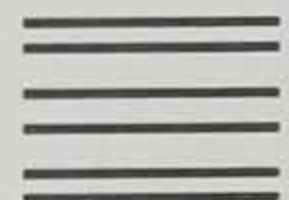


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Hills and Rolling Prairies region of western and southwestern Iowa have sandy or muddy bottoms and warm water that is often cloudy with silt. Although it is still early in the sampling phase, biological results have also begun to show distinct regional patterns.

Historical perspective

In developing goals for Iowa's streams, it is important to be aware of the remarkable changes that have taken place over the past 150 years. Early explorers and settlers told of clear streams that were teeming with fish of many kinds. By 1892, however, Iowa's streams had already changed noticeably, as a result of agricultural development.

Seth Meek, a professor at Coe College in Cedar Rapids and a fisheries scientist working in Iowa before the turn of the century, remarked that the conversion of native prairie to cropland and field drainage improvements had caused many streams to go from being "deep and narrow" to "wide and shallow." Meek also noted that agricultural tillage practices reduced the soil to a "condition in which it could be easily transported by heavy rains to produce muddy currents." The result of this, Meek reported, was streams that were once "abounding in pickerel, bass and catfish . . . are now inhabited only by bullheads, suckers, and a few minnows."

Stream conditions continued to decline during the first three decades of this century. It was at this time that a large number of Iowa's wetlands were

drained and many streams channelized. Urban development also came at a cost to water quality. Before the arrival of modern sewage treatment technology, the discharge of raw sewage into Iowa's streams and rivers was commonplace.

The decline of Iowa's surface waters took its toll on Iowa's native fishes. As many as a dozen of the 140 fish species considered native to Iowa are believed to be gone from the state. Many other fish species are listed as endangered, threatened or of unknown status because they have not been collected in recent years. Less is known about the losses of other aquatic animals and plants, but losses of similar or greater scale are possible.

In recent decades, better wastewater treatment and efforts to reduce runoff from agricultural lands have improved water-quality conditions. Programs such as the Conservation Reserve Program (CRP), in which thousands of acres of cultivated land were taken out of production, are credited for producing benefits to fish, water quality and wildlife. The value of wetlands and vegetated buffer zones around lakes and streams has been recognized in terms of removing chemical pollutants and sediment.

Despite these advances, new threats to water quality are emerging. Ongoing urban growth, conversion of CRP acres back to cropland, and the proliferation of large-scale livestock confinement facilities are a few of the current threats to water quality. Wise management is

needed to make sure recent gains are not lost in the future.

As for the near future, reference stream sampling will continue for the next few years in order to build a good data base for biocriteria development. DNR and University of Iowa Hygienic Lab staffs are testing various types of biological indicators to find out which ones are sensitive to stream pollution and habitat destruction. Indicators that respond predictably to changes in stream quality will be the most useful. Ecoregions and reference streams seem to be working well as a foundation for developing biocriteria. All in all, the biocriteria project is providing useful information and should provide the DNR with better tools to manage Iowa's streams and rivers.

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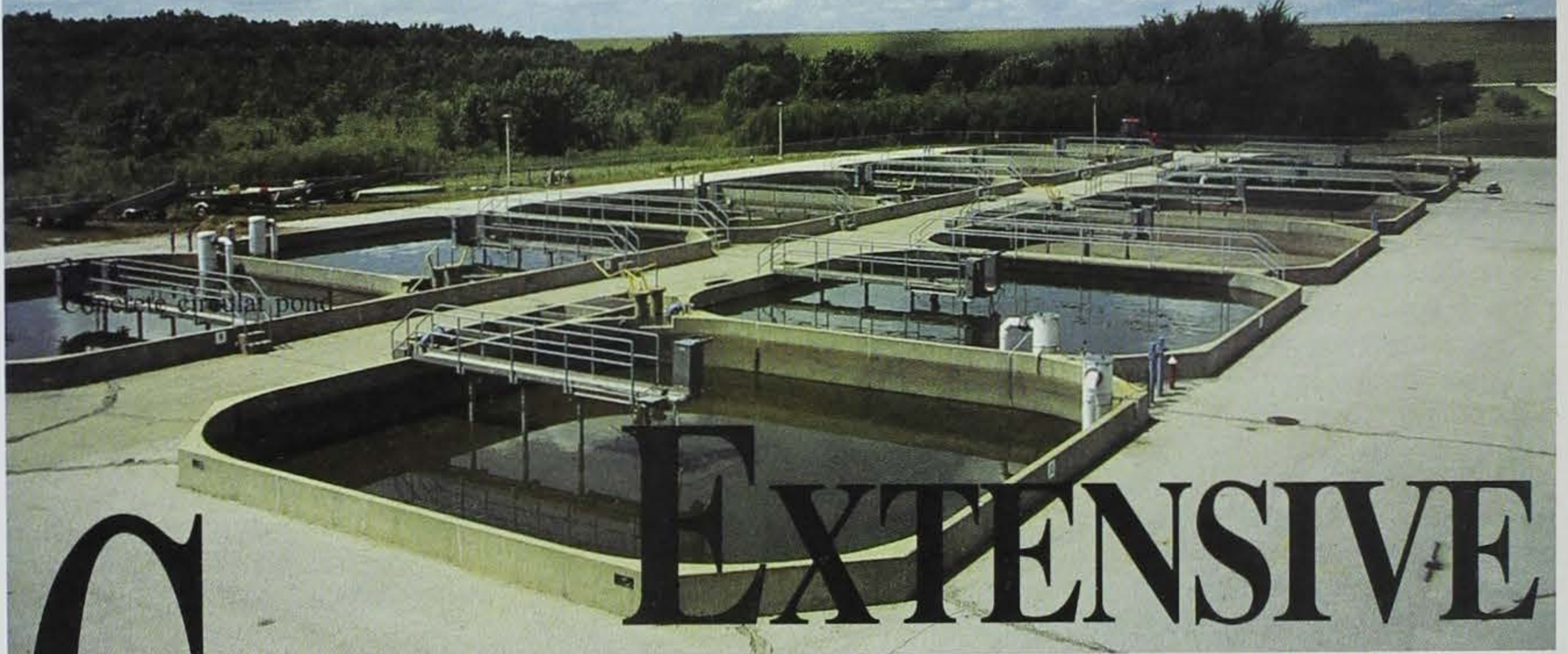
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by Julaine Olson

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What is the difference between intensive fish culture and extensive fish culture? Simply put, if fish are reared in an earthen pond the culture method is considered extensive. If fish are reared in a tank, raceway or concrete pond, then the culture method is considered intensive.

Each culture method has its own set of advantages and disadvantages (see Table 1). The number of fish any fish-rearing container will hold, whether a large pond or a small tank, is limited by the availability of oxygen and the buildup of the byproducts of metabolism. The greater the flow of water through a pond or tank, the more oxygen available to fish for respiration, and the greater the dilution of harmful metabolic by products, such as ammonia. Extensive culture ponds (earthen ponds) typically have little or no water flow through them so the number of fish reared is limited by fluctuating oxygen levels. More fish can be raised in less space under intensive culture conditions because of greater water flows keeping oxygen levels in the water high.

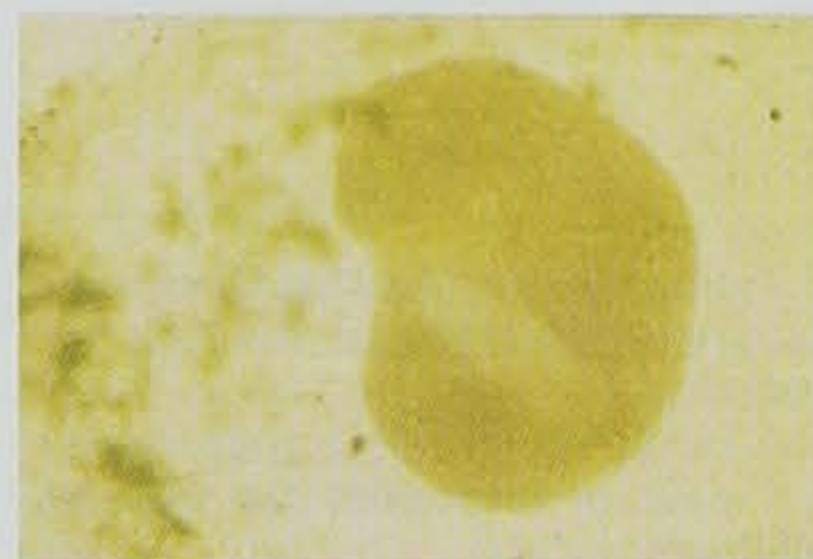
The ability to produce more fish with intensive culture has a downside -- disease. Intensively reared fish are vulnerable to outbreaks of life threatening diseases which can result in high losses, unless fish are closely watched. Disease outbreaks are treatable and preventable. Fish reared intensively are easily observed for changes in feeding behavior or changes in the number of fish that die each day. Fish reared in ponds are not immune to fish diseases and sometimes fish get sick, although not as often as under intensive culture conditions. Disease prevention is more difficult in a pond because dead and dying fish are hard to find and disappear quickly. In addition, when diseases do occur, treatment is often troublesome or impractical because of large pond sizes.

Formulated feeds are a necessary part of fish culture, especially intensive culture. Fish reared extensively eat plankton and insects available in the pond. Often growth of plankton in ponds is promoted with applications of

organic or inorganic fertilizers. Once fish reach a larger size, manufactured feed can be added to their natural diet. Intensively reared fish eat formulated feeds almost exclusively, therefore, these feeds must meet all nutritional requirements. Many of the fish culture research projects currently underway involve development of dry diets that are as nutritionally complete as natural foods and result in the production of strong, health fish.

In general, intensive culture can be more expensive. Labor costs for intensive culture can be higher because tanks and concrete ponds must be cleaned frequently to minimize disease problems caused by unsanitary conditions, or because of the "intense" care that the fish receive. Costs for chemicals and treatment time add up when disease outbreaks are a problem. The higher cost of intensively reared walleye is offset by their high survival after stocking and their significant contribution to the fishery. Intensively cultured fish grow faster and are generally in better condition when stocked into fishing waters. These fish survive better and produce good fishing, while stocking fewer fish. Intensive culture for many species will continue as new technologies are refined. These improvements will continue to increase survival of stocked fish, decrease cost of production and improve angling.

Iowa was one of the first states to use intensive culture techniques to rear cool-water and warm-water fish. Iowa developed and continues to develop intensive culture methods to rear channel catfish and walleye. Many of the intensive culture techniques in use today were unheard of a decade ago. These advancements have enabled



DNR



DNR



DNR

Above from top:

■ Diseases caused by parasites such as *Ichthyophthirius multifiliis* or ich can be devastating for fish reared with extensive or intensive fish culture methods.

■ Indoor tanks used for intensive culture of fish at the Rathbun Fish Hatchery.

■ Walleye have the potential to achieve larger sizes when spawned out of season and reared with intensive culture methods. The bottom fish was spawned in January and reared with intensive culture methods. The top fish was spawned in April and reared with extensive culture methods.

Opposite page:

■ Concrete circulating ponds used for intensive culture of fish at the Rathbun Fish Hatchery.

From left:

- Earthen ponds used for extensive culture of fish at the Mt. Ayr Fish Hatchery.
- A happy angler with a good catch -- a result of successful fish culturing methods.



DNR

Iowa hatcheries to be reliable producers of quality fish.

In 1995, more than 2.6 million fish were reared using extensive culture methods and nearly 1.5 million fish were reared using intensive culture methods in Iowa (see Table 2).

Whether extensive or intensive culture techniques are used to rear fish is a combination of the particular culture method best suited for that particular species of fish and the availability of facilities.

Trout, muskie and channel catfish are reared from fry to stockable size using intensive culture exclusively. The bluegill is one species reared entirely with extensive culture techniques, mainly because they are stocked at such a small size. Other species are reared with a combination of extensive and intensive culture methods. Bluegill and largemouth bass lend themselves well to earthen pond production because of their habits of scouring out nests on the pond bottom when spawning. These species are simply harvested when they reach two inches and used for stocking in farm ponds or newly renovated lakes. A portion of the largemouth bass are stocked into tanks where they are trained to accept



Ron Johnson

formulated feed and reared intensively to a larger size.

Walleye are also reared with a combination of the two methods. Walleye are spawned in the hatchery, then newly hatched fry are transferred to earthen ponds to feed on natural feeds, such as, zooplankton and insect larvae. Fry are usually stocked into ponds to feed for lack of a proper substitute to their natural diet. For now, two inch walleye grown in earthen ponds and not used for stocking are transferred to the Spirit Lake and Rathbun hatcheries for intensive culture and grow to seven inches or greater. Newly developed techniques for rearing walleye fry on formulated feeds are being researched and are now available. Two-inch, intensively reared walleye can be produced to supplement the numbers currently harvested from earthen ponds. These new techniques

will allow an increase in hatchery production of walleye needed to meet the demands of anglers.

In Iowa, both fish-rearing methods have their place and are skillfully controlled by hatchery managers to optimize fish production and provide quality fish to stock at the least cost possible. Hatchery personnel are constantly updating and improving extensive and intensive culture techniques to assure they meet production goals.

Julaine Olson is a fisheries biologist at the Rathbun Fish Hatchery.

Table 1
A comparison of intensive and extensive culture methods.

| Intensive Culture | Extensive Culture |
|---|---|
| Requires water flow. | Requires little or no water flow. |
| Raise more fish in less space. | Need more area to raise large numbers of fish. |
| Formulated feeds must meet nutritional requirements. | Natural foods available to compensate for nutritional shortcomings of formulated feeds. |
| Disease problems common. | Some disease problems, but not as often. |
| Oxygen usually adequate. Oxygen may be added to water | Oxygen levels fluctuate daily -- may need to aerate. |
| More labor involved in caring for fish. | Less labor intensive. |

Table 2
Numbers and species of fish reared intensively and extensively at Iowa's fish hatcheries in 1995.

| Species | Number Produced | Size | Culture Method | Hatchery |
|-----------------|-----------------|---------|----------------|------------------------------------|
| Walleye | 600,800 | 2" | Extensive | Mt. Ayr, Fairport |
| | 255,500 | 3-6" | Extensive | Spirit Lake Nursery Lakes |
| | 120,000 | 7" | Intensive | Rathbun, Spirit Lake |
| Channel Catfish | 621,850 | 2-4" | Intensive | Rathbun |
| | 369,890 | 6" | Intensive | Rathbun |
| Largemouth Bass | 460,750 | 1.5" | Extensive | Fairport |
| | 29,500 | 4-5" | Intensive | Rathbun |
| Muskellunge | 7,100 | 9" | Intensive | Spirit Lake |
| Bluegill | 1,325,000 | 2" | Extensive | Mt. Ayr, Fairport |
| Trout | 316,000 | 1/2 lb. | Intensive | Decorah, Big Spring and Manchester |



Ethanol Production Growing In Iowa



by Joel Palmer

With the increasing demand for ethanol in this country, the time seemed right for several farmer-controlled organizations to plan ethanol-production plants. These plants will allow farmers to use their own corn to help their local economies instead of having to export most of it. The 10-to-30-million-gallon-per-year plants will also produce cattle feed for local cattle producers.

Sunrise Energy Corporation

Sunrise Energy Corporation is currently constructing an ethanol plant in Blainstown, located in east-central Iowa. This organization developed from the merger of two cooperatives -- the Benton County and Eastern Iowa Farm Feeders (cattle raisers), and the Iowa Producers Coop (corn growers). Members of the Sunrise Energy

Corporation had an idea in which they could produce ethanol and cattle feed in the same facility. In the past, corn growers would export most of their corn while cattle producers would have to buy distillers grain from ethanol facilities to feed their cattle. With the new facility, the corn farmers will be able to use their corn to produce ethanol and the by-products can be used to feed the local cattle.

The plant will use three million bushels of corn per year to produce between seven and 10 million gallons of ethanol. The by-product of this operation will be enough to feed about 25,000 head of cattle per year.

The \$18-million facility will be ready for production in about one year. To fund the project, the organization is receiving state assistance, including grants from the Department of Agriculture and Land Stewardship and the Iowa Department of Economic Development. The group is also selling stock in the plant, with a minimum investment of \$5,000. Most of the investors are corn farmers.

The plant will provide 17 jobs to the area. "This will be a real plus for the economy," said Dick Pankey, consultant to Sunrise Energy Corporation. "It will bring more people to this area. There will be a number of local businesses who will be supported by this on a spin-off basis. It will also help the tax base of Benton County."

The organization is not threatened by the high corn prices that the U.S. is currently experiencing. "It still works, even with expensive corn," said Pankey. "There's a huge demand for ethanol. You can easily sell all that you make, no matter what price you

sell it at because of the constant demand. It's really a seller's market."

Integrated Agri Energy

Another facility is being planned by Integrated Agri Energy. This organization is comprised of 12 farmers, two from each of the following counties: Adair, Audubon, Cass, Guthrie, Pottawattamie and Shelby. This group also wanted to produce ethanol and cattle feed in the same operation.

Integrated Agri Energy plans to build an \$18-million production complex just north of Atlantic. The plant will use 3.7 million bushels of corn to produce 10 million gallons of ethanol annually. The plant will also provide 90,000 tons of distillers dried grain co-products for feeding cattle.

To fund this project, the organization received a \$200,000 grant and a \$700,000 loan from the state, plus \$25,000 from a state value-added program. They also received a \$25,000 forgivable loan from the Iowa Corn Promotion Board.

Farmers can invest their crop in the facility by agreeing to deliver at least 8,000 bushels of grain annually or, in the case of cattle feeders, by agreeing to accept a minimum of 600 tons of wet distillers grains with solubles (WDGS).

The plant will create 22 jobs plus provide other services in the area with work such as trucking and maintenance. "We're hoping it will mean more economic activity," said Jim Pellett, president of Integrated Agri Energy.

This group is also not concerned with the current high corn prices. "We

don't anticipate corn prices staying this way," said Pellett. "Current corn prices are not a reflection of the true value of corn."

He said that this plant will be able to produce ethanol at a lower cost than most facilities. One reason for this is the plant will not use a dryer to dry the cattle feed produced by the ethanol by-product. Pellett said that dryers can account for 10 percent of a facility's operating cost. Also, because there is a sufficient number of cattle in the immediate area, the group will not have a large trucking expense to transport the feed.

Western Iowa Ethanol Coop

A third facility is being planned by the Western Iowa Ethanol Coop. This facility will also produce ethanol and distillers grains for cattle feed. The operation will use 11 million bushels of corn per year to manufacture 30 million gallons of ethanol. It will also produce 100,000 tons of cattle feed per year. This proposed \$50-million facility is the largest of the three projects being planned.

This facility is still in the early stages of planning. The design of the plant is completed and the coop plans to build it just outside of Glidden. The organization is currently applying for permits and working on financing the project. Norm Soyer, who is on the coop's board of directors, said it is possible that construction will start as early as this fall. He said once construction begins, it will take 12 to 16 months to complete.

The coop plans to have 400 local members who will each enter into a market contract to sell their corn at

market price. The minimum investment will be 5,000 bushels with a maximum of 200,000 each year over the next five years.

The coop is moving cautiously on this project. Soyer said he is concerned with how the current high corn prices will affect the ability of the plant to be profitable. The organization is waiting to see where corn prices go and what kind of corn crop is harvested this year. If prices remain at their current mark, Soyer said the project may be put on hold, but not abandoned.

If built, the plant will provide between 40 and 50 jobs to the area. "It could have a very healthy economic impact," said Soyer.

These three groups have found a way to provide a service to both corn farmers and cattle producers, while helping their local economies. By having farmer-controlled and farmer-invested facilities, these organizations can ensure that farmers get to participate in the plants' profits. And by investing in a thriving industry, such as ethanol, these farmers can expect a

high rate of return on their investments.

Joel Palmer is an energy information intern for the DNR in Des Moines.

Reprinted from the Renewable Energy Bulletin, July 1996.





Introduction

With efforts underway to expand ethanol use, market opportunities for small ethanol producers are growing. However, for businesses to survive the changing agricultural market place, they must be able to use and sell the by-products of ethanol production.

The Department of Natural Resources initiated a project to develop an economic feasibility study, computer model and business plan for a hypothetical energy-producing farm. The premise of the energy farm is that each of the farm's activities produce by-products and the waste generated from each activity can be used by other farm activities as feedstock. The information obtained from this study was designed to be a transferable resource for others considering similar ventures.

The contractor chosen for this project was Sunrise Energy of Blairstown, Iowa.

The hypothetical integrated energy farm developed by Sunrise Energy is comprised of a variety of farming components which rely on each other for their economic and energy survival.

by David Downing

Integrated - Energy - Farm

Ethanol Plant

The hub of the project is an ethanol plant with a production capacity of 7.5 million gallons per year. Corn production for the ethanol plant is from local coop members who are also energy farm stockholders. A local growing area means grain transportation is only a short distance, making it both economical and energy efficient. The corn used in this dry milling ethanol production system may contain up to 28 percent moisture. Acceptance of wet corn saves the producers up to \$40 in drying cost per corn acre. Three different heating options were considered for the internal design of the plant considered - biomass fired hot water steam system, a biomass co-generation system or reliance on a natural-gas-fired boiler system. Each system was evaluated for efficiency and capital cost.

By-Products

During the production of ethanol, a variety of by-products and feedstocks are created. In this project, carbon dioxide gas is captured and bottled for sale. Any excess carbon dioxide is sent to the greenhouse to increase plant growth. Wet distillers grains and solubles (WDGS) produce a high-protein animal feed supplement. The WDGS are used to feed cattle at an on-site operation, with the remaining product being sold to energy farm stockholders with cattle facilities. The plant will produce approximately 21,600 tons of WDGS per year, with a market value of \$120 per ton.

Greenhouse

The feasibility of a greenhouse using steam and hot water from the ethanol plant was studied. During winter months, if a supplemental source of energy was needed for heat, methane gas could be used from the methane biogas recovery system.

Aquaculture

Another component of the energy farm made possible through the use of farm by-products is aquaculture. The aquaculture building uses captured waste heat from the ethanol plant to maintain the incoming water temperature at 70 degrees. The proposed system could hold one million fish. The by-product waste water is used on plants in the greenhouse.

Methane Digester

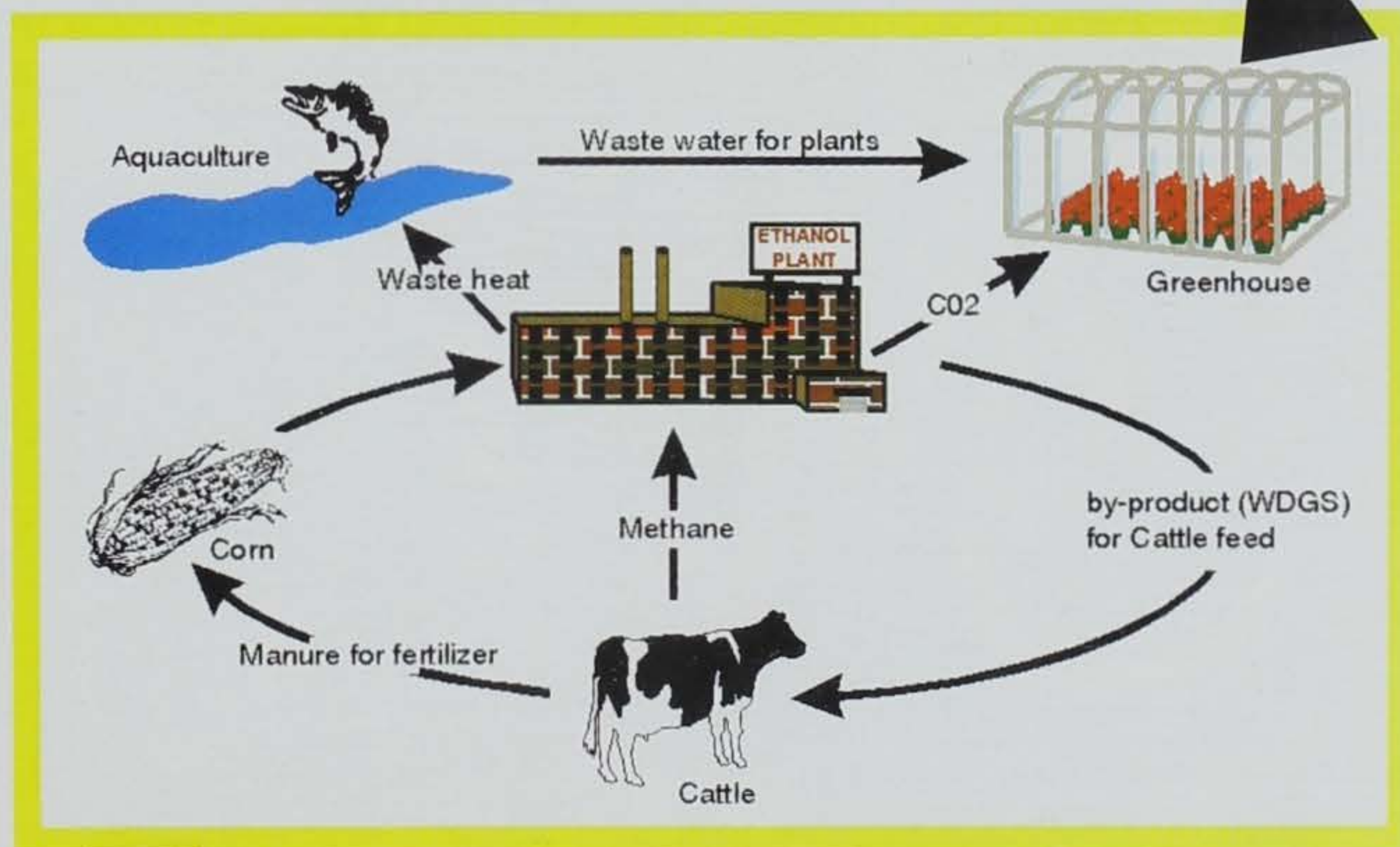
One of the by-products from the cattle operation is methane gas. The methane gas recovered from the digester is used as a supplemental energy source for the ethanol plant boiler, and as a heating method for the greenhouse and aquaculture if needed during the winter.

Computer Model For Economic Feasibility

The computer model allows the input of information reflecting the current financial markets as well as the specific application needs of the user. The model provides the user the opportunity to test various energy farm scenarios and financial situations, and learn if the outcome is economically feasible. The model provides a financial statement for a five-year period.

Sustainable Farm

A cattle operation located next to the ethanol plant confines 1,000 head of beef cattle year round. Another 4,000 head of cattle are maintained in an outdoor facility. The feed for the operation will come from the on-site ethanol by-products, and through coop energy farm stockholders. A nutrient management system was developed, indicating where to best use the cattle manure as fertilizer. The cattle produce 35 tons of waste per day, needing treatment from a methane digester.

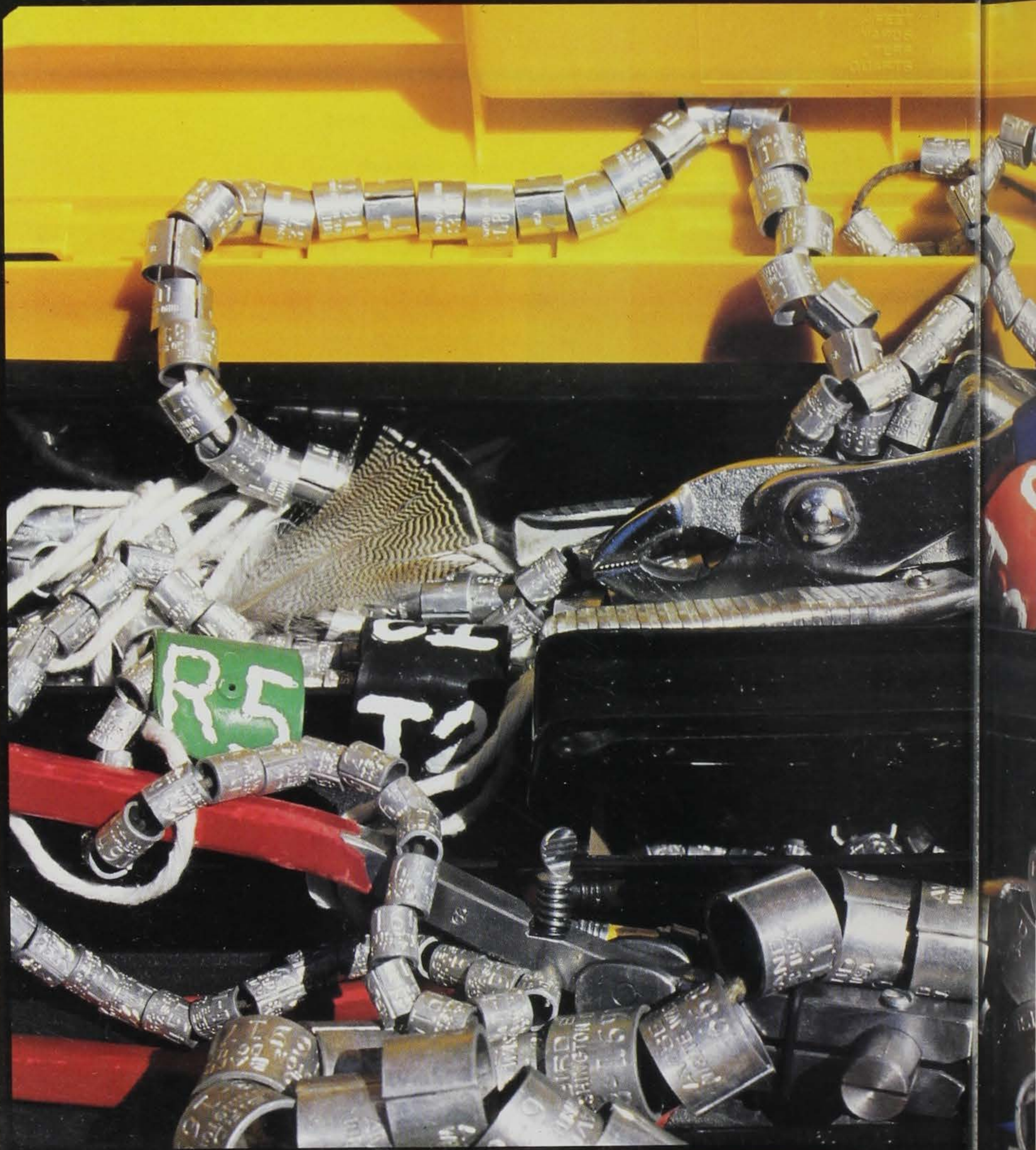


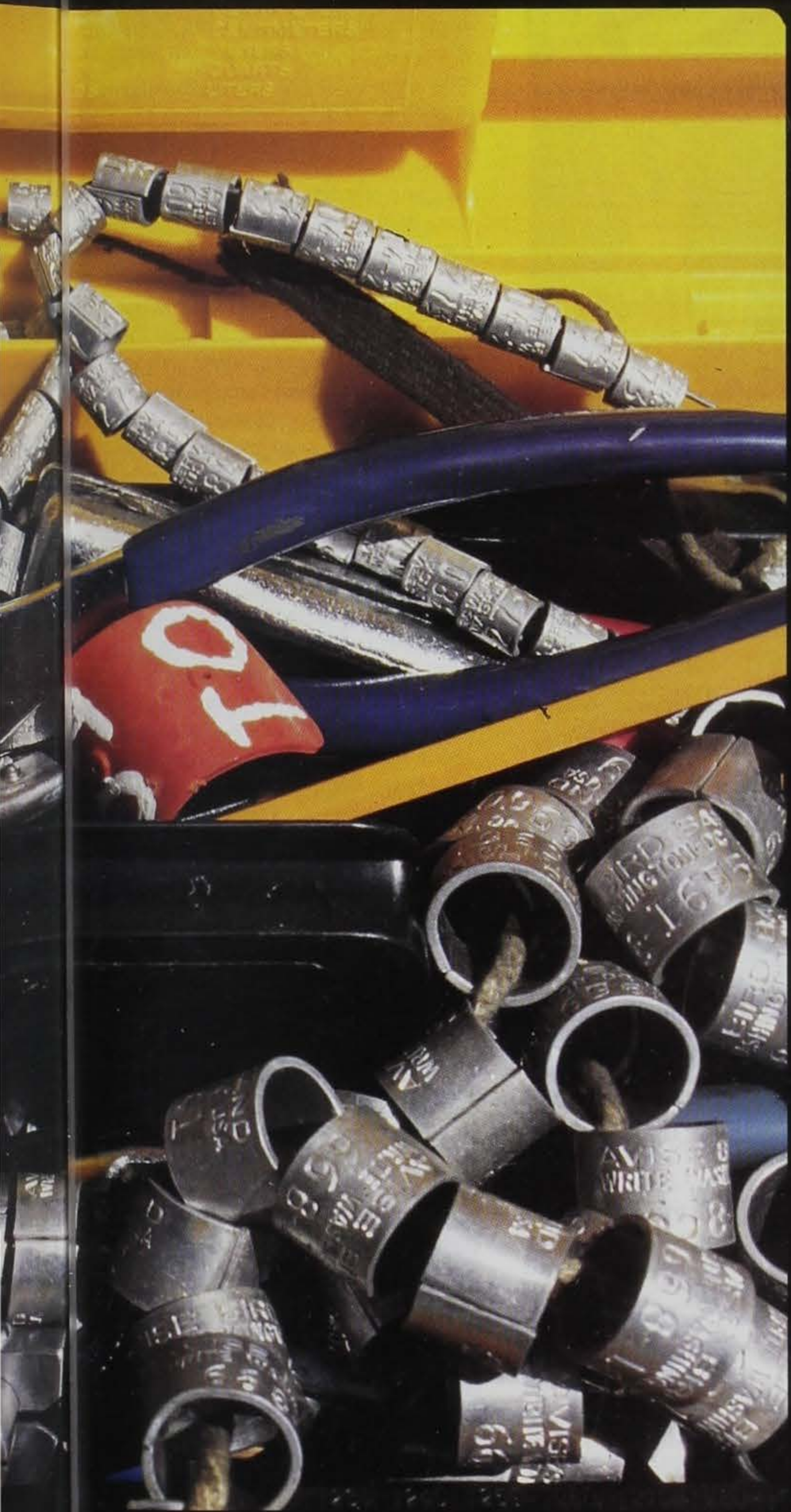
Conclusion

One way to meet the goal of increasing the production of ethanol while maintaining sustainable agricultural practices is to employ an integrated energy farm system. Systems like an integrated energy farm can provide options for smaller ethanol producers by taking economic advantage of what used to be waste material and adding value.

David Downing is a program planner for the department's energy bureau in Des Moines.

Reprinted from the Renewable Energy Bulletin, July 1996.



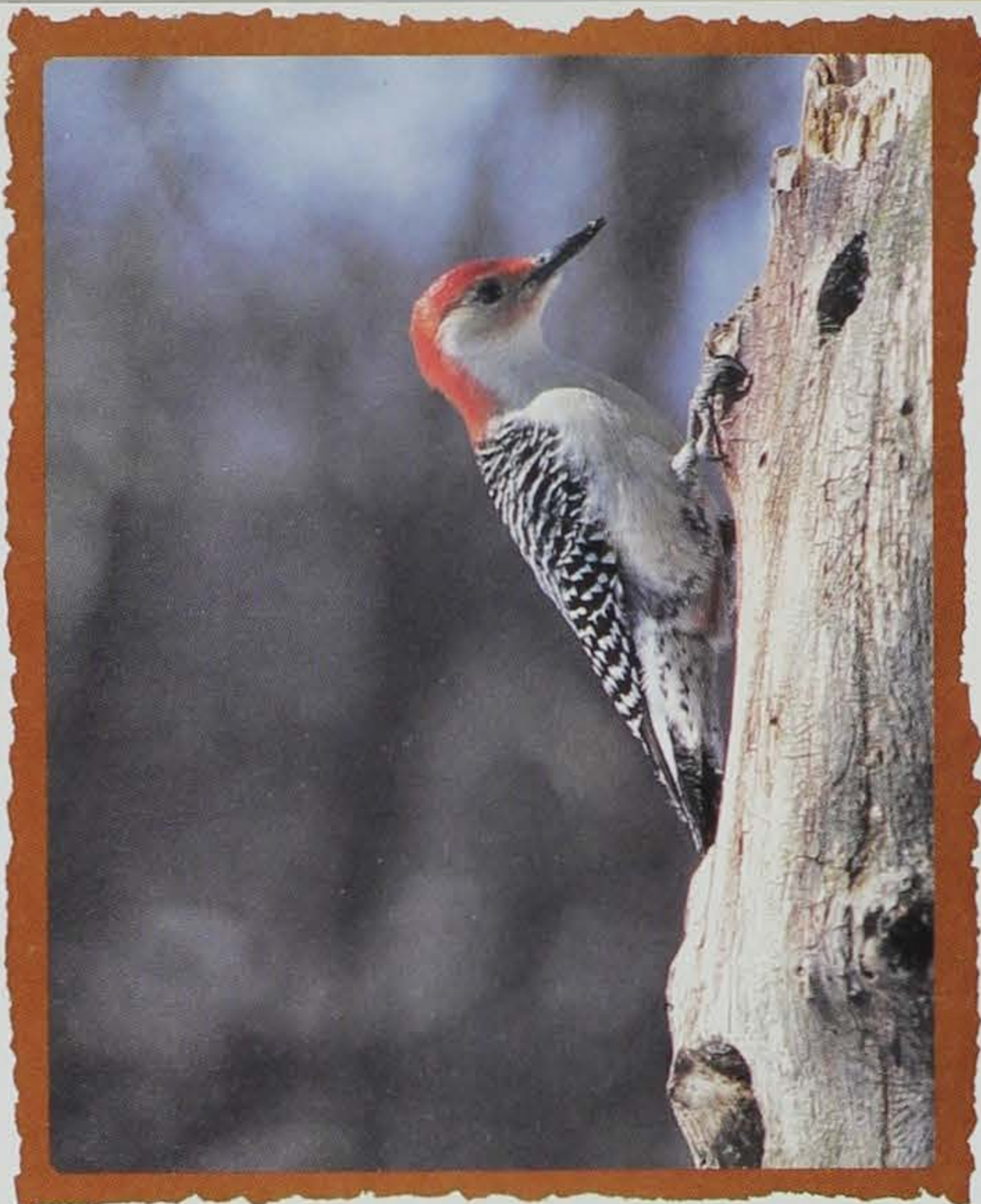


To many, they may look like cheap rings of aluminum, but for those who wish to unlock the mysteries of migration these rings are more valuable than gold.

Precious Metal

Article and photos by
Lowell Washburn

■ From red-bellied woodpeckers (left) to ruddy ducks, the information gathered from band reports enables scientists to better understand the needs of the species.



In the summer of 1994, Dr. Pat Redig repelled down the side of the American Republic Insurance building in Des Moines to band a peregrine falcon nestling located in an alcove several stories above the busy street below. In March of 1995, the same falcon was recaptured and released 20 miles south of Mexico City.

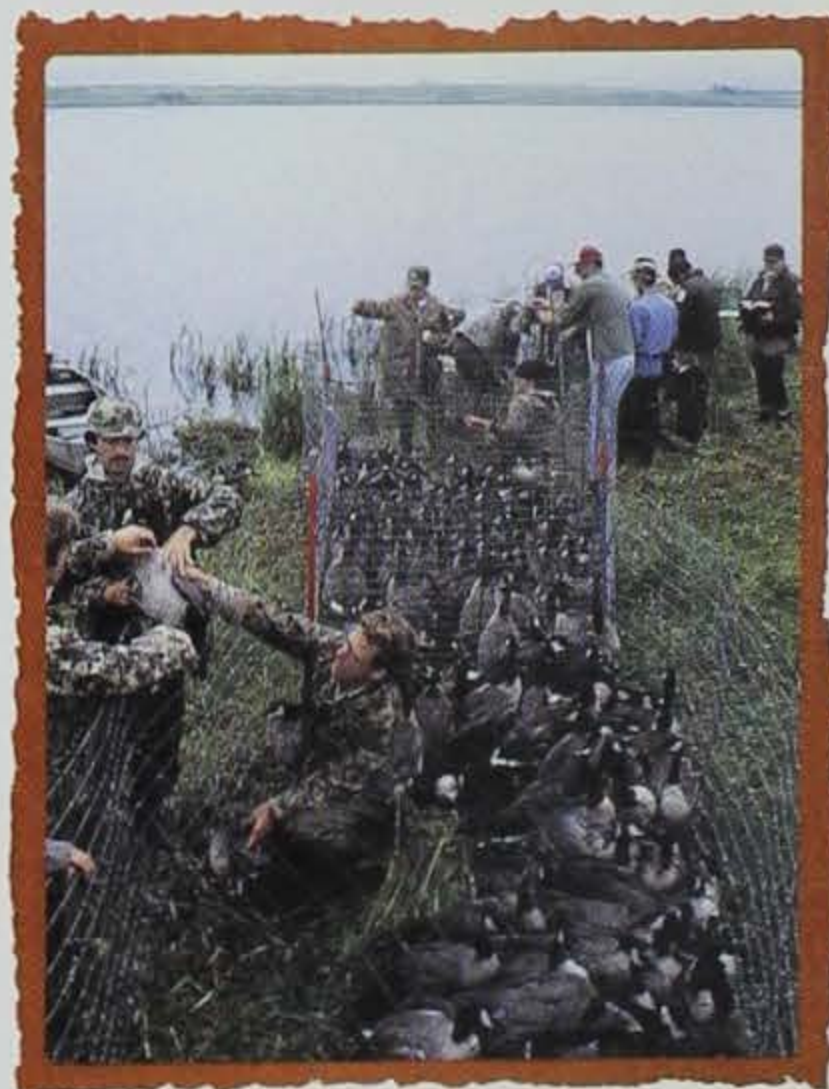
In September 1982, DNR wildlife technician Gerry Anderson banded an adult male blue-winged teal just south of the Minnesota border at Winnebago County's Rice Lake. Three weeks later, the bird was bagged by a hunter on the south coast of Old Harbor, Jamaica, West Indies.

In central Iowa's Springbrook State Park, a group of school children helped capture and band a young red-bellied woodpecker. Eleven winters later, the same bird is retrapped at the same feeder.

Humans have long marveled at the annual mass movements of migratory birds. We mark the change of seasons by their passage, and have long pondered the mysteries of migration. Where do birds go when they depart for the winter? How long do individuals live? Do birds return to the same breeding areas each year and, if so, do they use the same invisible pathways during each migration? Is the robin that nests under your garage eave really the very same bird that has raised its young there for the past three summers? Do the chickadees swarming to your backyard feeder ever leave the area or are they all year-round residents? How many mallard ducks can be harvested from the fall flights before having a negative impact on future production?

Although the questions are as diverse as the species involved, information gathered through the widespread use of bird bands has provided all or part of the answers to these puzzles -- and then some.

Bird banding is not a new idea, and in one fashion or another, people have been attempting to mark wild birds for centuries. The earliest recorded example was the marking of the emperor's falcons during the early days of the Roman Empire. Banding is said to have gotten its start in America when bird painter John James



■ Canada geese are rounded up to be banded.

Audubon tied rings of metal thread to a group of nestling phoebes and was able to identify two of the birds when they returned to the same Philadelphia neighborhood the following spring.

Today, bird banders are at work around the globe. And if he were alive today, Audubon would be amazed at the magnitude of contemporary banding efforts. More than 50 million birds have been banded in North America, and the information gleaned from reports on more than three million of those bands have become a cornerstone in the international management of migratory birds.

In North America, all banding efforts are coordinated through the U.S. Fish and Wildlife Service. Each time a shiny, new, aluminum band is clamped onto the leg of an osprey, warbler or pintail, the bird receives a new identity that will remain for a lifetime. Along with the band's individual serial number, information regarding the bird's age, sex, species and location of capture is entered into a computer at the U.S. Migratory Bird Banding Lab at Laurel, Maryland.

In Iowa, about 12,000 wild birds are banded each year. Here, as elsewhere, the major emphasis is on waterfowl. During 1995, 3,700 giant Canada geese, and 6,700 wood ducks were banded in the state. The American kestrel was the most frequently marked nongame species with 538 banded last year. Modern-day bird banding has become a large-scale, labor-intensive and often expensive effort that involves hundreds of employees from conservation agencies at the federal, state and provincial levels. In Iowa, DNR banding activities are assisted by personnel of the county conservation board system as well as by 38 licensed volunteers. In turn, DNR wildlife personnel aid in projects that are banding geese in the arctic and large numbers of prairie-nesting ducks in Saskatchewan.

During its infancy, bird banding was most often a random, "catch 'em where you can" proposition. But today, banding activities are conducted under a set of well-defined goals usually attempting to mark significant numbers

within a specific group or population of birds.

In addition to its individual ID number, most bird bands also bear the inscription — "AVISE BIRD BAND WRITE WASHINGTON, D.C." These words serve as an alert for anyone coming in contact with a marked bird to report the find. So far, the numbers from about three million bands have been reported to the Fish and Wildlife Service. The information gleaned from those reports has enabled scientists and managers to better understand the life-cycles and management needs for many species.

We have learned, for example, that mallard ducks may experience a 30 percent hunter mortality rate during the



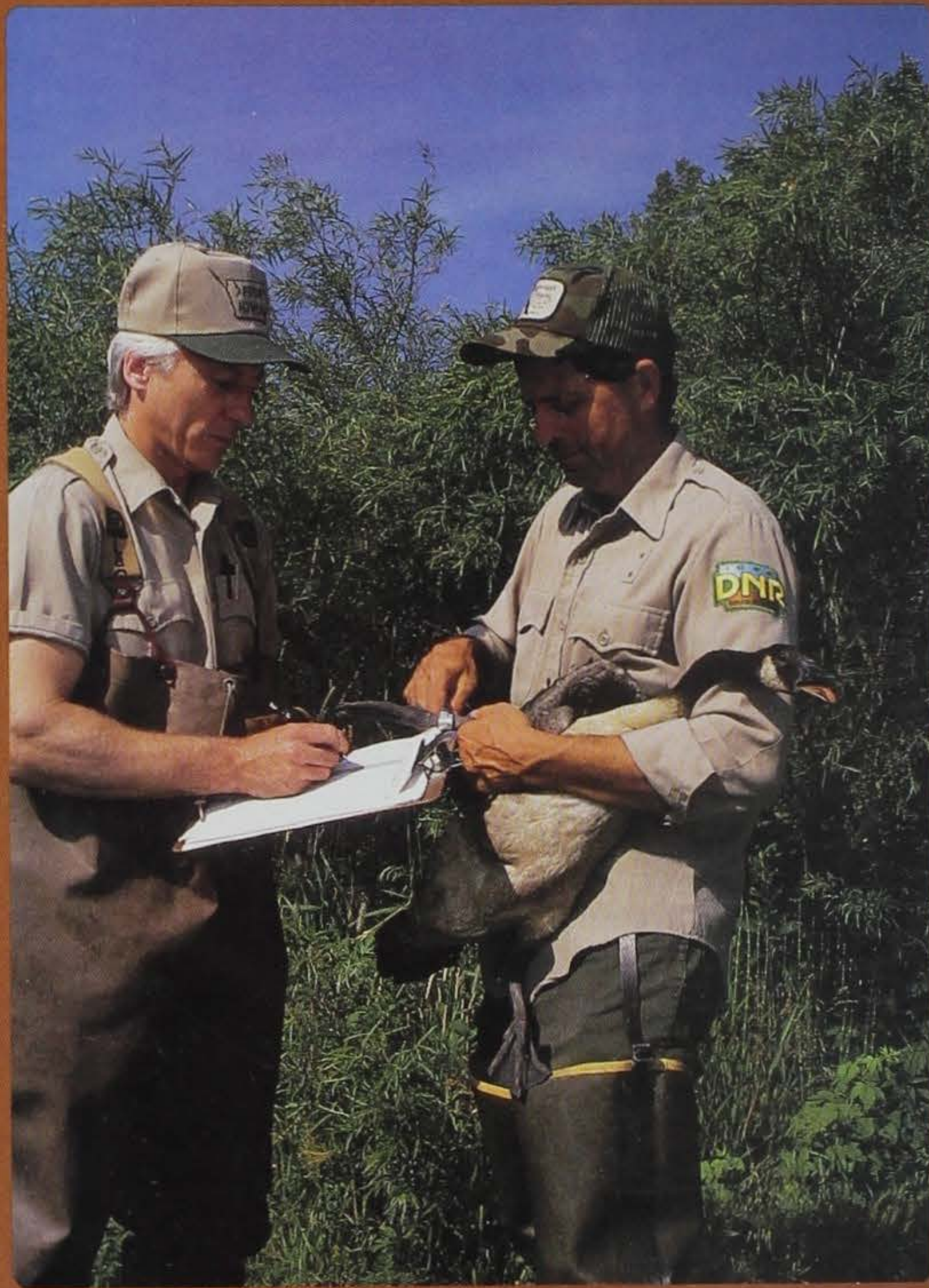
fall migration, and hens suffer a greater annual death rate than drakes -- mainly because of predation during the nesting season. We have also learned that if an Iowa-reared giant Canada goose manages to survive its first hunting season, the odds of surviving subsequent seasons skyrockets to 95 percent, suggesting perhaps Canadas really are as intelligent as legend has portrayed.

It has been long known that bluebird nest box trails are an effective means of bolstering local populations, yet banding information has shown as few as one-half of one percent of the young annually fledged on a given trail

■ More than 50 million birds have been banded in North America, and the information gleaned from reports on more than three million of those bands have become a cornerstone in the international management of migratory birds.

Banding Trivia & Unusual Reports

- A pintail duck banded in Canada was shot 21 days later by an English waterfowler -- a straight line distance of more than 2,200 miles.
- A bald eagle banded and released at the Hawkeye Wildlife Unit was recovered 12 years later in Georgia.
- Longest survival of a banded bird -- 36 years for a herring gull banded along the coast of Maine in 1930 and found dead on Lake Michigan in 1966.
- A blue-winged teal banded at Rice Lake, Iowa in September shows up the next month near the village of Iztapa, Guatemala.
- The third digit of the number on a waterfowl band indicates the band's size.
- The person who finds and reports a marked bird is the most important component in the banding equation. Without recovery information, all bird banding is in vain.
- Birds of prey are banded with special lock-on or riveted markers. Their powerful beaks can easily tear off the traditional butt end bands used on other large birds.
- Number of birds banded in North America each year -- one million. Number of bands reported each year -- about 65,000.
- In the spring of 1994, Bob Anderson climbs a 400-foot power plant smoke stack near Bayport, Minnesota to replace the gravel in a peregrine falcon nest box. On July 7, he returns to band the nestlings. While working with the young falcons, Anderson discovers a tiny bird band lying on top of the new gravel. He later discovering the band had been placed on the leg of an adult male grackle by Jane Olyphant on Oct. 1, 1972. Olyphant had banded the bird just eight miles east of the power stack, providing strong circumstantial evidence that the bird had returned to the same area year after year. The ancient grackle sets a new longevity record for the species at least 23 years old when the peregrines brought it home for dinner. I wonder if the bird was tough?



■ Each time an aluminum numbered band is clamped onto the leg of a bird, information regarding the bird's age, sex, species and location of capture is recorded.

will return as adults to nest. Where do they go? Recaptures show that they disperse to other trails, while bluebirds from those or other areas move in to fill the void.

In stark contrast to bluebirds, it is not at all unusual for a female wood duck to return to the very nest box where she was hatched. It has also been learned that woodies establish pair bonds while on the wintering grounds, and come spring the male simply follows his new mate to wherever she was hatched. Conse-

quently, an Iowa-produced drake is just as likely to spend his summer in Ontario, one of the Carolinas, or Georgia as he is in his home state.

Band reports and recaptures have also revealed young kestrels disperse widely during their first migration and often travel as far south as Texas and Oklahoma. However, as adults, they tend to become strict home bodies. Some adult kestrels go so far as to spend the entire year as close to their nest cavity as our harsh Iowa winters will permit.

Neck Collars



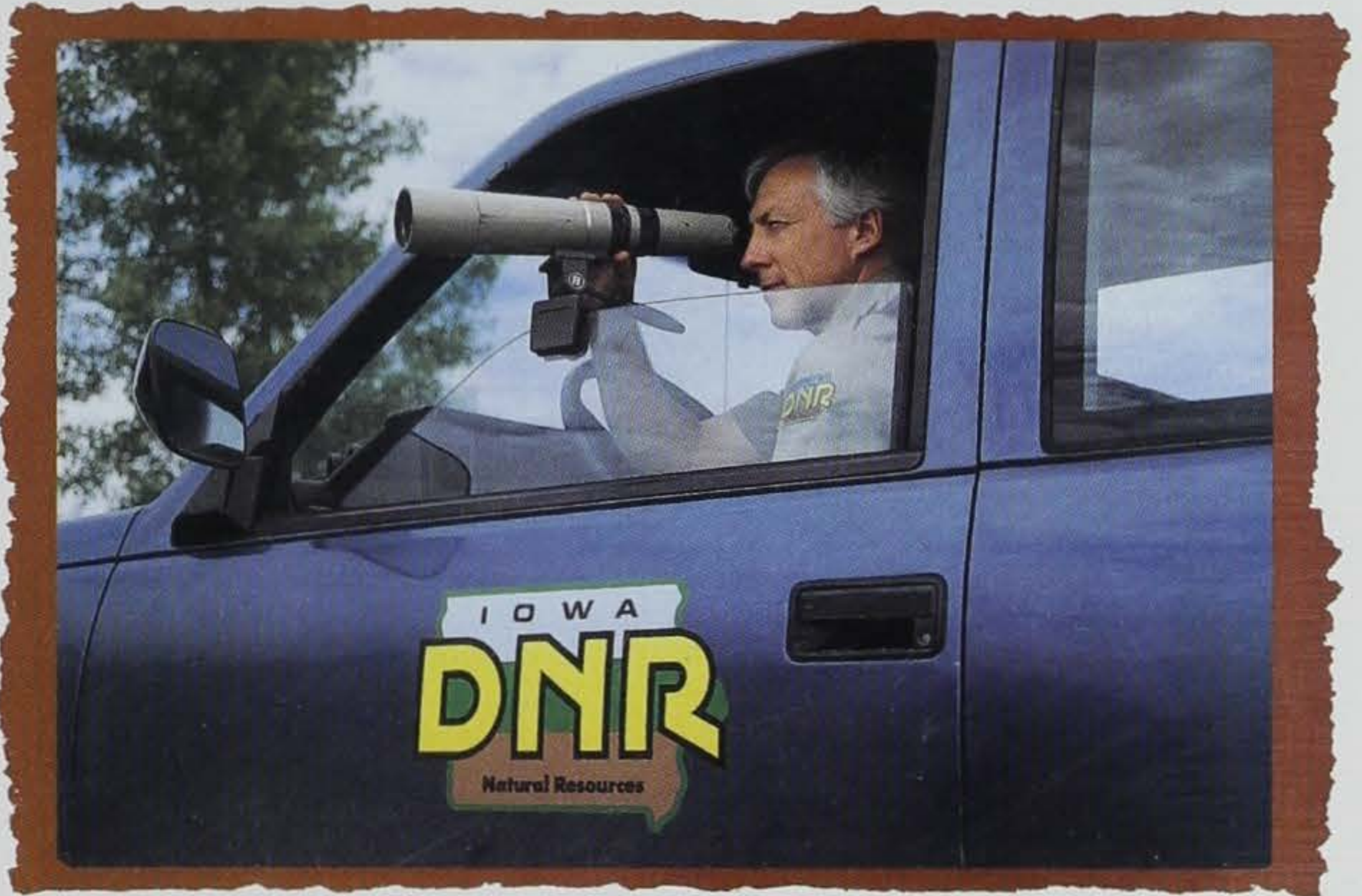
Bird banding is a well-accepted and effective tool for gaining insight into the lives of wild birds. So much so, in fact, that more than 50 million birds have been banded in North America, and the number continues to increase at a rate of about one million birds per year.

However, as state waterfowl biologist, Guy Zenner points out, "You don't learn very much by simply banding a bird."

What Zenner means, of course, is that it does little good to mark any wild bird unless someone eventually comes into contact with the creature somewhere down the road. Until recently, information on the whereabouts of banded birds came from three sources -- birds that were shot and reported by hunters, birds found dead, and birds that were recaptured. In other words, meaningful data could only be obtained with a bird in hand, an event which usually ended that particular story.

Times have changed, and today a wide variety of highly visible leg, wing, and neck markers are allowing scientists to monitor the life history and movements of several species of migratory birds ranging from bald eagles to trumpeter swans. The most familiar of these devices is the waterfowl neck collar.

Canada geese have received more neck collars than any other species of bird. Goose collars come in a variety of colors and each is marked with an



From top:

- Neck collars play an important role in monitoring the comeback of the Iowa trumpeter swans.
- Neck collars allow data collection at a distance -- without having contact with the bird.

personalized combination of letters and numbers. Like other special markers, goose collars can be read at a distance and allow valuable data collection without ever coming near the bird.

"The beauty of neck collars is that the birds can generate information the year round," says Zenner. "Before neck collars, almost all of the information we obtained came during the

hunting season. That was valuable, but this gives us a better look at the whole picture," he adds.

For neck-collaring to be effective, wildlife agencies need to establish a systematic and coordinated approach to "looking for necks." Observation networks require a substantial investment in personnel, making collaring programs about three times as expen-



■ Canada geese have received more neck collars than any other species of bird.

sive (\$30 per goose versus \$10 per goose) as traditional leg banding. Since most collars have a life-span of only four to five years, it is important to collect observations as quickly as possible.

"I don't think there is any doubt that our neck collaring program has been worth the effort," says Zenner.

"We have been able to look at the survival, mortality and distribution of Canada geese throughout the year," says Zenner. "Neck-collar programs enable us to gather as much goose information in five years as we used to collect in 20 years using leg bands."

Some of the most surprising information has come from collaring programs aimed at marking specific populations of arctic-nesting Richardson's Canada geese. Usually referred to as Hutchin's geese, these noisy, four- to five-pound Canadas usually arrive in Iowa during early to mid-October. By the first week of November they have continued southward toward Gulf Coast wintering grounds.

"We had always assumed that these geese came from the colony that nests along the west side of Hudson's Bay and we geared our regulations according to their production," says Zenner.

Although traditional banding data gave biologists a good handle on where migrant Hutchies spent their winters,

there was no information from the summer breeding grounds. But as neck-collaring programs aimed at other subspecies began to pay dividends, federal, state and provincial researchers decided to pool their resources and begin marking geese under difficult arctic conditions. As soon as the collars were in place, the information began flowing in.

"What we found was that 95 percent of those small geese weren't nesting at Hudson's Bay at all, but were coming from a colony located on Baffin Island -- literally several hundred miles to the northeast" says Zenner.

"For most of this century, hunters had been harvesting these small geese with only minimal information about their breeding populations," he adds. "In terms of abundance, this has been a species very prone to boom or bust cycles. Now that we finally realize what population we're dealing with, we will be able to make more intelligent management decisions."

Neck-collar readings have also provided some interesting insights into the biology of Iowa-nesting giant Canada geese. During the summer, large groups of goslings are often seen in the company of just one pair of adults. These "gang broods" may contain in excess of 20 youngsters. Before neck-collaring, the huge

broods were believed to be the result of older, more experienced geese stealing the goslings of younger pairs. This theory proved incorrect. What biologists learned was the same adults were not always with the brood. Instead, the pairs were taking turns watching the goslings while the other parents took a break to feed and preen in a more relaxed atmosphere.

Waterfowl neck-collars are also playing a role in monitoring the recovery of Iowa trumpeter swans. During the summer of 1995, an initial group of ten collared, juvenile swans were released at the Kettleton Waterfowl Production Area located near Spirit Lake in Dickinson County. Since they have no free-flying adults to follow, biologists have questioned whether or not released swans will be capable of establishing adequate migration routes that lead to safe wintering grounds.

During their first winter in the wild, information was received on five of the 10 marked swans. Shortly after leaving the wetlands of northwest Iowa, two of the collared swans were reported at Lake Panorama in Guthrie County. They showed up next at Swan Lake National Wildlife Refuge in Missouri. Later that winter, one of the swans was killed near Swan Lake when it collided with a power line. The other bird remained in the area until spring.

Another trumpeter was reported at a pond near Hillsdale, Kansas where it had taken to consorting with a group of captive mute swans.

Two more of the Kettleton swans migrated to Snyder Bend located in western Iowa along the Missouri River. As winter set in, the pair moved to Desoto, Kansas where they spent the remainder of the winter on the Kansas River. The birds vanished in early spring, but were soon sighted at Squaw Creek National Wildlife Refuge in northern Missouri. The swans were next sighted near Brookings, South Dakota. In April, the pair was still together, sitting on a southern Minnesota marsh not far from where they were released the summer before.

Public's Involvement Key to Bird Banding Success

Find A Banded Bird -- Who You Gonna Call? 1-800-327-BAND

The banding of wild ducks and geese has become a cornerstone of modern-day waterfowl management. Unfortunately, a large percentage of the bands recovered by hunters are never reported -- a practice resulting in the loss of tens of thousands of work hours and the waste of precious resource dollars.

In an effort to increase band reporting rates, the U.S. Fish and Wildlife Service has announced the availability of a toll-free telephone number for reporting the band number found on any species of bird. All anyone has to do to report a banded bird is dial 1-800-327-BAND.

"We established this number as a uniform, convenient way to increase the reporting rate for banded birds," says John Tautin, chief of the Migratory Bird Banding Lab, located at Laurel, Maryland.

"In the final analysis, we expect that the [band] reporting rate will be more than doubled as a result of the 800 number," says Tautin. "The result will be the collection of more and better data which will in turn make field banding operations more cost-effective."

The 1-800 number will be available anywhere in Canada, the United States, and in most parts of the Caribbean.

"Hunters need to bear in mind that we really don't learn anything by simply banding a bird," says Guy Zenner, DNR waterfowl research biologist. "In order for a bird band to pay off, something has to happen on the other end. Our banding activities represent a substantial investment, and we have no control at the other end of the equation."

In an attempt to better understand hunter reporting rates, the Fish and Wildlife Service recently conducted a study in which mallard ducks were fitted with reward bands ranging in value from \$5 to \$400. As the reports began to filter in, it came as no surprise when the reward bands were reported at a

greater rate than the "regular" bands which had been used on ducks in the same group. Also, the reward bands were reported in direct proportion to their value. Biologists were eventually able to determine in order for all of the recovered mallard bands to be reported, they need a value of \$100 or

more. The final result of the reward-band study was only 32 percent of the mallards bagged by hunters were reported.

"Assessing band recoveries has always been a difficult proposition," says Zenner. "It appears as if the hunter reporting-rate varies from area to area and from species to species."

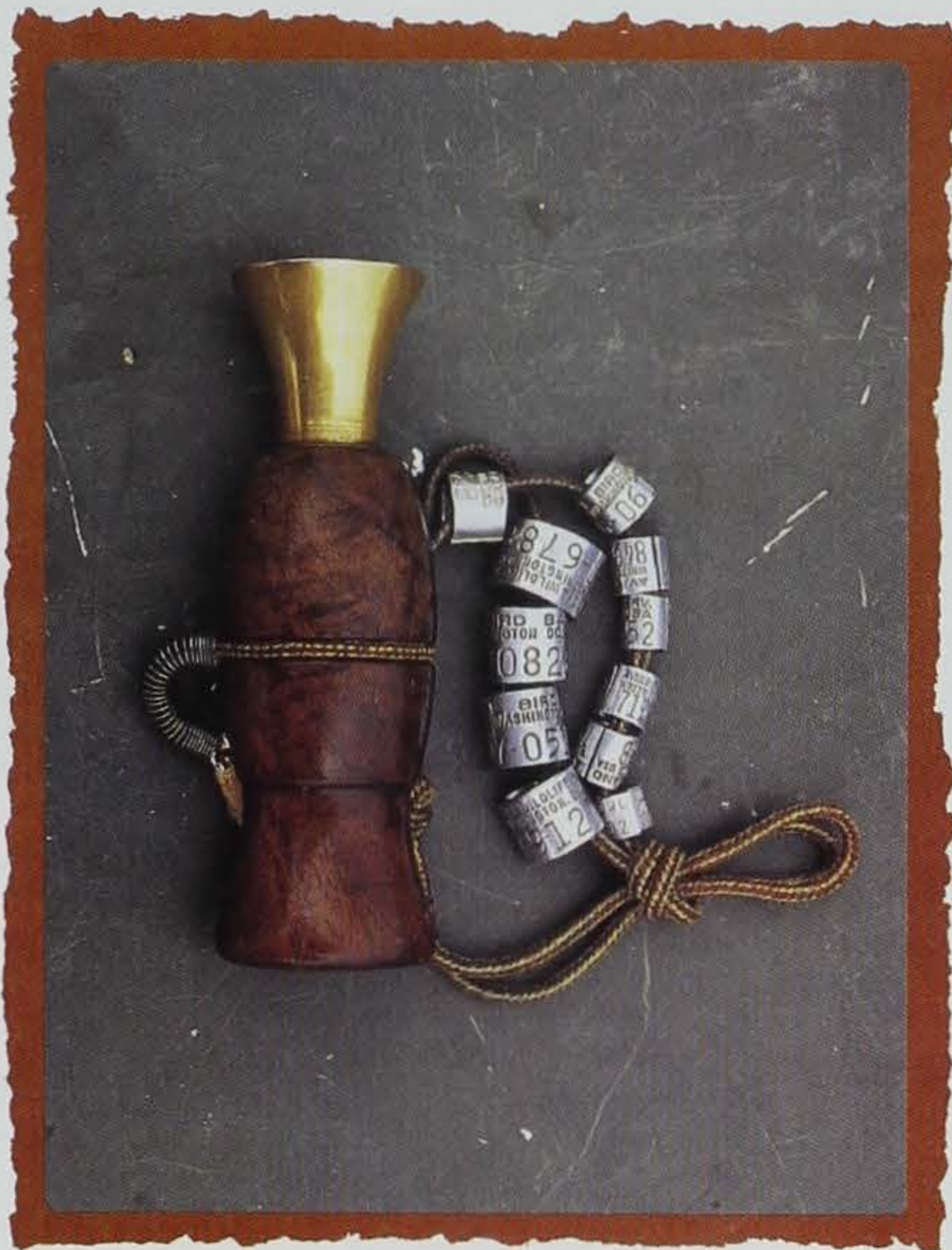
For example, in areas where large samples of locally nesting geese are banded, hunters may fail to report band numbers simply because of increased exposure. For some reason, many people tend to believe the bands of local birds are less important than those of waterfowl which may have traveled a greater distance.

"In Iowa, we have a direct recovery rate of 5 percent on banded giant Canada geese," says Zenner. "Going by the information currently available, I suspect that

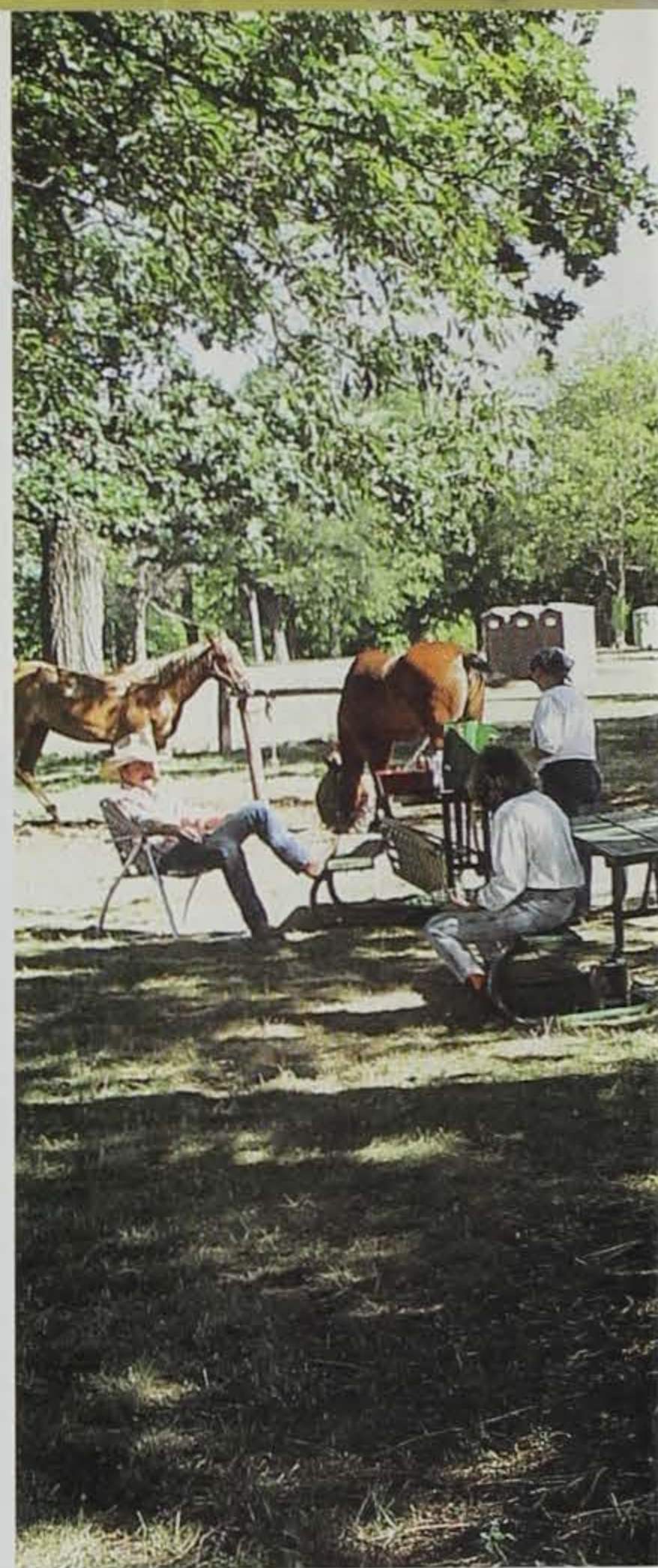
hunters are only reporting about 20 or 25 percent of the banded birds they bag. That sort of rate makes it much harder to intelligently manage the resource."

During the summer of 1995, the Fish and Wildlife Service conducted its latest banding experiment by marking equal numbers of mallards with leg bands bearing the new 1-800 phone number versus conventionally addressed bands.

In the first hunting season, the 1-800 bands received a significantly higher reporting rate from the public, which prompted the service to go nationwide with the number this year. This summer, more of the 1-800 number bands were placed on mallard ducks in prairie Canada as well as in the northern U.S. In Iowa, 250 mallards have been marked with the special bands.



Brushy Creek State Recreation Area



by Greg Van Fosson

As you travel across Highway 520 in north-central Iowa, it may be hard to imagine that one of Iowa's largest recreational areas is nestled among seemingly endless acres of prime farmland. Do not be deceived, Iowa's largest recreational area is just waiting for you to experience.

Brushy Creek State Recreation Area, approximately 15 miles southeast of Fort Dodge, began its developmental journey in 1962, as a result of the "large lake program" designed to identify areas within the state in need of water-based activities. These areas would become recreation areas, not state parks, and offer year-round recreational opportunities such as hunting, winter sports, and 24-hour fishing. A total of four areas were identified: Brushy Creek in north-central Iowa, Big Creek in central

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Ron Johnson

Iowa, Volga River in northeast Iowa, and Pleasant Creek in east-central Iowa. Brushy Creek is the last of the four to be developed.

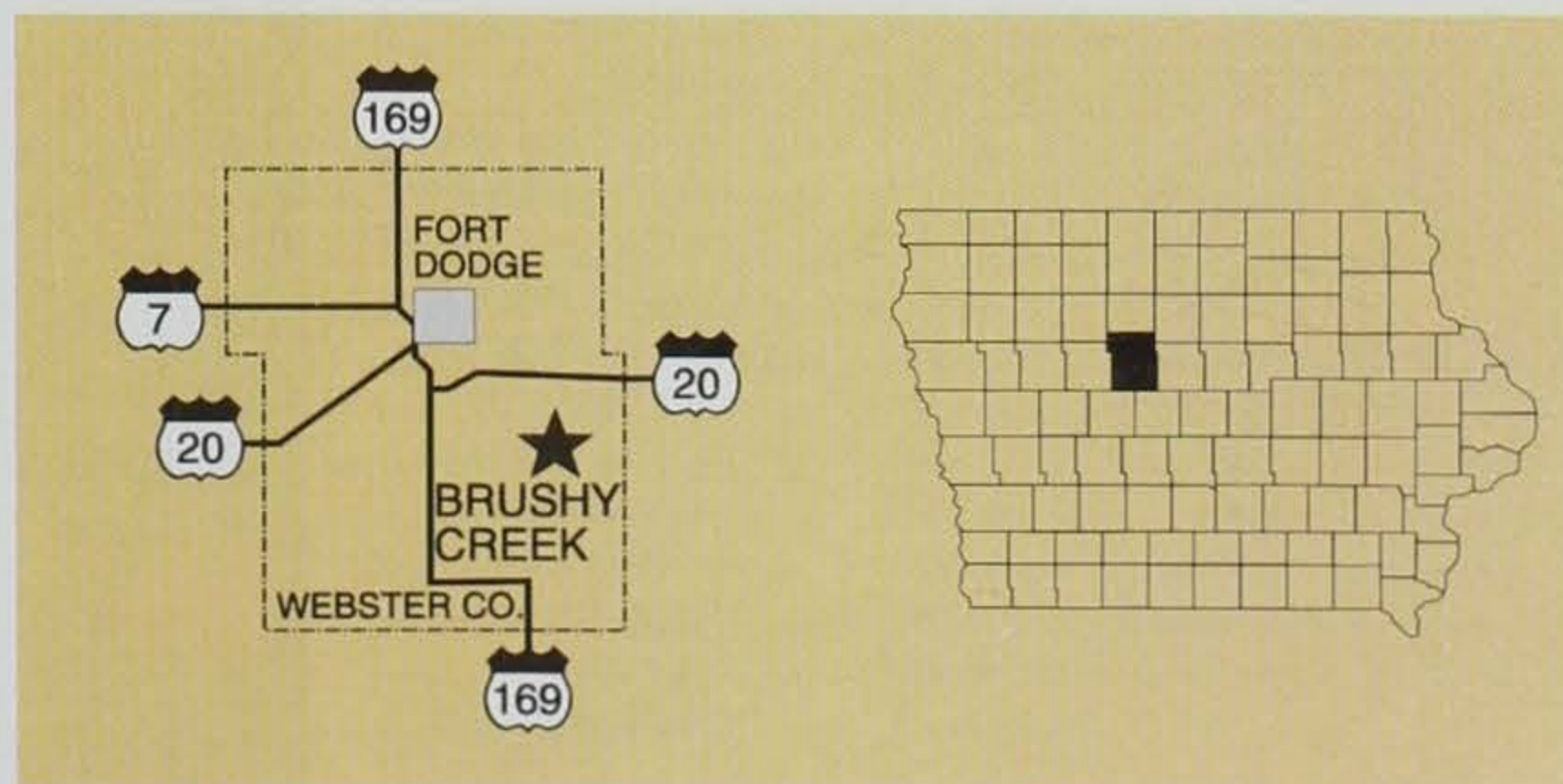
Between 1968 and 1994 approximately 6,200 acres of land was purchased, and in March 1993 construction began on the earthen dam for the planned 690-acre lake. This permanent-pool dam, the largest the DNR has undertaken, will measure nearly 2,000 feet long, 600 feet wide and 100 feet high, and require 1.3 million cubic yards of earthen material. Under the watchful eye of Larry Taylor, of the DNR's construction services bureau, two Ft. Dodge contractors are constructing the \$7.1-million project.

With the dam half completed, more than one million cubic yards of earthen material has been moved; 900,000 pounds of structural steel has been placed as part of the spillway; 5,000 cubic yards of concrete has been poured for the spillway and

control tower; and 15,000 cubic yards of sand have been hauled and placed. An observation point, provided for visitors wishing to view progress on the dam's construction, can be found by entering Brushy Creek and going north off of County Road D46. The dam should be completed in 1997 and will mark the beginning of one of Iowa's premier lakes.

Brushy Creek's lake is expected to be the deepest artificial lake in Iowa. The lake will have approximately 21 miles of shoreline, an average depth of 29 feet and a maximum depth of 76 feet. Preliminary forecasts indicate the lake will take from one to three years to fill.

As dam construction continues, so does facility development. Since





Ron Johnson

■ New additions for Brushy Creek include a 135-acre forested wetland, as well as 10 miles of newly constructed trails.

■ With expected completion of the dam in 1997, Brushy Creek's lake will become the deepest artificial lake in Iowa.

1994, the 125-site, northern equestrian campground has seen many improvements. Road surfacing, 125 new hitch rails, information kiosk, new well, 50 new electric sites, and a new shower and rest room facility were added to modernize the campground. Future plans for this area include four camping cabins, playground equipment and day-use area.

In 1995, roads were paved in the two remaining campgrounds and the first phase of shoreline riprap was completed. A road and parking lot have been constructed at "fish pier point" offering shoreline fishing access and the best picnic spot on the lake. Several more facilities will be completed this year, including a much needed recreation area office and shop, primary sewer and water lines, and the sewage lagoons.

Trail repair and expansion projects are ongoing, and more than ten miles of new trails were constructed by a prison crew from Rockwell City last year. This year, along with trail construction, the prison crew will construct camp pads and campfire grills for the southern equestrian campground.

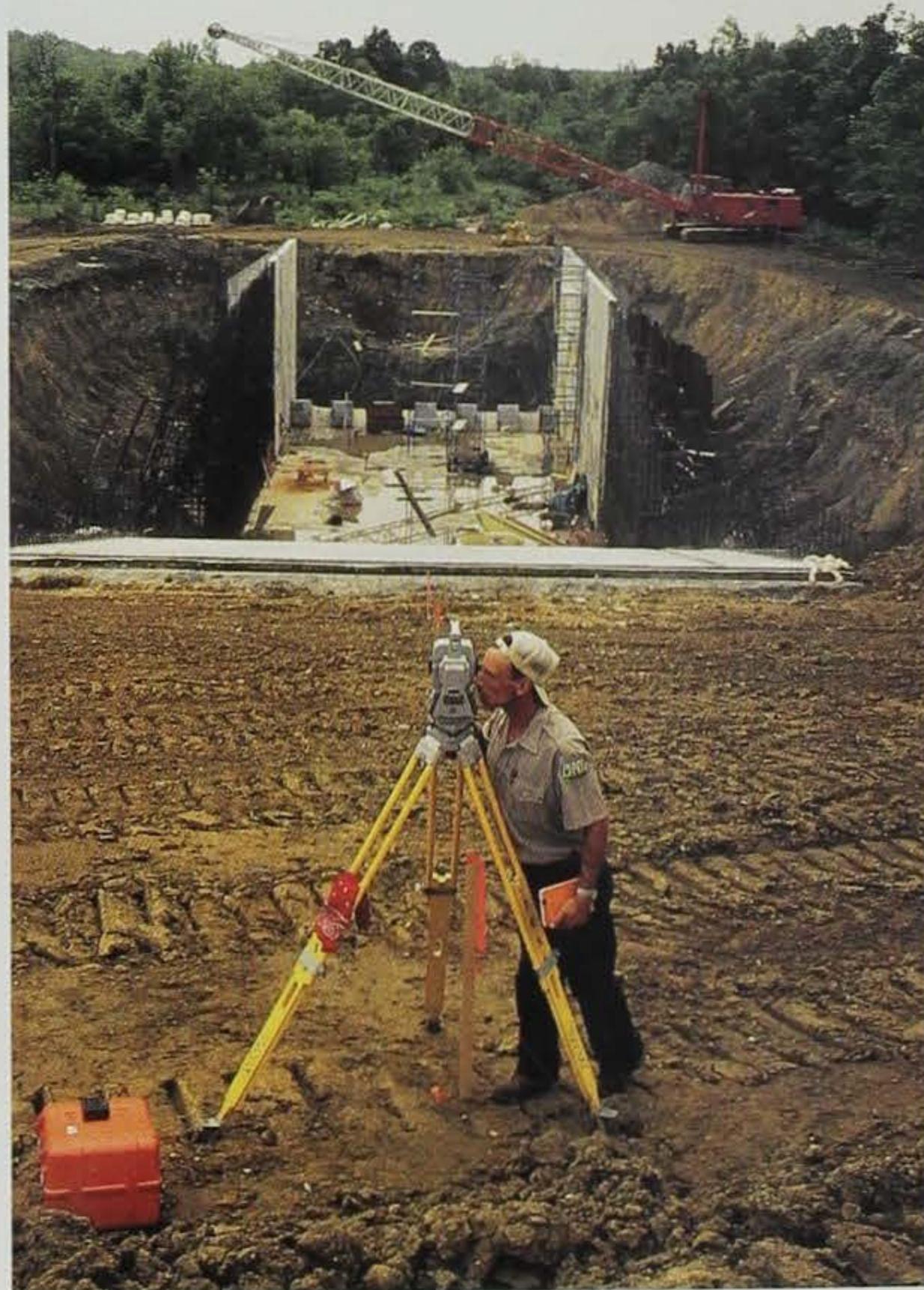
To bring two federal mitigation projects to a close, a 135-acre forested wetland project was completed with the planting of 90,000 trees and 10,000 shrubs along the Des Moines River, and a sedge meadow transplant project

was also completed. Both projects will be monitored for the next six years in hopes of restoring two unique vegetative communities to Brushy Creek.

Although development will continue through the year 2000, when fishing is expected to take off and major facilities should be in operation, there is much to offer now. From upland grasslands to woodland stream banks with prairie grasslands in between, the Brushy Creek area has some of the most diverse topography, vegetation and wildlife found anywhere in the state.

Come visit soon to watch and enjoy this new recreation area grow.

Greg VanFosson is the area manager at the Brushy Creek State Recreation Area.



Ken Formanek

The What, Why and Where of Fall Colors

Fall is often one of the best times in Iowa, warm days and cool nights, low humidity, no bugs to bother you and yes, the brilliant autumn colors of Iowa's trees. Every year thousands of Iowans and visitors alike flock to the countryside to view nature's colorful display of red, orange, yellow and purple leaves. While many people appreciate this celebration of fall color, most people do not understand the hows and whys of Iowa's fall leaf color changes.

The leaves of deciduous trees change color because of chemical alterations to the color pigments within the leaves. Leaves contain four groups of pigments: the chlorophylls (green), tannins (brown), carotenes (yellow and orange), and anthocyanins (red and purple). Different tree species contain different amounts of these pigments. Red oak contains a high amount of anthocyanins giving red oak a red color, whereas green ash contains a high amount of carotenes giving it a yellow fall color. The production of these pigments is controlled by the trees' genetics. This accounts for differences in color among tree species as well as between individuals of the same tree species.

The steady decline in the amount of daylight, not a visit from "Jack Frost," is the signal for the breakdown of the chlorophylls or green pigments. Environmental factors such as weather and the amount of nutrients in the soil influence the timing of the fall colors.

While many people think of fall color after the first, hard, cold snap, the best autumns for brilliant fall colors occur when weather conditions are clear, dry and cool. In reality, frost can ruin fall colors by killing the leaf cells responsible for color change. Strong winds and heavy rains may also cause trees to prematurely drop their leaves, shortening the fall color season. Even brilliantly colored autumn

around Yellow River State Forest in Allamakee county in extreme northeast Iowa has wonderful viewing points during the later part of September. During the Forest Crafts Festival at Lacey-Keosauqua State Park in Van Buren County, individuals can not only marvel at excellent wood crafts, but witness beautiful fall colors during the Oct. 12 - 13 festival. Pikes Peak near MacGregor can

offer beautiful river scenic vistas during leaf change. But, if conditions are right good fall colors can be found anywhere in the state.

In Iowa, fall leaf color varies from fire red to deep ruby, bitter-sweet rust to vibrant lemon and every of shade inbetween.

Here is a brief primer on fall colors found in common Iowa tree species:

Walnut. These small, pointed leaves turn yellow

in fall. Walnut trees are one of the last trees to leaf out in spring and one of the first to turn and drop leaves in autumn.

Ash. Ash leaves also turn yellow, but some have a purplish cast. The leaves fall after those of walnut trees, but earlier than those of oaks and maples.

Red Oak. The red oaks have brilliant red leaves in fall though the color is probably not as intense as that of some hard maples.

White Oak. White oaks have a more subdued red fall leaf color. The leaves then turn brown and often stay on the tree until new leaves begin to grow in the spring.



Roger Hill

hills can turn drab overnight if there is a heavy thunderstorm.

"Knowing when and where the fall colors are going to be most brilliant, is kind of a roll of the dice," says John Walkowiak, DNR urban forester. "But in general, the northern one-half of Iowa has prime fall colors during the last week of September and first week of October, and the southern half of the state has prime fall colors during the second and third weeks of October."

All of Iowa's state parks and forests are excellent viewing sites, as are numerous county and city park areas. The area

Practical Conservationist



Roger Hill

Bur Oak. Buff to yellow colors predominate in bur oaks. The leaves remain on the tree and turn brown before falling.

Hickory. Leaves turn yellow on hickory trees, then brown before falling.

Elms. Elm leaves turn various shades of yellow with some turning brown before falling, others falling while still yellow.

Soft Maple. The leaves of soft maples turn yellow but do not turn brown before falling.

Hard Maple. Brilliant flame red hues are the signature of hard maple leaves. The red pigmentation of some leaves breaks down before falling.

Sumac. The fall color in these leaves can be redder than almost any other tree, but sumacs are often overlooked because they are small trees confined to openings and edges.

Virginia Creeper. This plant adds a bright, intense splash of red to many fall scenes. It is very spectacular when it grows on dead snags with the vibrant red starkly contrasting with the soft gray.

If you wish to save that brilliant but brief fall splendor for year-round viewing you need to move quickly while colors are still bright. No matter which of the following methods you use, "save" the leaves at the height of their color and suppleness. They will continue to fade but you can retard the effect somewhat by limiting exposure to direct sunlight.

A low-tech way to preserve leaves is to make a "leaf sandwich" of two pieces of wax paper (somewhat larger than the leaf) with the leaf between them

and a sheet of paper on top. Iron using a setting high enough to seal the edges but low enough not to melt the wax paper onto the white paper. A variation on this theme calls for "autumn-color" crayon shavings to be placed on the wax paper and melted next to the leaf to accentuate the colors.

Similar but more high-tech methods of preservation involve laminating and adhesive-backed vinyl film. (Lamination services can be found in the yellow pages.)

You can either seal the fresh leaves between two pieces of clear vinyl or use one sheet of white vinyl as the backing. The white can enhance leaf color while the clear allows viewing from both sides. Once mounted by any of these "enclosure" methods, the leaves can be punched with a paper punch and made into a mobile, strung in cascades or even hung in a window (direct sunlight will quickly fade the colors however). Laminated leaves can be used to make keychains or coasters and small leaves can be mounted as pieces of jewelry. Using these sealing methods on a larger scale you can fashion seasonal decorations or placements.

If you wish to use the leaves in a floral arrangement or as a craft material where they need maximum suppleness, make a mixture of two parts glycerin to one warm part water. Cover the leaves and soak them from three days to three weeks (so the glycerin can be absorbed by the leaves). Remove the leaves and use them to make wreaths, decorations or floral arrangements.

For Current Info

For weekly updates on the best fall color locations, the DNR's Forests and Forestry Division has a recorded phone message available from mid-September to late October. Call (515) 233-4110 to find out conditions across the state and then take a few minutes outside to witness one of nature's most spectacular shows.



Roger Hill

Nose Know-How by Bob Rye

Adapted from the *Ranger Rick's Nature Scope Amazing Mammals Part I*, published by the National Wildlife Federation.

Background Information:

Smell is the most important sense for most mammals. They use their noses to detect predators or prey, to distinguish between family and non-family members, to find mates and to recognize territories. This activity has the students use their noses to learn how and why a sense of smell is important to mammals.

Deep inside a mammal's nose is an area called the olfactory region. The olfactory region has lots of "smelling" nerves. When mammals breathe air through their nose, odors in the air "turn on" these special smelling nerves. Biologists are not exactly sure how the brain identifies the different odors, but they do know that mammals can distinguish among thousands of different ones.

An odor is not always easy to smell and identify. Sometimes odors are very faint and mammals must sniff to get a better idea of what an odor is and where it is coming from. Some mammals also snort to clear all the "old" air out of their noses so they can get a better whiff of a new odor.

Smell is important not only for detecting predators or following prey but for many other reasons. For example, it is important for a male mammal to tell if a female is ready to mate by detecting a certain odor she gives off (dogs, horses and deer exhibit this behavior). Many mammals mark their territories with urine or feces (cats, dogs and most primates), special anal glands (beavers) or glands on other parts of their bodies (deer).

Smell also helps some mammals recognize each other as members of their "family." This identification begins at birth. The young sniff each other and learn the "smell" of their litter mates. They continue to sniff each other when they meet throughout their lives, reinforcing family ties and social hierarchies.



Roger A. Hill

■ Mammals use their noses to detect predators or prey, to find mates and to recognize territories.

Objective:

Explain how a mammal's sense of smell works. Describe some ways smell is important to mammals.

Ages:

K - 12

Materials:

Several different scents (vanilla, peppermint, lemon, rootbeer, orange, etc.) available as extracts in grocery store spice departments

- film canisters
- cotton balls
- paper and pencils
- yarn
- markers
- reference books

Classroom Corner



Roger A. Hill

■ Mammal "moms" identify their "babies" by the babies' individual smells.

Extensions:

1. Pass a film canister around to each person in the group and discuss what they thought the odor was. Have the students relate to past experiences and how identification by odor is important to humans as well as other animals.

2. Place a number on the top and bottom of film canisters. Place a different odor in each canister. Divide your group in half, with part of the group to represent the parents and the other part the young. Have the parents smell their canisters and keep the top. Then take the bottoms of the film canisters and give one to each of the students who are representing young. Then ask the parent population to find "their" young. You can check the results by comparing the numbers on the canister and tops.

3. Have the students develop another set of animal clues. They can select an Iowa animal, its description, habitat, food, reproduction and special facts.

Bob Rye is a training officer at the department's Springbrook Conservation Education Center in Guthrie County.

Procedure:

In this activity, students will find "mammal" clues.

1. Cut 30 (five-by-five-inch) cardboard squares and 60 eight-inch pieces of yarn. Punch a hole in the top and bottom of the cardboard.

2. Tie a piece of yarn through each hole.

3. Make five clues about six mammals. For example, the clues for a raccoon would be: *Description* -- I have a plump body with a grayish coat. *Habitat* -- I live in woodlands. I like to hang around streams, ponds and lakes. I am found in most parts of the United States and in parts of South America and Canada. I sometimes visit people's backyards. *Food* -- I eat small fish, crayfish, frogs, eggs, mice, fruits, nuts and some plants. *Reproduction* -- My gestation period is a little more than two months. I have three to six young at a time. *Special Facts* -- Some people say I wash my food before I eat it, but I really don't.

4. Pick six scents to use for the sniffing trail. Soak six cotton balls in each scent. (You will have six oranges, six rootbeer and so on.) Cover the balls with a small piece of material (clean, old socks, calico scraps, etc.) and staple the material so the cotton balls cannot be seen. This will keep students from color keying for example, strawberry scent will make pink balls. Tie five cotton balls of each scent to the yarn of five cards (for example all the raccoon clues would have cotton balls soaked with peppermint and the sixth will be a sample of the scent).

5. Set up your trail where you have all the *descriptions* in one place, all the *habitat* cards in a second place, and so on.

6. Discuss the sense of smell. Divide your group into six teams and explain that each team represents a different mammal. They are given the sample team smell and each person individually will walk the trail and collect their own clues. They will identify what mammal fits the clues and compare with the rest of the team.



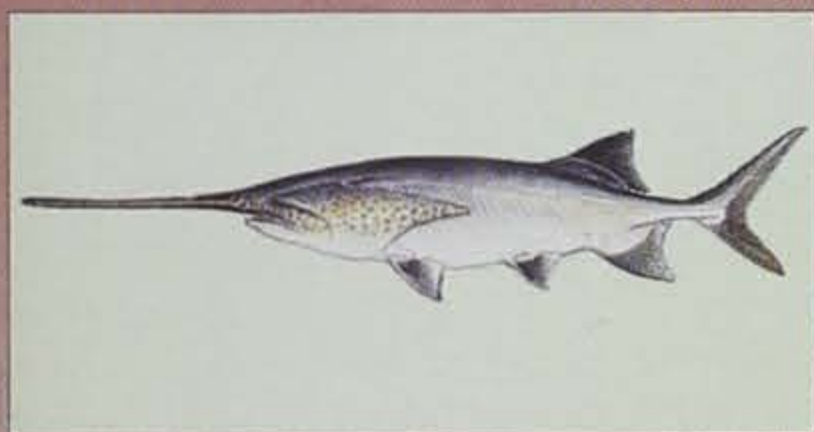
Roger A. Hill

■ Mammals, such as these young foxes, use their noses to differentiate between family and non-family members. The individual smells of family members help reinforce family ties and social hierarchies.

Paddlefish Spawning Migration Documented

One of the first recorded cases of Mississippi River paddlefish migrating up a tributary river to spawn was documented last summer by DNR biologists Gary Siegwarth and John Pitlo.

"This finding illustrates the vital role of interior rivers to Mississippi River fish populations," Siegwarth says. "It also indicates that in the days before the dams, tributary rivers served as significant 'highways' for fish populations moving to important seasonal habitat."



As part of a multi-state paddlefish study, several paddlefish on the Cedar River at Palisades-Kepler State Park were collected in early June and injected with coded wire tags. A 30-pound female and a 17-pound male were also implanted with radio transmitters to verify spawning sites. Biologists hoped to not only document this stretch of the river as a paddlefish spawning area, but wanted to determine if these fish were part of a resident Cedar River paddlefish population or migrants from the Mississippi River.

"The paddlefish remained close to Palisades-Kepler State Park until mid-June," Siegwarth said, "and then we could no longer locate them by boat. An aerial search was set-up through the Civil Air Patrol in Dubuque to find the fish on the lower river. The search began below the roller dam at Cedar Rapids and continued down the Cedar River to where it meets the Mississippi below Lake Odessa."

"Just when it seemed the fish had simply disappeared," Siegwarth continued, "a radio signal from the female was

picked up on the Mississippi, three miles below the mouth of the Cedar River and more than 100 river miles below Palisades Park. This fish had migrated all the way back to the Mississippi in only a couple of weeks!"

"The radio signal, though a simple event, was exciting for John and myself," Siegwarth said. "It represented a big step in our knowledge of paddlefish populations in Iowa."

Electronic Licensing Would Improve Customer Service

DNR officials are looking into a new way of issuing licenses to outdoor enthusiasts that could dramatically improve customer service.

"Electronic licensing is the wave of the future," says Al Farris, administrator of DNR's Fish and Wildlife Division. "Several states, like Texas and Idaho, have found it quite an improvement over the traditional way of hand-writing a license out of a triplicate copy book."

Farris says with electronic licensing, a hunter, for example, may be able purchase a regular hunting license, and a deer and turkey license, at the same time, without having to go through the deer and turkey application process.

Electronic licensing should eliminate more than 90 percent of the paperwork license sellers and county recorders currently must perform, due to accounting requirements. It would also result in easier and faster electronic transfer of license money to the DNR, resulting in more interest earned on those accounts.

License buyers would probably purchase their licenses in most of the same places they do today. The license would be issued almost like a cash register receipt. Electronic licenses would not require a separate habitat, waterfowl or trout stamp; the price of those would just be added to the license.

"We still have much planning to do, and we would need some major legislative changes for electronic licensing to become a reality in 1998," says Farris.

(See page 18 for the 1997 stamps. This may be the last year for Iowa habitat, waterfowl and trout stamps.)

IRENEW Expo Sept. 7-8

The fifth Iowa Renewable Energy Expo and Alternate Fuel Vehicle Showcase is Sept. 7 and 8 at Hawkeye Downs in Cedar Rapids. The Expo features booths exhibiting alternate energy equipment such as photovoltaic panels, solar thermal panels, low energy-use refrigeration and solar glazing. Workshops on basic electricity, wind generation, energy conservation at home and on farms, energy efficient building design, electric autos, methane generation and ethanol are scheduled for the two days. For more information contact IRENEW at (319)338-3200, fax (319)338-2338, by mail P.O. Box 2132, Iowa City, IA 52244-2132, or email IRENEW@igc.apc.org.

Recycling Information At Your Fingertips

Where can you go to conduct research, network with business and industry and do a little shopping on the side? If you are interested in the recycling business, you go to <http://www.RecycleIowa.org>. The "Recycle Iowa" program is part of a joint venture between the Iowa Department of Economic Development and the DNR.

The Internet page provides recycling information targeted at recycling industries and professionals. In addition to financial and technical assistance information, the *Iowa Recycling Directory* and the *Iowa Recycled Product Directory* are available on the internet and searchable by commodity and by region.

25
NATIONAL HUNTING & FISHING DAY
25th Anniversary • Sept. 28, 1996

Conservation Update

The Healthy House

Are you experiencing headaches, colds and allergic reactions, and are not sure what is causing these symptoms? The reason could be the air in your house is highly polluted.

Unbelievable as it may sound, a house could cause illness, and scientific evidence suggests indoor air pollution is a growing problem. In some cases, the indoor air is actually more polluted than the outdoor air of large, industrialized cities. In fact, the Center for Disease Control reported the national rate of asthma deaths rose 46 percent during the last decade, largely because of poor indoor air quality.

In response to this problem, the American Lung Association of Iowa (ALA) has created a house with several features that improve indoor air quality.

The "Healthy House" is a standard home featuring healthy options for homeowners, builders and remodelers. Every aspect of the project is aimed at educating Iowans on the problems and solutions associated with indoor air pollution.

"Most people don't consider the healthiness of a home when they buy it," says Carla Deemer, public relations director with the ALA of Iowa. "It should be high on their priority list."

The concept was started by the ALA, Hubbell Realty and MidAmerican Energy as a way to educate Iowans on healthy options for their new home. The house was modeled after several existing healthy homes around the country. This is the first healthy house in Iowa.

The *Healthy House* was built by Jerry's Homes in cooperation with Hubbell Realty at the NorthGlenn community in Johnston.

The goals of the project are to expand customers' understanding of what makes a house healthy, to educate builders on how to construct healthier, more efficient houses and to make manufacturers aware of the demand for environ-



mentally sustainable products.

■ The *Healthy House* is also an energy efficient house. It received the highest five-star rating from Energy Rated Homes of Iowa.

Indoor air pollution is a growing problem because of two factors. One reason is homes are being built tighter. This reduces ventilation and traps poor air in the house.

The second reason is homes are being built with more synthetic, toxic materials. These materials bring pollution into the home and, since houses are built tightly, the pollutants are trapped.

But this is not a problem in the *Healthy House*. The home was built with materials that do not contain formaldehyde, carbon monoxide, asbestos or any other harmful toxins. These features include paint with low volatile organic compounds, a radon control system, kitchen and bath cabinets with no formaldehyde, a bacteria-resistant bathtub and all-natural siding and flooring.

The *Healthy House* also contains a ventilation system which exchanges stale, indoor air with fresh, outdoor air. Another feature is the electronic air cleaner which removes 95 percent of pollutant particles. This system provides a much cleaner breathing environment, especially for those who suffer

from asthma or allergies. And since most of the dust is removed, the *Healthy House* stays clean longer.

The *Healthy House* focuses on a



■ One of the biggest contributors to the efficiency of the house is the polyisocyanurate air seal insulation, containing no formaldehyde or CFCs.

person's mental health, as well as their physical health. The backyard, including a four-season porch, was designed to offer the resident a relaxing environment, with plenty of area for gardening and playing space.

The home also has high-quality windows and insulation, blocking the penetration of outdoor noise. This means when all doors and windows are closed, the resident will not hear the neighbor's lawn mower or highway traffic while trying to watch TV.

Not only is the house a healthy house, but it is also an energy efficient house. The house received a five-star rating from Energy Rated Homes of Iowa, the highest rating a house can receive.

One of the biggest contributors to the efficiency of the house is the polycynene air seal insulation. Polycynene is a cellular plastic material that contains no formaldehyde or CFCs. When injected into an enclosed space, it expands and forces itself into every corner and crack.

Another feature of the home is the

geothermal heating and cooling system. This system uses the earth's constant soil temperature to transfer heat to and from the house. It is the most energy-efficient system available.

Other special items in the house include carpet made from recycled materials, weather-protected windows and a gas fireplace with a direct vent to the outside, eliminating the need for a chimney.

"Some of these options will become standard in all new homes in the next three to five years," says Ron Grubb of Jerry's Homes.

While it seems like a house you might find the "Jetsons" living in, the house looks just like a home of the 90s. It is a standard two-story, 2,300-square-foot domicile with four bedrooms, 2-1/2 bathrooms, a two-car garage, laundry room, four-season porch and a price tag of \$250,000.

Many of these options can be incorporated into a standard floor plan at little or no additional cost. Some of these options do, however, make the

house more expensive than a comparable house. But, the savings these options produce will provide a quick payback for the investment. In fact, MidAmerican Energy has estimated the heating and cooling bills of the *Healthy House* are 40 percent lower than a regular house of the same size.

"These improvements do cost more, but you are also paying less for utilities and health-care costs," says Deemer. "With the money saved, they will pay for themselves very quickly."

Plans are in the making for a second smaller-scale healthy house to be built next year, selling for about half as much.

Joel Palmer, intern for the department's Energy Bureau

Timber Sales Finance Replanting

"For decades, black walnut trees along the Iowa River next to Otter Creek Marsh in Tama County endured storms, insects, droughts and occasional high water," says Rick Trine DNR wildlife biologist, "but the flood of 1993 was the last straw. The flood was somewhat unique because it occurred in the middle of the growing season. Instead of a brief inundation during spring run-off, the trees suffered through weeks, and in some cases months, of standing in water when their roots were trying to grow and breathe. As a result, approximately 50 percent of the walnuts died."

"Rather than let the dead walnuts rot in the timber," Trine continues, "a salvage sale for 136 of the biggest walnuts was conducted, producing \$33,000 in revenue. The money is being used for timber stand improvement and replanting trees lost along this section of the river bottom, including planting 2,400 trees throughout this 200-acre area. The trees, supplied by the DNR, consists of 500 white swamp oak, 500 pin oak and 1,400 black walnut.



■ The *Healthy House* also has high-quality windows and insulation, blocking the penetration of outdoor noise such as lawnmowers and traffic.

Conservation Update



Roger A. Hill

Trumpeter Swan Project Receives Boost

"Super. . . spectacular . . . unbelievable," exclaims Ron Andrews, DNR wildlife biologist and trumpeter swan restoration project coordinator. Andrews' jubilation is over a recent donation of more than \$31,000 to the project by the Sampson family, formerly of Webster City. In addition, the family gave the Hamilton County Conservation Board \$13,000 to bring a breeding pair of trumpeters to Beemer's Pond southwest of Webster City. In December 1994, the Sampson family donated \$100,000 in memory of David A. and Robert Luglan Sampson, to accelerate Iowa's swan restoration efforts.

"Robert and David had a love for hunting and fishing and the great outdoors," said family members Jan Sampson of Apple Valley, Minnesota, and Dr. Shelley Sampson Gordon of Denton, Texas. "This is our way of giving something back to the great world that surrounds us. The beauty of these majestic birds, and the echo of their melodious trumpet, will be a living memorial to David A. and Robert Luglan Sampson."

"The last documented nesting of wild trumpeter swans in Iowa occurred in 1883

at the Twin Lakes Wildlife Area near Belmont in Hancock County," Andrews says. "The DNR has released 18 swans to the wild to date, and an additional 25 swans will be released this summer. In addition, through partnerships developed with the cooperation of several organizations and private individuals, we have placed 18 breeding pairs whose young will be released into the wild. The Sampson family is truly dedicated to the Iowa swan project. Had it not been for their generosity, this project to restore the native swan to our state would be progressing at a snail's pace."

"My brother, David A., and father, Robert Luglan Sampson, would be delighted with this magnificent effort," said family spokesperson Dr. Shelley Sampson Gordon.

For more information on the trumpeter swan restoration program contact: Ron Andrews, Clear Lake Station, 1203 North Shore Drive, Clear Lake, IA 50428 (515)357-3517.

Iowan's Entry Places in National Top Ten In Junior Duck Stamp Contest

Ten-year-old Grant Rozeboom's acrylic painting of a lone blue goose was awarded top-ten honors in the national Junior Duck Stamp design contest.

Rozeboom was a Middle Amana School fourth-grader when he won the Iowa Best of Show entry last April 27 at Iowa's second annual Junior Duck Stamp contest. His painting was then shipped to Washington, D.C. to compete in the national contest.

The painting will be part of a traveling show including winning entries from all 50 states. The show will be featured at wildlife art shows, museums and art centers across the country throughout 1996.

Forty schools participated with a total of 424 entries in the Iowa contest.



■ Grant Rozeboom's acrylic painting of a lone blue goose was awarded top-ten honors in the national Junior Duck Stamp design contest.

Public Hunting Areas of Iowa and Iowa 1996 Hunting Regulations Available Now

A newly revised, 24-page booklet on Iowa's public hunting areas is now available at DNR offices. The guide, *Public Hunting Areas of Iowa*, is organized by county. The listing for each site includes the main types of game in the area, acreage, descriptions and the location of and/or directions to the area. The directions refer to the city nearest the area and then directs the reader along federal, state and county roads.

Areas that have portions of their acreage established as wildlife refuges are designated, as are natural lakes established used as open-water refuges.

To request a copy of the publication call (515)281-HNTR(4687) or write to DNR, 900 E. Grand, Des Moines, IA 50319-0034.

The *Iowa 1996 Hunting Regulations* are available at DNR offices, county recorder's offices and many retail outlets where hunting licenses are sold. This synopsis of the regulations also contains season dates, hours, and daily bag and possession limits for Iowa's hunting and trapping seasons.

CRP Not Guaranteed

Recent reauthorization of the Conservation Reserve Program (CRP) may lead many hunters, conservationists and outdoor enthusiasts to mistakenly believe the battle for Iowa's upland birds and waterfowl has been won. Not so, according to Todd Bogenschutz, DNR wildlife biologist.

"The 1995 Farm Bill law is simply a working outline for programs the USDA will offer over the next seven years," Bogenschutz says. "The rule-making process is actually where the details of the various programs are worked out, and these details have not been finalized. The USDA released interim CRP rules in July, and the final rules will be published in



Roger A. Hill

September."

"CRP has been a tremendous benefit to Iowa's wildlife in general, and pheasants in particular, by providing more than two million acres of undisturbed nesting and winter cover," Bogenschutz explains. "Although the CRP has been extended in the new Farm Bill, a new set of administrative rules will determine what kind of cover will be used. These rules will also determine whether Iowa will get a significant portion of the CRP acreage available for new sign-ups or re-enrollments. USDA staff will decide when, where and how the new programs will be offered."

Bogenschutz says it is too early to assume Iowa will retain a large portion of its CRP enrollment. He says certain programs like the Wildlife Habitat Incentives Program and the Wetland Reserve Program have already been reduced for 1997.

"If outdoor enthusiasts and conservationists do not remain vigilant, their favorite pheasant spot may be a cornfield next year," he says. "To that end, the rule-making portion of the process may be more important than the legislative action. We won the first battle by getting the CRP reauthorized, but we haven't won the war. As we did with the initial CRP rules, the Iowa DNR wildlife bureau will work with federal officials to ensure the new rules are as beneficial to wildlife as possible. The support of outdoor enthusiasts and conservationists make this task much easier."

Upcoming NRC, EPC and Preserves Board Meetings

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

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

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

Natural Resource Commission:

- September 12, Paulina
- October 10, Mt. Ayr
- November 14, Des Moines
- December 12, Des Moines

Environmental Protection Commission:

- September 16, Des Moines
- October 21, Des Moines
- November 18, Des Moines
- December 16, Des Moines

State Preserves Advisory Board:

- September 5, Dickinson County

Warden's Diary

Not Just the Same Old, Same Old

This job has many great points. Even after years of the "same old, same old" you can still look forward (*most* days) to going to work. There are days when the beauty of an outdoor scene overwhelms you or when something unexpected can still amaze you. There are many pluses but there are some minuses. As officers we get tired of being lied to. Sorry, I don't know any other way to put it. It seems everyone has an excuse.

"I didn't know I couldn't do that!" "It's not my fault!" "I didn't shoot it!" "I didn't catch it!" "Well, yes I have a license, but there was a flood, an earthquake, my car broke down, honest, it's at home somewhere!"

I don't want to paint everyone with the same brush. That is unfair and untrue, but the fact is we are lied to much of the time. So, it was refreshing the day I met the man who admitted he was wrong.

It started like many things do. A complaint went into the sheriff's office and was referred to me. The background story went something like this:

A man was sitting in his living room when he heard, "Bang!" He looked outside to a field across the road and saw a pickup in the field with someone in the pickup and someone standing beside it, pointing a gun into the field. Deer season was in full swing and someone *really* wanted a deer.

Startled by the shooting so close to his house, the homeowner jumped out of his chair and ran across the road to challenge both hunters. As he talked to the pair, he found out the man in the pickup was hunting with his teenage son. They had seen a deer in the homeowner's field, and turned into the entrance, where the young hunter got out and shot at the deer. No, problem so far right?

Well, their first problem was they were well within 200 yards of the house. The second was they did not have permission to hunt in the field and their third problem was the teenager shot at the deer with a rifle.

When the homeowner confronted both the hunters, the dad admitted all the wrongs. "We've been hunting all weekend, haven't seen a deer, and we were getting frustrated!" he said. The dad was apologetic and wanted to know how he could appease the homeowner. "What can I do to make it right?" he asked.

The homeowner had no ready answer. After all was said and done, the homeowner did some serious thinking and reported the violations. When I talked to him, he gave me all the information -- descriptions, a license number and names. He had decided what happened was not right, and though it was difficult because he knew the people involved, he decided he should report it and agreed to testify in court if needed.

We get called with a lot of complaints. Very often the complaints are long after the fact. Many times we hear "Here's what happened, but, I don't want to get involved." Or, the refrain

is, "I really don't want to get anyone in trouble."

The problem is, if we get involved, it stands to reason someone is probably going to get into some trouble. Sometimes we can't pursue the matter too far without the eyewitness testimony which is, many times, crucial to a conviction. I admired the homeowner for his courage and concern for legal hunting.

After gathering all the info, I located the twosome -- father and son. When I talked to the dad he agreed to bring his son and to meet with me.

Well, we met the next day in a parking lot. I told him everything I knew about the incident, and told him I wanted to hear his side of it.

He immediately agreed with everything the homeowner had described. "That's the way it happened," he said.

I explained the charges I would be filing

"I have no problem with those charges," he said.

When I asked for his signature on the ticket, I told him, "I appreciate your honesty and I want you to know it was difficult for the homeowner to report this because he knows you. Sometimes the right thing to do *is* the hard thing to do."

He looked at me. I could tell he was having a difficult time with something. "I'm sorry about all this," he said. "What I really hate is what a bad example this set for my son."

Being a dad, too, I could understand this. All the officers work very hard in hunter safety courses trying to teach ethics in the sport. It was obvious he was really concerned.

I looked at his son. "You know, it takes a real man to stand here in front of a law enforcement officer and do the right thing -- admit you made a mistake," I told him. "I want you to remember what your dad did today, because he must love you very much to stand here in front of you and admit this."

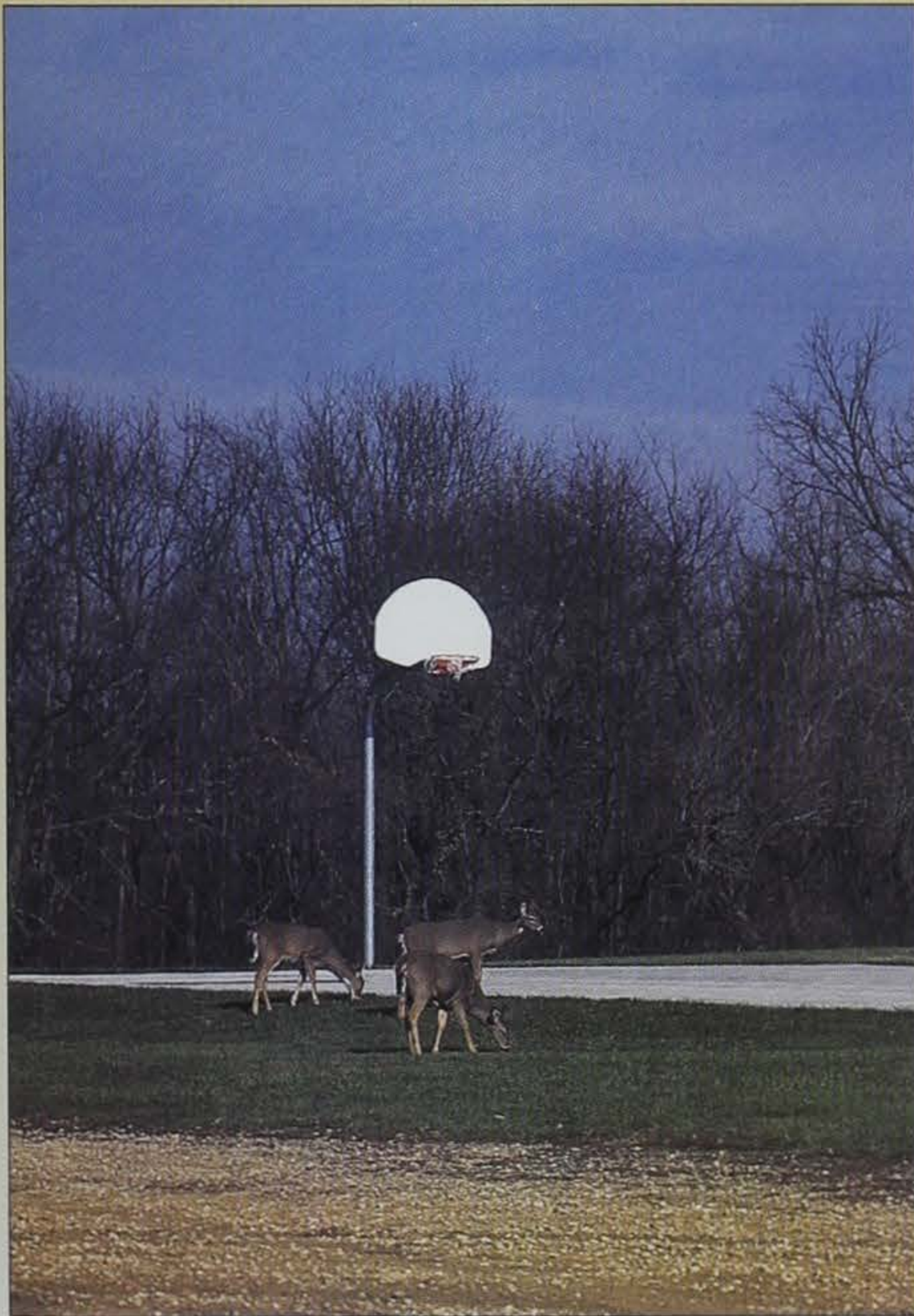
I shook the man's hand and thanked him again for his honesty. I got back in my car and drove away. As a law enforcement officer it's easy to get a cynical attitude from everything you see and hear. Sometimes you forget about the good people. You forget about the people who accept responsibility and don't hedge. You forget about the parents who *are* concerned parents and know kids learn by example.

We all try to treat people the way we would want ourselves or our families treated. I hoped my actions were fair to that man, and hoped in some way it would help shape his son's future attitudes. It may have helped shape not only his attitude about hunting, but about what it takes to be a parent, to be responsible for your actions -- what it means to be an adult.

What the dad probably didn't know is how his refreshing honesty made my day.

-- by Chuck Humeston

Parting Glance



Roger Hill

“Let the game begin . . .

Taking the court, the infamous Iowa Does for the much-anticipated season opener with the Bucks. Yes folks, this is going to be a great season for deer fans.”

