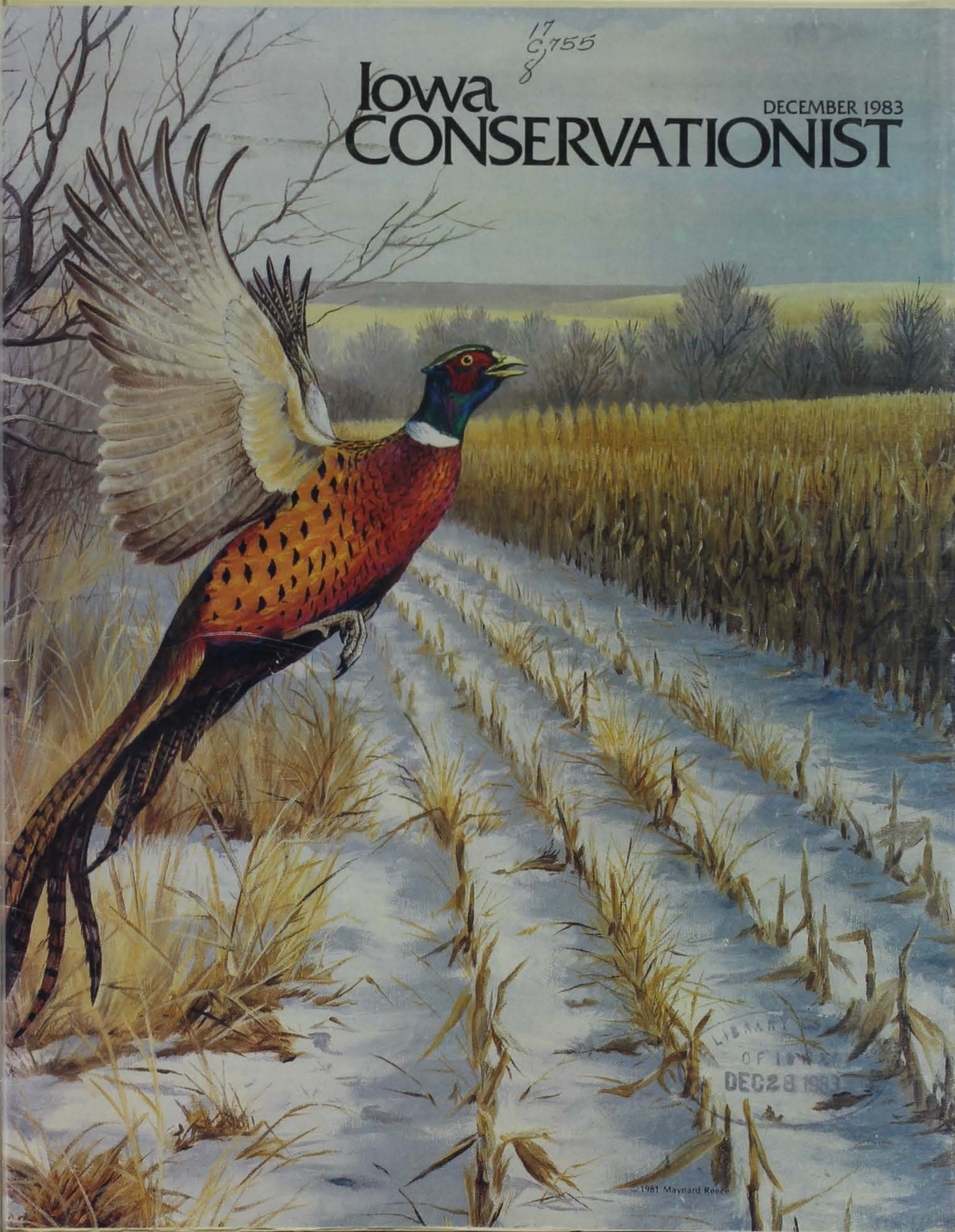


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Iowa CONSERVATIONIST

DECEMBER 1983



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COVER: *Escape* — Ring-necked Pheasants
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Ken Formanek

A BIRD FOR LATE S

By Roger Sparks

The mild winds of fall are gone and if the air moves now, it stings. The boys down at the barber shop are fussing over bowl games, and their only contact with pheasants these days are at Sunday dinner tables, where they enjoy the rewards of opening day efforts. The L.L. Bean monogrammed hunting

vests are, for the most part, stored till next year. But for this hunter, and relatively few like me, the real pheasant season has just begun.

December pheasants are different. Not only have those cussed cock birds mastered the same tricks they used to elude us in November, they've added a



E SEASON

few to boot. They run harder, flush wilder, fly farther, and sit tighter than before. I hesitate to suggest birds with bean-sized brains are smart, but by December they become extremely alert to danger, familiar with escape routes and just plain sneaky. Above all, late-season pheasants are survivors. Fewer

in numbers, those remaining roosters have withstood the swarms of fair weather hunters, the daily pursuit of predators and an early winter storm or two. As a game bird, they aren't exactly classic, and they won't make the front cover of some east coast hunting calendar. But, to a half-matured farm boy with a fair Lab, the ringneck in December is colorful, challenging, and simply wonderful.

There are no absolutes in late season hunting, but pheasants tend to do certain things in certain types of weather conditions. If the temperatures are unusually mild and there is little or no snow, birds will be widely dispersed in sparse cover, fence rows and small, light weed patches within corn and bean fields. Under such conditions, pheasants tend to be found in little bunches of either hens or cocks. Since the birds may be located almost anywhere, a great deal of ground must be covered between flushes. The key to success is to leave no stone unturned. If the tiniest foxtail waterway could possibly hold a bird, walk it — it may hold a limit of roosters. They may flush wild, but sometimes even late-season cocks will hold in the skimpiest of cover.

More often, Iowa Decembers are characterized by some periods of cold temperatures and snowfall. During harsh weather spells, pheasants head for the heavy stuff. Pheasants of both sexes will be found in brush, large weedy draws, deep drainage ditches, windbreaks, and frozen cattail marshes. Although the birds are bunched in these easy-to-find spots, the successful rough-weather hunter nearly always has a dog. Why? Because few birds are killed when flushed from this heavy cover. Big flocks of nervous pheasants rarely allow an approaching hunter to get within range; they'll likely spook wildly and fly in every direction at the first sign of danger. The object, then, is to watch them scatter, try to spot a few roosters, guess where they may be headed, and get after those birds. After the first big flush, pheasants tend to sit tight. Slow, meticulous dog work from downwind, if possible, often pays off.

My Lab has a great nose, but I can't deny that the pointing breeds have

better. There's definite value in working late-season pheasants with one of the pointer varieties; a solid point will often hold a rooster from a wild flush.

About the only time I track pheasants is to get the big flock to flush that first time, after they've moved from cover into a grain field. Occasionally, a single will run a ways before holding and I'll follow those tracks, but more often than not they'll become confused with other tracks in good pheasant country. Besides, I've learned to trust my dog's nose considerably more than my eyes.

One more tip: if a standing cornfield exists, it will attract late season pheasants. If a large cornfield is picked late in the year, some fine pheasant hunting can be had by the first to gain permission to hunt it.

With fewer birds to go around, small parties are a must for late season. Three to four hunters are maximum. I generally can't find that many people who'll go out late in the year. I've learned to enjoy December pheasant hunting with one partner, or alone. I can't recall a day when several people killed a limit of pheasants late in the year, but I remember many fun days when a friend and I shot one apiece.

The pheasant should never be criticized for sometimes forsaking the so called classic game bird qualities. Uncooperative, uncompromising and unpredictable, I'll gladly take him, early or late, just as is. There have been many mornings spent standing hopelessly on a hill, eyes watering from the sharp wind, watching scores of pheasants pour from a big draw below. Several pairs of hunting pants have worn thin from plowing through ice-bound cover, only to have their wearer see a dozen hens flush single file at his feet...and one cock about 60 yards to the rear. I've watched pheasants running full bore no less than 400 yards ahead of an oncoming hunter, and I've spent days when my dog caught as many birds as were flushed.

Still, I've shot my share of prime December roosters, busting just in front of the dog's nose into a thrilling explosion of brilliant feathers and sparkling snow crystals. Those are the moments I keep, for this is my season.

THE SLOUGH BILL



Dean Roosa



Rock Bridges

By Steve Dermand and Ken Herring

Steve Dermand joined the commission in 1982 as a county conservation board specialist. He holds a B.S. from Buena Vista College.

Ken Herring is a wildlife biologist located at Adel. He has been with the commission for seven years and holds a B.S. degree in fish and wildlife biology from Iowa State University.

"Men measure the yield of the earth in terms of bushels of corn, tons of hay, or bales of cotton. These are familiar quantities; they have meaning in

expressing the difference between two fields or two farms. But to see the natural world with realism, we will need many other units by which to gauge the quality of land." So wrote Durward L. Allen in *Our Wildlife Legacy*.

How well this statement speaks for the fate of Iowa's natural areas. Unfortunately, Iowa's truly natural areas have been seriously depleted. Iowa's native landscape was composed of over 30 million acres of vast prairies. These beautiful and extremely complex seas of grasses and forbs molded the richest soil resource in the entire world. It is ironic that today less than one-third of one percent are all that remain of Iowa's native prairie.

Finally, A Tax Break For Landowners

Another important native vegetation type was Iowa's woodlands which bordered the many rivers and streams. Twenty million acres of mature forest graced the Iowa landscape along major drainage ways and filtered outward to meet the vast prairie. As of today, 80 percent of this forest land has disappeared. The remaining 20 percent includes much that is cut over, currently overgrazed, or in some "lesser quality" from the true native state.

And who could forget that Iowa was once dotted with prairie marshes and numerous sloughs where countless waterfowl mated, nested, reared young, rested and fed during their migration. Today, no more than 5 percent of these areas may be found in Iowa.



Ron Johnson



Ken Formanek

Bob Baylor (above) of Exira has wildlife habitat around his farm pond in the tax-exempt program. "It has been a learning experience. I bought a couple of books on wildlife so I could know more about it. And last year, twenty-five people fished the pond."

Who Protect Iowa's Remaining Natural Areas

The bright spot for these natural areas may indeed be centered around the slough bill. This bill has given conservationists and concerned landowners some comfort that the remaining natural areas in Iowa are worth saving. While first-time, groundbreaking legislation is seldom without problems, the slough bill is an encouragement to all Iowans concerned with the conservation of Iowa's natural resources.

Law Makers Enact the "Slough Bill"

The State Property Tax Natural Resource Exemption and Assessment Act, or as it is commonly called, the

"Slough Bill," amended the Code of Iowa by providing property tax exemption to private landowners for certain types of land. Wetlands, recreational lakes, forest cover, forest and fruit tree reservations, rivers and streams, river and streambanks, wildlife habitats, native prairies, and open prairies all achieved tax exempt status. While qualifying forests and fruit tree reservations have been receiving partial tax exemption since 1913, those acres have only recently become eligible for *full* property tax exemption under this new act. The primary objective of the slough bill is to preserve land in its natural state through property tax incentives.

During the 1978 Iowa legislative session Lowell Norland, representative

from Kensett, was chairman of the House Ways and Means Committee. Tax breaks for urban construction projects were being proposed and Representative Norland and a few of his colleagues felt incentives should be offered to rural landowners who often feel the need to put land into production simply because it is being taxed. Therefore in 1979, Norland, along with Representative Jim West of State Center, introduced a bill into the legislature dealing primarily with property tax exemptions for sloughs and riverbanks. Three years and four redrafts later, the "Slough Bill," in its present form, passed both the House and the Senate. In May, 1982, it was signed into law by Governor Ray.

Benefits to Landowners

Until the passage of the slough bill, landowners had little choice. Either they used all land for economic gain or they lost money. Simply, there was little or no economic reason for landowners to consider the long-term preservation of natural habitats. Long-time owners of land without mortgage encumbrances or high financing costs for purchasing land, nonetheless faced rising property taxes. Newer landowners faced property taxes, high interest rates and depressed economic conditions as well. Needless to say, many landowners were under extreme pressure to put every acre of land into agricultural production.

Landowners who have timber, odd uncropped areas, or perhaps a unique native prairie or wetland complex finally have a choice. They may elect to preserve, enhance or restore natural habitats on their land without the eco-

nomical disadvantage of paying property taxes. When certified under the new law, forests, prairies, rivers and streams and other "unused" areas will be exempt from property taxes.

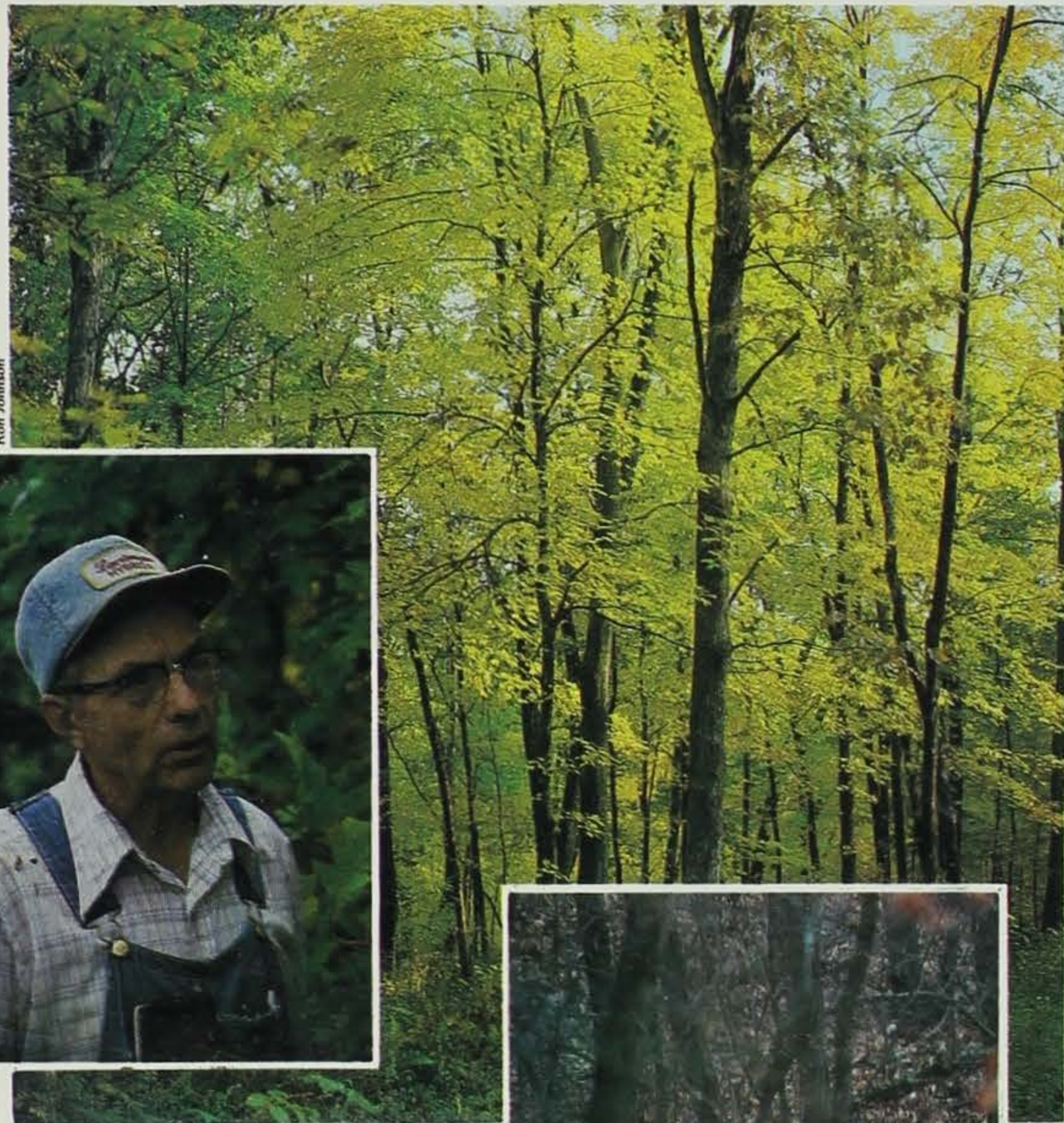
This is not an economic cure-all for the landowner. Unfortunately, most land in Iowa that is eligible for certification is already taxed at a low rate. **As a rule of thumb, landowners with steeper, gullied, forested, or poorly drained lands that they might want to consider for certification could be expected to save less than \$10 per acre.** Most areas will, in fact, save the property owner \$5 to \$7 per acre.

Still, there are exceptions. The only sure way for a landowner to know how much could be realized by certifying a portion of his or her property is to apply and find out. **The important thing is that for once, the Iowa property owner who is protecting or restoring the important natural habitat "pieces" will have a choice.** There is

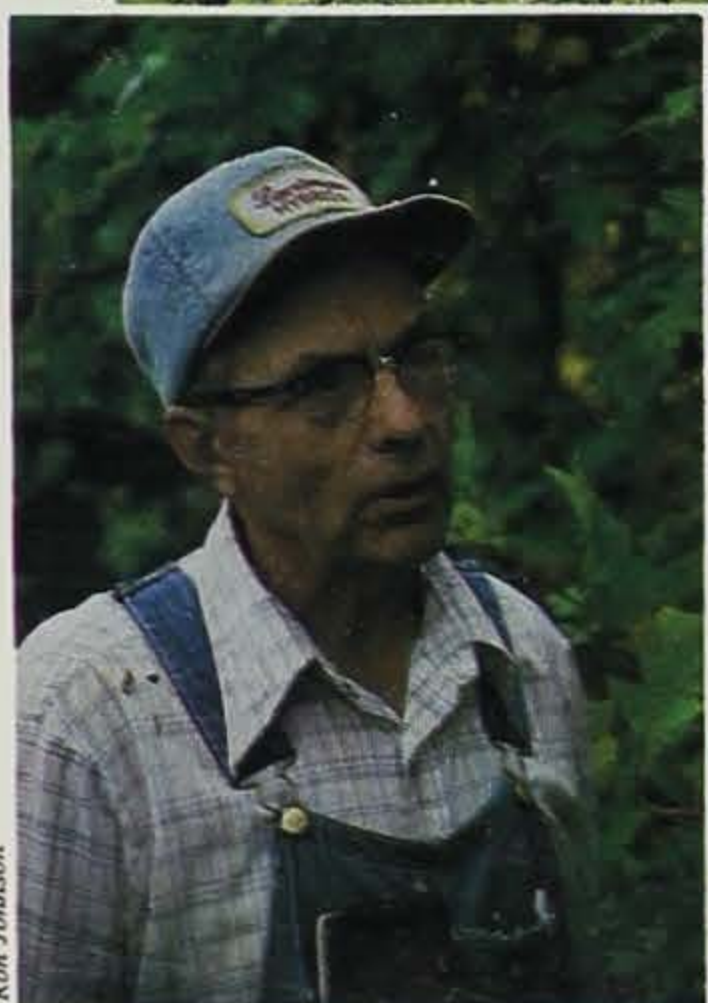
now an alternative to bulldozing a steep brushy hillside to "make enough to pay the taxes." There is an alternative to draining a small pothole on the family farm. And yes, there now exists an alternative to plowing up a small corner of the farm that has produced a brood of pheasants each year. The alternative may be enough for many landowners as the small savings realized in property taxes will simply *not* be enough to compensate for the potential of production. But for once, thanks to the Iowa legislature and conservation-minded citizens, landowners do have a choice. Under the protection of the slough bill, a concrete economic savings can be realized when the owner agrees to set aside the area.

Perhaps the most important aspect to the landowner who elects to apply for tax exemption is the recognition he or she receives for preserving unique areas. It is time state and county governments, and the general public recognize the importance of the natural habitat remaining in private landowners' hands. Numerous studies show that the current public ownership is not enough to provide for increasing use of outdoor space. **The vast majority of hunting, fishing, snowmobiling, mushrooming and other outdoor activities occur on private land.** The forest lands, odd corners that escape the plow, rivers and streams provide the bulk of current and future wildlife needs and the associated outdoor recreation in Iowa. The slough bill recognizes the importance of these lands by recognizing that the property owner needs an incentive to preserve these areas for all. In effect the bill gives the landowner this overdue recognition. In a sense, Iowans are saying they appreciate the value of the remaining natural habitats held in trust by landowners throughout the state and are willing to grant these individuals a property tax exemption to encourage future preservation. To the property owner who sees a host of outdoor activities occurring on his or her land, this recognition of tax exemption may just be enough to preserve the area for future generations.

Slough bill participant Lester Johnson, of Brayton, says he gets a lot of good from his timber. "I would never bulldoze it. It's a good mushroom timber, and it's full of wildlife and wildflowers, too. My wife and I spend a lot of time there — it's a real piece of nature."



Ron Johnson



Ron Johnson



Jerry Leonard

Benefits to All Iowans

It is difficult to fully understand how all Iowans will benefit from the protection of natural habitats as a result of the slough bill. Those who hunt, fish, camp, search for mushrooms, photograph, and otherwise enjoy Iowa's outdoors will directly benefit by the assurance that there will be more areas preserved for their particular outdoor activity. Wildlife biologists all agree that every acre of habitat certified for tax exemption under the slough bill gives an important measure of protection to the most important wildlife-producing lands in the state. The forests, prairies, rivers and streams, and associated "unused" areas on privately owned land will produce, house, and maintain the majority of wildlife for future generations of Iowans.

The preserved areas will also serve as increasingly important natural classrooms allowing Iowans to better understand what Iowa was like in earlier times. Scientifically, endangered or threatened plant or animal species may be used to unlock some discovery important to medicine or plant genetics. The few remaining natural areas host a veritable treasure of unexplored knowledge.

Iowans respond favorably to the sight of wild turkeys, white-tailed deer and other species. In addition, increasing environmental awareness has focused attention to the enjoyment many Iowans gain from our state's nongame wildlife resources. Bird feeding and identification and the independent study and management of nongame species have rapidly gained support among urban and rural dwellers. The slough bill will benefit Iowa's wildlife resource and, consequently, the people who enjoy it. **Indeed, every Iowan who takes pride in the natural beauty of this state, who enjoys trees, native plants and wildlife, and who has strong conservation ethics will benefit from the slough bill.** As Aldo Leopold said, "There are those who can live without wild things and those of us who cannot." A growing majority of Iowans cannot.

The benefits of the bill in terms of soil conservation should not be overlooked either. District Conservationist Marlyn Schaffer of the Soil Conservation Service for Audubon County summed up the soil conserving aspects of the bill. "According to the Audubon County Soil Survey, there are 36,300 acres of land not suitable for crop production. About 6,000 of these acres are being cropped. One of the most

common reasons given by farmers is that property taxes are being paid on that land. Much of this land would be suitable for pasturing, but with a tax incentive, some of this land could be reclaimed and developed as open prairie or forest reserve. At least 23,000 acres of farm land in Audubon County are now severely eroded. This means there is little or no topsoil left. Such land should be returned to permanent grass or wooded cover for natural regeneration. The best treatment is to have it set aside and become tax exempt as a wildlife area."

All of Iowa's 99 counties face similar problems with soil conservation. **While the incentives provided by the slough bill will not stop soil erosion, the tax exemption does provide a helpful alternative.**

First Year Results Very Encouraging

During the first year, the slough bill has proven to be an outstanding success. **Over 16,000 acres of Iowa's remaining natural lands, not including forest and fruit tree reservations, have been protected.** The new tax exemption categories are *wildlife habitat, native prairie, and wetlands*. Wetlands also include recreational lakes, forest cover, rivers and streams, river and streambanks, and open prairies. Many of these areas are endangered representatives of Iowa's natural history. Therefore, it is to the benefit of all Iowans, not just the landowners, that these unique areas be identified and preserved for future generations to experience and enjoy. Particularly heartening are the results seen under the wetlands category which is the only optional portion of the slough bill totally under the discretion of the board of

supervisors in each county. Over 40 Iowa counties adopted the wetlands category and subsequently were able to sign up over 15,000 acres for tax exemption status. The remaining three categories — forest and fruit tree reservations, wildlife habitat, and native prairie — are relatively automatic; in other words, if a landowner applies for an exemption under one of the three categories and the area is approved by the certifying conservation official the tax exemption must be granted.

A great deal of the credit for this first year's success should go out to the county boards of supervisors, the county conservation boards, the Iowa Conservation Commission's wildlife management biologists, and the Soil Conservation districts personnel. Without their concentrated and joint efforts at the local level, these results would not have been possible.

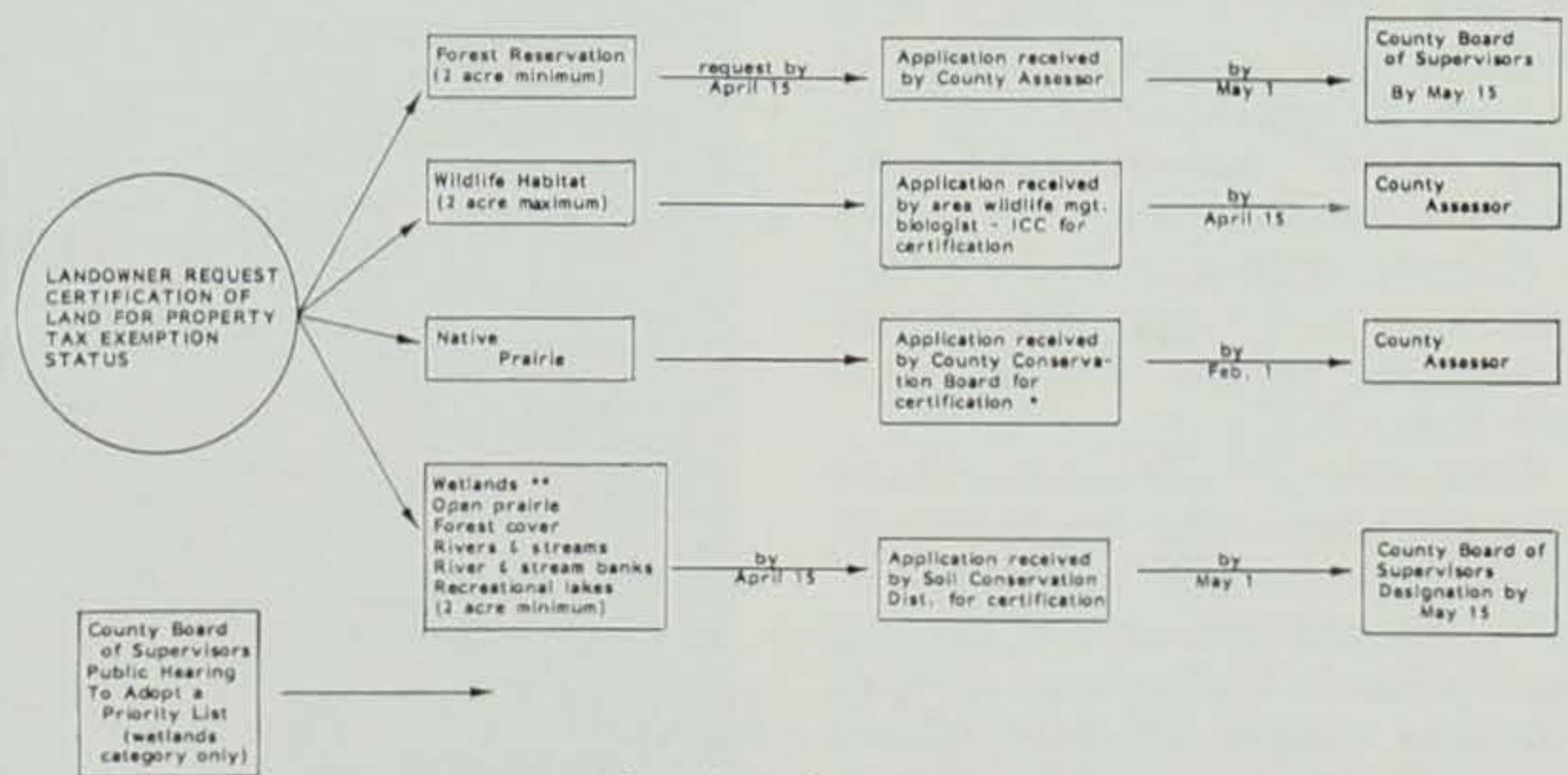
How to Apply

Landowners interested in participating in this program next year should become aware of the application deadline dates for the particular exemption they may qualify for. They are as follows:

Forest Reserve, April 15; Wildlife Habitat, April 15; Native Prairie, February 1; and Wetlands, Open Prairie, Forest Cover, Rivers and Streams, River and Streambanks, and Recreational Lakes, April 15.

Local soil conservation district offices, county conservation board offices, or Iowa Conservation Commission's wildlife biologists can provide the appropriate forms and can also explain the requirements and advantages of a program that will give both the taxpayer and wildlife a break.

DIAGRAM FOR "SLOUGH BILL" APPLICATION PROCEDURE



* Except Allamakee Co., Iowa Conservation Commission will certify in this case.

** Application effective for 3 - years.

Unveiling The Masked Marauder's Secrets

By Ron Andrews

Ron Andrews is a wildlife research biologist located at Clear Lake. He holds a B.S. degree in fish and wildlife biology from Iowa State and has been with the commission since 1968.

The raccoon brings different reactions from different people. To the person whose sweet corn patch has been invaded by raccoons just when it is about ready for the table, the raccoon is a son-of-a-gun. To the acreage owner whose unrented house was torn into, the raccoon ranks at the bottom of this list. Some people automatically believe that a raccoon seen on their premises is rabid, despite indications from diagnostic labs that only a very small percentage of raccoons in Iowa are rabies carriers. (The striped-skunk still remains the number one carrier of this dreaded disease.) But there is a brighter side to this masked bandit's reputation and that is one held by hunters and trappers. Sportsmen have expended many hours of recreation in pursuit of this critter, and they view this guy at the other end of the spectrum. They want to see raccoons flourishing and in high numbers.

Raccoons have been a real success story as far as wildlife is concerned. While they did exist at the turn of the century, their numbers were low and sporadic. They were concentrated in hardwood forests along eastern Iowa and along water corridors elsewhere in the state. Pioneers clearing timber initially reduced raccoon populations. However, the adaptability of raccoons to changing environments and a new agricultural food supply has allowed modern day raccoon populations to grow higher than ever.

While Iowa raccoons utilize corn as a major food item, they are technically called "omnivores" or "everything eaters." They will feed on most anything that is palatable. Garbage cans are often a favorite hangout of these masked critters. Their menu would be several pages long.

Besides their desire to feed on most anything, they have developed a great adaptability to survive in all types of environments despite man's influence. Raccoons live in intensely cultivated agricultural areas, along wooded stream and river valley corridors and next to man on the edges of cities and towns. On many occasions conservation personnel have been called to handle a raccoon complaint in the most unusual places. Raccoon litters occasionally can be found in chimneys of cottages or overhangs of expensive houses. Because they are so versatile, it is little wonder raccoons are distributed statewide and are common throughout the United States. Also their adaptability to live in places where hunting is not

allowed or is difficult, provides them with a nucleus to supply raccoon numbers to other more huntable areas.

During the late 1970's, it was not uncommon for a raccoon hunter or trapper to approach me and say, "When are you people going to shorten the raccoon season?" A few of them even went so far as to suggest that the raccoon was becoming an endangered species. The raccoon, however, is in no danger. In fact, the adaptable critter is doing quite well these days. Fur buyer records show that over a quarter million raccoon pelts have been harvested by Iowa hunters and trappers in 9 out of the last 10 years (see figure on harvest trends). These sustained high harvest rates indicate a healthy population.



Thomas Gluck

Because raccoon populations have been at high tide since the late 60's and 70's, they have been vulnerable to disease outbreaks that could cause rather significant die-offs if their numbers were left unchecked. Raccoons are susceptible to distemper, psuedorabies, parvo-virus and perhaps a few other less significant ones.

In 1978, because of increased hunting and trapping pressure on the raccoon population, the Conservation Commission implemented a raccoon spotlight survey in an effort to monitor population trends. The survey occurs each spring from about April 10 through 30. Counts begin one hour after sundown on 85 different 25-mile designated routes. Two observers scan the trees, creeks and fields with spotlights, looking for raccoon eyes and silhouettes. These counts appear to be giving reliable trend information for raccoon populations (see table).

Because of all the hullabaloo over the raccoon population and because the raccoon has gained considerable status in recent years, the Iowa Conservation Commission, in cooperation with Iowa State University, initiated a study on the raccoon population in Guthrie County. This research will determine the reproductive, survival and dispersal rates of raccoons in Iowa. It will also examine potential effects of harvest on these population parameters. Some 170 raccoons have been live-trapped and ear-tagged on our study area in Guthrie County. Also when live-trapping is completed this fall, 50 animals will be wired for sound with radio collars in an effort to closely monitor their movements, mortality and habitat use.

Hunters and trappers taking one of these tagged or radioed critters will receive a small reward for reporting this valuable information and returning the radio collars. Information can be turned into the local conservation personnel, to research student Thomas Glueck at Guthrie Center or to the Wildlife Research Station at Boone.

Besides the radio telemetry work, information on the age structure of the population is being compiled by pulling an incisor from each raccoon and taking a very thin microscopic slide of the tooth. When this slice is placed under a microscope, one can count rings, like those on a tree trunk, to determine the age of the animal.

If a high percentage of raccoons are young-of-the-year, or one or two years old, it indicates the population is thriving and doing well. This is typical of

populations that are being heavily exploited. It would appear that in habitat like that found in Guthrie County overharvest is impossible. Biologists speculate that the more raccoons harvested, the more young per litter they produce. Harvest also lessens the opportunity for a devastating disease to infiltrate the population. Apparently, regulated hunting and trapping makes for healthier raccoons in the long run.

As a part of the ICC-ISU cooperative study, blood samples are taken from the masked bandit to see if distemper, parvo-virus, psuedorabies, and rabies are significant factors in this Guthrie County population. The technique for taking blood is unusual. While the animal is drugged for tagging and radio-collaring purposes, three cc's of blood

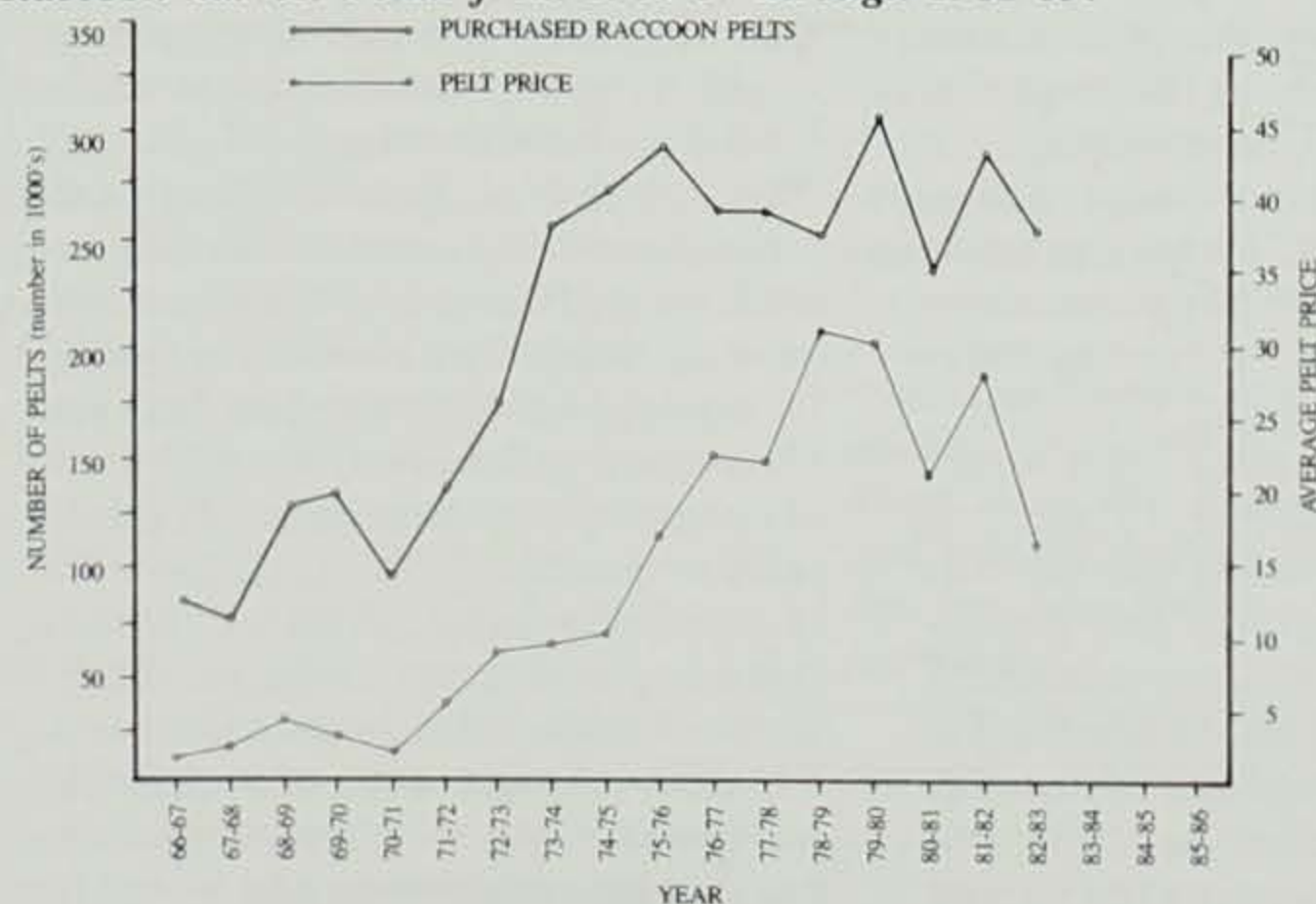
are taken by heart puncture. A syringe is inserted through the chest cavity directly into the heart, for drawing out the sample. Surprisingly, it causes no ill effects to the animal. Early results show low incidence of any of these diseases in Guthrie County, again supporting the theory that high raccoon harvests may be the reason the raccoon population is so healthy.

Although the study is still in its infancy, researchers hope a few of this masked marauder's secrets will be unveiled. It is important that people coming across one of the marked critters report the information. While the masked bandit will never disclose all his secrets, results of the study will develop a better understanding of what healthy, corn-fed Iowa raccoon is all about.

Iowa raccoon spotlight survey results, 1978-83.

YEAR	NUMBER OF ROUTES	RACCOONS SEEN	ANIMAL/MILE
1978	57	587	.41 raccoon/ mile or 1 raccoon/ 2.43 miles
1979	83	935	.45 raccoon/ mile or 1 raccoon/ 2.22 miles
1980	82	675	.33 raccoon/ mile or 1 raccoon/ 3.03 miles
1981	85	763	.35 raccoon/ mile or 1 raccoon/ 3.78 miles
1982	85	882	.42 raccoon/ mile or 1 raccoon/ 2.41 miles
1983	84	1066	.51 raccoon/ mile or 1 raccoon/ 1.96 miles

Raccoon harvest trends from 1966-67 through 1982-83.



Fish and Wildlife Economics

By Al Van Vooren

Economics of fish and wildlife? They're free! They belong to all of us.

While that's true, our fish and wildlife resources and the habitat that supports them represent a very real economic value.

In Iowa's broad-based economy where agriculture, industry and service related businesses dominate, the economic values of fish and wildlife may not be so obvious. But visit Big Creek Reservoir, Lake Okoboji, Pleasant Creek Reservoir, or the Mississippi River on a nice Saturday in June. Or, go out for early breakfast nearly anywhere in Iowa on the first Saturday in November to see how the recreational pursuits of fish and wildlife represent a real economic value in Iowa as well.

These economic values are obviously supported by the fish and wildlife populations recreationists pursue, and ultimately by the habitat that supports those populations. This principle, even without knowledge of what actual economic values are, is a basic premise behind the goal of resource managers to protect and improve existing habitat or create new habitat.

But, in these economic times we are forced more and more to evaluate just what the economic costs and benefits of resource management and protection actually are. Probably nowhere is this more true than on the Mississippi River. The major emphasis of resource managers on the river has been and continues to be protecting the habitat

which supports fish and wildlife populations.

Historically, the vastness of the Upper Mississippi River has lulled people into believing that any one piece of habitat was minor in importance. Being a major corridor for commercial transportation, great demands have been placed on the river by industrial development, barge facilities and channel maintenance activities. Anticipated impacts on fish and wildlife habitat have rarely outweighed projected economic benefits of those activities. Alternate construction designs, operational procedures or site placement are recommended by resource managers to minimize impacts on habitat and plans are often modified accordingly — if they don't require significant added costs.

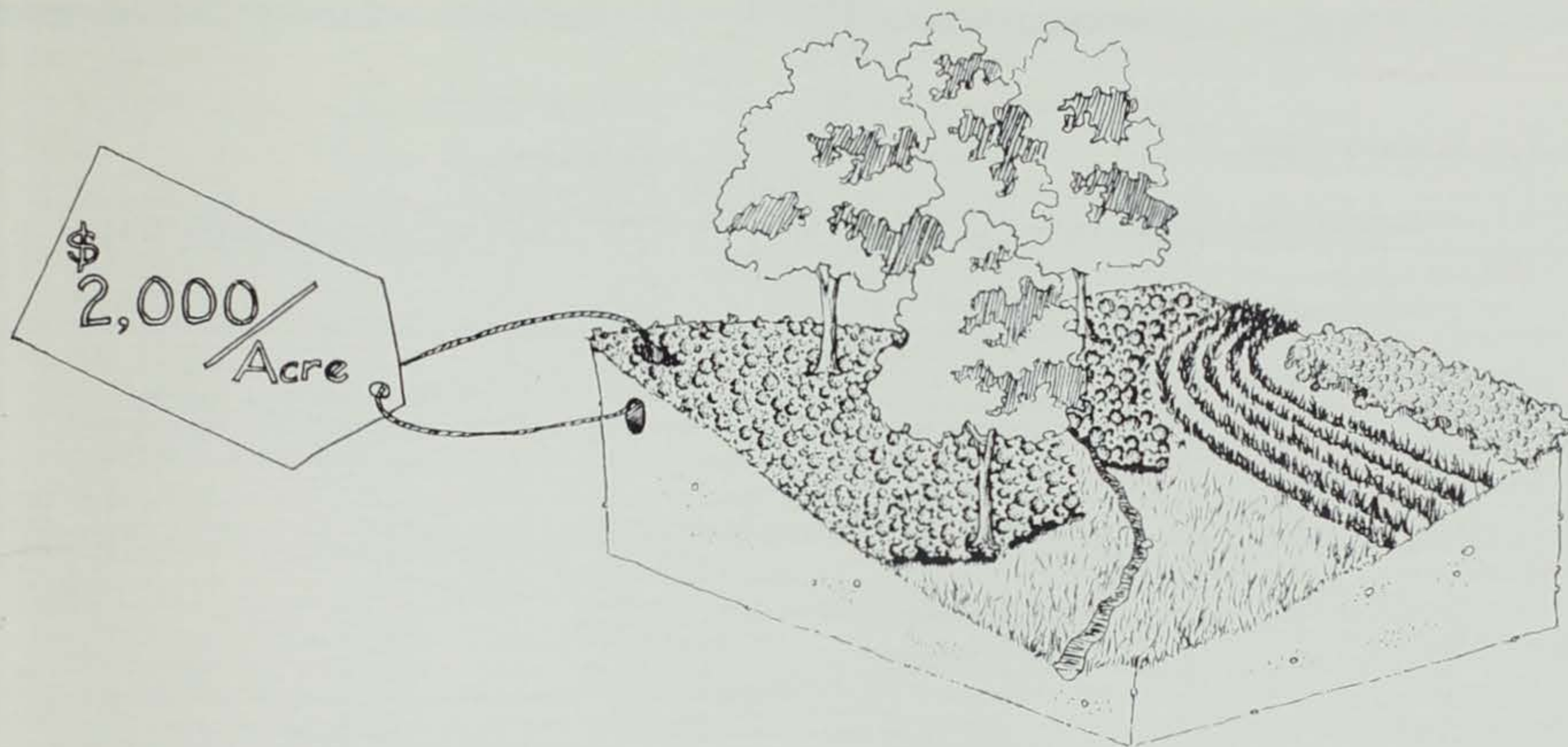
The Upper Mississippi River is a shrinking natural resource. Piecemeal losses have accrued from encroachment, industrial development, channel training, dredge spoil disposal and other direct impacts by man. Overshadowing these losses are those that have occurred due to sedimentation. In one pool alone that lies between Davenport and Muscatine, 800 acres of fishery habitat have been lost due to sedimentation. Efforts to slow or reverse the process, short of actually removing sediments from the backwaters, have been largely fruitless. Physical rehabilitation of our backwaters may be the only viable solution, but that takes money — and lots of it!

While the habitat shrinks, the demands on fish and wildlife have increased. A recent survey of 3,000 Iowa anglers showed that the average license holder made almost 50 percent more fishing trips in 1981 than in 1975.

So, as habitat decreases and pressure increases, just as with supply and demand in economics, the remaining habitat becomes more and more precious. How "precious" in dollars? We will never be able to say completely. It would be unrealistic to think we could ever convert all outdoor experiences into dollar values. How much was that last fishing trip with your son worth — when he caught the big one for the day and strained the buttons on his shirt as he carried it into the kitchen to show mom? Or, how much was it worth to you last spring to watch that doe and fawn feeding at the edge of the timber.

Dollar values have been put on expenditures involved with certain outdoor activities. A recent national survey of hunting and fishing recreation activities compiled information on related expenditures such as transportation, food, licenses, bait, equipment, tackle, lodging, etc. The study concluded that the average expenditure for a day of fishing was \$12.50.

Let's use this value and apply it to estimates of fishing use to gain some perspective on the dollar value of fishing, and in essence the aquatic habitat that supports fishing. The survey of Iowa anglers mentioned



earlier, estimated the number of fishing trips Iowa anglers made to the Mississippi River during 1981, and extensive cooperative angler surveys conducted by the five adjoining states during the 1970's similarly estimated angler use for the entire Upper Mississippi River. Applying our \$12.50 value to these use estimates, and dividing by the appropriate acres of water including main channel, side channels and backwater equates to values of \$200 to \$275 per acre per year.

Certain habitat types are obviously more valuable than others. During 1982 a survey clerk counted fishermen every hour, for 8 hours a day, 5 days a week as part of a comprehensive creel survey on a 180-acre Mississippi River backwater south of Muscatine. Expanding these numbers to account for days and hours not surveyed yielded an estimated 5,655 fishing trips made on that backwater from mid-May through October. Applying the \$12.50 per trip figure equates to a value of over \$70,000, or almost \$400 per acre per year for this river backwater habitat!

When we throw in the added economic value of other water-oriented activities such as waterfowl hunting, commercial fishing, trapping, canoeing, boating, birdwatching, swimming, etc., we begin to see that an acre of aquatic habitat on the Mississippi River supports a pretty impressive annual economic value.

A 1982 report published by the Upper Mississippi River Conservation

Committee, used extensive recreational use surveys and similar estimates of related expenditures to arrive at an estimated value of \$432,700,000 per year for all recreational activities on the pooled portion of the Mississippi River. If we apply this dollar value to the acres of water present, which directly support or indirectly attract these various recreational pursuits, we obtain a total annual economic value of almost \$1200 per acre!

Obviously there are weaknesses and flaws in this "figure juggling." We'll never be able to calculate exactly all the money generated directly or indirectly by it, just as we'll never (I hope) reduce to cold dollars the value of watching a woodduck brood paddle through the duckweed on a backwater river pond.

But, we must recognize that, tangible or intangible, that economic value of fish and wildlife habitat is real. And our juggling of figures and estimates has to at least convince us that those values are substantial. Substantial enough to warrant investments in rehabilitation of habitat that has already been degraded or nearly lost.

A recent study was authorized by Congress in response to resource agencies' concerns over the impacts of expanding navigation capacity with a new \$800 million lock and dam at Alton, Illinois. This study called for a master plan to be developed for the Upper Mississippi River which would take into consideration the natural

resource as well as commercial transportation interests. The master plan that was produced recommended that \$200 million be appropriated to complete a second lock chamber to service the already constructed dam, but also asked that \$191 million be appropriated over a ten-year period for rehabilitation of fish and wildlife habitat. Several compromise bills are now in Congress which ask for full authorization of \$200 million for the second lock and from \$125 million down to nothing for habitat rehabilitation. The Iowa Conservation Commission has developed habitat rehabilitation plans for areas along the Mississippi River should funding be approved.

Today's economic values for fish and wildlife habitat can and hopefully will justify authorization of major expenditures to rehabilitate fish and wildlife habitat on the river — expenditures which are in actuality an investment against the loss of a major economic resource — an investment in future recreation benefits to us all.

Al Van Vooren is a fisheries management biologist for the Mississippi River area. He holds a B.S. in fish and wildlife biology from Iowa State and has been with the commission for five years.

MIDWINTER BALD EAGLE SURVEY

Target dates for the 1984 Midwinter Bald Eagle Survey are January 6 or 7 1984. Counts reported between January 2 and 16 may be used if they do not duplicate target-date counts.

Eagle counters report all the eagles they see at specific sites or along described routes on one day.

The midwinter bald eagle survey is a project of the Iowa living resources program, cooperating with the raptor information center in the National Wildlife Federation.

Living resources specialist Dave Newhouse is the regional coordinator for Iowa. He shares information with Elton Fawks, the Mississippi River coordinator.

Counts are conducted by Iowa Conservation Commission, Fish & Wildlife Service, and Corps of Engineers personnel, assisted by concerned citizens and environmental groups.

Last winter, 240 adult bald eagles and 83 immature birds (323, total) were counted in Iowa. Of those, 186 were seen inland from the major boundary rivers. Observers saw eagles in 24 Iowa counties in 1983 counts. Fremont and Harrison counties reported the most birds followed by Clinton and Jackson counties. Clayton and Des Moines counties also had good numbers of eagles.

People who wish to participate should contact their local Conservation Officer or Wildlife Biologist to coordinate counts. They should contact Dave Newhouse for report forms. [Wildlife Research Station, Rt. 1, Boone 50036].

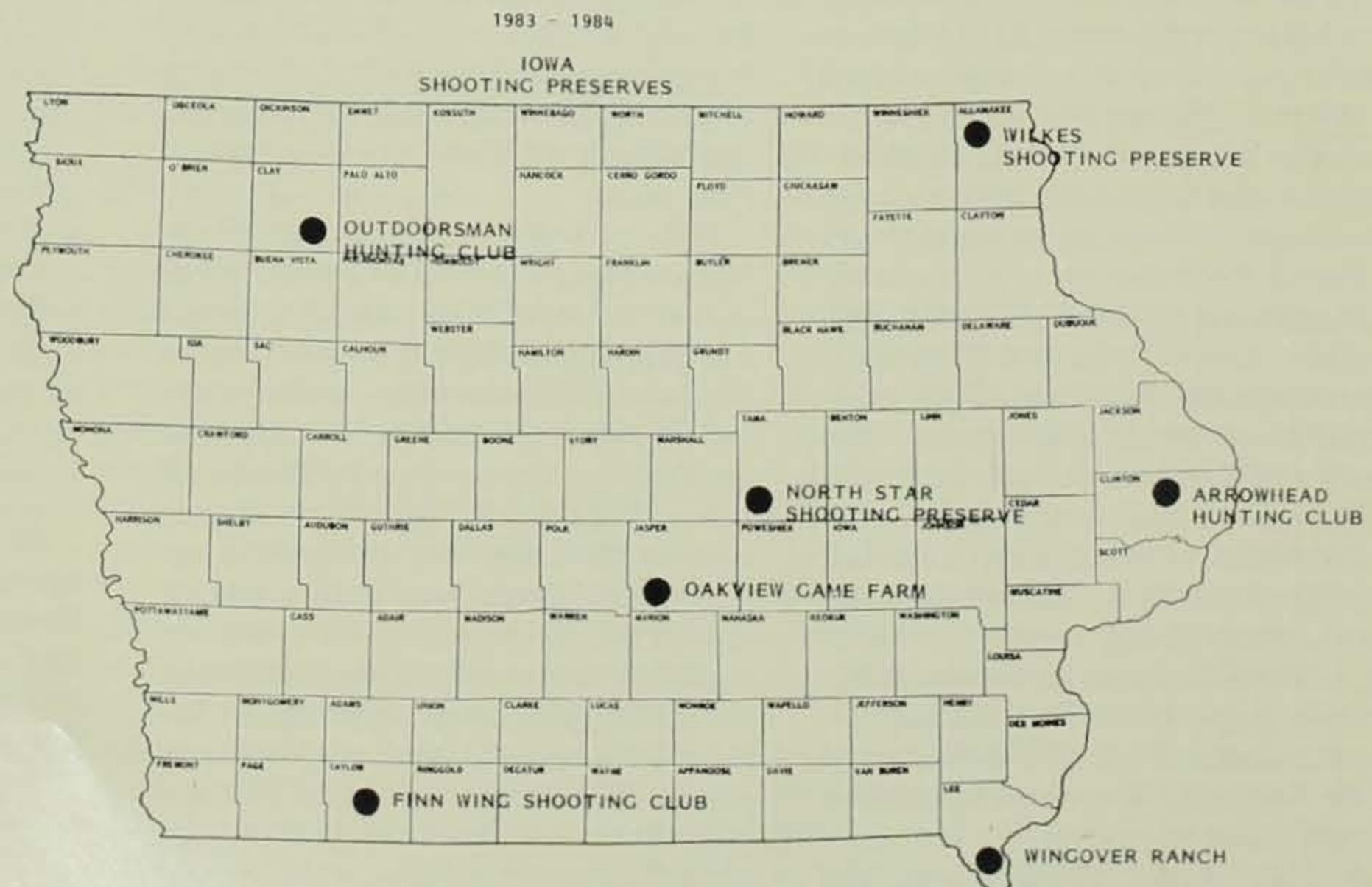
IOWA 1983-1984 PRIVATE LICENSED SHOOTING PRESERVES

The shooting preserve hunting season is from September 1 - March 31 of each year.

COUNTY	SHOOTING PRESERVE NAME	OWNER OR MANAGER	LOCATION FROM NEAREST TOWN	SPECIES AVAILABLE*
1. Clinton	Arrowhead Hunting Club Rt. 1, Box 28, Goose Lake, IA 52570	John Mullin Owner (319) 577-2267	3½ miles SW of Goose Lake, Iowa	P-Q-C-M
2. Lee	Wingover Ranch One Progress St. Keokuk, Iowa 52632	c/o Hubinger (319) 524-5757 Ext. 334	5 miles North of Keokuk, Iowa	P-Q-M
3. Jasper	Oak View Hunting Club Rt. 2, Prairie City, IA 50228	Ron DeBruin Owner (515) 994-2094	7 miles SW of Prairie City, Iowa	P-Q-C-M
4. Tama	North Star Shooting Preserve RFD, Montour, IA 50173	Larry Hinegardner Owner (515) 492-3490	3 miles NE of Montour, Iowa	P-Q-BG
5. Clay	Outdoorsmen Hunting Club RFD, Webb, IA 51366	Larry Buettner Owner (712) 838-4890	4 miles West of Webb, Iowa	P-Q-C
6. Allamakee	Wilkes Shooting Preserve Rt. 1, Dorchester, IA 52140	Lyle Wilkes Owner (319) 492-5347	3½ miles NW of Dorchester, Iowa	P-Q
7. Taylor	Finn Wing Shooting Club Box 104, Gravity, IA 50848	Bill Cruth Owner (712) 537-2576	4 miles NW of Gravity, Iowa	P-Q-C

P — Pheasant Q — Quail C — Chukar M — Mallard BG — Big Game

*Special Nonresident Shooting Preserve License — \$5.00 (for use on shooting preserves only) plus Habitat Stamp — \$3.00.





WOODLANDS FOR PROFIT SLIDE PROGRAM AVAILABLE

A new slide-tape program, "Woodlands for Profit," has just been released by the Iowa Conservation Commission and the Soil Conservation Service. The program describes the benefits of woodland management and the services provided by

the commission's district foresters.

The slide-tape program is available from the Soil Conservation Service in each county as well as from the commission's district foresters throughout the state.

HUNTER ORANGE FACTS

Hunter orange clothing has now been available for some 20 years and has even gained a traditional status among the gear of most birdshooters and big game hunters. Yet some hunters are still skeptical and resist wearing this important safety material. If you're in this minority category, these facts should change your mind.

It's a *fact* that fluorescent orange, more than any other color, is the most easily seen and recognized bright, unnatural color against a natural background. Hunter orange is the only satisfactory color for hunters to wear under all weather and light conditions.

It's a *fact* that almost 10 percent of all hunters have color vision deficiencies. Red clothing, for example, is no longer recommended because red cloth may not be seen by hunters who cannot distinguish color properly and because it becomes difficult to see in poor light.

It's a *fact* that accidents in which the victim was mistaken for game rank very high on the list of the most common types of accidents that occur in most states. Yet states with mandatory hunter orange laws have had a dramatic decrease in mistaken-for-game accidents. Many states have experienced a reduction of 50 percent, others by even more. There is no question that these sharp reductions in mistaken-for-

game accidents are a result of hunter orange clothing.

It's a *fact* that there has been no decline in hunter success in those states with mandatory hunter orange regulations.

It's a *fact* that hunter orange clothing is a tremendous aid in helping hunters maintain visual contact with one another, particularly when moving through dense cover or woods. Experienced hunters are keenly aware that, unless they know the location of their partners at all times, they cannot determine their safe zone of fire. Any hunter who has seen nothing more than a patch of orange out of the corner of his eye knows full well the value of fluorescent orange in helping everyone keep track of each other while in the field.

It's a *fact* that hunter orange has been defined as fluorescent orange with a dominant wave length of 595-605 nm (a measure of light intensity), a purity of not less than 85 percent and a luminance factor of not less than 40 percent. Clothing not meeting these standards is less effective. Hunter orange garments that have faded should also be replaced.

It's a *fact* that there are now 34 states and Canadian provinces that have instituted mandatory hunter orange regulations.

FINDING A PLACE TO HUNT

Trespassing is a blight on any state's hunting seasons and causes grief for both landowners and good sportsmen.

In Iowa it is a hard and fast rule that no one can hunt on private land without permission from the owner or lessee. Unfortunately there are individuals who feel the statement, "game animals belong to the public" means they can go anywhere and do anything to hunt. The damage these few thoughtless people do is costly to farmers and land owners.

Getting permission to hunt private land takes time and effort. The object is to convince the landowner you are a good sportsman who can be trusted on his property. There are steps that can be taken to make the job a little easier.

Ask permission to hunt well in advance of the season. A familiar face is more

likely to be welcomed than a stranger who shows up once, makes a quick hunt, and then is likely never seen again. Be courteous and considerate when asking permission. Introduce yourself and present either a business card or write down your name, address and phone number for the landowner's reference.

If the landowner says no, don't labor the point. If the answer is yes, listen carefully and follow instructions on where and what to hunt. Before leaving, check back with the landowner whether successful or not. If successful, share some of the game after it has been cleaned.

This is also a good time to ask permission for a future hunt. Later, add a thank you note, Christmas card or other personal touches to keep up good relations. Courtesy will breed better hunting.

Conservation Set-Aside Announced

Agriculture Secretary John Block has announced recently that 10 percent of the 1984 feed grain acreage may be set-aside for conservation purposes. The program appears to mark a change in USDA policy which before had stressed production control without conservation benefits.

"I am referring to the 1984 program as an acreage conservation reserve to give special emphasis to the administration's objective," Block said. "We want to encourage farmers to place their more erosive land into conservation uses while continuing to balance supply and demand during 1984." He said that farmers may sign up for the program on January 16 through February 24, 1984.

To receive price supports under the program, a producer must limit feed grain acreage to not more than 90 percent of the average number of acres planted in 1982 and 1983. The other 10 percent must be devoted to conservation purposes.

USDA also attached some stipulations to the program that have the potential to benefit wildlife as well as control soil erosion. Haying will not be permitted on the conservation acreage. However, the set-aside land may be grazed, but not during the six principal growing months. This should give certain wildlife, such as pheasants, rabbits and waterfowl, the opportunity to produce and rear young before the cover crop is reduced or removed.

ANIMALS AND PLANTS CALL DITCHES HOME

By Celia Smith-Burnett

Hunters, birdwatchers, prairie freaks, energy conservationists and penny-pinchers, listen up. This article appeals to all of us.

Back in the 1960s, the Iowa Department of Transportation, at the urging of the Iowa Conservation Commission and other wildlife groups, adopted a policy of not mowing to control weeds in roadside ditches before July 1. This policy allowed ground-nesting birds, in particular pheasants, time to raise their broods and leave their nests among the roadside plants.

In the 1970s, with the energy crisis upon us, mowing was further restricted to save fuel and money. No mowing was permitted in ditches before or after July 1, except for safety reasons. Mowing was allowed for shoulder areas adjacent to the pavement, as well as for control of noxious weeds and for snow storage.

This restricted-mowing policy has evolved over the years from a money- and energy-saving practice to one with tangible benefits for the wildlife and people of Iowa.

Unfortunately, individuals and interest groups are pressuring the DOT for a policy revision. These people believe "cosmetic mowing" — the golf course look — is more desirable in attracting tourists and industry.

IT'S NOT SIMPLY a matter of perception.

The amount of land tied up in the state, county and city road systems in the form of ditches, back slopes, medians and interchange areas is 670,000 acres, equal to the amount of land tied up in all federal, state, local and private creation land in the

state. We're talking about a significant amount of land.

These roadside areas offer prime nesting, feeding and cover habitat for reptiles and amphibians and the small mammals that feed on them. Moles, shrews, gophers and badgers, unwelcome in plowed fields, can live in grassy roadsides among the snakes, frogs and insects. The ditches are also home to game birds such as pheasant and quail, as well as non-game and song birds such as killdeer, meadowlarks, plover and mourning doves.

With civic groups voluntarily planting trees along roadsides, the road system offers still more benefits. These planted trees form windbreaks or "living snow fences" which save time, fuel and money in terms of snow removal.

Increasingly important, the roadsides are one of the few remaining places left in the state where part of our natural prairie heritage can thrive. The ditches and back slopes of our highways provide habitat for Iowa's native flowers and grasses, including endangered orchids.

IT'S A MATTER of misperception. And it's a misperception that a ditch full of tall grasses and flowers is out of control and not pleasing to the eye. It's a misperception that closely-mowed shoulders are more attractive and desirable.

It's much more progressive to allow Iowa's native plants to grow along our roads, providing a habitat and an inexpensive history lesson, saving money and fuel in the process.

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BOOK REVIEW

MATCHING THE GUN TO THE GAME

By Clair Rees

272 pages

Illustrated with photographs.

Published by Winchester

Press, 220 Old New

Brunswick Road,

Piscataway, New Jersey

08854; 1983

\$26.95

Today's sportsmen are faced with a bewildering array of firearms, calibers and gauges, types of action, sights, and other variables that can affect their hunting success and enjoyment. In this handsome, well-organized volume, Rees clearly describes how to match the gun and load to the game.

Important, but often overlooked details are covered. Rifle/sight combinations for long-range shooting, portable rests and how to use them, choice of bullets when pelts are to be saved, optical versus iron sights for close-range shooting, and camouflaging a turkey or waterfowl gun are among them.

This book contains a wealth of practical hunting and shooting information. It is enhanced by more than 150 photographs.

AMERICA'S FAVORITE BACKYARD BIRDS

By Kit and George Harrison

288 pages

Illustrated with photographs.

Published by Simon &

Schuster, 1230 Avenue of

the Americas, New York,

New York 10020; 1983.

\$15.95

Bird feeding and watching have become favorite American pastimes, and excellent books like this one are primarily responsible. Instead of the broad-brush treatment of many species, they give primary attention to less than a dozen of the more common birds that are seen regularly around feeders and easily recognized.

The book is aglow with loads of very interesting but obscure facts that the reader probably would not uncover in a lifetime of literature. This information is spiced with the authors' personal observations made over years of feeding and watching birds at home. No matter how long you have been birding, it is a cinch that you will learn something new from this volume.

AMERICA'S FAVORITE BACKYARD BIRDS is exactly as the Harrisons describe it, a look into the "personal lives of common backyard bird species."

WILDLIFE BOOKLET AVAILABLE

Copies of the popular booklet, "Helping Wildlife: Working With Nature" can be obtained from the Wildlife Management Institute. Written by Colorado State University wildlife specialist Delwin E. Benson, the illustrated, 36-page booklet was prepared as a nature and wildlife management primer for youngsters 8-18 years old. More than 55,000 of the

booklets have been distributed, and their usefulness as a teaching aid and instructional medium has received acclaim from educators and students alike. Single copies may be purchased for \$1.50 from WMI, Suite 725, 1101 Fourteenth Street, N.W., Washington, D.C. 20005. Bulk order rates given on request.



IDENTIFYING ANIMAL TRACKS

By Richard Headstrom

141 pages. Illustrated with drawings. Published by Dover Publications, Inc., 180 Varick Street, New York City 10014; 1983. Price \$3.50

This Dover edition is an unabridged and unaltered republication of the work originally published in 1971 under the title WHOSE TRACK IS IT? The book is not billed as a definitive work on animal tracks. It is considered a guide for those who enjoy the outdoors to identify tracks they are likely to come across, and to learn how to read stories the tracks tell.

BLM Wildlife Maligned Again

The federal government appears to have little concern for wildlife on 340 million acres of public land administered by the U.S. Bureau of Land Management, the Wildlife Management Institute reports. Neither the Administration nor Congress seems to recognize the recreational and economic importance of wildlife on those lands. If they do, it is not reflected in this year's appropriations.

The Administration's budget request for BLM's wildlife program was down one-third this year from the 1981 level. The House added \$1 million to the request, but directed that the money be

spent only on endangered species. The Senate essentially kept the program from folding by tacking on another \$2 million, thanks to Senator James McClure and several other interested committee members. Thus BLM's wildlife program this fiscal year is \$13.5 million, but that is far below the 1981 level of \$15.3 million. And it is a paltry sum indeed to care for wildlife on more than 340 million acres. The U.S. Forest Service in comparison will have more than \$30 million for wildlife on only 190 million acres.

The disregard for BLM's wildlife program is made more difficult to accept when

one hears statements such as was made recently in justifying transfer of BLM land into the National Wildlife Refuge System: "The U.S. Fish and Wildlife Service, and not the BLM, has the expertise and knowledge to properly care for and manage wildlife and wildlife habitat," a congressman said.

If the Service had BLM's wildlife budget to work with, it would not have adequate expertise and knowledge either. BLM is bound by law to manage wildlife habitat on the public domain. It is time that the Administration and Congress started giving the agency a hand instead of kicking it in the teeth.

HOW FAR WILL MY GUN SHOOT?

All our lives we listened to fellow hunters tell from how many yards they killed a fox, coyote or some other game. To hear them talk, they have that distance between the gun and the target figured out to a gnat's fanny.

But how much of an "expert" is that hunter? Does he or she really know how far the shot or bullet goes after it's fired? When ballistics facts are understood the importance of the two shooting safety rules — "know your target" and "be sure of what's beyond it" becomes

clear. The person with a gun in his or her possession has a full time job. They cannot "guess" or "forget." They must know: how it works, is it loaded, where it's pointing, where the target is, what the target is, where the bullet or shot will go, where it will stop, etc.

In order for the hunter to know how far his or her gun will shoot, here is some valuable ballistics information furnished by the National Rifle Association and Small Arms and Ammunition Manufacturer's Institute.

Rifled Shotgun Slug

Gauge	Weight (oz.)	Muzzle Velocity (feet per second)	Maximum Range* (yds.)
12	1	1600	817
16	7/8	1600	817
20	5/8	1600	817
.410	1/2	1830	843

* to point of first impact

BALLISTICS INFORMATION

Shot size	Diameter (ins.)	Maximum range (yds.)
00 buckshot	.34	748
0 buckshot	.32	704
1 buckshot	.30	660
#2 shot	.15	330
#4 shot	.13	286
#5 shot	.12	264
#6 shot	.11	242
#7½ shot	.095	209
#8 shot	.09	198
#9 shot	.08	176

Bullet name	Bullet wt. (grams)	Assumed Max. Vel. (ft. per sec.)	Calculated max. range (yds.)
Cal. .22 WRF	45	1450	1950
Cal. .22 WMR	40	2000	1900
Cal. .223	55	3240	2200
Cal. .30 Luger	93	1220	1900
Cal. .38 Special	158	855	1800
Cal. .357 S&W Magnum	158	1430	2350
Cal. .38 Super Auto	130	1140	2050
9mm. Luger	124	1140	1900
Cal. .44 Remington Magnum	240	1570	2500
Cal. .22 Hornet	45	2690	2350
Cal. .243 Winchester	100	3070	4000
Same	80	3500	3500
Cal. .257 Roberts	100	2900	3850
Cal. .270 Winchester	130	3140	4000
Cal. .280 Remington	125	3140	3700
Cal. .300 H&H Magnum	180	2920	4356
Cal. .338 Winch. Magnum	250	2700	4660
Cal. .375 H&H Magnum	270	2740	4500
Cal. .458 Winchester FMJ	500	2125	4500
Cal. .22 long rifle	40	1145	1500
Cal. .30 Carbine M1	111	1970	2200
Cal. .30 ball M2	152	2800	3500
Cal. .30 boattail M1	172	2600	5500

1984 Boating and Water Safety Poster Contest

It's time for the Fourth Annual Boating and Water Safety Poster Contest, held each year in conjunction with Iowa Safe Boating Week. The contest is conducted by the Iowa Conservation Commission, in cooperation with the U.S. Coast Guard Auxiliary, Des Moines Power Squadron, and the Iowa Chapter of the American Red Cross. Co-sponsor of the contest, the IMT Insurance Company of Des Moines, is providing the prizes and plaques to be awarded the winners.

School children in fourth through sixth grades throughout the state are eligible to enter, and your students will have the chance to win one of the cash prizes. The first prize winner will also be invited to attend the signing of the Safe Boating Proclamation to take place in the Governor's Office at the State Capitol.

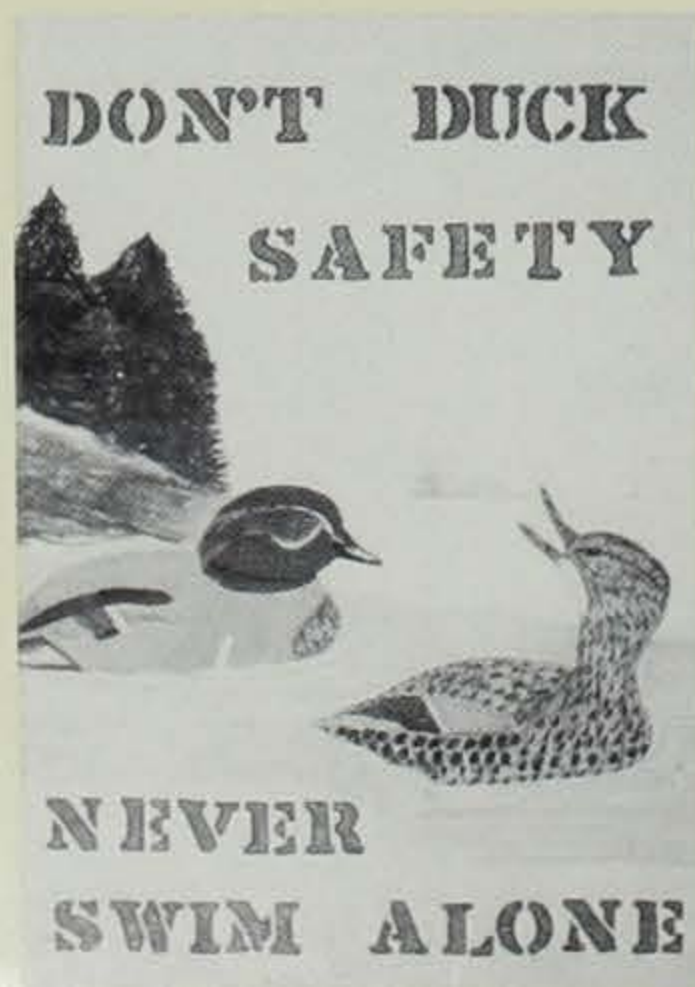
Prizes for the contest are: First prize — \$100 savings bond; second prize — \$75 savings bond; third prize — \$50 savings bond. Each winner will also receive a plaque.

The theme for this year's contest is "Rivers Require Respect". Suggestions for the theme are:

1. Be careful around dams.
Keep a safe distance from dams when boating.
2. Be a safe wader — wear a PFD.
Wading can be very dangerous.
Parents should closely supervise children when wading. If you must wade, wade upstream instead of downstream.
3. Boaters and canoeists should be alert for submerged objects, snags and debris.
Don't stand up in a boat or canoe.
While hunting or fishing, don't overload craft.
4. River ice can be especially treacherous because of underwater currents.
Ice skaters, hunters, anglers, snowmobilers and other recreationists should be especially careful on river ice.

These ideas are suggestions only. As long as the theme is depicted in some way, the poster will be accepted.

We believe the Boating and Water Safety Poster Contest is an important method for promoting water safety education, and we hope you will encourage your students to enter this year's competition. To all entrants we say, "Thank You and Good Luck!"



Contest Rules

1. The poster must be drawn on poster paper 15" by 20" or 14" by 22". Students may sketch their design lightly with pencil, but it must be colored. There is no limitation as to the type of media — such as paint, crayon, cut paper, etc., but it should be easy to reproduce. **Use no more than three colors.**
2. Posters must be designed on a vertical plane rather than horizontal plane.
3. The official entry form must be completely filled out and attached to the back of the poster.
4. Posters may be packed and wrapped flat or mailed in a sturdy sealed mailing tube. Entries must be postmarked or received by February 1, 1984.
5. Entries will not be acknowledged or returned. All entries become the property of the Water and Boating Safety Committee of Iowa.
6. Winners will be contacted by mail and listed in the Conservationist Magazine.
7. Children of the judging committee may not enter.
8. The right to modify any poster for reproduction is reserved.
9. Magazine illustrations or copyrighted material may not be used.
10. Each winner will be awarded a savings bond and a plaque. Other deserving participants will receive honorable mention.

To Parent or Teacher:

To the best of my knowledge, this is the original work of my child/student and represents his/her level of ability.

Signature of Parent/Teacher

Check One: () Parent () Teacher

All entries must be postmarked no later than deadline date of February 1, 1984. Address to: **Iowa Conservation Commission, Wallace State Office Building, Des Moines, Iowa 50319.** Fill out entry form completely and secure it to the lower left hand corner on the back of the entry.

Official Entry Form (Please print)

NAME _____ PHONE _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

NAME & ADDRESS OF SCHOOL _____

GRADE _____ DATE OF BIRTH _____

1983 Winners

Last year's first place winner was Katherine Eller, a fourth grade student from Denison Elementary School. Her design, "Don't Duck Safety — Never Swim Alone," was judged the best among _____ entries received. Eller is the daughter of Mr. and Mrs. Thomas Eller of Denison. Katherine received a \$100 savings bond and a plaque, and met Governor Branstad during the signing of Iowa's safe boating proclamation last May.

Savings bond awards and plaques were also given to the following second and third place winners:

2nd place — (\$75 savings bond) Joel Bennett of Harvey, a fourth grader from Lincoln Elementary School in Pella;

3rd place — (\$50 savings bond) Jeanne Cuthbertson, a sixth grader from Milford Community School in Milford.





Ken Fermannick

Plant Tale of the Month...

Changing of the Colors

By Dean M. Roosa

Most Iowans look forward to the leaves changing color each fall. Many of us travel to rugged northeast Iowa in late September or early October to view the annual spectacle. Everyone enjoys it, but not many wonder what causes the changes.

The colorful autumn colors of leaves is due to disintegration of green pigments called chlorophyll, which allows yellow and orange pigments to become visible for a brief period. The bright red and scarlet colors are largely due to the presence of a pigment called anthocyanins. By-products of the various pigments add many subtle shades to the leaves. Shortly, these pigments further break down, causing the leaves to turn brown.

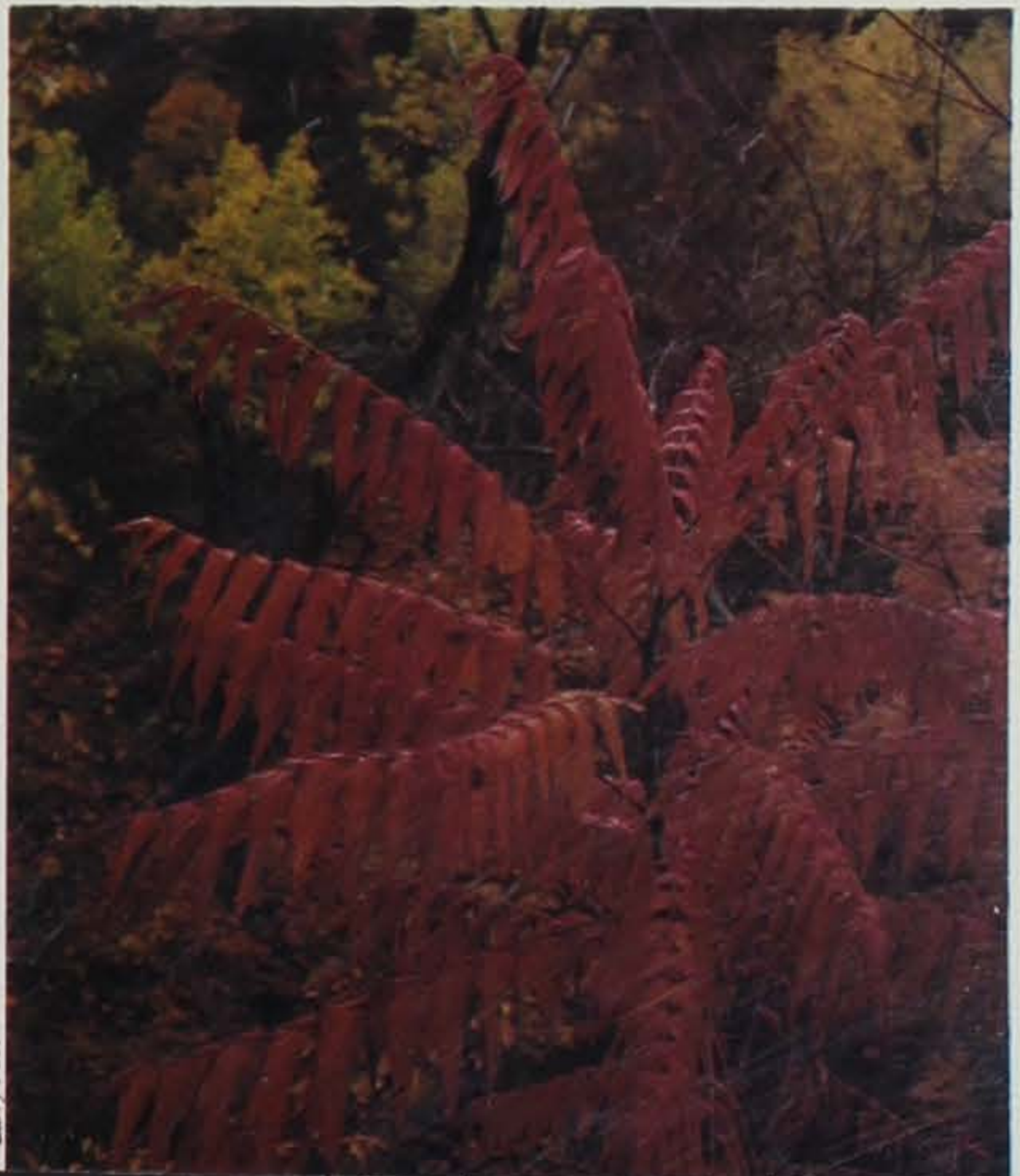
Leaf color usually begins to change before the first frost, due to the change in day length and decrease in the average temperature.

These color changes are accompanied by a change in another part of the leaf. In preparation for the dropping of leaves, a special layer of cells form across the base of the petiole. This layer, called the abscission layer, seals off the normal channels which conduct food away from the leaf. Enzymes dissolve certain compounds in this layer and the cells separate. This is why leaves fall from the trees so readily each fall.

The beauty of the fall parade of colors is an annual event we take for granted. It is actually a complex chemical reaction that provides beauty and interest to the Iowa landscape. Some years are more spectacular than others; the fall of 1983 was one of the most beautiful, especially in southern Iowa, due probably to the prolonged drought. Be sure to take some time next fall to enjoy the spectacular changing of the colors.



Jerry Leonard



Larry Pool



NEW HOPE FOR WINTERKILL LAKES

Lannie Miller

By R.H. McWilliams

Dick McWilliams is a fisheries research biologist located at Spirit Lake. He has been with the commission since 1971 and holds a B.S. and an M.S. degree from Iowa State in fish and wildlife biology.

"Fishing was good here last year; and would have been great this year, but the lake winterkilled."

Sound familiar? It is to many anglers, particularly those living in northern Iowa. Winterkills of fish cause major problems in maintaining sport fisheries in many of Iowa's shallower lakes.

Various methods of preventing fish winterkills have been tried over the years, such as spreading carbon lamp-black or black plastic on the snow and ice; or physically plowing snow off the lake ice. This was done to increase light penetration to oxygen producing plants.

Other methods included oxygenating water by spraying it into the air and then allowing it to drain back into the lake; chopping small holes in the ice to provide open water areas for oxygen transfer; and using small air compressors to force air into the water. Although some of these methods worked once in awhile, none were consistently successful, or economically feasible, and some were dangerous — such as using heavy snow plows on the ice. Development of mechanical aerators capable of preventing fish winterkill have literally breathed new life and new hope into many of our winterkill lakes.

The Iowa Conservation Commission began experimenting with two types of mechanical aeration systems in 1978 to determine if either would prevent fish winterkill and be economically feasible for use in our lakes. These systems, a bubbler system, or helixor and a fan type or axial flow pump were installed in Black Hawk Lake, a typical winter-

kill lake. The systems have worked successfully, and today there is a fast developing sport fishery in the lake (see "Rebirth of Black Hawk Lake" by Lannie Miller, Iowa Conservationist, December, 1982).

A number of questions are commonly asked about winterkill, the aeration systems and their operation, such as: "What causes winterkill and why don't all the fish die?"; "Is it necessary to have the open water areas?" and "How big does the aeration system have to be to prevent winterkill?" Each question is important in understanding winterkill and how it's prevented.

First, there are a number of factors that influence fish winterkill, and what fish species survive. As ice forms in early winter, it effectively seals the lake from any further oxygen transfer from the air to the water. The amount of oxygen available to keep fish alive throughout the winter is then equal to the amount of oxygen stored in the



Lannie Miller

Axial Flow Pump (right) keeps Black Hawk lake open and free from severe winterkills.

Opposite page: *Steam indicates water kept open by aeration system.*



Dick McWilliams

water at the time of ice formation, plus the amount produced by plants during the winter months. In addition to oxygen needs of fish, oxygen is also required by the plants and bottom dwelling animals, and large quantities are required during the decomposition of plants and animals on the lake bottom. During a typical winter oxygen levels in the water, just as ice forms, are quite high. Levels then decrease as oxygen is consumed, with the most critical time for fish during late January or February. It's rare for a complete fish winterkill to occur, since rarely is all the oxygen consumed during the winter.

Fish species have different tolerances for low oxygen levels. Some, including most of the sport fish species, are relatively sensitive to low oxygen levels and cannot survive very long if levels fall below 2-3 parts per million. Other species tolerate these low oxygen levels and survive even under severely low levels for short periods of time. These species include bullhead, and rough fish such as carp and buffalo, which is the reason these species often dominate in a winterkill lake.

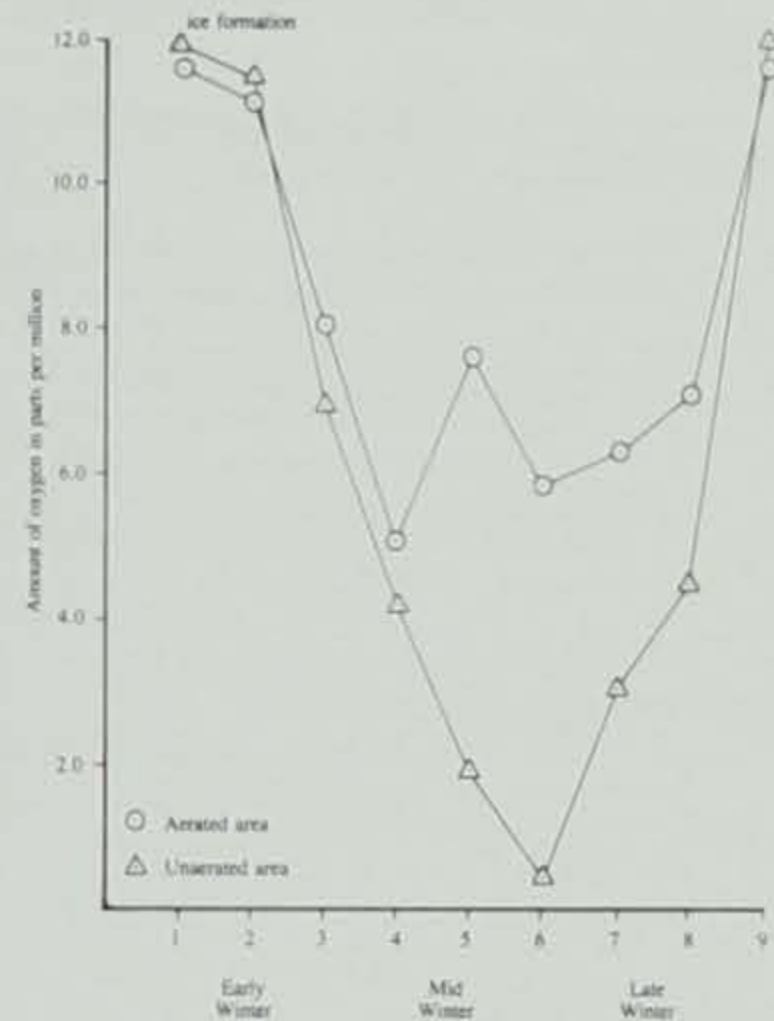
The main purpose of the aeration systems is to create a haven for fish during periods of low oxygen. The systems are not designed to maintain high oxygen levels throughout the lake, but rather to produce a zone of oxygenated water that fish can move into during the critical mid-winter period. In Black Hawk Lake for instance, the

systems have maintained this zone of oxygenated water, while oxygen levels in much of the lake were lethal to fish.

The primary method of oxygen transfer is through the open water areas created by the aeration systems. These areas are kept open throughout the winter by moving the slightly warmer water along the lake bottom to the surface. As the water becomes oxygenated at the surface, it is pushed under the ice, up to 500-700 feet away from the aeration system. The key to the success of aeration is the creation of open water areas to allow oxygen transfer. The size of an aeration system depends to some degree on the size and depth of the lake and the historical frequency and severity of fish winterkill. However, one unit is normally required for each 50-75 surface acres.

Aerators are run continuously all winter, each winter. There are two main reasons. First, no one can predict which winter will produce a fish winterkill. During severe winters, when winterkill might be expected, it doesn't occur; yet during a mild winter, winterkill conditions might develop. Second, if the aerators are not started until oxygen levels reach dangerous levels, the initial mixing and stirring of the water can cause a further decline in oxygen levels and can actually hasten fish winterkill. Lakes where aeration systems have been installed were selected with care and where aeration has a good chance of success. Second, installation costs

Oxygen concentrations in the aerated and unaerated areas of Black Hawk Lake during the 1981-82 winter.

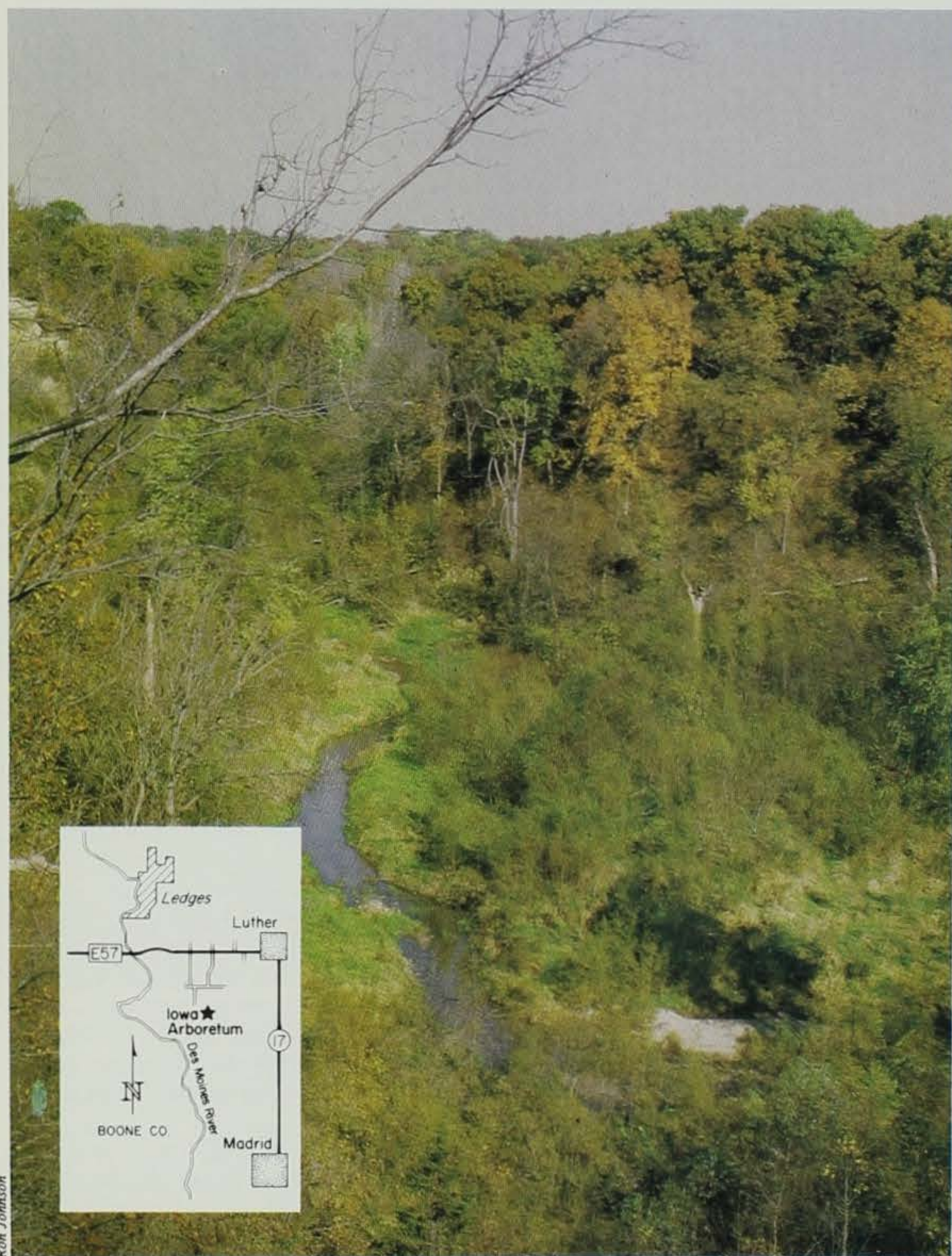


are relatively expensive — from \$20,000 and up depending on how many units are installed, plus operational costs which run from \$600-\$1,500 per winter. Consequently, future selections will receive the same care and consideration as past selections.

One caution — the open water areas created by the aeration systems expand and contract depending upon weather conditions throughout the winter months. Thus, ice conditions around the systems can change quickly, from open water to ice or vice-versa. Areas around the systems should be avoided, and as in any winter, extreme caution should be used when venturing out on the ice.

Aeration systems are presently in operation, or will be in operation by the winter of 1983 in the following state and county lakes: Walnut Creek Marsh, Ringgold County; Spring Lake, Greene County; Mariposa Lake, Jasper County; Hickory Grove Lake, Story County; Little Wall Lake, Hamilton County; Silver Lake, Dickinson County; Lake Hendricks, Howard County; Dog Creek Lake, O'Brien County; Lake Pahoja, Lyon County; Green Castle Lake, Marshall County; Pilot Knob Lake, Winnebago County; Ocheyedon Pond, Osceola County; Silver Lake, Worth County; Silver Lake, Delaware County; Muscatine Slough, Louisa County; Kent Park Lake, Johnson County; and of course, Black Hawk Lake, Sac County.

THE IOWA ARBORETUM



Ron Johnson

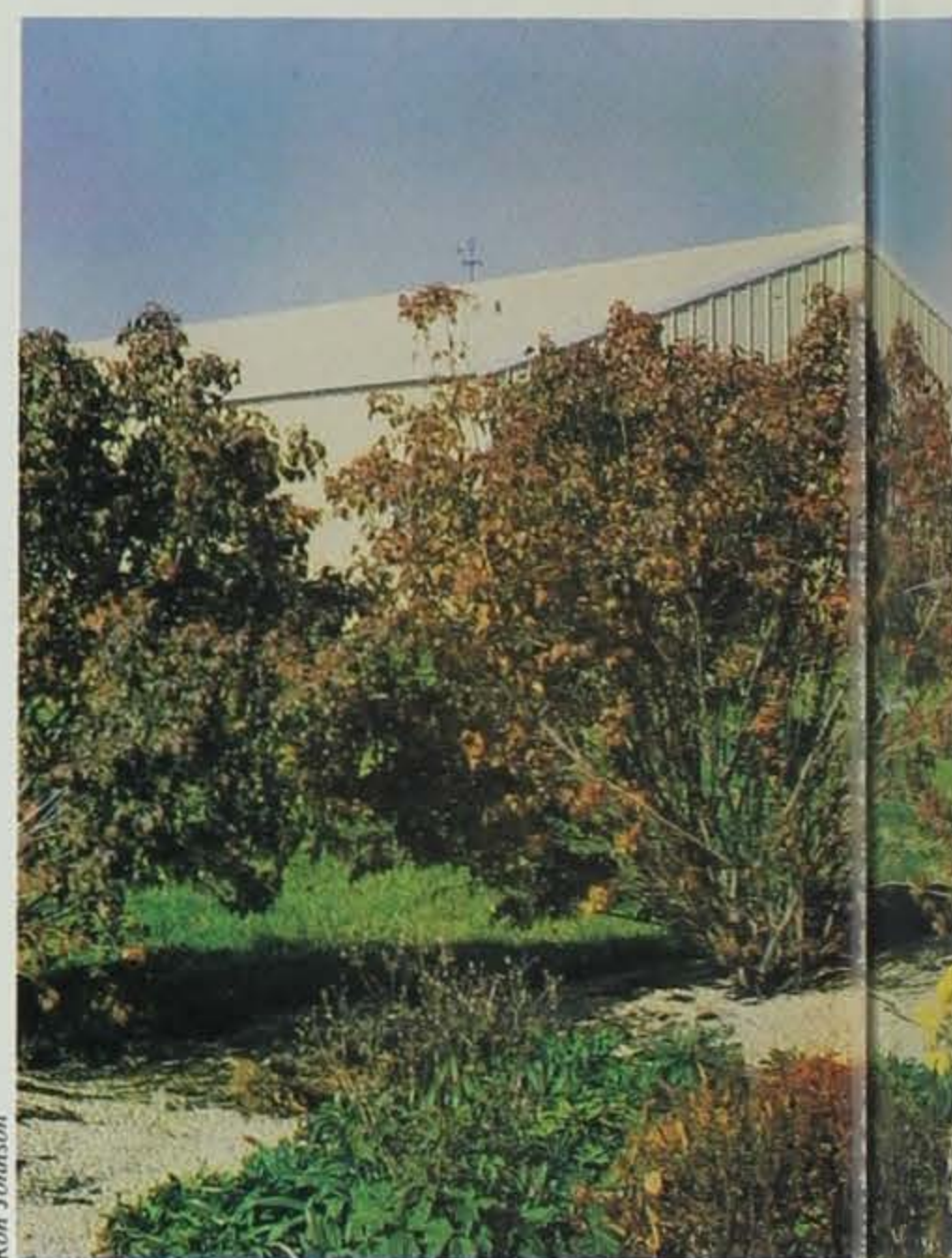
By Peter J. van der Linden

Peter van der Linden has been the executive director of the Iowa Arboretum since 1980. He holds an M.S. degree in botany from Iowa State University.

As libraries go, this one is certainly unusual. It has no walls or roof; its floors are sod; and its leaves are on trees, not in books. Nevertheless, Iowa's newest library is being built for the same purposes as a more traditional one — to organize information in a

logical, systematic manner and to provide a broad range of educational services to its visitors.

This "library of living plants," otherwise known as the Iowa Arboretum, occupies 340 acres of rural Boone County, just east of the Des Moines River. Much of this land is very rugged, with deep, wooded ravines, spring-fed streams and scenic overlooks. The diverse landscape provides habitats for more than a hundred kinds of wildflowers, and a similar number of wild birds and mammals.



Ron Johnson

The wilder portions of the arboretum are being managed for native plants of Iowa. Visitors will eventually be able to see all the trees and shrubs native to Iowa, plus most of our native ferns, grasses and wildflowers. To make the area more accessible, a network of trails is being developed. Labels identify plants along the trails and illustrated pamphlets permit self-guided tours.

Another 40-acre tract is being planted with cultivated trees, shrubs and flowers from temperate areas throughout the world. In keeping with the arboretum's educational theme, plants with similar uses are being grouped together. For example, shade trees that mature at a small size are found in one area and larger shade trees in another. With this arrangement, visitors can quickly "look up" the best plants for their needs.

The arboretum was founded by members of the Iowa State Horticultural Society in 1967 and is operated as a private, non-profit facility. Development proceeded slowly at first because of a shortage of funds but has greatly accelerated since 1980. From the very beginning, all income has been derived from memberships, donations and bequests.

In the years to come, the arboretum will serve as an educational clearing-

M

"Library of Living Plants"



house where Iowans can find information on plant propagation, culture and care. It will also serve as an outdoor laboratory for testing the hardiness and adaptability of newly introduced plants, and as a center for the preservation and propagation of rare and endangered plants. Another important function will be to serve as a place "to get away from it all" where one can enjoy the peace and beauty of nature.

The arboretum is open from sunrise to sunset every day of the year with free admission. Because of its beautiful scenery, abundant wildlife and uncrowded trails, it is becoming a favorite of hikers, photographers, cross-country skiers and bird watchers. Camping, hunting, picnicking and off-road vehicles are not allowed.

Guided tours are available for service clubs, church groups, conservation clubs and other organizations. Visitors are also welcome to use the arboretum facilities for meals, meetings and special events. Groups of 100 persons or more can be accommodated during the warmer months of the year and smaller groups year-round. To schedule a tour or reserve a meeting room, phone the arboretum office at 515/795-3216 or write P.O. Box 1672, Ames, IA 50010 at least two weeks in advance.

That Funny Little "Thumb" Fish



Michael Wade

By Michael Wade

Michael Wade is a fisheries technician at Manchester. He holds a B.S. degree in fisheries and wildlife biology from Iowa State. He has been with the Commission since 1978.

Nestled among rocks and under logs in a few of northeast Iowa's coldwater streams lives one of our most unique and seldom seen fish species. *Cottus cognatus* derives its Latin name from the flattened appearance of its head which looks similar to a miller's thumb that has been flattened during the process of grinding grain. The common name for this species is slimy sculpin.

The sculpin is almost totally scaleless, brown or grayish in color with a light belly and reaches a maximum length of six inches. The adult male can be distinguished from the female by a rust-orange band on the dorsal fin.

The sculpin is equipped for living on the stream bottom by having large, fan-shaped pectoral fins that allow it to creep along the bottom. Unlike most other fish, the sculpins do not have a swim bladder. This enables them to remain on the bottom with little effort.

The sculpin spends most of the daylight hours hiding underneath rocks and logs. During twilight, it ventures forth to feed on freshwater shrimp and immature insects. Sculpins have often been

accused of preying on trout eggs, but studies fail to prove that they do so. Trout often prey on sculpins, and in streams where sculpins are found, sculpin imitation lures are excellent baits.

In March and April the male sculpin is busy preparing a nest and enticing a female to lay her eggs in the nest. She will lay between 100 and 200 large, orange-colored eggs at the nest site. The male will spend the next few weeks guarding and fanning the nest with his pectoral fins, until the eggs hatch.

The slimy sculpin is classified as a threatened species in Iowa. The few isolated populations in Iowa inhabit a fragile environment. The habitat requirements of sculpins are similar to trout in that they prefer water temperatures around 60°F and require clear, relatively silt and sand-free streams for reproduction and for the production of their food.

Anything that adversely affects trout in these streams will also have a detrimental effect on sculpins and other coldwater fish species. In many of our coldwater streams the rock and gravel substrate is becoming buried under tons of sand and silt due to improper land management practices. If proper land management does not become ingrained in our land ethics, then the sculpin could disappear from our waters.

WARDEN'S DIARY

WINTER

By Jerry Hoilien



Ron Johnson

"Winter wouldn't be so bad — if it weren't for the cold!" I've seen a few "open winters" but everyone wanted snow — deer hunters particularly. It makes it a lot easier to track deer, but I also think of the safety factor. It's a lot easier to identify game with a good snow background. Man is too close to the size of a deer and there's always the clown who goes out during the deer season *without* his blaze-orange. I met one last year wearing brown coveralls and a light-colored, hooded sweat shirt with the hood sticking out, bouncing along on his back — just like a deer flag. He got the point when I asked why he didn't tie a set of antlers on his head. While we were visiting about his citation, he whipped out a white handkerchief and shook it out in the wind. I started looking for a big tree to get behind. Some people need a keeper.

Deer hunting's a great sport, but you've got to use your head. If you're in a large group, make sure you know where everyone in your party is supposed to be. Make thorough plans and be *sure* you've got permission wherever you're going. We get a lot of complaints about deer hunters trespassing — so be *sure* to ask! Sometimes we

check out a complaint only to find it's one neighbor trespassing on another, only because he was sure "he wouldn't mind!" Be courteous and ask!

Some people argue we should allow rifles for the taking of deer, but when you look at our safety record over the years and compare it to our neighboring states, I like the "old pumpkin ball." She doesn't go as far and she does the job. It's an effective weapon, and with the new types of slugs and slug barrels, it's getting even better. If we had any more effective weapons, we would have to add more restrictions to our regulations. I remember a number of years back, in Minnesota, a friend's boys came running in all excited. They'd shot at a deer out back with a 45 automatic pistol. When their dad asked if it was a buck or a doe, one said he didn't know, "It was too far away." Oh well.

We've got quite a thing going for us in Iowa with our deer population, and it's getting better and better. I grumble a lot when I get called out in the middle of the night on a deer-car accident. One of my patrol friends called me on the radio one night and asked if I couldn't control those deer better, as they were

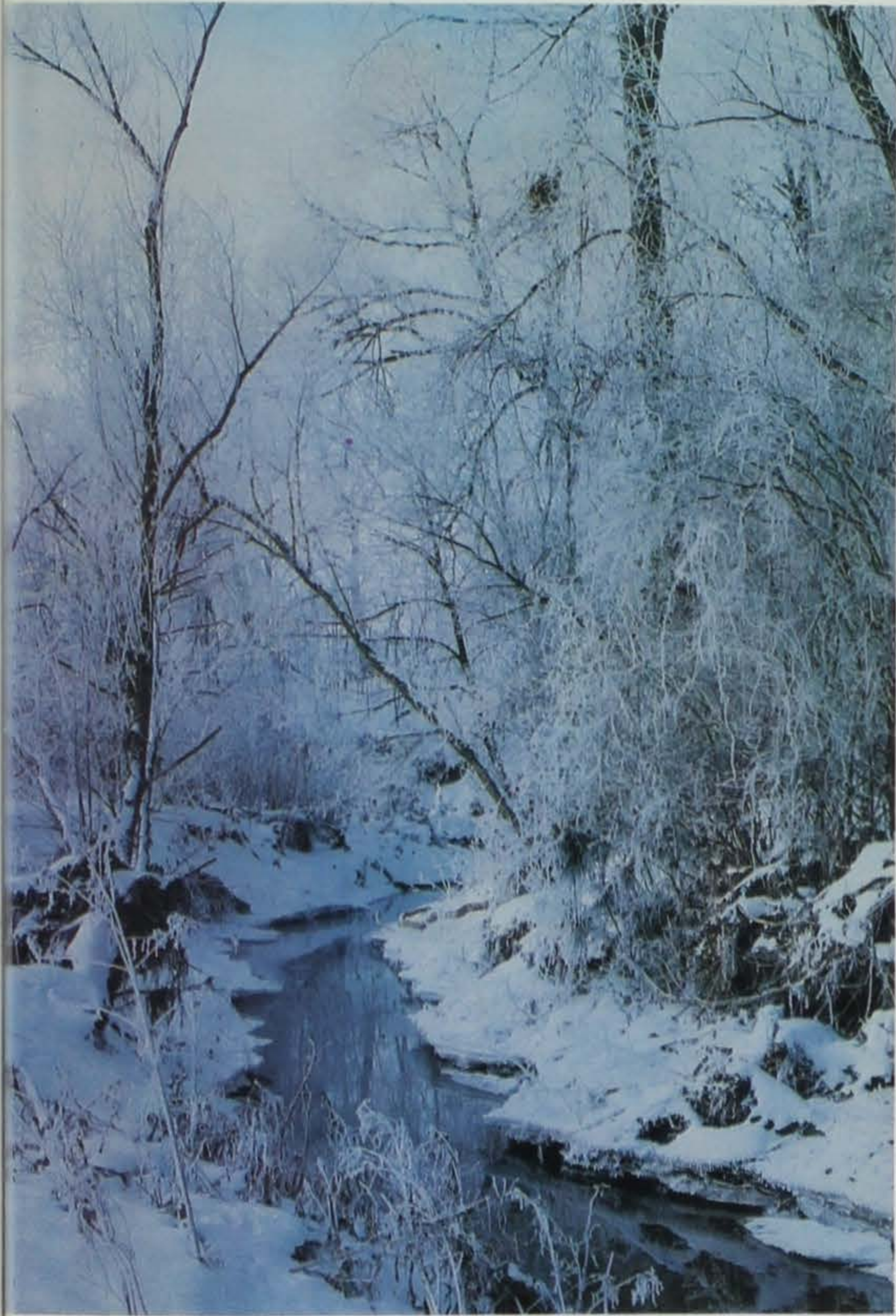
all out on the road, and he had almost hit a couple. I radioed back, "The deer aren't going so darn fast that *they* can't avoid the *cars*!"

About the year I was born (have to be careful or you'll know my age) we had about seventy-five deer in Iowa, and most of those were in cages. Now, through good protection and management, we've got a good deer population in every county in the state — some of the biggest and healthiest deer in the nation. It's something to be proud of and worth protecting. Let your warden know if you see someone taking deer out of season or illegally during the season. It's not just *his* deer and *his* job; they're yours, too.

I like the story about the guy who shot his first deer and was walking around it, making sure it didn't jump up and run off. The warden walked up behind him and almost scared him out of his hide when he congratulated him on the fine deer and said, "Like to check your license." The excited fellow began to search for it frantically and couldn't locate it. After he had gone through all of his pockets twice, he looked forlornly at the warden, who said, "Well — pick up your deer, and we'll have to go to town." The fellow said he wasn't about to carry that great big deer all the way back just so he could pay a fine. With a sigh, the warden shouldered the deer and headed for the road. When he got there, the fellow found his license. How about that!

I ran across this venison recipe in the Missouri Guide to Cooking Fish & Game by Werner O. Nagel.

When partially thawed, trim off 1/8 inch of outer edge of each steak or chop. Brush well with your favorite cooking oil. Sprinkle with garlic salt and place in broiler; turn every half-minute several times to sear meat and to prevent the escape of juices. Turn occasionally after that until done on both sides. Venison is always at its best when rare. When done, spread on the following butter mixture (you can prepare this in advance and keep it in the refrigerator). BUTTER MIXTURE: Cream 1/4 cup butter, 1/2 teaspoon salt, 1/2 teaspoon pepper, 1 tablespoon chopped parsley. Slowly add 1 1/2 tablespoon lemon juice. Garnish platter with parsley.



Ken Formanek

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