

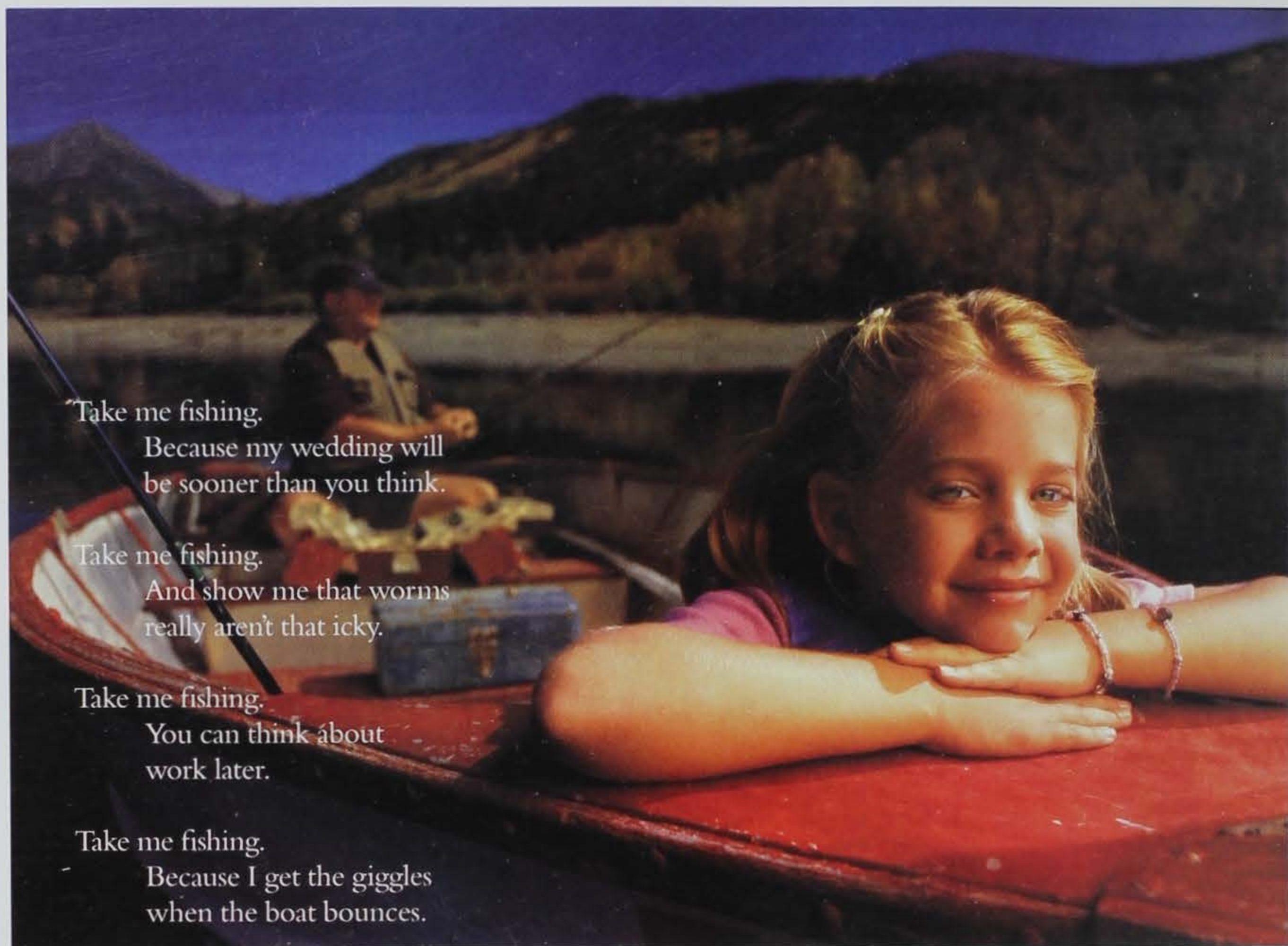
MAY/JUNE 2001

CONSERVATIONIST

IOWA

DEPARTMENT OF NATURAL RESOURCES





Take me fishing.
Because my wedding will
be sooner than you think.

Take me fishing.
And show me that worms
really aren't that icky.

Take me fishing.
You can think about
work later.

Take me fishing.
Because I get the giggles
when the boat bounces.

Take me fishing.
Because my wedding will
be sooner than you think.

Water works wonders

FOR FISHING, BOATING, AND
THE ENVIRONMENT

NATIONAL FISHING & BOATING WEEK • JUNE 1ST THRU 10TH

Celebrate Free Fishing Days in Iowa • June 1-3

During Free Fishing Days only, Iowa residents may fish and possess fish without a license, and payment of the Iowa trout fee is not needed to possess trout. All other fishing regulations apply, including length and possession limits.

FRONT COVER: BARNYARD BLUEBIRDS
BY GREG BORDIGNON
(CURRENTLY OUT OF PRINT)

BACK COVER: SAILING ON WEST OKOBOJI
BY KEN FORMANEK



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MEET THE DIRECTOR



HOME STATE: New York

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- Smithsonian Institution
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FAMILY: Wife, Mary Anne; Children, Peter and Laura

PERSONAL INTERESTS:

Enjoys hunting, fishing and occasionally golfing

The list of places my career has taken me is long — New York, Maine, Chile, Peru, the Caribbean, Washington, D.C., Iowa, Nebraska, the Dakotas, Wyoming, Montana, Colorado and California.

The list of places *I've come back to* is much shorter: Iowa.

Gov. Tom Vilsack has been active in encouraging former Iowans to "Come Back to Iowa." My return is not by accident. I am

happy and honored to have such an opportunity.

"Opportunity" is really the definitive word for Iowa right now. The state and its vast natural resources — including its people — offer an incredible opportunity to chart a new direction that both preserves our rich heritage and uses the innovation and enthusiasm of its citizens to build a more prosperous future for our state.

It is opportunity that has brought me back to Iowa and I concur with the governor that many former Iowans, as well as new citizens, would come to the state if more opportunities existed. We are, of course, talking about economic development.

Let me say up front that one of my cornerstone beliefs is that environmental protection, re-

source conservation and economic development *are not* mutually exclusive — we can successfully accomplish all three by respectfully working together. I would even take it one step further in saying we *cannot* meet our goals regarding economic development without proper and effective resource management. The very foundation of our state's economy has always been on the rich, fertile soil of our landscape.

But beyond the obvious agricultural productivity of our soil, quality of life is key to attracting former Iowans and top-notch newcomers to move to Iowa. Virtually all issues the Iowa Department of Natural Resources deals with touch directly on quality of life: fresh air to breathe and clean water to drink. Recreational opportunities such as parks, trails, hunting, fishing and wildlife observation are fundamental to economic development efforts.

I have been on the job only a couple of months now, much too soon for me to offer specific changes in direction, programs or solutions. These may come. But if or when changes do come, you, your neighbors and many others will all have had a chance to provide this department with input and guidance. I am a firm believer that the care of our natural resources begins with all

of us individually. It also stands to reason, then, that all of us should have the opportunity to take part in the decision-making process on conservation and environmental issues.

Iowa's DNR represents some of the best and brightest this state has to offer in terms of the people we have employed in the agency, their knowledge, their expertise and their commitment. The diversity of the people we have working for you as citizens of the state represents a wide-variety of interests and experience united behind a genuine, common desire to make a difference in our environment.

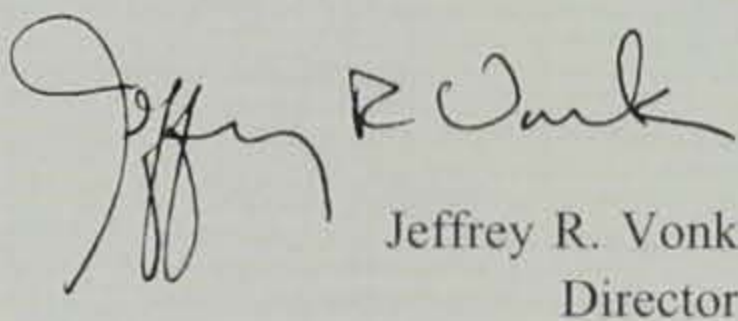
The DNR, like so many other aspects of life in Iowa, always looks to the future with a firm reverence to the past. In fact, this state places great value in its past and the people who have done so much to shape it. I take great comfort in knowing that while this is a new opportunity for me, I can draw on the knowledge and expertise of so many people around me.

This includes former director and current deputy director Larry Wilson, and Lyle Asell, who has so capably served as interim director for the past year. These two people alone represent countless hours and unswerving dedication to the preservation of our natural resources, just as so many others have in this depart-

ment and other agencies and organizations we work with on a daily basis.

You will be hearing more from me in this spot in *The Conservationist* in future months and I certainly want to hear from you. The best way to reach me is by mail: Jeff Vonk, Iowa DNR, 502 E. Ninth St., Des Moines, Iowa 50319. I'll be setting up an e-mail address in the near future and look forward to meeting many of you in person as I visit Iowa communities.

I hope you will be as happy to have me back in Iowa as I am to be here.



Jeffrey R. Vonk
Director

The *Iowa Conservationist's* "Letters" column will resume in the July/August 2001 issue.

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Fifth in a series

CONSERVATION IS BORN

A Brief History of Wildlife Conservation in Iowa

Article by Terry W. Little

Photos courtesy

State Historical Society of Iowa,

Des Moines

By 1900 the conversion of Iowa from a diverse landscape of prairie-wetland-forest to an agricultural environment was complete. The few prairies still remaining were broken into small, scattered tracts; all but the largest wetlands were drained; two-thirds of the original forests were lost to the ax and saw. In just 70 years all were converted to farmland supporting a predominantly rural human population of around 1 million people. In that short period of time, Iowans were transformed from pioneers to farmers.

Though the internal combustion engine had been invented, its adaptation to farm machinery had not yet begun. Farms were small, mostly self-sufficient operations of 80 to 160 acres. Fields were often divided by hedge rows of osage orange, catalpa or mulberry. Sundry corn, small

grains and forage crops were grown to provide food for large farm families and to feed livestock, which were essential to farming at the tail end of the horse and buggy era.

There was little room on the land for wildlife. Most of the once-plentiful fauna of the prairies had disappeared. Iowa native Aldo Leopold, writing in his 1931 *Game Survey of the North Central States*, said "...No region in the world was originally more richly endowed with game than this one, quantity and quality both considered. Contrary to common belief, the cream of its game country was



The winning team in the Pheasants for Vets Drive, 1955. The birth of conservation in Iowa created a greater awareness of natural resources and implemented new laws and programs to regulate the use of them.

the prairie type, *which is now the poorest*" (emphasis added).

The herds of bison, elk and white-tailed deer and the large predators that preyed on them had vanished. The incomprehensibly huge flocks of passenger pigeons were gone forever. The flood of ducks, geese and shorebirds that poured into Iowa to nest or rest on their annual migrations had declined to a trickle. Upland game birds like bobwhite quail and prairie chickens, which had benefitted temporarily as farming penetrated the prairies, were in serious decline as agriculture became too pervasive. And the ring-necked pheasant, soon to become Iowa's most well-known game bird, was yet to make an appearance.

The situation in Iowa was not unique. From 1867 to 1900, the rapid expansion of civilization beyond the Mississippi River placed some 400 million acres of prairie and virgin timber under the plow and another 200 million acres under the cow. Much of the nation's most striking and abundant native wildlife was in jeopardy.

Bison, once numbering 60 to 100 million, were reduced to just 250 animals surviving in Yellowstone National Park. Market hunting for hides and U.S. government policy to eliminate them as a source of food for nomadic western Indian tribes were the culprits.

Elk, originally found continent-wide, were gone from the eastern United States and were down to 40,000 animals surviving in the mountains of the West.

Pronghorn antelope, once thought to number 30 to 40 million animals on the shortgrass prairies of the High Plains, were down to just 13,500 animals.

Wood ducks, the most brightly colored of our waterfowl, were nearly extinct in their native bottomland hardwood forests of the southeastern United States.

Wild turkeys, once recommended by Benjamin Franklin as the symbol of our country instead of the bald eagle, totaled just 200,000 birds widely scattered in the most inaccessible mountains and swamps of the South and Southwest.

White-tailed deer were reduced to 500,000 animals from what had once been millions living on the prairie-forest borders and woodland openings of the East.

Beaver, historically found along streams throughout the continent, were nearly extinct south of Canada because their pelts were valuable for gentlemen's hats. Wading birds like egrets, ibises and storks were threatened with extinction in semitropical Florida because their feathers were in demand as plumes for ladies' hats.

The passenger pigeon, heath hen (an eastern subspecies of the prairie chicken) and the auk were extinct, and hundreds of other species of birds, mammals, amphibians and reptiles were in trouble.

While unrestricted exploitation from hunting and trapping affected many of the big game animals, the majority of species were threatened because the landscape had changed. The plant communities they needed for food and cover, collectively called habitat, were increasingly converted to agriculture, crowding wildlife into smaller and more isolated tracts of land in order to survive. Cheap land for farming and ranching was no longer available. Instead of pioneering new regions, farmers had to convert more and more of their small

holdings to agriculture. The existence of the nation's wild heritage was in doubt.

Prior to 1900 the federal government did little to protect wildlife and the states had little ability or moral imperative to do so. Hunting remained mostly unregulated and was done primarily for the table or the market. The Iowa Legislature recognized some wildlife was in peril and took limited steps as early as 1857 to end hunting of deer, elk, turkeys and prairie chickens between Feb. 1 and July 15. Special committees on game and fish were appointed in 1868 and 1870, but there was no way to enforce legislative actions. The appointment of the first fish and game warden in 1897 did little to help.

To understand how the situation was reversed and wildlife was saved, we need to focus to the broader national stage.

Teddy Roosevelt Leads a Charge

As the 20th century approached, a movement slowly came together to avert the impending tragedy. It was fueled by a small group of wealthy and influential citizens, most of them avid hunters and anglers with positions of responsibility in business and government. While many ultimately took part, a few played crucial roles in awakening Americans to the plight of wildlife and helped develop the legal and financial basis for its future protection.

George Bird Grinnell was a Yale-educated naturalist who traveled extensively in the West. He was with Custer's first expedition to the Black Hills in 1871 and saw the Plains in their largely unspoiled glory before the herds of big game were decimated. He later became editor

of *Forest and Stream* magazine, the forerunner of today's *Field and Stream*, and his writings were instrumental in gaining protection for the last remaining buffalo herd in Yellowstone.

The key governmental figure was undoubtedly Theodore Roosevelt. The wealthy son of a prominent family from Long Island, N.Y., Roosevelt went to North Dakota to become a rancher in the 1880s. He became an avid big game hunter, but he noted, just a decade after Grinnell's trip, that bison were becoming hard to find. He ultimately returned East to become governor of New York, assistant secretary of the Navy, lead the Roughriders up San Juan Hill in Cuba during the Spanish-American War, and

served as vice-president and president of the United States.

As president, Roosevelt set aside the first national wildlife refuge in 1903 — Pelican Island in Florida. Before his second term expired he added 86 refuges and 150 million acres in national forests and parks and created the U.S. Forest Service. These lands were set aside from the public domain existing at the time; it would be decades before funding was found to acquire new lands for wildlife.

Roosevelt and Grinnell became life-long friends and advocates of wildlife. Together they formed the Boone and Crockett Club, a select group of 100 wealthy members

promoting protection of big game through state and federal laws to end market hunting.

Life was changing in America's second century. After the Civil War the cities of the East grew rapidly and city dwellers had more leisure time to pursue activities other than work. Baseball was invented during this era and a host of other sports became popular as an outlet for physical activity and healthy competition for young men. Inherent in these activities was the concept of sportsmanship — the pursuit of a goal while maintaining order and discipline in one's behavior and playing by the rules.

Grinnell, Roosevelt and the Boone and Crockett Club ultimately suc-



Foxes taken at a January hunt in the 1950s. Beginning in 1915, the U.S. government experimented with "predator control," believing the elimination of predators would result in more wild game for hunters. The practice continued for several decades. The result was an overpopulation of deer and a lack of sufficient food supply

ceeded in developing the image of the "sportsman," an outdoorsman who avidly pursued fish and game while adhering to a set of rules and regulations that gave the quarry a chance to escape and assured the future of fish and game populations. The Izaak Walton League, founded in Chicago by businessman Will Dilg in 1922, added a Midwestern voice to the call for a code of ethics for all sportsmen so the integrity of the hunting tradition could be maintained. Today those principles are commonly called "fair chase."

In the era following Grinnell and Roosevelt the sport hunter took on the mantle of the elite outdoorsman, one who hunted for the pleasure of the outdoor experience and to improve his moral fiber by always adhering to the highest principles of fair chase. The meat hunter was considered the lowest form of game thief, a hunter that would stoop to any method to kill wildlife merely for the table. (Ironically, today, a century removed from the time when many Americans hunted to survive, the public's view of the sport hunter and meat hunter have reversed. Citizen polls find general support now for the hunter who takes game home for the table, but less sympathy for the one who participates just for a trophy or the "sport.")

During Roosevelt's term as president a fundamental philosophical difference developed between groups interested in protecting America's few remaining unspoiled areas. A growing urban population was creating great demand for food, wood products, water and power generation from the nation's public lands.

Gifford Pinchot was the first professionally trained forester in the



Congressman John Lacey

United States and first head of the Forest Service under Roosevelt. Pinchot coined the term "conservation," which he defined as using natural resources in a way that promoted "the greatest good for the greatest number for the longest term." According to Pinchot's philosophy, hunting, fishing, logging, grazing and other uses of public lands to benefit humans was permissible as long as they were done in a way that perpetuated those resources for future generations to enjoy.

A different philosophy was espoused by John Muir, a Swiss-born naturalist who settled in California and fell in love with the beauty and solitude of Yosemite Valley. Muir, who founded the Sierra Club, preached preservation of the wilderness in all its unspoiled splendor. He advocated letting nature take its course and vehemently opposed any economic use or development that would change its natural beauty.

Muir and Pinchot frequently quarreled over specific management activities in the Sierra Nevada range,

but Pinchot's concept of sustained and wise use eventually won out. Conservation, not preservation, became the cornerstone of both federal and state wildlife programs for most of the 20th century. However, preservation of unique areas of great scenic or ecological value in their natural state has remained part of the nation's mind set. It has resulted in, among other accomplishments, setting aside national parks and vast wilderness areas in the West and, in Iowa, the creation of a system of unique state preserves.

Wildlife Belongs to Everyone

Roosevelt, Grinnell, Muir and others did much to mold the public's attitude toward natural resources and provided a new moral basis for hunting and fishing. However, little could change without a system of laws and administrative regulations on which the federal and state governments could act. Roosevelt argued strongly for a "public trust" doctrine for American wildlife that embodied these few principles:

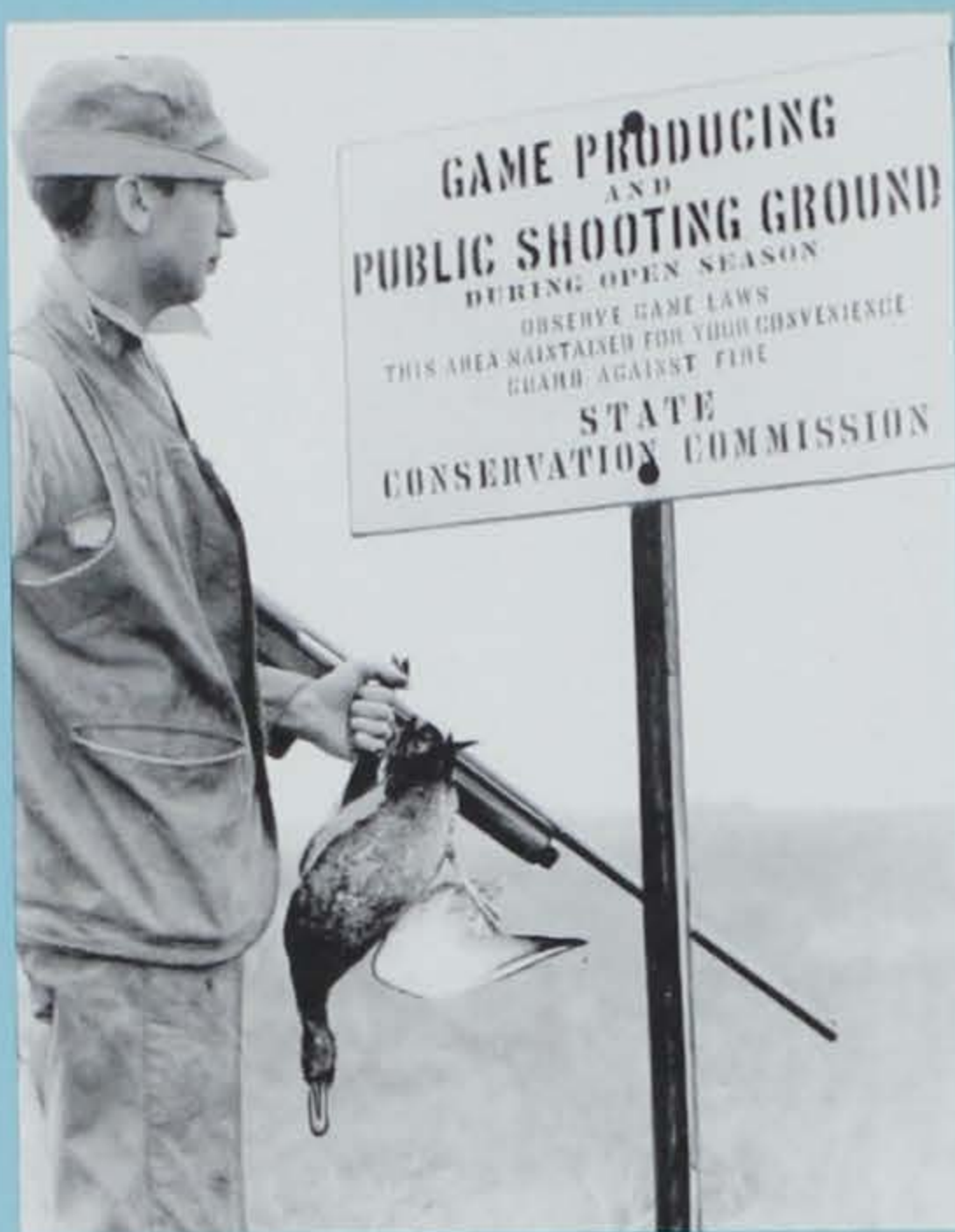
Wildlife belonged to the public, not to those who controlled the land or access to it.

Wildlife should only be killed for a purpose - for food, self defense or sport hunting. Market hunting and other commercialization of wildlife should be banned.

The use of wildlife should be allocated to the people by a series of impartial laws and regulations that provided opportunity democratically to everyone.

Migratory wildlife is an international resource, and its continued existence is a shared responsibility among nations.

Science is the proper tool for



Under urging from state leaders, the Iowa Conservation Commission was created in 1935 to set policy for conservation programs.

developing wildlife policy, not personal influence or preference.

Beginning at the turn of the 19th century these principles began being codified in state and federal law.

The Lacey Act of 1900, authored by Congressman John Lacey of Iowa, prohibited the interstate shipment of illegally taken wildlife or wildlife parts. Its impetus was to stop the illegal trade in bird feathers as clothing decorations, but it ultimately became the primary federal tool to stop commercial poaching and transportation of all wildlife and fish.

In 1902 the International Association of Fish and Wildlife Agencies was formed. While several states had laws protecting fish and wildlife, none had the administrative or enforcement staff to make them work. The Association provided a forum for state administrators to

discuss problems and find common solutions.

In 1907 Roosevelt convened a conference of all state governors to impress on them the need for coordinated action to protect wildlife. The conference galvanized many states into action and began a century-long state and federal partnership that would pay great dividends. The immediate result of the conference was Iowa passed its first law in 1909 requiring a hunting license of residents (fishing licenses were not required until 1929).

Although the idea initially met with great resistance, revenue from licenses has been the primary method by which most state fish and wildlife programs are funded. (Fishing and hunting licenses sales annually produce nearly \$20 million in revenue for fish and wildlife conservation in Iowa and nearly \$1 billion nationwide).

In 1918, the U.S. Congress approved the Migratory Bird Treaty Act with Canada and eventually extended it to include Mexico, Japan and Russia. The treaty recognized migratory birds as a shared resource and gave the federal governments of the signing countries the authority to manage them. The treaty immediately ended spring hunting of waterfowl, ended the sale of migratory birds, ended hunting of most shorebirds and gave complete protection to migratory songbirds and threatened species. Regulated hunting was allowed of ducks, geese, woodcock,

doves and other game birds under jurisdiction of the federal government.

In 1923, Congress, at the urging of the Izaak Walton League and other wildlife groups, appropriated \$1.5 million to create the Upper Mississippi River National Wildlife refuge from Winona, Minn., to the Quad Cities. In 1929, the Migratory Bird Conservation Act provided congressional authorization for the entire National Wildlife Refuge System, but permanent funding was not provided.

Wildlife Conservation Develops Slowly

As these conservation philosophies were being developed and laws enacted to implement them, actual on-the-ground success stories in conserving wildlife were few. With no practical experience to draw from, no training available and little political or financial support, wildlife agencies implemented programs based on what seemed to be common sense but often produced unpredictable and ineffective results. In general, four types of programs were undertaken to bring back game populations:

Stop hunting. Ending market hunting, stopping the trade in bird plumes and enacting hunting seasons to close shooting during breeding seasons helped some game animals, but for big game it was a case of locking the barn door after the horse had escaped. In most of the country bison and elk were gone and only a few deer were left. Restricted hunting had little effect on small game animals whose decline was caused by habitat loss rather than overshooting.

Iowa hunters experienced firsthand the futility of closing

seasons to build up small game populations. The Iowa legislature closed the quail hunting season from 1917 to 1933 with no noticeable improvement in quail numbers. And restrictive seasons and bag limits did nothing to stem the declining waterfowl populations in the Dust Bowl era of the early 1930s.

Game farms were established to repopulate a landscape barren of wildlife. It made sense – if the game was gone, raise animals in captivity and release them. It would take more than 30 years to learn through hard knocks and great expense that this was not the answer. Animals raised in captivity, provided with protection from their natural predators and supplied with unlimited food, did not have the essential survival skills needed to succeed when they were set free.

Iowa established its first state game farm in 1913 at the state fair grounds, and later had game farms in Clive and Lansing, and finally, Ledges State Park at Boone from 1939 until the late 1970s. While many species were raised and released, positive results were seldom obtained (more about this in a later article).

Predator control was implemented. It also seemed logical that if coyotes, wolves, foxes, hawks and owls ate game animals, then eliminating the predators would surely leave more for hunters. The now infamous experience with predator control on the Kaibab Plateau along Grand Canyon's north rim demonstrated how seriously wrong a well-intentioned plan can go.

The U.S. Bureau of Biologi-

cal Survey, forerunner of today's U.S. Fish and Wildlife Service, began massive predator control efforts throughout the West in 1915 to protect cattle and sheep, improve the range for grazing and increase game populations. With wolves, bobcats and mountain lions under strict persecution, mule deer populations on the Kaibab literally exploded. An estimated 3,000 deer counted prior to predator control quickly increased to at least 30,000 animals (some said 100,000). At the same time, 20,000 head of cattle and sheep were introduced to the plateau and would compete with deer for forage.

In just a few years deer numbers far exceeded their available food supply and literally ate themselves,

and the livestock, out of house and home. During the 1920s thousands of emaciated deer starved each winter, yet state biologists bowed to public pressure and would not allow hunting. In 1928, the U. S. Supreme Court finally stepped in because the Kaibab is on federal land. It took years of hunting and sharp shooting by professionals to reduce mule deer numbers to acceptable levels. It took far longer for the range to recover.

Decades of scientific research would eventually unravel the delicate balance of predator-prey relationships and demonstrate why predator control seldom works for resident game animals. Big game populations actually benefit when predators eliminate the sick, injured and unfit



In the early 20th century, the sport hunter took on the image of the elite outdoorsman, and the meat hunter was considered a game thief. Ironically, those views have reversed in recent years.

animals and leave the survivors healthier and in harmony with their habitat. Small game animals produce enough young each year that predators simply take the excess that can not survive the winter. In either case, predators left alone generally remain in balance with their prey or they find themselves without a food supply.

Introducing exotic species. If native wildlife could not survive, why not bring in similar animals from other continents to replace them? State and federal wildlife agencies introduced dozens of non-native big game and game bird species through the

1960s before a salient fact was realized. If there was not enough habitat to support native game, bringing in exotics with similar habitat requirements would do no good, and if habitat already existed, transplanting native animals that were already adapted to the local environment was far more effective.

There was one notable exception. On a bitter cold winter night in 1901, a blizzard blew down the fences at a private game farm in Cedar Falls, liberating 2,000 gaudy game birds recently shipped in from the Willamette Valley of Oregon.



Three hunters admire their birds, 1938. The accidental introduction of pheasants in Iowa proved to be successful, but in most cases, non-native species did not adapt well to Iowa.

Rumor has it that neighbors may have helped some, but whether accidental or intentional, that night marked the first appearance of ring-necked pheasants in the Iowa wilderness.

While they eventually colonized the state and became Iowa's most important game bird of the 20th century, ringnecks were the exception rather than the rule. Biologists now believe they succeeded because they found a favorable niche or vacant habitat to colonize. Prairie chickens were on the way out because there were few remaining blocks of the undisturbed grasslands they required for survival. Ringnecks, however, had evolved in cultivated habitats around the small rice paddies of southeast Asia. They found to their liking the abundant food in small fields of grain, nesting cover in hayfields and the winter cover in fencerows, ditches and undrained sloughs that were common on northern Iowa farms.

Spurred on by the success of ringnecks, the Iowa Conservation Commission experimented with several other exotic game birds at its Boone game farm for 40 years without much success. These failed efforts included the Reeves pheasant, a forest-dwelling pheasant from southeast Asia that, if it had adapted to Iowa, might have prevented the eventual restoration of the wild turkey.

An American Game Policy

With no experience to draw from and learning as they went, many state and federal wildlife programs proved ineffective at improving the wildlife situation in Iowa or the nation. There were few successes, many failures and most were often expensive, controversial and embarrassing to fledgling wildlife agencies. Then a

leader emerged who would turn the tide in the right direction.

Aldo Leopold grew up hunting with his father and brothers along the Mississippi River near his hometown of Burlington. He became one of the first professionally-trained foresters in the United States and was on assignment with the Forest Service in New Mexico and Arizona during the mule deer debacle at the Kaibab. Drawing on his experience as a hunter and his keen powers of observation, Leopold began formulating the revolutionary concept that habitat was the key to wildlife abundance, and its destruction had caused the demise of most native wildlife, not the excessive hunting or predators commonly blamed. This belief led him to condemn most of the wildlife management efforts that had so far failed to produce positive results.

Leopold came to national prominence in 1928 when he was asked to chair a committee to develop an American Game Policy. The committee of respected scientists and government leaders debated for two years, ultimately developing recommendations that shaped wildlife conservation programs for the rest of the century:

Regardless of species, protection and expansion of habitat were the key ingredients to any successful wildlife conservation program.

The funding available to federal and state agencies was inadequate and inconsistent. Agencies were funded by annual appropriations from Congress and state legislatures that were subject to overnight changes in political priorities. Greater and more consistent funding was needed.

Politics was intruding too often into what should be science-based conservation decisions. Wildlife

administrators and workers were too often hired by political patronage, rather than by qualifications. Consistent programs were hard to develop due to constant turnover in leadership as political parties changed. Key management decisions were too often dictated by politicians to benefit themselves or powerful constituents rather than based on science.

The immediate problem facing all wildlife programs was lack of science-based knowledge about wildlife and its relationship to the land. Research needed to be expanded before major progress would be made.

Leopold's convictions that habitat was all-important to wildlife was formalized with the 1933 publication of his book "*Game Management*." The book established the basis for a wildlife profession based on science and laid down the fundamental principles governing the interrelationships between habitats and wildlife populations, predators and prey, diversity, population and habitat management techniques. While much has been learned since "*Game Management*" was published, the concepts that Leopold expounded are still pertinent today.

The American Game Policy had no force of law, but came at a favorable time. The 1920s had seen an increased interest in hunting. Returning World War I veterans were familiar with guns and the Roaring 20s produced an unprecedented growth in personal wealth and the leisure time to spend it. By 1928 there were 6.5 million licensed hunters in America, four times the number in 1910.

Increased hunting pressure on waterfowl, the Great Depression and



Jay N. "Ding" Darling

the worst drought in America's young history all collided in the "Dirty Thirties" to create great concern for the future of waterfowl populations. Drought decimated farms and ranches in the West and Midwest. Powder-dry soils blew away, clogging streams and lakes. Farmers unable to raise food or make farm payments immigrated to cities to survive. While devastating to Americans socially and culturally, the era spawned a new group of conservation leaders and laws dedicated to protecting wildlife.

One of the most influential and effective was Iowa's own Jay N. "Ding" Darling. Darling was an avid hunter, a nationally syndicated cartoonist with the *Des Moines Register* and a long-time champion of conservation. Darling accepted an offer from President Franklin D. Roosevelt to lead the Bureau of Biological Survey in 1934 and began implementing many of the recommendations of Leopold's committee. With Darling's influence on the Roosevelt administration, the help of Midwestern congressmen interested

First federal duck stamp, designed by Ding Darling.



in conservation and the political support of citizens groups like the Izaak Walton League, Audubon and the American Game Protective Association, several landmark pieces of legislation were passed.

In 1934 the Migratory Bird Hunting Stamp Act provided an ongoing source of funds for protecting waterfowl habitat by requiring waterfowl hunters to purchase a "duck stamp" annually. Duck stamp revenue provided the permanent source of funding for national wildlife refuges dependent on annual, mostly inadequate Congressional appropriations. Darling himself designed the first stamp.

The Fish and Wildlife Coordination Act of 1934 established the basis for cooperation between state and federal agencies on wildlife issues and required all federal land management agencies to consider wildlife in their activities. For the first time, the Forest Service and Bureau of Land Management had responsibilities other than just logging and grazing.

In 1935, Darling helped secure funding (including his own contribution) for the first Cooperative Fish and Wildlife Research Unit at Iowa State University. Research units would eventually be developed at most state land grant universities. Units are funded by federal and state wildlife agencies and the universities to provide trained biologists and develop the science-based knowledge necessary for sound wildlife management.

In 1935, under urging from Darling and state conservation leaders, the Iowa Conservation Commission was formed, designed after a model wildlife agency recommended by the Leopold committee. It consisted of a seven-member bipartisan commission appointed by the governor to serve staggered six-year terms. The commission had the sole authority to hire a director and other employees, to set policy for fish and wildlife conservation programs and to expend money from fishing and hunting licenses to implement those policies. The independent Conservation Commission operated

free of most political influence for the next 50 years.

In 1936, the first North American Wildlife Conference was held to bring together state and federal biologists and academics to discuss solutions to the nation's wildlife problems. After the conference, the National Wildlife Federation was formed to provide citizen input and political support for wildlife restoration. Darling became its first president.

In 1937, the Federal Aid in Wildlife Restoration (or Pittman-Robertson) Act was enacted and became arguably the single most influential law to affect wildlife in this century. It provided an 11 percent tax on sporting arms and ammunition paid by the manufacturer to the federal government. The tax revenue was reverted to the states for wildlife conservation and restoration based on each state's land area and number of licensed hunters.

Two critical conditions were placed on states wishing to receive P-R funds. No state could divert money from hunting license sales to any purpose other than the administration of its fish and game department. Management personnel hired using P-R funds had to be competent and trained in conservation. These provisions reduced political interference in wildlife conservation programs and made them more credible and responsive to the public. Today the P-R program reverts nearly \$200 million annually to the states for wildlife management, research and hunter safety training.

Since P-R was enacted, many laws have been passed to strengthen, protect and enhance our wildlife legacy, among them the Bald Eagle Protection Act of 1940, the Wilderne Act of 1964, the Endangered Species

Act of 1973, the National Environmental Protection Act of 1973 and many others. But the Pittman-Robertson Act, and subsequent fish restoration acts in 1950 and 1984, remain the backbone on which state fish and wildlife conservation programs are structured.

The changes in attitudes toward conservation developed in the first half of the 20th century and the legal basis enacted to implement the ideas were truly innovative and unprecedented in world history. North America is the only continent with a conservation policy recognizing wildlife's right to inhabit the land and the public's right to use and enjoy that resource regardless of personal status or wealth.

But in spite of these breakthroughs, the wildlife situation in Iowa remained largely unchanged from 1900 to mid-century. The automobile burst on the scene and the development of gasoline-powered farm implements changed rural life forever. But farms were still small, diverse operations raising a variety of grain and forage crops and livestock.

Those baby-boomer age or older can remember when "going hunting" meant taking a .22 rifle or small-bore shotgun after rabbits or squirrels. Pheasants had spread throughout northern Iowa, quail were confined mostly to the pasture and cow country of the southern half of the state, and limited waterfowl hunting was available on the border and

inland rivers and streams. Hunting the prairie marshes meant a long trip to northwest Iowa. Unless you were lucky enough to live where these types of hunting were available you confined most of your hunting to small game. Deer and turkey hunting was absent, as was the reasonable chance to bag a Canada goose.

The next half-century, however, would see remarkable change!

Terry W. Little is the wildlife research supervisor for the department in Des Moines.



Hopkins Sporting Goods, Des Moines. In 1937, the Federal Aid in Wildlife Restoration Act provided an 11 percent tax on sporting arms and ammunition, which was reverted back to the states for wildlife conservation and restoration.

Iowa's Common Harmless Snakes

Article and photos by Jeff LeClere

With the onset of spring, creatures that have been hibernating all winter awake to start their seasonal active period. We look forward to seeing these various critters in the yard or at the park. All, it seems, except for the snake.

Some people consider snakes unwelcome visitors in their yard. Others, like myself, are fascinated by snakes and actually spend time looking for them. Even those who

are not particularly fond of snakes may be curious about what type of snake they saw near the garden or while mowing the grass, especially snakes with markings unlike the "normal" ones they usually see.

This article is intended to identify those different-looking snakes. Not all of Iowa's snakes are included. I have selected some of the more common species with a relatively large range in Iowa.



Redbelly Snake

Small Snakes

Redbelly Snake

Storeria occipitomaculata

The redbelly snake is one of Iowa's smallest snakes at about 10 inches in length. It is light brown to dark reddish-brown on top and may have a stripe down the center of its back that is slightly lighter in color than the background. Some may be gray with four very thin dark stripes down the back and sides.

The best way to distinguish this species from all other Iowa snakes is by its belly. True to their name, they have a bright red belly. They are gentle snakes and eat slugs and earthworms.

Brown Snake *Storeria dekayi*

Another small snake, the brown snake is common throughout most of Iowa. Brown snakes (also called DeKay's snake) are tan or brown. They have a light stripe down the back bordered by small black spots. The belly is white or pinkish, but not red. Most specimens are docile, but a few will flatten their heads and bodies when alarmed, producing white dashes down the sides. They may strike, but these tiny snakes (only 13 inches long) are incapable of delivering an effective bite. Brown snakes eat earthworms.

Prairie Ringneck Snake

Diadophis punctatus

This secretive woodland and prairie edge species is common, but rarely seen by most people. Ring-necks are easy to identify. They are solid dark reddish-brown to slate gray on top, with no markings other than a distinct bright orange ring around their neck. Their bright orange belly is speckled with small black dots. No



Brown Snake (left)



Prairie Ringneck Snake (top)



Smooth Green Snake (above)

other Iowa snake has the orange neck ring or lack of markings on the top.

When threatened, they twist their tails into a tight coil, displaying the bright red coloration found only on the underside of the tail. However, they are docile snakes and never bite. Ringneck snakes are Iowa's smallest constricting snake, however they rarely do so unless the prey is large. They eat earthworms, small frogs, toads and snakes. Larger specimens may eat baby mice.

Smooth Green Snake

Opheodrys vernalis

Green snakes are one of the easiest snakes to identify. They are bright green with no markings and a plain

white or yellow belly. Green snakes do show some resemblance to the racer, although they differ in size. Green snakes grow to about 20 inches, while racers are much longer, and young racers, the size of the biggest green snake, still have a spotted pattern.

An unusual tan variant of the green snake has been found in central Iowa, and may resemble other small brown snakes. However, the smooth scales and no markings gives the green snake away. These snakes eat insects. Their numbers are thought to be declining due to pesticides and habitat destruction. They are a threatened species in Iowa and should be reported to the DNR when found.

Red-sided Garter Snake



Medium Snakes

Eastern Garter Snake

Thamnophis sirtalis

The eastern garter snake is easily the most familiar snake in Iowa. Most are brown or black with a light yellow stripe on top. They also have a light stripe on either side of the body located on the second and third rows of scales up from the large belly scales. The location of the side stripes distinguishes eastern garters from the very similar plains garter and ribbon snakes. There are two rows of alternating black spots in between the eastern garter's stripes. The skin between the scales can be white, orange, red or mint green, and the belly is plain white or yellowish.

There are two eastern garter snake subspecies in Iowa. The eastern garter snake described above is generally found in eastern Iowa. The red-sided garter snake is very similar, but with more red between the stripes. This subspecies is found in the



Plains Garter Snake

western three-fourths of Iowa. The two subspecies interbreed in Iowa, and snakes resembling either subspecies may be found almost anywhere in the state. They reach about 26 inches in length.

Plains Garter Snake

Thamnophis radix

The plains garter snake is also common in Iowa, especially in open habitats. They are similar to eastern

garter snakes, but the light side stripes are located on the third and fourth scale rows up from the large belly scales. These side stripes, along with several bold black bars on the lips, separate plains garter snakes from eastern garter snakes, which have none or only two or three weak bars on the lips.

Plains garters may have a yellow or orange stripe on top. Often, the skin between the scales is mint green or white, and in rare occasions, red. They are the most heavy-bodied of Iowa's garter snakes, and they grow to about 28 inches in length. Like other garter snakes, they eat a wide variety of foods, such as earthworms, frogs, toads, fish and small mammals. They are not constrictors; they swallow their prey alive.

Western Ribbon Snake

Thamnophis proximus

These very slender garter snakes are usually mistaken for eastern garter snakes. The difference is the western's side stripes are located one row of scale higher than on the eastern. Westerns differ from plains garter snake in that they don't have

black bars on their lips and their tails are more than one-fourth the length of their body. The top stripe is orange, and the belly is plain white, often with a tinge of yellow, blue or green. They will climb bushes along streams and ponds to catch treefrogs.

Graham's Crayfish Snake

Regina grahami

Graham's crayfish snake is dark brown and unmarked on top except for

a faint stripe down the middle in young and recently shed specimens. There is a wide stripe on both sides that is gold, tan or cream with a narrow black stripe above. The belly is the same color as the side stripes and is separated by a thin black line that zigzags between the lateral scales and the underside. The belly is usually unmarked, although on rare occasions some will have a row of black dots down the center.

Graham's crayfish snakes are the most reclusive of Iowa's water snakes. They are found near streams and marshes. Their diet consists mainly of crayfish, but they will occasionally eat fish and other aquatic animals. Their numbers are declining and sightings should be reported.

Northern Water Snake

Nerodia sipedon

Northern water snakes are often mistaken for cottonmouths (or water moccasins, a venomous snake not found in Iowa). Northern water snakes are common and often seen by anglers. They are about 40 inches long. Their background color ranges from brown to gray. They have darker bands across the neck, which change to blotches on the back and rings on the tail. There is also a row of alternating spots on the sides of the body, which may be brown, reddish or nearly black. Northern water snakes basking in the sun may appear solid brown, but the pattern reappears when the snake is wet. The belly pattern may vary, but generally it is



Western Ribbon Snake

white with randomly scattered reddish crescents.

They are found near all types of waterways and may be seen basking on limbs or swimming in the water. They are not constrictors. They eat mostly fish and amphibians. When picked up, northern water snakes are aggressive biters.

Eastern Hognose Snake

Heterodon platyrhinos

The eastern hognose snake is an amusing, stout-bodied snake. They grow to a little more than 30 inches on average, but are thick for their length. They are known for their upturned snout.

They may be light colored with dark blotches, or a nearly uniform olive color with only a trace of markings. They have two large dark black marks on each side of the neck. The belly may be white or mottled with dark pigment. The underside of the tail, however, is always lighter

than the belly, although both may be very black. The underside of the tail is what differentiates an eastern from its cousin, the western hognose (rare in Iowa), which is nearly solid black.

Eastern hognose snakes are found in open grasslands and wood-

lands, especially areas with sandy soil. When threatened, hognose snakes will spread their neck and head like a cobra and hiss loudly. They will make short jabs with a closed mouth, although it is just an act. They are actually quite docile and will not bite in defense. If the

Top to bottom: crayfish snake, northern water snake and hognose snake



Milk Snake

act fails, they will twist and turn as if in pain, and roll over and play dead. If rolled onto their stomachs, they immediately roll over onto their backs. Only until the danger passes will they resume normal activities. They are not constrictors, and they eat amphibians and occasionally small mammals.

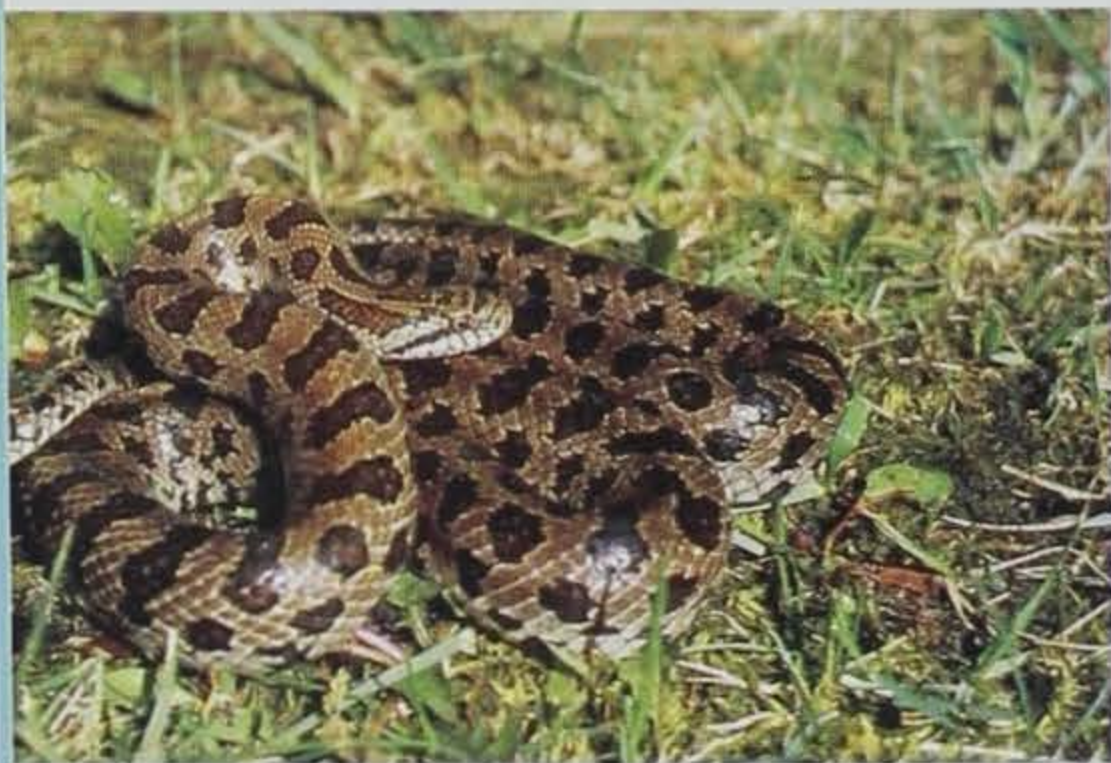
Milk Snake

Lampropeltis triangulum

These reclusive snakes are about 1-1/2 to 3 feet long, the smallest of Iowa's kingsnakes. They are light gray to white with reddish blotches outlined with black on the back. The belly is also light colored with clusters of black checkers.

There are two subspecies in Iowa that look very similar: eastern milk snakes found in northeastern and parts of northern Iowa, and red milk snakes, found across the remainder of the state.

Prairie kingsnakes can resemble a milk snake, although they are generally more brown than red. Milk snakes eat rodents, lizards and other snakes. They are constrictors, and may vibrate their tails when agitated.



Prairie Kingsnake



Large Snakes

Prairie Kingsnake

Lampropeltis calligaster

The prairie kingsnake is brown or gray with reddish-brown or brown blotches. The belly is yellowish with dark checkers. They can be difficult to tell apart from the fox snake.

King snakes have smooth scales and a stripe through the eye. Fox snakes have keeled scales and usually no stripe through the eye (in adults). Bullsnares, which can also look similar, have keeled scales, an enlarged rostral (nose) scale and are more yellow overall.

Prairie kingsnakes eat rodents, small birds, lizards and other snakes, even venomous species. They are constrictors. Kingsnakes will vibrate their tails when alarmed.

Racer *Coluber constrictor*

Racers are large, fast-moving snakes and are easy to identify as adults. They grow to about 50 inches and are the only large snakes uniformly bluish or greenish-gray on top. The belly is plain white or yellow.

The young, however, look much different. Young racers are white or gray with large reddish-brown blotches down the back. The belly is white or yellow with many brown dots. An easy way to identify a young racer is by the tail. Newly hatched racers have a uniformly brown tail. All other young spotted snakes have rings on their tails. Also, racers have smooth scales, which distinguishes them from young water, fox, black rat and bull snakes.

Racers are most common on open prairies, but they are also found in woodland edge and bluff prairie

habitats in Iowa. They are found statewide, excluding north-central and northwestern Iowa.

They eat insects, frogs, lizards, snakes and mammals. They are the largest non-constricting snakes in Iowa, and they swallow their prey alive. They rely on speed to defend themselves, but most will bite ferociously if picked up. There are two subspecies in Iowa, which interbreed, and specimens resembling either may be found anywhere in their range.

Fox Snake

Elaphe vulpina

This is probably the most common constricting snake in Iowa. They grow to 54 inches in length and are brown, gray or nearly yellowish with dark brown or black spots. The belly is yellow with black checkers.

Fox snakes are often mistaken for bullsnakes. However, true bullsnakes have a pointed nose, a dark stripe through the eye, dark bars on the lips and a prominent color change from head to tail. Fox snakes are also very similar to prairie kingsnakes. However, prairie kingsnakes have smooth scales and a stripe through the eye (in adults only).

Fox snakes are found in woodland river valley, meadow and prairie habitats in Iowa across the state. They are beneficial in that they eat a variety of small mammals.

Black Rat Snake *Elaphe obsoleta*

Often called "black snakes" by many Iowans, these large snakes (72



Racer

Fox Snake



Black Rat Snake

Bullsnake



inches) are not easily mistaken for any other snake. They are black, but usually have some pattern, especially near the front of their bodies. The skin in between the scales may be white, yellow, brown or red. The last one-third of the body may be solid black. The chin and throat are light, but the belly becomes increasingly dark to bluish-black near the mid-body.

Young black rat snakes look similar to young fox snakes, but they turn black after two or three years. Black rat snakes are found in the scattered wooded river valleys in eastern and southern Iowa. They are excellent climbers and spend considerable time in trees. They are constrictors and eat rodents, birds and bird eggs.

Bullsnake *Pituophis melanoleucas*

The bullsnake is Iowa's largest and most familiar big snake. They can grow to more than 72 inches, and their

scales are keeled. They are characterized by a prominent color change down the body. Most are light with dark black spots near the head and front of the body, which changes to a dull yellow with brown to reddish-brown blotches at the midpoint.

The tail is a brighter yellow with black markings. They have smaller spots on the sides, but sometimes they are tough to see due to heavy speckling. The belly is yellow, and near the tail there may be black checkering. Bullsnakes have a pointed nose caused by an enlarged rostral scale, which helps them burrow in loose soil.

Although bull and fox snakes look similar, there are differences. In contrast to bullsnakes, fox snakes do not have a stripe through their eye (in most adults), no black bars on their lips, are more brownish in overall coloration and do not have a color change.

Bullsnakes are powerful constrictors and save farmers hundreds of dollars each year because of the rodents they eat. They are found in open prairies — especially with sandy soils — grasslands, bluff prairies and woodland edges. Bullsnakes have declined in numbers because the open areas they inhabit also make the best croplands. Most will flee when encountered, but some will coil, strike, hiss and loudly buzz their tails. Bullsnakes are large and their bite may break the skin, but it is not dangerous.

Reporting a Find and Further Information

If you find an unusual or protected snake, it should be reported. The best thing to do is leave the snake where it is. If possible try to get a good photo of it. Send the photo and information to Iowa Natural Areas Inventory, Iowa DNR, 502 E 9th, Des Moines, Iowa 50319-0034. Include your name, address and phone number, description of the animal, the date and location it was found (township name or township/range number, section or direction to site from nearest town) and habitat (roadside, forest, grassland).

To learn more about Iowa's snakes, field guides are available at libraries, bookstores or on the Internet. The DNR also publishes the *Snakes of Iowa* booklet, available for \$2 at the address above.

Jeff LeClere is an amphibian and reptile survey technician for the Minnesota DNR.

A Note on Iowa's Venomous Snakes

Of Iowa's 27 species of snakes, only four are venomous and all four are uncommon.

The massasauga, prairie rattlesnake and copperhead are very rare, have restricted ranges and are listed as endangered species in Iowa. The most "common" venomous snake in Iowa is the timber rattlesnake. Common is a rather misleading term given their numbers are declining.

Timber rattlers look unique among other Iowa snakes. They have very thin dark zigzag bands across a yellow body. Iowa's nonvenomous species have spots rather than thin crossbands down the body. Some references say to look for a diamond-shaped head and a heat sensitive pit between the eye and nostril in rattlesnakes.

The problem with using these features to identify a venomous snake from a harmless one comes from the fact many harmless snakes, such as bullsnakes and water snakes, will flatten their heads and spread their jaws when threatened. This gives their heads the same diamond shape as the rattlesnake. The heat pit is reliable, but can

often only be seen at a relatively close range — too close for most people.

The best field mark (from a safe distance) is probably the tail. Timber rattlesnakes have a dark black tail ending in a very obvious tan rattle. When rattling, a timber rattlesnake will hold its rattle high and shake it in the air. No other large, patterned Iowa snake has a dark black tail, and certainly no rattle of any kind.

A great number of Iowa's large harmless snakes will vibrate their tails against leaves or grass, making a rattling sound. However, because



Lowell Washburn

Massasauga

the snake's tail must be in contact with something to produce noise, it holds its tail close to the ground, not high in the air like the rattlesnake.

Copperheads are the only venomous species found in Iowa that do not have a rattle. The venomous cottonmouth (or water moccasin) is not found in Iowa.

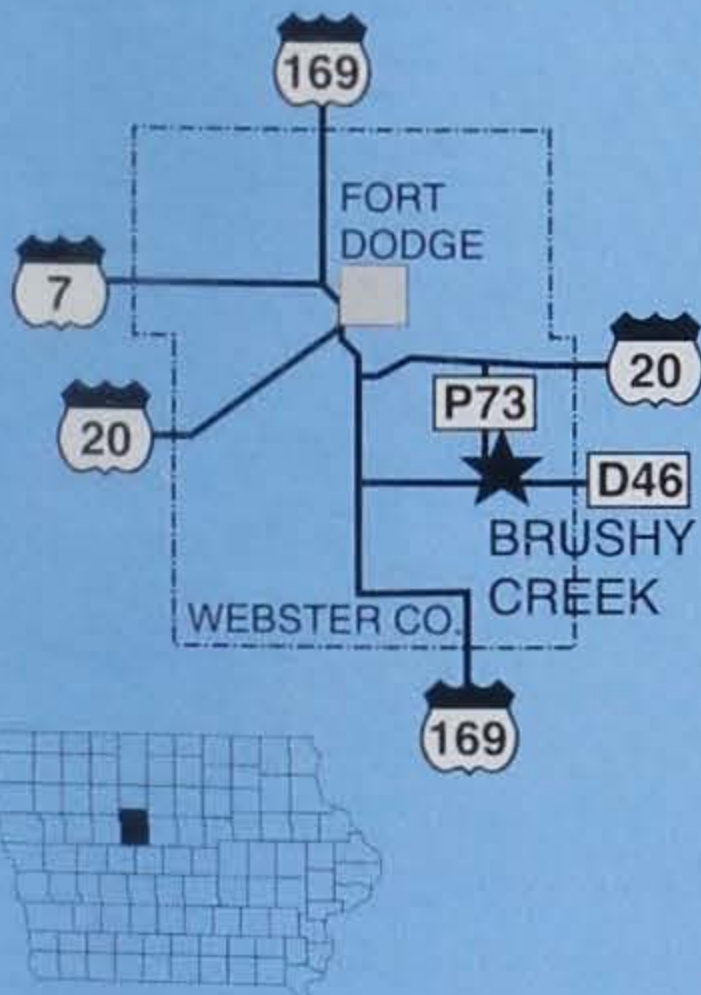
Construction of the largest earthen dam built by the DNR began in 1993 and was completed five years later.



Ken Formanek

Worth the Wait

By Lannie Miller



My mother once told me good things take a little longer to become reality. That definitely was the case with Brushy Creek Lake — a 30-year-old project still in the making . . .

Brushy Creek emerged from a 1962 Iowa Conservation Commission study identifying four areas where large artificial lakes and recreation areas were needed.

The commission identified Fort Dodge as an area in need and targeted land along Brushy Creek. The land contained a mosaic of unique natural resources in need of protection. The lower Brushy Creek Valley contained exceptional beauty, significant archeological sites and geological formations, mature forests and habitat for the vole, a species considered threatened in Iowa. Most of the land for the recreation area was purchased between 1968 and 1975, although there was a significant purchase in 1989.

Rocky Start

Controversy haunted Brushy Creek from the start. Special interest groups wanted the valley to remain intact, while anglers requested a high-quality lake. Original plans called for a 980-acre lake, however concerns over the effects of a large impoundment on the lower valley led to an extensive public comment period and an Environmental Impact Statement. Eventually, a compromise was reached.

The final plan called for a 690-acre lake with a maximum depth of 80 feet, an average depth of 29 and 21 miles of shoreline. It would

have a 56,360-acre watershed, with a drainage area to lake surface ratio of 82 to 1. At crest elevation, there are 19,660 acre-feet of water in the lake.

Construction of the dam began March 14, 1993, and was completed in August 1998. Approximately 2,000 cubic yards of dirt was used to build the 2,000-foot dam, which is 100 feet tall and 600 feet wide at the base. It is the largest earthen dam ever built by the DNR in Iowa. Approximately 8,000 cubic yards of concrete and 1.3 million pounds of reinforcing steel were used to build the spillway.

The lake was designed and built for fishing. Trees in the basin were left as fish habitat. Grubbing or removal of shrubs, bushes or small trees was not allowed, except at the dam and boat ramps.

Approximately 25 fishing structures, containing more than 20,250 tons of rock, were added to the lake bottom to increase and diversify fish

habitat. A large panfish spawning area was created in the north end using approximately 8,000 tons of sand. A handicap-accessible fishing pier and eight rock fishing jetties were also installed to give anglers easy access to good fishing areas. Four boat ramps are located around the lake. Boats with any size motor may be used, but they must be operated at no-wake speed.

On Aug. 26, 1998, gates on the dam were closed and the lake began to fill. Fisheries staff wanted to stock the lake as soon as there was enough water to sustain fish, so on Oct. 2, 1998, the first fish — fathead minnows — were stocked.

The minnows provided immediate forage for the predator fish. Later that fall, 2-inch bluegills, 6-inch walleyes, 7-inch channel catfish, 4-inch smallmouth bass and 2-inch redear sunfish were stocked. The following spring, largemouth bass,



Lammie Miller

More than 20,000 tons of rock were placed in the lake basin for fish habitat prior to filling.

muskellunge and walleyes were added. Adult black crappies were stocked in the fall of 1999.

Six-inch walleyes and 7-inch catfish will be stocked annually, and 12-inch muskies every other year to maintain populations. The remaining species will reproduce naturally and maintain themselves.

Based on various data, fisheries biologists can actually determine how good fishing will be even before a drop of water settles in a new lake. Staff studied Brushy Creek's mean basin slope, the watershed to surface area ratio and siltation rates in the watershed, among other things. It was determined Brushy Creek Lake would have excellent water quality and tremendous fishing potential.

It didn't take long for biologists to realize their optimistic predictions may have been underestimated. In the summers of 1999 and 2000, secchi disk readings were taken. These depth readings gauge water quality by measuring the transparency, or clarity, of the lake. Brushy Creek's was more than 18 feet.

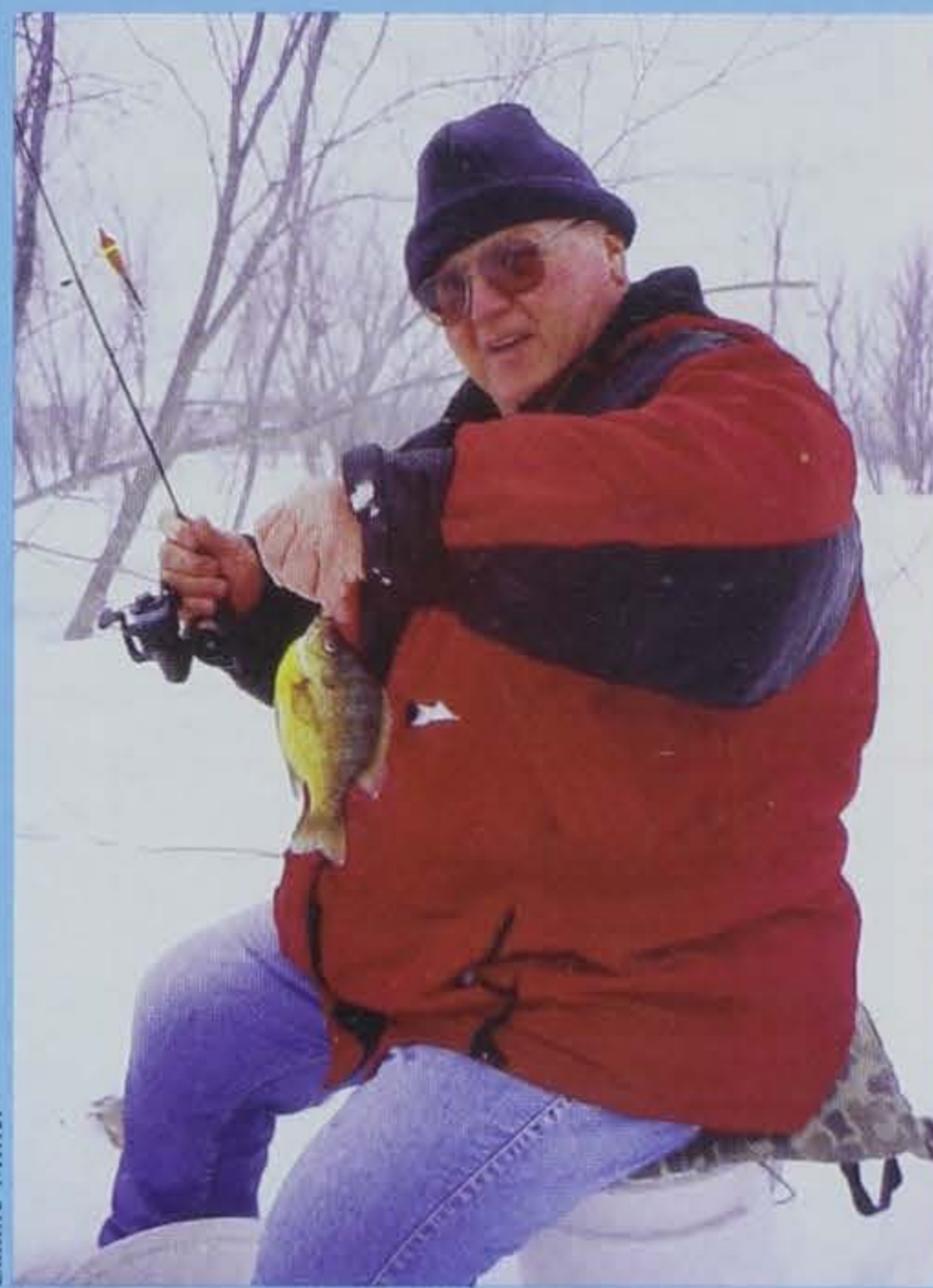
Fish growth surprised even the most optimistic fisheries biologists. By the summer of 2000, just one full

growing season after initial stocking, anglers were catching 8-inch bluegills, 16-inch largemouth bass and 19-inch walleyes. This year's ice fishing produced numerous 8- to 9-inch bluegills and some 15- to 18-inch walleyes.

The tremendous growth rate will not last forever. In three to five years, fish growth will level off, although excellent growth rates and recruitment are expected to continue. This year, the DNR will conduct a six-month creel survey on Brushy Creek to determine harvest, catch rates and size of fish caught. The data will help the DNR better manage and make decisions on the future of the fishery.

Fishing, of course, is not the only recreational opportunity available at Brushy Creek. The lake and upland areas are open to public hunting, and waterfowl, pheasants, deer and turkeys are abundant. A shooting range is being built south of the DNR service building.

Brushy Creek currently has four picnic areas, and a beach on the west



Lannie Miller

An angler enjoys a great catch while ice fishing this past winter at Brushy Creek.

side of the lake. More than 35 miles of multiuse trails are woven throughout the area, offering hikers, bikers and equestrians a close-up view of the scenic valley.

The equestrian campground, also available to non-equestrian campers, contains 125 campsites. A second equestrian campground with 105 campsites will open later this summer. A general campground with 96 sites is also in the plans. Additional improvements, such as cabins and a lodge, are planned for the future.

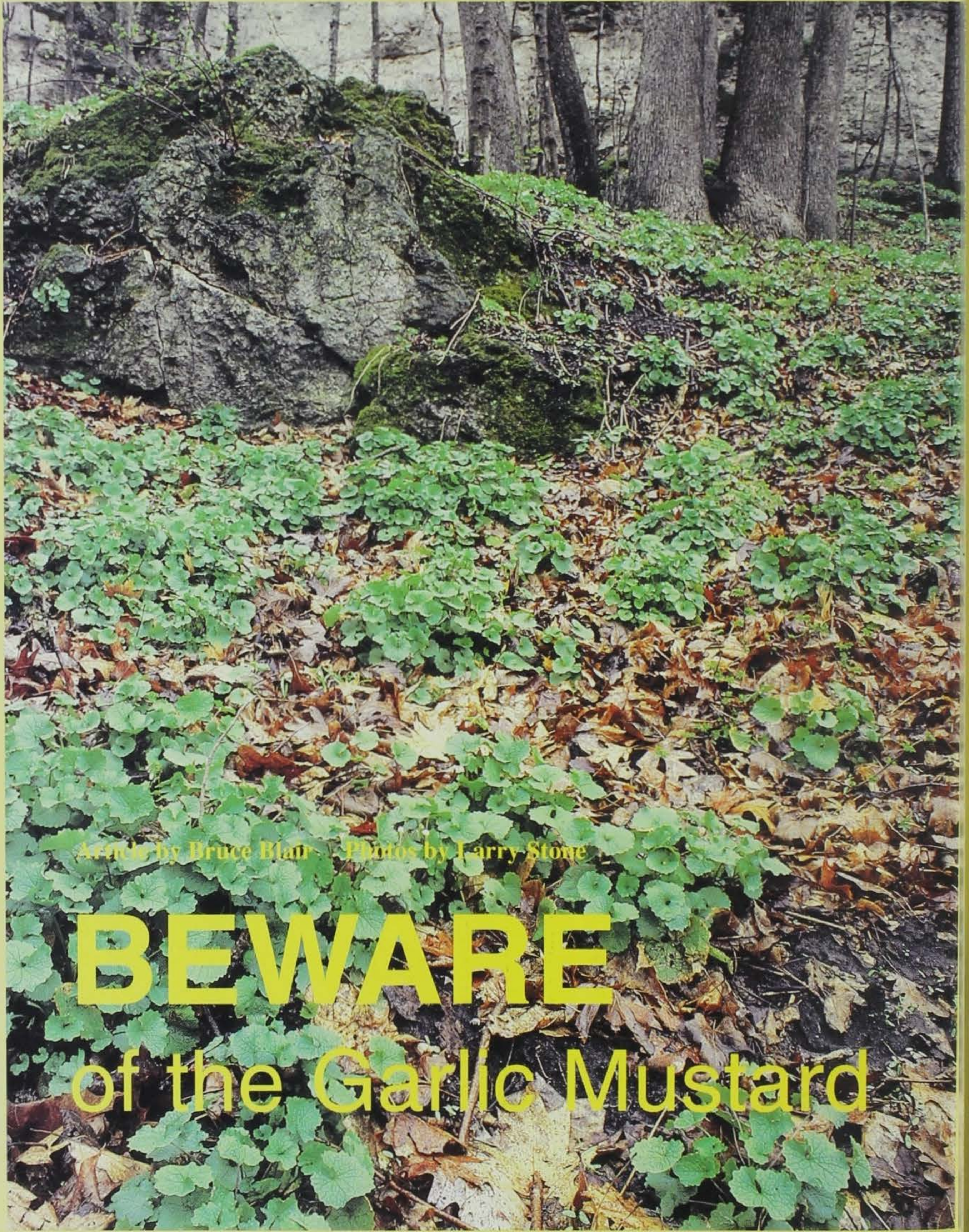
Although it took almost 30 years to complete, the future of Brushy Creek Lake does indeed look bright.



Laura Ryan

The west boat ramp at Brushy Creek, fall 1999.

Lannie Miller is a fisheries management biologist at Lake View.



Article by Bruce Blair Photos by Larry Stone

BEWARE of the Garlic Mustard

The title sounds like an old movie cliché, but it's not far from the truth once you've seen the impact garlic mustard, can have on a *once* pristine woodland. In the movies, garlic protected against vampires. In this case, garlic mustard is the exotic monster.

Garlic mustard is not native to North America and it has the potential to colonize and displace most of the native understory flora in an average Iowa woodland. Today, it's become a very serious problem, particularly in parts of eastern Iowa.

The Nature Conservancy (TNC) claims garlic mustard was first collected in the wild in 1868 on Long Island, New York. It is native to Eurasia and was probably brought to America and cultivated for its medicinal properties. Since its introduction, it has spread to 30 eastern and midwestern states, three Canadian provinces and is now reported as far west as Colorado, Utah, Idaho, Washington and British Columbia.

Garlic mustard can spread very rapidly. Small colonies frequently develop along animal and human trails. It's believed the seeds are carried on the fur of animals, in the cuffs of pants and on the tires of off-road vehicles. From these new colonies, the seeds disperse in all directions. Within a few years the plants can infest an entire woodland. Disturbances from timber harvest operations or high populations of whitetail deer can dramatically increase its rate of spread.

Garlic mustard can flourish under partial and deep shade, but it tends to shy away from full sunlight. It's not picky about where it grows — it does well in rich or poor soils, bottomlands and rocky hillsides.

Identifying garlic mustard is relatively easy. The plant is biennial. It germinates from a seed in the spring and produces a whorl of basal leaves that look very similar to creeping Charlie, or ground ivy. An easy way to identify garlic mustard is with your nose. Crush a leaf between your fingers; the juices produce the unmistakable odor of garlic.

Many of the first-year plants die from competition. The ones surviving into the second year will produce a flower stalk in the spring. The flowers are rather indistinct, with four white petals per flower and rather small at 6-7 mm in diameter. The flower stalk will reach about 3 feet in height.

From these flowers grow long, narrow seed pods similar to those of other species in the mustard family. The seeds mature quickly. One stalk can produce hundreds of seeds. The seeds are "spring loaded" and the slightest brush of the plant will send them flying several feet in every direction. This is its primary mode of seed dispersal.

First-year seedlings stay green throughout the winter. They will grow the instant warm weather arrives. Whitetail deer and other herbivores shy away from eating garlic mustard. In North America, it has no important fungi, virus or insects for enemies.

The problem with garlic mustard should not be underestimated. A number of important natural areas in northeast Iowa have been severely affected. Several years ago, garlic



Clumps of garlic mustard are one of the first signs of green in the spring.

mustard was hard to find in Backbone State Park near Dundee.

Today it's abundant throughout the park. It has become prolific at the Mines of Spain Recreation Area near Dubuque. Few, if any, native plants can be found where it grows in dense stands.

"The problem has gone beyond pulling," says Jerry Selby, director of science and stewardship for The Nature Conservancy in Iowa, referring to garlic mustard at Retz Memorial Forest. Over the past few years, Jerry has organized garlic mustard pulling parties at the TNC-owned woodland in northeast Iowa, where 10 to 20 volunteers dedicate a day to pulling the exotic weed. Their efforts should be applauded, but garlic mustard is still abundant and continues to spread through the preserve.

Effigy Mounds National Monument, near Marquette, is one of the Midwest's premiere natural areas. Each year, thousands of people visit the monument's ancient effigy and burial mounds. The monument also boasts pristine woodlands and spectacular vistas of the Mississippi bluffs.

Rodney Rovang, the monument's natural resource manager, is responsible for protect-

ing and maintaining the park's natural areas as well as restoring them to their historic and pristine condition. He and his crew spend considerable time and resources every year locating and eradicating exotic/invasive species like European buckthorn and Asian honeysuckles. Their greatest problem now is with the constant influx of seed adjacent properties. Though park crews can have a big impact on the quality of flora within the park, there is little they can do to control the abundance of exotic/invasive plants growing outside the park. As a result, they face a never-ending battle to locate and eradicate new infestations.

Pulling is the favored method for controlling garlic mustard at the monument. Pulled plants must be carried out and burned. Otherwise, a pulled plant lying on the ground can actually continue maturing and develop viable seed. A propane torch has become a popular tool for killing the plants. The heat from the flame quickly kills the plants.

Native plants are incidentally burned in the process, but they usually recover since most are perennials and naturally adapted to fire. Garlic mustard, being a biennial, has to start over from seed. With persistent pulling and burning, the garlic mustard's seed bank in the soil will eventually become exhausted. Obviously, using fire can be dangerous. High moisture conditions must be present before burning becomes an alternative.

Herbicides can also be effective, although they can kill non-target species as well. Herbicide treatments should be applied in early spring or late fall, when most

other plant species are dormant. Garlic mustard is evergreen, therefore, it will absorb herbicides effectively on warm days in late November through early December, and again in early March.

Researchers are looking into biological control methods. The hope is to isolate a natural disease or insect pest that will target garlic mustard and not other species. Research is on-going with the hopes of introducing an agent sometime during the middle of the decade. In the meantime, we can all help reduce its spread by using practical measures.

First, learn to identify garlic mustard so you can alert others to its presence. (*Remember, it looks somewhat like creeping Charlie*

and if you crush a leaf it will smell like garlic.) When in the woods, check clothes, especially pant cuffs, for any seeds hitching a ride. Clean boots and shoes before leaving an area of infestation or before entering areas unexposed by the plant.

A garlic mustard infestation can cause dramatic changes to a woodland. Regeneration of woody species and the overall species diversity can rapidly decline once garlic mustard has been established. As the old saying goes, "An ounce of prevention is worth a pound of cure."

Bruce Blair is a district forester in Elkader.



Tiny white flowers emerge at the top of garlic mustard stems.

Wild Birds . . . What Value?



Have you ever wondered what a wild bird is worth? Probably not. If you're like me, you've been too busy enjoying them to dwell on such tedious matters.

For most of us, the benefits of living near wild birds are as profoundly incalculable as they are vital. How could anyone, for example, fairly assess the aesthetic value of a cardinal taking on fuel at a backyard

feeder, a kestrel intently hovering above a summer grassland or the sight of a flock of ducks warily circling the decoys against a blaze orange sunrise?

Obviously, such pleasures extend far beyond any numbers found in a birder's "life list" or in a hunter's daily log. It quickly becomes obvious, when it comes to wild birds, the definition of "value" is nearly as

By Lowell Washburn



Ron Johnson

Author, Lowell Washburn (above), knows the "value" of birds. He is not only an avid bird hunter and photographer, he is also a master falconer.

elusive as the creatures themselves.

But for those compelled to assign a statistical value to everything in life, including birds, the results of a recent study (commissioned jointly by the International Association of Fish and Wildlife Agencies and the U.S. Department of Interior) should be of particular interest. Here's some of what the surveyors discovered.

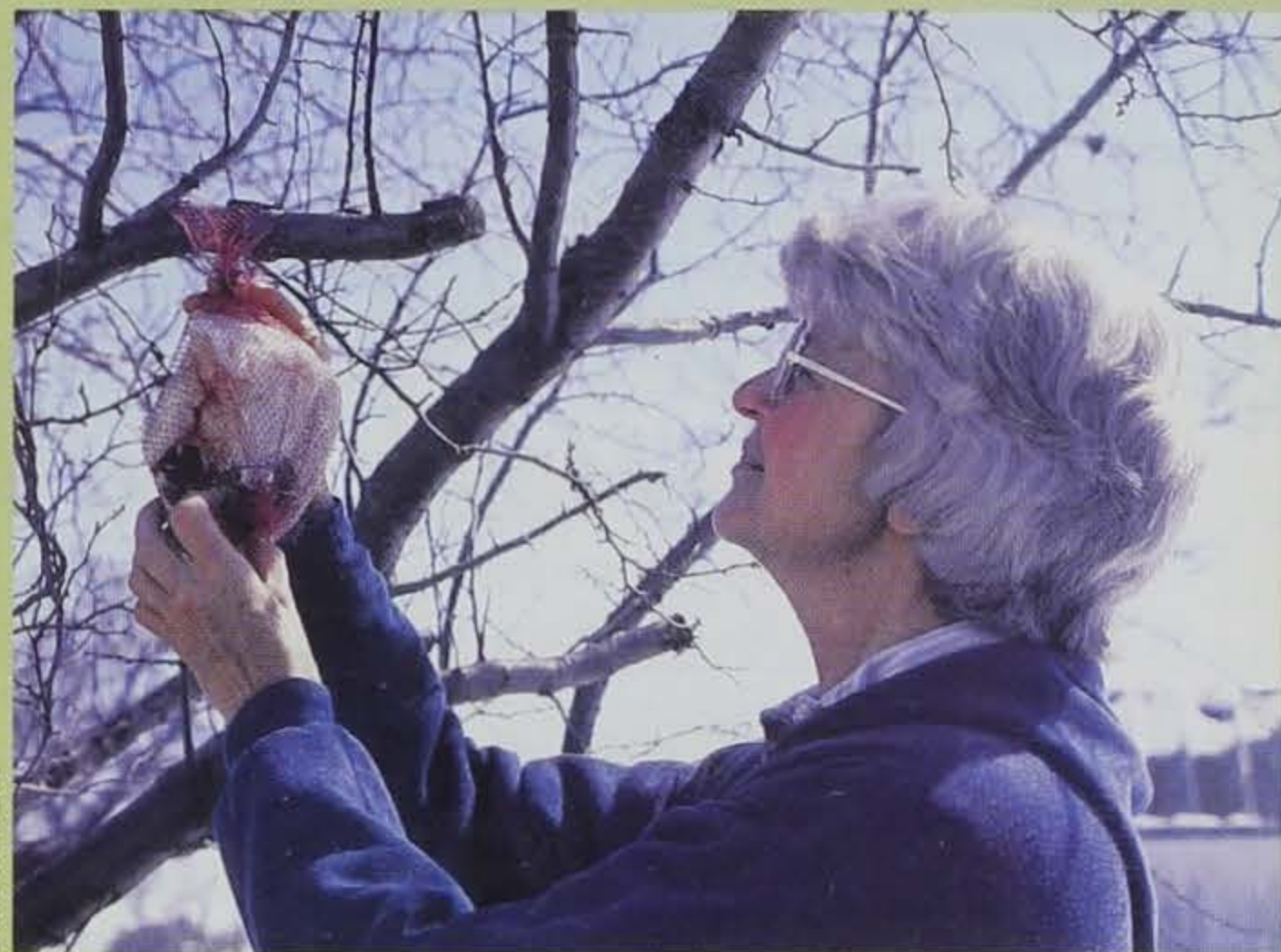
During the course of an "average year," the pursuit of wild birds (with gun, camera and binoculars) generates nearly \$21 billion nationwide. Birds are also directly responsible

for more than a quarter-million jobs.

According to information gathered by the U.S. Department of Commerce and U.S. Bureau of Census, more than 3 million Americans hunt migratory birds. Their spending generates around \$3.6 billion annually.

Around 25 million of us like to observe, photograph or feed birds, which generates an additional \$16 billion each year. These combined activities also generate another billion dollars-plus each year in state and federal tax revenues. Hunting activities support 43,230 jobs; non-consumptive recreation involving wild birds supports 191,000 jobs.





Ken Formanek

The top three states for bird related retail sales are California (\$725.2 million), Florida (\$490.1 million) and Texas (\$417.9 million). The state with the lowest annual retail sales based on bird-related activities was North Dakota with \$15.6 million. In Iowa, wild birds generate \$52 million in direct retail sales.

Bear in mind, although these figures are the best and most current available, they only represent the *direct purchase* of things like bird

feeders or duck decoys. Add associated expenditures and the figures double and in some cases triple. For example, nearly 1 million Iowans enjoy watching, feeding or photographing wildlife. Their total expenditures, including such things as food and fuel, account for nearly \$124 million each year — more than double the original \$52 million in direct retail. The total dynamics of America's thriving bird business, the study concludes, matches or exceeds

that of many Fortune 500 companies.

As important as the numbers may be, they are still pretty dry stuff for most of us.

For me the real value of wild birds cannot now, or ever, be expressed in purely economic terms. Birds are simply worth too much for that. Can anyone really assign a dollar amount to the thrill associated with having a storm-tossed hen mallard talk back to the call? Or who can begin to affix a numeric value to the tranquility that comes from staring into the glowing embers of a dying campfire while listening to the sound of whip-poor-wills resound from a woodland backdrop? Such bird-derived benefits are not only intangible; they are, in a word, priceless.



Ken Formanek

Whether pursuing birds for consumptive or nonconsumptive reasons, the fact remains the same — they are a big business.

Elk Creek

The Gospel is in the Water



"Here's the Gospel in the Water"

*All ye sons of Adam's race
Come and share this watery grace
Water gives the soul promotion
Water is the healing lotion
Water purifies the nation
Water is regeneration
Every mother's son and daughter
Here's the Gospel in the water*

excerpt from a poem by
early Elk Creek settler,
Job Odell, 1856

By Kevin Baskins

Job Odell's first visit to northern Delaware County left a lasting impression. The writings from his diary more than 150 years ago bear witness to his admiration of the virgin Iowa landscape he found north of Manchester.

"From Dubuque, we traveled about 14 miles through a rough, mountainous country," Odell wrote of his first visit to Delaware County during an expedition throughout eastern Iowa in 1849.

"We then passed through about 12 miles of a good soil, three or four miles of which was good timber such as we never met within any county . . . A short distance before we came to the settlement (Colesburg) we came in heavy timber. This colony is a settlement of Pennsylvanians in the north part of Delaware County and some of the most splendid situations I ever saw," Odell wrote.

Odell returned to his home in Michigan, but didn't forget what he had seen in Elk Township Delaware County. Two years later, after his father passed away, he, his wife and their three children loaded an ox-drawn wagon and joined the westward migration of pioneers, a journey to a place so clearly etched in a memory from his previous expedition.

The destination of Odell's quest was a bubbling spring he remembered from his first trip. There, he pur-

chased 160 acres and built a mill on the site in 1855. There, Iowa commodities were faithfully ground into meal until 1925 when a flood washed away the dam.

Remnants of Odell's enterprise can still be seen today in the ruins of the mill near Fountain Spring; in the flint rock that crossed the ocean from France, steamboated up the Mississippi and transported by ox cart from Dubuque. It now rests against the barn of Alvin Tibbott, who owns the land where Odell built his mill.

Elk Creek Watershed Project Will Work With Landowners

A lot has changed in the last 150 years, but some of the lessons and reverence for the resources found by Job Odell are remembered. As he walks the land first settled by Odell, Tibbott points to parts of the farm, recalling its rich history.

"Right over there," said Tibbott pointing to a spring, "is where they kept the cream."

Many of the same streams so vital to the life for Iowa's early pioneers need our help today.

Sediment, nutrient enrichment and pesticide contamination are affecting water quality in Elk Creek and its tributaries. The beautiful and fertile land within the watershed is also very fragile. Nearly 60 percent of the land in the watershed is considered highly



Conservation practices like no-till by Gretchen and Bill Adams (far left) not only protect the natural resources of their land, but also provides tremendous water quality benefits to people like Gary Kruse (left).

waterways, pasture farrowing of pigs, strip-cropping and nutrient pest management. People like Kruse are quick to realize the benefits they reap as fly fishers from conscientious producers like Adams.

"When farmers are doing the right kinds of things, you can see it in the stream," said Kruse of Dubuque who is past president of the Hawkeye Fly Fishing Association. "The water quality and the habitat is improved. You see more insects and flies in the water and that's what you need to sustain wild trout.

But improving water quality isn't the motivation behind Adams' farming practices.

"I guess the fishermen may appreciate it," says Adams, "but I'm much more interested in protecting the natural resources of my farm. This is my investment and I'm running a business. I've definitely realized savings in production costs from what I'm doing and I want to protect what I've got because I have to make a living off this land."

Recreation provided by high quality streams also has an economic benefit to the surrounding area.

"People come here to fish from all over – places like Chicago and Wisconsin. There are many people looking for good places to trout fish and they spend some money when they come," Kruse said.

Kevin Baskins in an information specialist working with non-point source pollution programs.

Sustainable Agriculture: Linking Farming To Fishing

The Elk Creek Watershed is an important place to people like Bill Adams and Gary Kruse, but for vastly different reasons. For Adams and other producers, the watershed is the place where he has to make a living. For Kruse and other trout anglers, the Elk Creek area is a quiet refuge in which to periodically retreat from the hassles of the work world.

When Adams rattles off farming techniques he uses in his operation, it sounds like a page ripped directly from a manual on best management practices: no-till farming, terraces, grass



Alvin Tibbott with the grist mill wheel from the Fountain Spring mill built in 1855 on his farm.

erodible. Pasture areas have heavy use and soil losses in the range of three to six tons per acre a year are common. Streambank erosion is also present and in some cases, major contributors of sediment in the streams because of the steepness of the terrain and fast runoff.

The good news is we have the knowledge and expertise to address many of these problems. The Elk Creek Area Watershed Project started in 1998 as a concentrated effort to improve water quality. The primary goal of this project is to provide landowners with the resources needed to implement best management practices that will improve water quality in a way that maintains, and in some cases, even improves profitability for farm operations in the watershed. (See pages 34 and 35 for some of the practices.)

"I have seen the interest in conservation by farmers change in the last 50 years," said Arnold Lueken, a Delaware County Soil and Water District commissioner who has farmed near Amesbury for 50 years. "Farmers realize there are more regulations coming and the new producers are more interested in conservation methods if it can be cost justified.

"We only have one earth to live in and we need to start protecting our resources if we are going to be able to feed every one," Lueken said.

BMPs on Land for Better Water in the Stream

The tools used to improve the quality of water in Iowa's streams and lakes are often referred to as best management practices or BMPs. Management practices such as nutrient management or structural practices such as terraces are designed to reduce the quantities of pollutants (sediment, nitrogen, phosphorus and animal wastes) washed by rain and snow melt into nearby lakes, creeks, streams, rivers and groundwater.

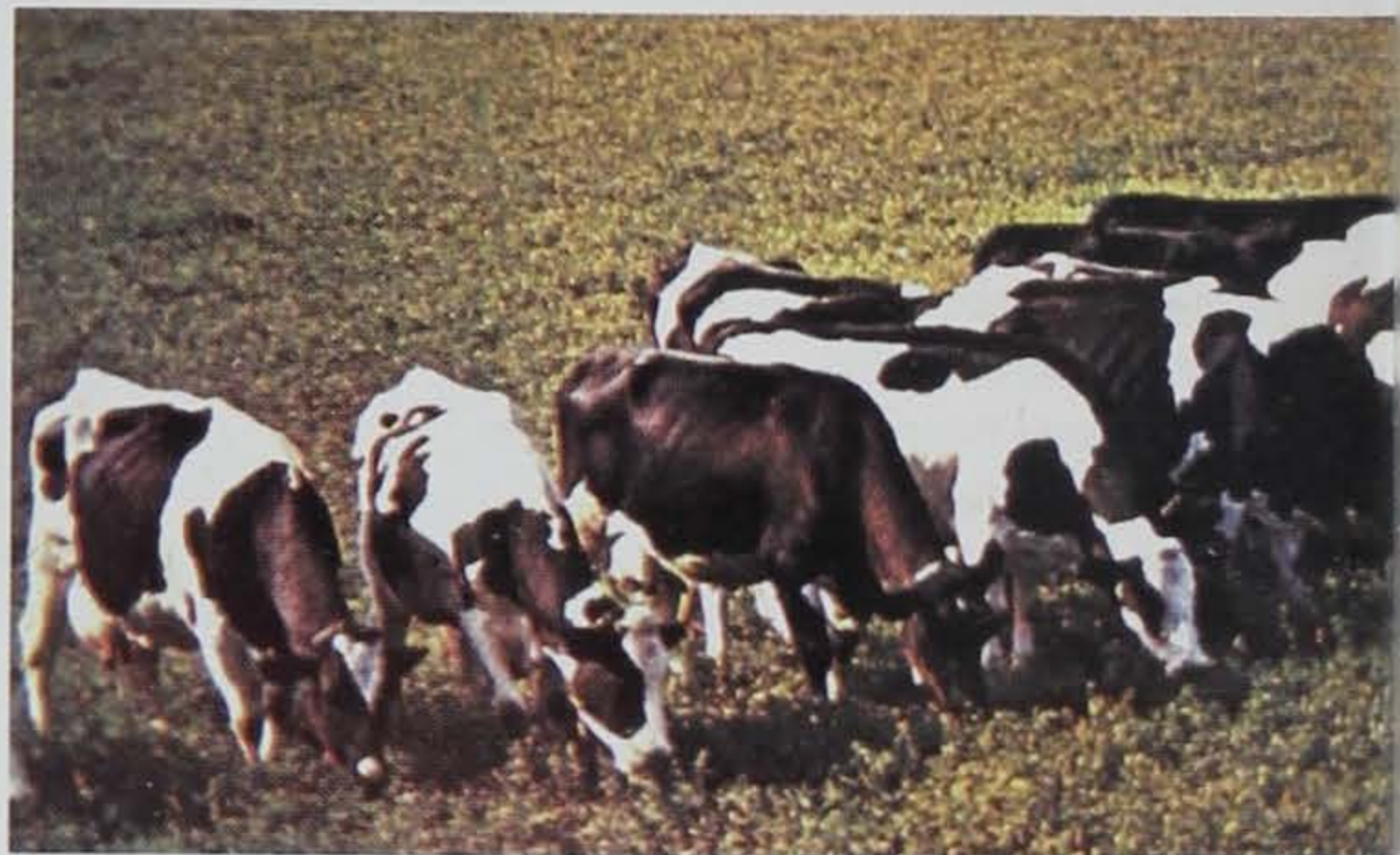
Nutrient and pest management programs will be implemented with emphasis on economic benefits using the services of area ag businesses and crop consultants (right).



Contouring, contour strip cropping (right), terraces, conservation tillage (no-till below), grassed waterways, grade stabilization structures and water and sediment control basins are all BMPs implemented at the Elk Creek Area Watershed Project.



Rotational grazing techniques including Manage Intensive Grazing (right) will be used to control sedimentation from pasture areas.



m



Agencies Involved:

- Delaware Soil and Water Conservation District with the cooperation of the
- Iowa Department of Agriculture and Land Stewardship, Division of Soil Conservation

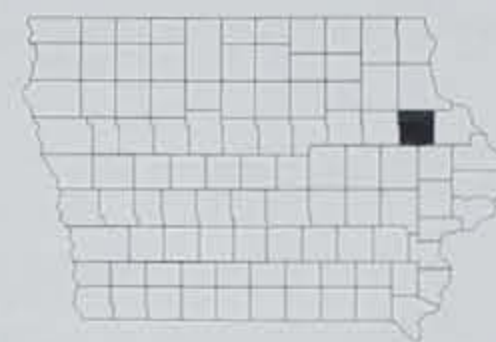
Funding Sources:

- US Environmental Protection Agency/Section 319 funds
- Iowa Department of Natural Resources/ Section 319 funds
- Iowa Department of Agriculture and Land Stewardship/Water Protection

Funds Partners:

- Landowners/operators
- USDA—Natural Resources Conservation Service
- Iowa State University Extension Service
- Iowa Department of Natural Resources- Fisheries and Wildlife Division
- USDA Farm Service Agency
- Hawkeye Fly Fishing Association

The Delaware Soil and Water Conservation would like to thank these agencies for their support of Elk Creek Area Watershed Project.



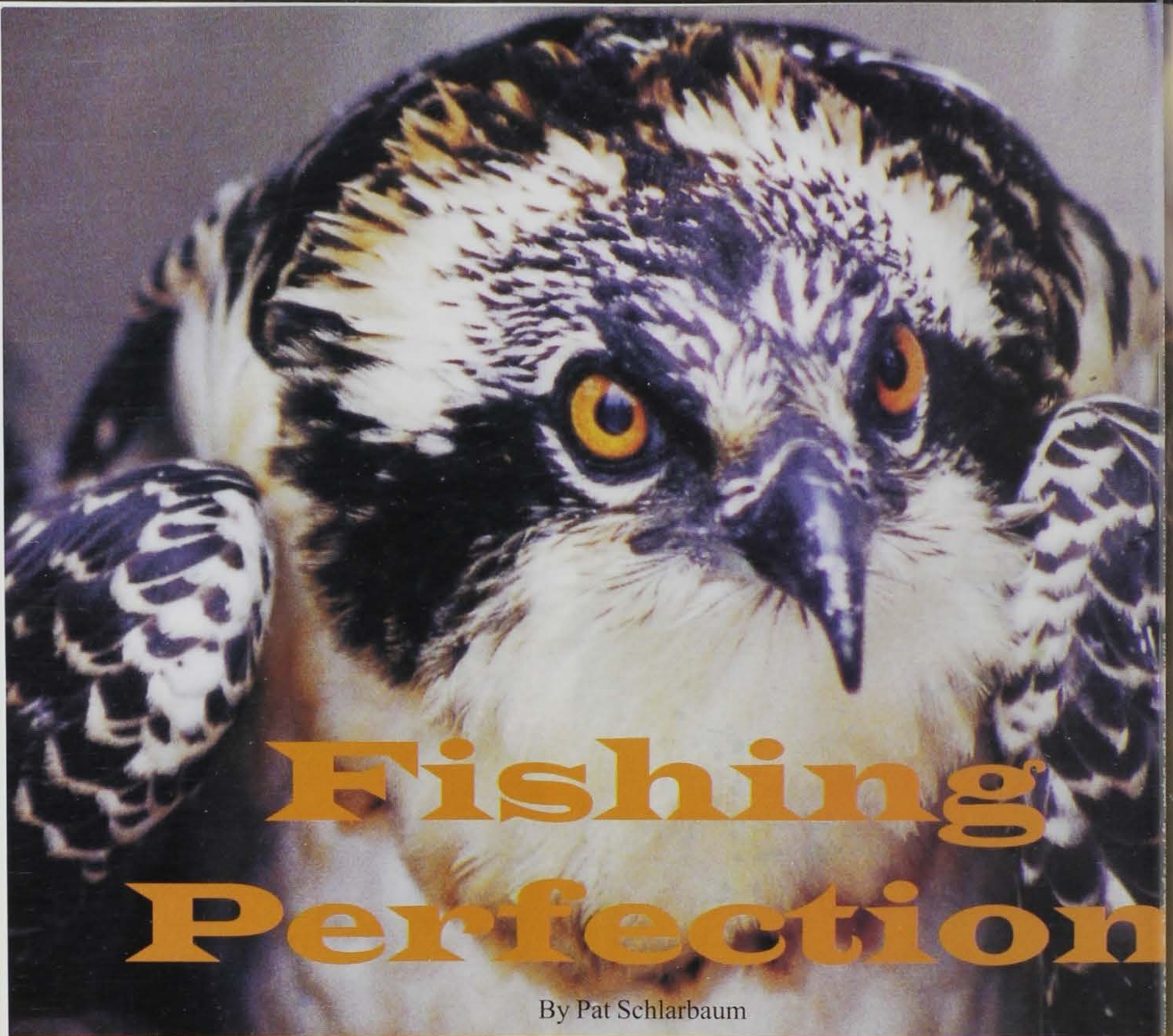
The Elk Creek Area Watershed Project is focusing on four separate watersheds in Delaware County.

Accomplishments to date at the Elk Creek Area Watershed Project include:

- streambank stabilization — 1,100 feet
- nutrient & pest management — 2,000 acres
- pasture management — 760 acres
- grade stabilization structures — 4
- grassed waterways — 8 acres
- notill acres — 500 acres
- terraces — 2,000 feet
- livestock exclusion — 131 acres
- tree planting — 4 acres
- timber stand improvements — 43 acres



Bio-engineering practices and riprap will be used to stabilize streambank erosion problems (above). Information and education will be done through news releases, tours (right), group meetings, newsletters, news media programs and demonstrations.



Fishing Perfection

By Pat Schlarbaum

Les Moeller

From 100 feet in the air the hovering angler folded its wings and silently slipped from the sky. Suddenly, a 4-foot section of the lake exploded into a spectacular plume of water droplets.

Immersed, the feathered predator floated to the sur-

face, struggling to emerge with a fish in its talons. A third, then fourth, labored wing-beat lifted the angler and its catch from the lake's surface. In a remarkable finale, the fishing raptor shook off the excess water, gliding ever so closely to the pool's shimmering edge. While positioning the fish

torpedo-style in its talons, the bird began stroking upward, its wriggling prey secured.

With efficient style, it had spied its quarry, and with amazing desire, just took it. Without so much as a hook or bobber, the osprey had put on an incredible display of "fishing perfection."

Ospreys are well-equipped for catching a meal. While humans have difficulty locating underwater targets due to water's refraction of sunlight, ospreys are quite the opposite. It's believed ospreys can pinpoint fish from as high as 150 feet above the water.

The osprey's pale-bluish talons are tipped with nature's finest fish hooks; claws sharp as needles. Their toes have roughened "spicules" or barbs to hold slippery fish. Their outside toes can swivel backward to join the rear toe or hallux, which allows the osprey to carry the fish head first to reduce wind resistance during flight. Flexible joints in their wing wrists or carpals (the middle of a bird's wing) allows them to lift from the water vertically. These unique abilities distinguish ospreys from any other raptors.

Ospreys, commonly called fish hawks or fish eagles, are neither hawks nor eagles. Actually, they are classified closer to the hawk-like kite family. There are four subspecies recognized worldwide. North America is home to two; one in temperate North America (including Iowa), the other in the Caribbean.

Ospreys are large narrow-winged raptors weighing between 2.5 and 4.5 pounds. They eat almost exclusively fish. Studies indicate a pair with two young needs four to five fish per day, and they typically target 5- to 12-inch fish. They are known to carry fish as far as five miles to remote nests.

Male and female ospreys are similar in appearance and size, although females tend to be 10 percent larger. Females have dark flecking on their chests, giving them the appearance of wearing a necklace. Immature birds have red/orange eyes, while adults' are yellow. A distinctive blackish-brown stripe extends across

the eye and down the side of the neck.

During flight, the osprey's wings angle back much like sea gulls, which is why the raptor is more often confused with gulls than hawks. Their wings are white with dark barring, and they have dark carpal patches at their wrists, which are conspicuous when viewed from below. Their call is a series of shrill, staccato whistles, gradually rising in pitch; *tewp, tewp, teelee, teelee, tewp*.

Ospreys build nests at varying

heights on any structure, natural or artificial, which provides a platform. They occasionally nest on or near the ground or on buoys over water. Nests are usually 1 foot deep, 4- to 5-feet wide, constructed of sticks and lined with grass. Visibility is apparently important since nests are built where there is a commanding view of the surroundings. They are usually located on prominent landforms, peninsulas or islands with few or preferably no tree branches higher than the nest.



Judy Voigt England

Ospreys typically build 4- to 5-foot wide nests of sticks and lined with grass where they have a commanding view of their surroundings. They usually lay three to four eggs in two- to three-day intervals.



Vanessa Greene

When confronted by predators, nestlings will lie outstretched and motionless. Although nests are made mostly of sticks, ospreys will use any similar material, hence the arrow shaft.

Ospreys lay three or four creamy white eggs, heavily marked with brown spots, at two- to three-day intervals in late May. The incubation period is 38 days from when the first egg is laid. Incubating is the prime responsibility of the female, although the male will occasionally sit on the eggs when the female is fishing. During the first 30 days, the male provides food for the female and brood while the female maintains constant supervision over the clutch, providing protection from predators, including raccoons, gulls, crows and owls, and the elements. When

Volunteers Making A Difference In Iowa Osprey Release Efforts

During the last 20 years, the number of ospreys migrating through Iowa has increased as breeding populations to the north have grown.

Despite the population growth, ospreys have demonstrated little breeding range expansion. Minnesota and Wisconsin DNR officials suggest ospreys, in our lifetime, will not readily pioneer new breeding ranges. To combat the expected trend, young ospreys from Wisconsin and Minnesota are being relocated to areas with suitable habitat in southern Minnesota, Iowa, Kansas, Missouri and Ohio.

The Iowa DNR has helped conservation partners successfully release ospreys in Iowa by providing technical assistance, encouragement and food for the birds. Spearheading the work is Jodeane Cancilla of the Macbride Raptor Project near the Coralville Reservoir. Beginning in 1997, four or five young ospreys have been released at the Coralville facility annually.

In 1998, Vern Fish of the Hartman Reserve Nature Center initiated a release at the Cedar Falls facility. Last year, Heather Freidhof and Joe Boyles of the Boone and Polk county conservation boards,

respectively, coordinated a release at Saylorville Reservoir. The U.S. Army Corps of Engineers has also assisted with releases at Coralville and Saylorville reservoirs.

These conservation organizations are devoted to bringing ospreys to Iowa as a nesting species. Fundraising is the responsibility of the organizations conducting the releases, which must cover the \$500 per-bird cost. They have done so with the help of hundreds of volunteers (a complete listing of the 321 volunteers to date is located at www.state.ia.us/government/dnr/index).

In Iowa, ospreys are fitted with two identification "bracelets" prior to release; a silver U.S. Fish and Wildlife Service band and a numbered, lavender DNR band. A four-year minimum commitment to releas-

predators are near, camouflaged nestlings lie outstretched and motionless.

At 42 days, young can tear apart fish provided by parents. Around 53 days, they take their first flight. The young quickly acquire fishing skills and gradually expand their range until dispersing in late August.

Researchers estimate 51 to 57 percent of the young die within the first year, while adult mortality is 16 to 20 percent annually. The average life span is 10 years.

Like other raptors, osprey numbers declined sharply beginning in the late 1950s due to the use of organochlorines such as DDT. The pesticides resulted in egg shells too thin to withstand incubation. Populations were severely reduced throughout their range, however the Great Lakes and Atlantic Coast areas were hardest hit.

Populations have shown a gradual increase since DDT and similar substances were banned in the United States in 1972. In 1981, 8,000 osprey pairs existed in the continental United States. By 1994, a national survey showed 14,109 pairs.

Tribal elders of the Omaha Nation, who have lived throughout northwestern Iowa for more than 1,000 years, have included accounts in their traditional stories of ospreys nesting along Iowa waterways. However, no successful osprey nesting has been documented in Iowa since European settlement. An 1892 report indicated a nesting may have occurred along

the Cedar River, but the unhatched egg was not recognized by the Iowa Ornithologists' Union as proof of a nesting.

Last year, two ospreys attempted to nest in northwestern Iowa. It is believed the pair came from ospreys released by the Minnesota DNR in the mid 1990s at Heron Lake in south-



Clay Smith

When released, ospreys are fitted with DNR and U.S. Fish and Wildlife Service bands.

ing ospreys is required at each site. With the help of conservation organizations and volunteers, experts expect a successful osprey nesting in Iowa this year.

Dr. Larry Rymon, noted Pennsylvania ornithologist who initiated osprey relocations along the eastern seaboard, observed 45 percent of the continental population nests upon artificial structures. Therefore, nesting platforms have been placed near all release sites for returning osprey to use.

Dan Hughes of Cedar Falls Utilities, Denny Kruehbel of MidAmerican Energy and Todd Deerfield of the Waterloo Leisure Services Division, have volunteered to top trees and place poles with nesting platforms within 20 miles of release sites. Nancy Schwendeman

from the Crow Wing Power Company of Minnesota assisted The Raptor Center of St. Paul in securing birds for Saylorville releases.

The First Step

In early July the availability of ospreys for relocation from Wisconsin and Minnesota is determined. When the birds are about 42 days old, nests containing more than one young are identified. Within hours, staff from The Raptor Center in St. Paul examine the "extra" ospreys to determine if they are suitable for relocation. When approved, the birds are driven to release sites and placed in carefully constructed release towers or "hack sites."

Hack sites are predator-proof 8-foot square structures with bars on the front to provide a view of the surroundings. The bars are removed when ospreys are released. Trained volunteers feed the young daily, making sure the birds do not imprint on people. By quietly viewing ospreys through one-way mirrored glass, detailed observations of each bird's temperament and condition are logged.



Clay Smith

western Minnesota, approximately 25 miles north of the nest. No eggs were laid, but it does give hope for future nesting success.

Male ospreys show strong loyalty to ancestral breeding areas, preferring to nest in colonies where the adults originated. Female ospreys may disperse

hundreds of miles from their origin, but males will generally return to within about 20 miles of their origin. Due to the difference in dispersal tendencies, young males are prime candidates for relocation.

There are numerous osprey sightings in Iowa during the summer, but these young, non-breeding birds apparently return to areas where they were reared for mating and nesting. However, with construction of lakes by the DNR and reservoirs by U.S. Army Corps of Engineers, potential osprey habitat exists where it was previously unavailable.

Volunteers have played an important role in the osprey release project in Iowa. At left, ospreys are raised to their new home atop an artificial nesting tower at Lake Macbride.

Pat Schlarbaum is a natural resource technician at the DNR's Boone wildlife research station.

When ospreys are approximately 53 days old, they are full-grown and have rapidly developing feathers. At that point, they are ready for release. The birds are actually heavier than they will be as adults, due to built-in fat reserves present until self-sufficiency is achieved.

Great care is taken to ensure the young are not startled into their first flight. Once they have flown, the birds' movements are monitored by volunteer spotters, either from shore or in boats. Young ospreys are better fliers, even on the first time out, than they are landers. As with other raptors, returning to a perch near the hack box can be a fatal learning experience for young

flyers. After the ospreys fledge, volunteers fish at the hack site until the birds begin fishing on their own.

The volunteer activities provide opportunities for families that enjoy the outdoors to connect with a

An osprey video and slide program are available from the DNR's Wildlife Diversity Program located at 1436 255th St., Boone, Iowa 50036; 515-432-2823

dynamic raptor. They can also trigger the need to be good stewards of the land. Volunteer efforts are moving this project, as well as other wildlife and habitat enhancement projects, forward. Ultimately, improving the quality of habitat will improve the

status of wildlife populations.

Ospreys can be thought of as "sentinels of clean water." They rely on fish for food, and fish need clean water. Fish need clean water, ospreys need clean water, we all need clean water. But clean water doesn't just happen. It requires conscious efforts from everyone. Like bald eagles, trumpeter swans, wetland mammals and a myriad of waterfowl, ospreys can be appreciated in all water quality endeavors while provide a rewarding environmental connection for Iowans.

Moreover, as a highly desirable watchable wildlife species, it's great to see "fishing perfection" in Iowa.

— P. S.

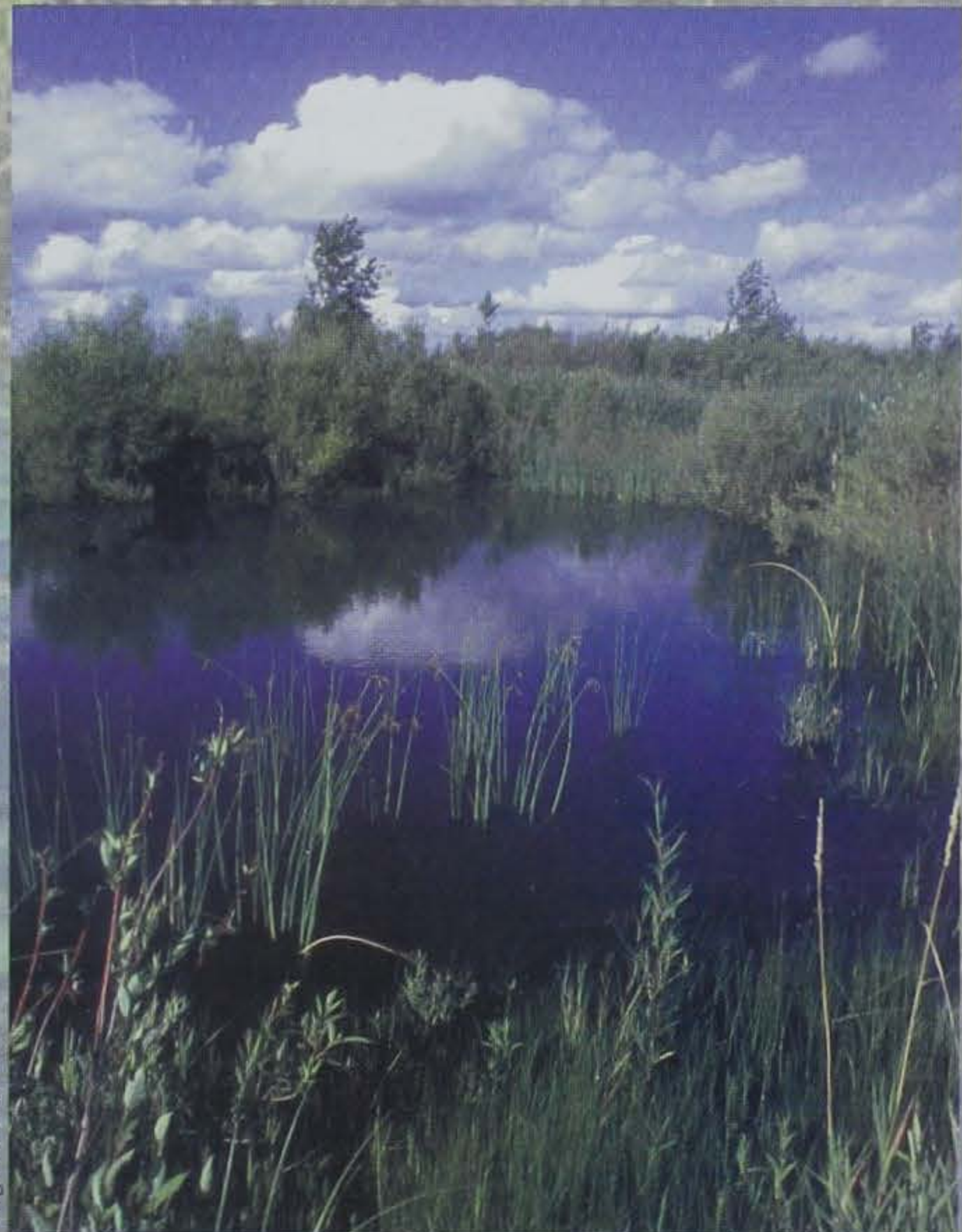
Identifying the Weeds in Your Pond

By Dick McWilliams

Every year fisheries biologists receive many telephone calls concerning weeds or aquatic vegetation in ponds. Most calls relate to controlling "problem" pond weeds. Vegetation in ponds is not always bad, and in fact some vegetation is desirable. In well-managed ponds with a balanced fishery, vegetation — and primarily rooted vegetation — provides cover for young fish, supports an abundance of aquatic insects, provides areas for foraging and supply oxygen for the pond. Fish tend to concentrate in and around the vegetation, and the "edge" line provides some of the best fishing areas in a pond. Many plants also provide food for waterfowl and other animals. How much vegetation is enough? Many feel vegetation should cover 15 to 20 percent of the pond's surface. Perhaps a better way to judge whether vegetation is becoming a problem is to determine if a larger percentage of a pond's surface is covered from one year to the next, indicating a growing problem.

What causes problems with vegetation? Sometimes problems with vegetation can be traced to improper pond construction. For example, if the slope of the pond is too shallow, there is an excessive amount of water two to three feet deep that is ideal for the growth of

many types of plants. More often vegetation problems result from an excess of sediment and nutrients running into a pond. Iowa's soils are rich, and runoff from the watershed, particularly uncontrolled runoff and erosion, carries nutrients and sediments into ponds. In many instances, ponds 10 to 15 feet deep when built become three to five feet deep after 10 to 20 years or less of uncontrolled runoff. As ponds become shallower, these newly created shallow waters are excellent places for vegetation to take root and grow. Excessive nutrients feeding into ponds from the watershed result in overabundant plant growth. Overabundant vegetation in ponds can result in more than difficult physical access or fishing



Roger A. Hill

problems, it can also lead to wide daily swings in the oxygen levels available for fish and other aquatic life. Under the right conditions this can result in oxygen depletion and summer fish kill.

If pond vegetation has become a nuisance, several factors need to be considered before beginning any chemical treatment. First, determine the size and water volume of the



Clay Smith

western Minnesota, approximately 25 miles north of the nest. No eggs were laid, but it does give hope for future nesting success.

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status of wildlife populations.

Ospreys can be thought of as "sentinels of clean water." They rely on fish for food, and fish need clean water. Fish need clean water, ospreys need clean water, we all need clean water. But clean water doesn't just happen. It requires conscious efforts from everyone. Like bald eagles, trumpeter swans, wetland mammals and a myriad of waterfowl, ospreys can be appreciated in all water quality endeavors while provide a rewarding environmental connection for Iowans.

Moreover, as a highly desirable watchable wildlife species, it's great to see "fishing perfection" in Iowa.

— P. S.

Identifying the Weeds in Your Pond

By Dick McWilliams

Every year fisheries biologists receive many telephone calls concerning weeds or aquatic vegetation in ponds. Most calls relate to controlling "problem" pond weeds. Vegetation in ponds is not always bad, and in fact some vegetation is desirable. In well-managed ponds with a balanced fishery, vegetation — and primarily rooted vegetation — provides cover for young fish, supports an abundance of aquatic insects, provides areas for foraging and supply oxygen for the pond. Fish tend to concentrate in and around the vegetation, and the "edge" line provides some of the best fishing areas in a pond. Many plants also provide food for waterfowl and other animals. How much vegetation is enough? Many feel vegetation should cover 15 to 20 percent of the pond's surface. Perhaps a better way to judge whether vegetation is becoming a problem is to determine if a larger percentage of a pond's surface is covered from one year to the next, indicating a growing problem.

What causes problems with vegetation? Sometimes problems with vegetation can be traced to improper pond construction. For example, if the slope of the pond is too shallow, there is an excessive amount of water two to three feet deep that is ideal for the growth of

many types of plants. More often vegetation problems result from an excess of sediment and nutrients running into a pond. Iowa's soils are rich, and runoff from the watershed, particularly uncontrolled runoff and erosion, carries nutrients and sediments into ponds. In many instances, ponds 10 to 15 feet deep when built

become three to five feet deep after 10 to 20 years or less of uncontrolled runoff. As ponds become shallower, these newly created shallow waters are excellent places for vegetation to take root and grow. Excessive nutrients feeding into ponds from the watershed result in overabundant plant growth. Overabundant vegetation in ponds can result in more than difficult physical access or fishing



Roger A. Hill

problems, it can also lead to wide daily swings in the oxygen levels available for fish and other aquatic life. Under the right conditions this can result in oxygen depletion and summer fish kill.

If pond vegetation has become a nuisance, several factors need to be considered before beginning any chemical treatment. First, determine the size and water volume of the

pond. These measurements, particularly volume, should be done using accurate measurements of length, width and depth. Don't guess at the size and depth of the pond. If sediments have filled portions of the pond, measurements taken when the pond was constructed will result in improper application of chemicals and unintended results. Another consideration includes pond water usage — is the pond water being used for livestock, drinking or irrigation; is the pond used for swimming; is the water contained in the pond or is there a constant outflow? Any of these uses may require a change in treatment or type of treatment. For example, sheep have little tolerance for copper, and drinking water containing copper sulfate may harm or kill the animals.

Second, determine what kinds or types of vegetation are causing problems. Many types of vegetation are found in ponds, and proper identification of problem weeds is critical to determine what, if any, treatment might be necessary. There are some broad categories that can help in determining what types of vegetation are present and help pond owners and biologists determine what treatment will be most effective in controlling problem vegetation.

Pond vegetation is broken down into four general types: algae, floating plants, submergent vegetation and emergent vegetation. **Algae** can be planktonic, filamentous or stonewarts. Algae can become major nuisances in ponds and probably results in most of the phone calls from pond owners.

Floating plants, as the name implies, float on the water surface. They do not root on the pond bottom.

Submergent vegetation is rooted in the pond bottom or grows under or

nearly under the water surface.

Emergent vegetation is rooted in the pond bottom and then extends above the water; examples are the familiar cattails and bulrushes.

Algal Plants: Planktonic, Filamentous and Stonewarts

Planktonic algae are very small, usually microscopic plants common in ponds. These plants often cause a green sheen in the water. Planktonic algae have varied shapes and colors (green, blue-green, yellowish-brown or reddish). If these plants become extremely abundant or "bloom," they are very noticeable, particularly following periods of little or no wind. During these periods, algae will rise to the surface of the water. A little wind can push the plants against a shoreline, or if the plant population is particularly dense, completely cover the surface of the pond. On windy days, the combined wind and wave action mixes the water and the plants are dispersed in the top few feet of water.

Filamentous algae is number one in terms of problems and complaints. Filamentous algae is often called pond moss or pond scum



Planktonic Algae

(dense planktonic algae is also often called pond scum). Filamentous algae can appear as long stringy web-like plants in the pond, can look like cut grass trimmings, or can grow along the pond bottom. In most instances, problems occur when the plants grow and form mats. The mats literally form a ring around the pond, or large mats float across the pond surface. When matting occurs, the tops can be pushed above the surface of the water. This top portion dies and often turns a yellowish color. The mats can be raked from the pond, but since they are not solid they often break up during raking.

Stonewarts often resemble rooted plants due to their branching and substantial vegetative growth and generally are not a major nuisance in ponds.

Control: Algae can be controlled using copper sulfate products. Not all fish are tolerant to copper sulfate and care needs to be taken in determining dosage levels. Caution should be taken if algae populations are extremely high, since decaying plants can cause rapid depletion of oxygen and result in a summer fish kill. This is particularly true in late summer when water temperatures are high. Warm water has less ability to hold oxygen than cold water, and consequently oxygen



Filamentous Algae

depletes faster during the hot summer period. Overuse of copper sulfate can also result in the formation of a precipitate that settles out on the pond bottom and interferes with the productivity of the pond. Toxicity of copper sulfate increases with low pH and/or low total alkalinity. In most areas of Iowa, ponds fed by surface runoff have good pH and alkalinity and toxicity should not be a problem.

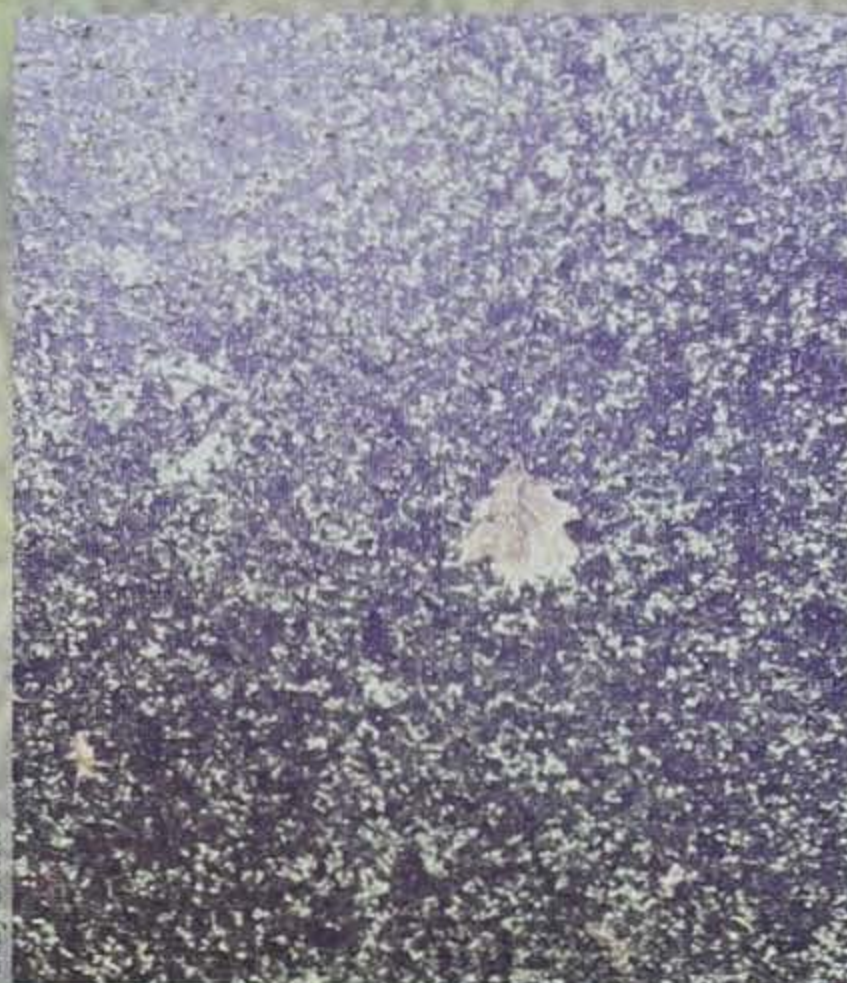
NOTE: Before using copper sulfate or any chemical, check and follow the labeled instructions, and check to see if chemicals are approved by federal and state regulations.

Floating Plants: Watermeal, Duckweeds

Watermeal and duckweed are the floating plants that cause most of the problems in ponds. Often found together watermeal and duckweed are small plants generally lime-green in color. Watermeal and duckweed populations can expand rapidly and completely cover the surface of a pond. Like algae, wind action can push the plants to one side of the pond or another. Watermeal is very small and can be described as floating grains of sand. A key characteristic of watermeal is the lack of roots on the bottom of the plant. There are a number of different species of duckweeds, but they are generally larger than watermeal, about the size of an pencil eraser or larger. Duckweeds also have small whitish roots dangling from the bottom of the plants.

Control: Duckweeds and watermeal can be controlled using diquat. Other successful chemicals include fluridone and 2, 4-D (ester-based). Ester-based formulas are toxic to fish, and care should be taken when using them.

Duckweed



Clay Smith

Submergent Plants: Coontail, Milfoils, Naiads, Pondweeds

There are several types of submergent vegetation usually present in ponds. Although normally beneficial, submergent vegetation, particularly sago pondweed, can become a nuisance under the right growing conditions. Sago pondweed belongs to a large group of submergent plants known as Potamogetons.

Potamogetons include the Illinois, American, floating leaf, variable leaf, small, curlyleaf, leafy, large-leaf and flatstem pondweed. While pondweeds are submergent, several kinds have leaves that lay on the surface of the water, such as the Illinois pondweed, and give the appearance of floating plants. These plants have a wide range of different characteristics. Leaves can be narrow to very large and straight or

curly. Sometimes the base of the leaves extends around the stem of the plants, while in other species the leaf base is very narrow. Identification of pondweeds can be difficult. Determining which species is present often requires a botanical key.

Another common submerged plant is coontail. Coontail gets its common name from the crowded leaves on the upper stem, resembling the bushy tail of a raccoon. The plants can form roots, but also grow well without them. Coontail often grows in dense tangled masses floating free in the water. The stems of the plants can reach six feet or more, and the stems are easily broken. The weak stem characteristic is the reason anglers often find coontail attached to lures. Several other submerged plants are often confused with coontail, including watermilfoils and *Elodea*.

Watermilfoils are another group of submergent vegetation in ponds.

Sago pondweed



Clay Smith

Resources for Additional Research

There are a number of resources and reference materials available for pond owners and others interested in vegetation management. A series of publications is available through the Iowa State University Extension, on pond management and vegetation control. Other publications of interest may include: *Water Plants for Missouri Ponds* by James R. Whitley, et. al. (Missouri Department of Conservation), and *Wetland Plants and Plant Communities of Minnesota and Wisconsin* by Steve D. Eggers and Donald M. Reed (U.S. Army Corps of Engineers).

Information on vegetation identification and control are also available through a number of web sites:

Aquaplant (A Pond Manager Diagnostics Tool): <http://wildthings.tamu.edu/aquaplant/>

Aquatic, Wetland and Invasive Plant Particulars and Photographs: <http://aquat1.ifas.ufl.edu/photocom.html>

Northern Prairie Wildlife Research Center: www.npwrc.usgs.gov/

Aquatic Plant Management Society: www.apms.org/

Help in plant identification and control is always available through DNR fisheries biologists. A list of fisheries stations can be found in the *Iowa Fishing Regulations* and also available through the Iowa DNR fisheries management offices web site: www.state.ia.us/dnr/organiza/fwb/fish/offices/manage.htm.



A. Murrey Center for Aquatic and Invasive Plants, University of Florida

Illinois Pondweed

Eurasian watermilfoil is an exotic plant causing major problems. Eurasian watermilfoil can quickly crowd out more desirable plants and completely take over the pond. When infestations of Eurasian

watermilfoil are found in Iowa, the entire lake is treated to kill the existing plants. Despite the fragile look, Eurasian watermilfoil is quite hardy. Plants are commonly spread by anglers and boaters transporting plant fragments from water to water attached to or in boats and trailers.

Elodea, another common plant in ponds, has long, tangled stems crowded with fairly narrow leaves along the stems. It can either be rooted or free-floating and is often found in large masses. Like watermilfoils, *Elodea* is most often spread through plant fragments. A characteristic of the common *Elodea* is the blade-like leaves in groups of three, in contrast to coontail and other similar plants.

Naiads are always attached to the pond bottom, and grow completely submerged. The plants have delicate, narrow threadlike leaves in pairs or groups of three. Naiads reproduce either by seeds or plant fragments. Like other problem vegetation a dense stand can grow from the bottom to the surface and make fishing almost impossible.



Clay Smith

Coontail

Control: Submergent vegetation in ponds may be controlled by white amur (grass carp). Stocking densities of white amur depend on what types of vegetation are present and how severe the problem is. After stocking, it will take one to two years before control is established, and the fish may need to be restocked every four to six years. If large predators such as largemouth bass are present, larger (eight- to 10-inch) white amur are recommended. It is easier and cheaper to stock fewer fish; for example, stock two to four fish per surface acre to start and then add additional fish several years later if more control is needed.

Chemical control of submergent vegetation: Diquat, in combination with copper sulfate is one of the more effective combinations for control of submergent aquatic vegetation. The amount of chemicals required should

be determined carefully, and the chemical used must be approved for aquatic use.

Emergent vegetation

Most emergent vegetation in ponds do not cause problems. Occasionally, cattails and/or bulrushes can limit access to the pond and need some type of control. Cattails have long slender grass-like stems with the well-known brown fruit. Bulrushes have triangular- or round-shaped stems, with clusters of flowers or seeds at the end of the stem.

Control: Physical removal of bulrushes and cattails are effective in controlling these plants. Diquat or a glyphosphate compound approved for aquatic uses can also be highly effective in controlling these plants.



Clay Smith

Cattails

While biological or chemical treatment of problem vegetation is effective, the long-term solution to problem vegetation in ponds is twofold. First, new or reconstructed ponds should be built so the basin slope is steep enough (2:1 ratio) to confine the vegetation to a smaller area around the pond. Second, control the amounts of sediment and nutrients coming into the ponds from the surrounding watershed. Unmowed (unfertilized) grass, brush and trees help filter both sediments and nutrients. While overabundant vegetation in ponds can cause problems, vegetation in ponds is important for the health and well-being of the entire aquatic community and is an important source of oxygen for fish and all aquatic pond life.

Dick McWilliams is a fisheries biologist for the department at Boone.



Courtesy of Texas A&M



Courtesy of Texas A&M

Naiads (top left); *Elodea* (left) and Eurasian watermilfoil (above).





Jon Christensen

DROP ANCHOR

Lake Macbride's Hidden Treasures

By Jon Christensen

On that early fall day, about 20 people looked on as the pages of eastern Iowa history were turned back. With the turn of a large hand crank, the underwater valve on Lake Macbride dam opened, and the lake slowly began to drain. The task of

lowering the lake 15 feet for renovation had just begun.

My co-workers and I stood on the dam and stared down at Coralville Reservoir where the water from Macbride would soon drain. At first there were small bubbles as the 40-year-old valve was turned. Soon, larger ones floated to the surface.

It wasn't long before a thick,

muddy ooze belched from the pipe. It was as if someone had opened Pandora's Box. The blob, black as oil, grew larger and larger, eventually surrounding the boats of anglers who paused on Coralville Reservoir to watch the historic moment.

Suddenly, as soon as the hideous black blob appeared, it was gone. The muddy muck disappeared as

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Macbride pumped its cleaner water through the valve. In the days to follow, the treasures Macbride had kept hidden for all those years were unveiled.

The Civilian Conservation Corps began constructing Lake Macbride in 1933 and finished in 1937. At the time, it was a mere 200 acres. The creation of Coralville Reservoir, however, would eventually change Lake Macbride — greatly.

Although Coralville Lake was authorized in 1938, construction of the dam didn't begin until 1949. It wasn't completed until 1958, due in part to a delay created by the Korean Conflict.

In 1956 Lake Macbride was drained, and the dam raised 28 feet to separate the two lakes. The new dam was completed in 1957, and by January 1960, the "new" 812-acre Macbride was full.

Over the last 40 years, however, Lake Macbride has showed signs of age. Wind and waves have eroded shorelines. Silt has taken over much of the shallow upper end. Some banks have become unstable, and certain trails near the lake rendered unusable. The old lake needed repair.

Restoration and repair began last fall and is scheduled to be completed early this year. The lake was drawn down 15 feet to stabilize shoreline banks with rock and construct fishing jetties, underwater reefs and rock spawning areas to deter wave erosion. The additions will also serve as fish habitat. Silt dams will also be constructed across the north and



Paul Sleeper

After the valve was opened, water from Lake Macbride slowly discharged into Coralville Reservoir.



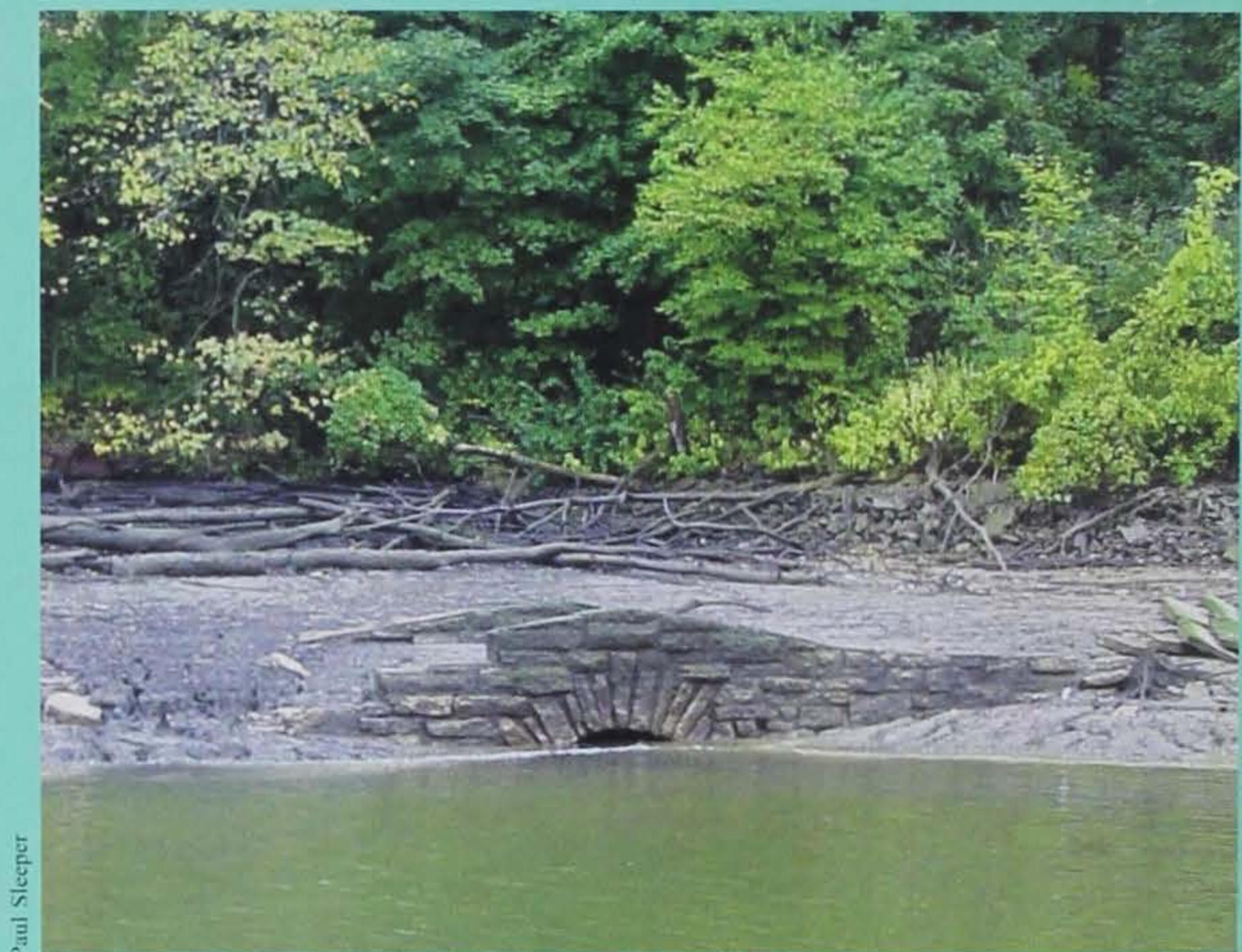
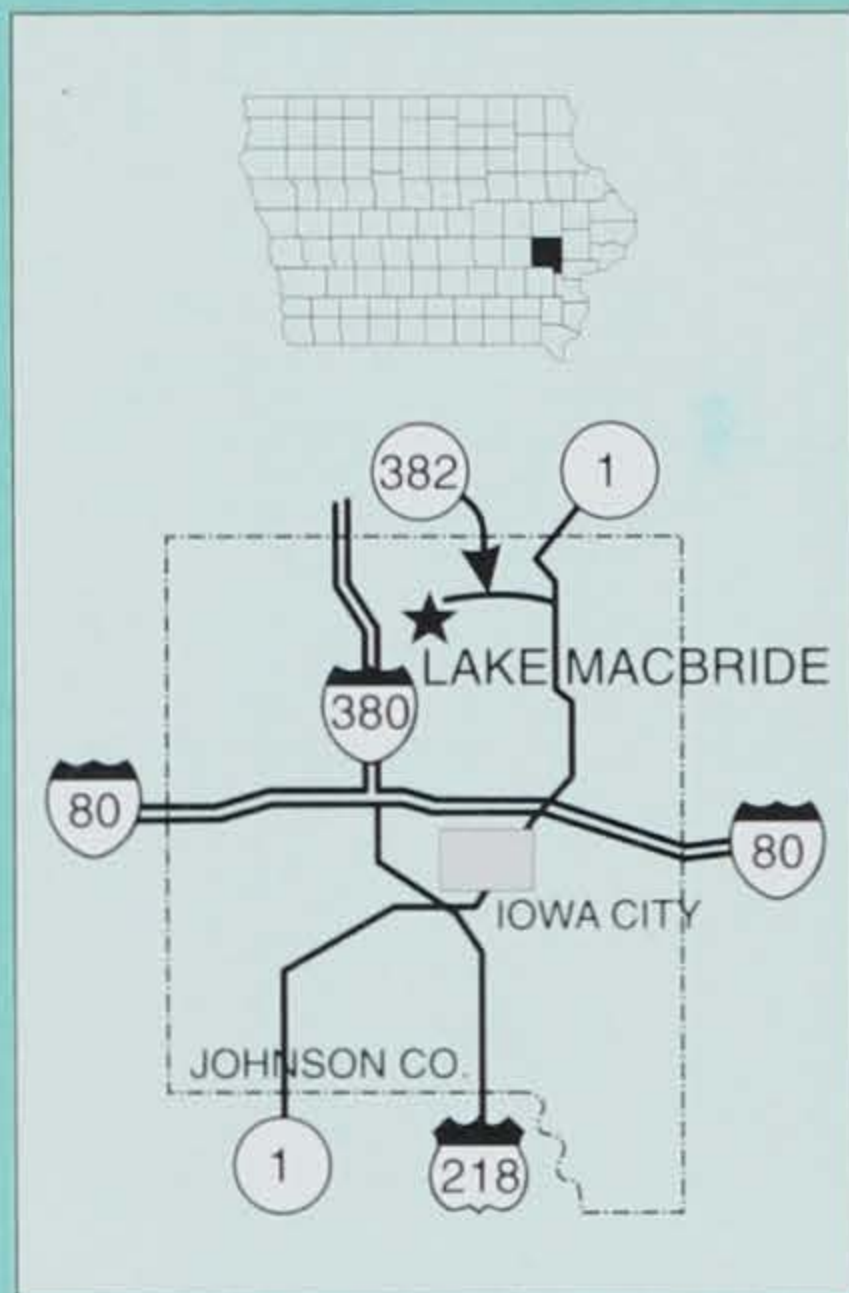
Paul Sleeper

Old anchors were discovered tangled in the limbs of old stumps. Various other artifacts were uncovered as well, including pottery fragments, jewelry boxes and fishing poles.

south arms. Many of the trails and boat ramps will also be improved during the project.

Before construction could start on the \$2 million project, much planning and work needed to be done. The

fisheries, parks and engineering staff of the Iowa Department of Natural Resources (DNR) discussed renovation improvements. Contractors and surveyors were brought in to work on the project. Once the lake was



Paul Sleeper

An old limestone bridge was revealed as Lake Macbride drained for renovation.

drawn down archaeologists were hired to document and collect artifacts from the exposed lakebed.

To many, the exposed lakebed was a muddy, stinking mess. Others though, found beauty hidden among the mud and muck. Archaeologists uncovered artifacts of past cultures that once inhabited the area. Frag-

ments of pottery, scrapers and arrowheads were found in the sediment. Hobbyists came with metal detectors hoping to find old coins, rings and other valuables. As the lake lowered, many people came to reminisce about and look over an old limestone bridge, beach site and foundations of the old Moose Lodge and bathhouse.

Lake Macbride's DNR staff was also busy on the lake, taking water measurements and identifying areas to place riprap and fish habitat on the newly exposed lakebed. Employees and approximately 600 volunteers picked up 20 tons of trash that had accumulated in the lake over the years. Other objects drew attention: a holster and ammunition for a revolver, jewelry boxes, fishing poles and old crankbaits.

Most interesting, however, were the anchors. Lost anchors were found almost everywhere. At times the drying lakebed resembled a graveyard for the old relics. Most were entangled in the stumps exposed as the water level dropped. The stumps had trapped the anchors, stealing them from Macbride's anglers and boaters who unwillingly left them behind. Hundreds of anchors were lodged in the gnarled crags of the old roots. Others were found buried deep in the mud, among

A mass of old anchors found in Lake Macbride. Many of the anchors were homemade, crafted from any supplies available, including gears, hubcaps and anvils.



Jon Christensen

limestone habitat shapes, manufac mushrooms iron wh The old seemed modern



Clay Smith

Lake Macbride was lowered 15 feet to stabilize shoreline banks with rock and construct fishing jetties, underwater reefs and rock spawning areas. The process will be completed this spring.

could serve as an anchor. Many people made anchors out of old disc blades, large gears, angle iron, rims, hubcaps, props and even a receiver hitch and an old anvil. Some were made of stainless steel, aluminum and lead poured into molds. Pieces of iron welded together resembled medieval weapons. Window weights and coffee cans filled with cement were also popular.

Anchors serve a simple role for boaters and anglers; to hold a floating vessel in place. Anyone who has spent any time on the water knows how important they are. The shapes, sizes and designs of an anchor are nearly endless. Anchors can be as simple as a cinder block on a rope or more complex, with elaborate release mechanisms and hinged parts to bite into the lake bottom.

The discoveries show boat anchors have evolved over time, something to think about the next time the captain orders "Drop anchor!"

limestone outcroppings and old fish habitat structures.

The anchors came in various shapes, styles and sizes. Most of the manufactured anchors were the mushroom and river style; many were iron while others were rubber coated. The older manufactured anchors seemed more complex than their modern cousins; some of the older

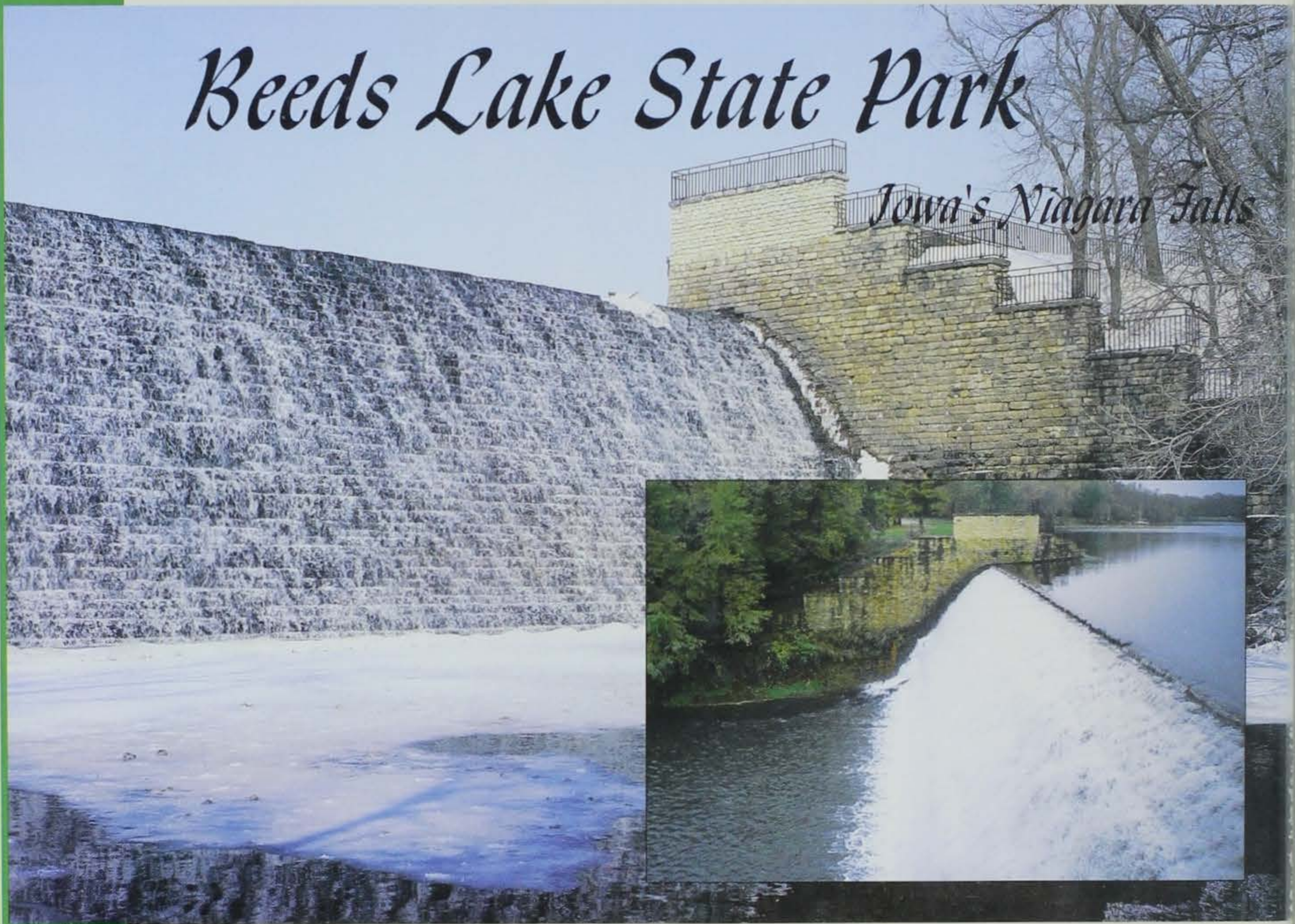
anchors resembled grapples with locking collars and spring release mechanisms.

The homemade anchors were the most interesting and unique. Each seemingly told a story about the people who once used them. Each anchor offered a hint about the trade and talents of its owner. We realized with a little imagination, about anything

Jon Christensen is a fisheries management technician at Lake Macbride fisheries station.

PARKS PROFILE

Beeds Lake State Park



Main photo by Ken Formanek. Inset photo is a DNR file photo.

By Dennis Ewers

The scene is mesmerizing. Great volumes of water, fighting a losing battle against gravity, cascades in a shroud of mist down a 40-foot wall of protruding limestone. The waterfall, 170 feet wide, serves as the outlet for

The intricate detail of the limestone is what makes the Beed's Lake dam unique.

Beeds Lake in Hampton. Peer behind the sparkling waterfall, however, and there is a story rich in history.

It begins with T. K. Hansberry, who built the initial dam in 1857 to supply water for a sawmill, and later a flour mill, on Springbrook Creek. In 1864, he sold the mill and 30-acre lake to William Beed, a Hampton businessman.

Beed operated the mill successfully for 40 years before

closing in the early 1900s when corn became more popular than wheat. During that time, Beed built a causeway spanning the lake which, today, is one of the park's focal points. Once closed, the mill, dike and causeway deteriorated. Reminders of the mill can be still be found east of the campground.

On May 13, 1916, Henry Pullus bought the land, demolished the mill and drained the lake. The land was converted to pasture and row crops.

However, the Izaak Walton League and citizens of Hampton wanted a lake and wildlife center (which never materialized). The former Beed's property emerged as a perfect choice. The league and community purchased the 25-acre property and transferred it to the state in 1934.

That same year, a terrible drought struck the United States, turning the great plains into a dust bowl. To combat the economic and social turmoil of the Great Depression and the drought, the federal government formed the Civilian Conservation Corps (CCC).

Company 2717 was formed in July 1934 to construct the dam and park facilities at Beeds Lake. The park was opened to the public June 2, 1938. The dam was built across a natural gorge and nearly enclosed the valley, transforming land that was once pasture into a 100-acre lake.

The CCC also constructed the park ranger's house, service building, a stone rest room in the camping area, the concession building, the bridges on the causeway and fish rearing ponds. Approximately 6,000 donated pine trees were planted along the shores of Beeds Lake.

Over the years, numerous improvements and updates have been made to the facilities. The concession building was converted to a lodge in 1998 with funds from the Restore The Outdoors program. A kitchen facility, dining area and modern rest room were added. The lodge, a popular place for family reunions, weddings and social gatherings, offers a panoramic



DNR photo

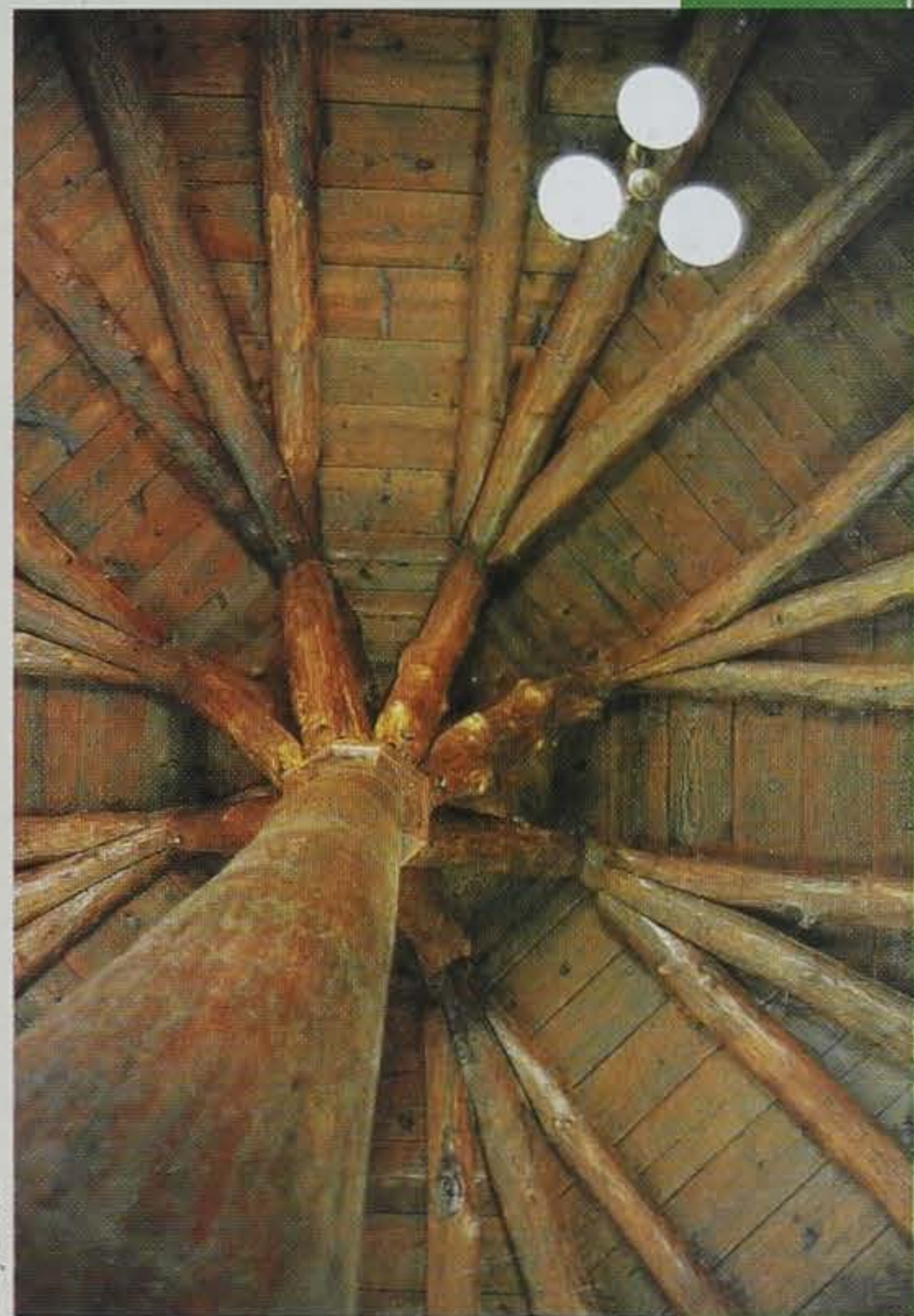
view of the lake. Rentals are handled through the concessionaire, MD's Lakeside Stop.

The campground has 70 electric and 74 nonelectric sites. Several are located next to the lake shore, providing easy access to a dock and fishing jetty. All electric and most nonelectric campsites are level and accommodate the largest camping units. A playground is located within the campground.

Although Beeds Lake has

ABOVE: The causeway and connecting bridge are popular with shoreline anglers.

RIGHT: A view of the lodge's center pillar shows the elaborate interior woodwork.



Clay Smith

PARKS PROFILE



Angela Cornio



Angela Cornio

The above photos show the backside of the lodge before and after renovation. Although the lodge underwent extensive restoration, the original integrity of the building was kept intact.

been drained three times for fish and dam restoration — in 1946, 1971 and 1982 — it remains a popular fishing spot. Crappies, bluegill, largemouth bass and catfish are plentiful, and don't be surprised if a big northern pike strikes.

Hiking and picnicking are available throughout the park. A two-mile trail around the lake passes below the cascading spillway. Waterfowl and other wildlife are abundant, especially near the west end of the trail. Resident geese are seen on the causeway daily.

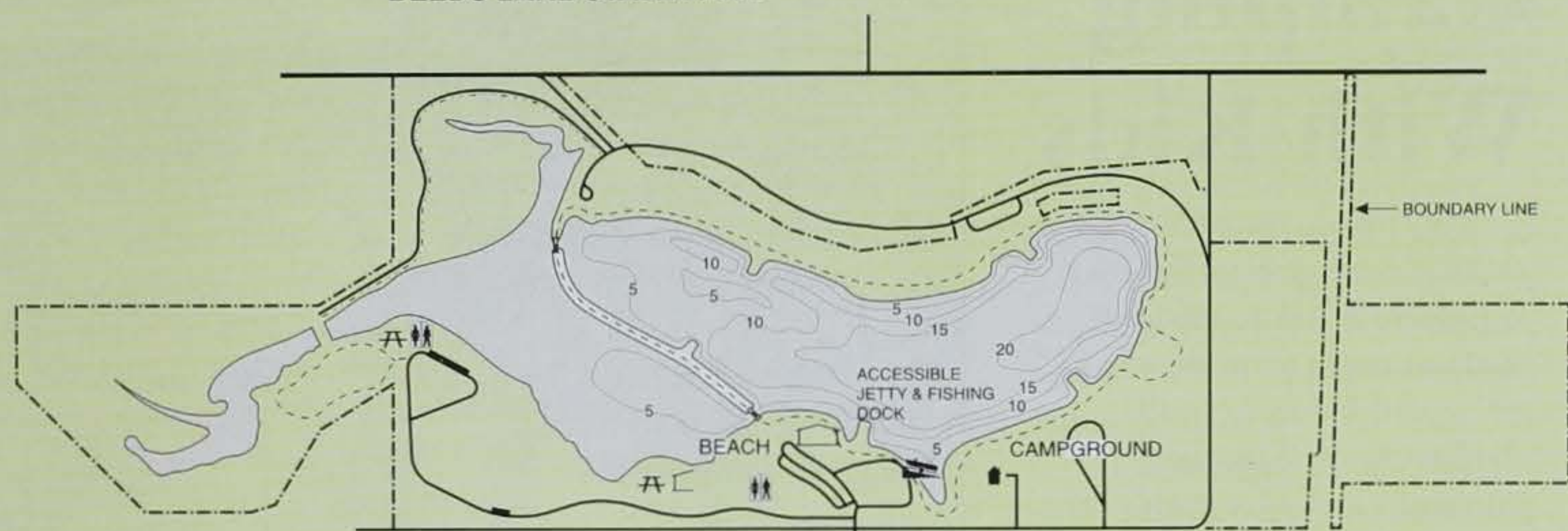
Beeds Lake has five fishing jetties, a fishing pier and the causeway (old dike), which are popular places to spend the day catching dinner. The pier and jetty on the lake's south side are handicap-accessible. Boats and motors of any size are allowed at "no wake" speeds. Bait, tackle, firewood, boat rental and snacks are available through the concessionaire.

The beach area is often busy with children swimming, while parents relax and supervise or test their skills on the barbecue grills. Hampton is only three miles away and offers quick access to a variety of shopping, including antique and gift shops.

Come enjoy the weekend or just the day at one of northern Iowa's favorite areas where there is always something for everyone.

Dennis Ewers is the park manager at Beeds Lake.

BEEDS LAKE STATE PARK



BEEDS LAKE AT A GLANCE

GENERAL INFORMATION: Approximately 320 acres. Causeway near lodge stretches across the lake. 170-foot spillway with horizontal layers of limestone abruptly drops 40 feet.

LOCATION: Located three miles northwest of Hampton; 1422 165th Street, Hampton, Iowa 50441

FISHING: 100-acre artificial lake containing largemouth bass, catfish, crappies, bluegills and northern pike. Handicap-accessible fishing jetty and dock located on south shore.

CAMPING: Modern campground, handicap accessible with 144 camp site sites (70 with electric). Modern rest room and shower facilities; sanitary dump station. Self-registration.

TRAILS: Two miles of multiuse trail.

PICNICKING: Shady and grassy picnic areas. Open shelter available first-come, first-served. A second open picnic shelter available for rent.

LODGE: Stone and timber beach building converted to rental lodge with dining areas, kitchen and rest rooms.

SWIMMING: Beach located on south side near the lodge; 300 feet of beach front.

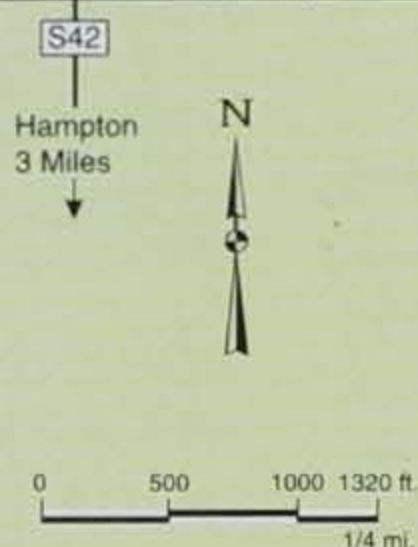
BOATING: Modern boat ramp on south shore. Boats with unlimited motor size operated at no wake speed allowed.

CONCESSIONS: MD's Lakeside Stop open 7 a.m. to 7 p.m. daily. Concessionaire handles reservations for lodge and open picnic shelter; paddle boat, canoe and fishing boat rental. Snacks, pop, firewood, ice, bait and tackle available for purchase.

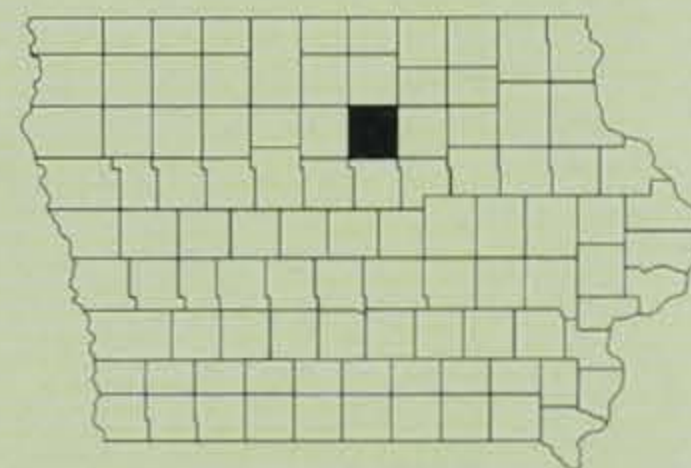
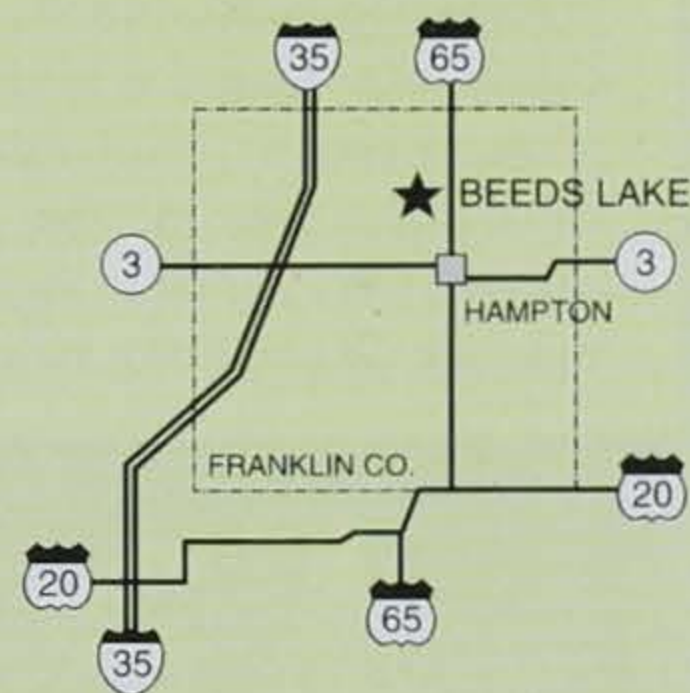
FUN FACTS: In 1857, T. K. Hansbury built the first dam to supply water for a sawmill. Two years later, water power was used to operate a flour mill. William Beed put in the causeway when he bought the property and operated the mill until 1903.

SPECIAL EVENTS: Annual Fourth of July fireworks display.

CONTACT: Concessionaire at (641) 425-6899 or (641) 892-4315 for lodge, picnic area reservations; (641) 456-2047 for general information.



- PARK RANGER
- ⌘ PICNIC AREA
- ♣ REST ROOM
- ▭ LODGE
- ▭ SHELTER
- ⚓ BOAT RAMP
- HIKING TRAIL
- MULTI-USE TRAIL
SNOWMOBILE
HIKING



CONSERVATION 101

Camping With Kids

Any trip or vacation with children is an adventure waiting to happen. A trek to the great outdoors might seem too adventurous with babies or small children, but with the right planning, camping with kids can be a great experience.

The single greatest way to ensure everyone enjoys the outing is involve the children in the process, from planning the trip to preparing the meals. Children who feel included in the decision-making will get more out of the outing, and the entire family will have a much better time.

Meals can be as simple as hotdogs and macaroni and cheese, or as unique as grilled pizza. Either way, involve the children. Let them mix the pancake batter, or build their own foil pack dinner. Make sure to

Interpretive Programs in State Parks and Preserves

For the first time in 60 years, seasonal naturalists were at work in Iowa state parks last summer—leading hikes, giving campground programs, organizing scavenger hunts and nighttime star walks, as well as a host of other interpretive events. An estimated 20,000 visitors learned about natural resources

through the nearly 600 programs.

Iowa's 80 state parks and recreation areas are living classrooms. Visitors of all ages can learn about Iowa's natural communities, water and air quality and how to improve the environment. Interpretive programs are expected to expand this year.

2001 Highlights:

- 12 seasonal naturalists
- Two full-time regional naturalists, employed by AmeriCorps
- Volunteers bringing enthusiasm and unique skills

incorporate s'mores, banana boats or "hobo" pies (see Kids Corner, 56-57) into the campfire ritual.

Playing outdoors — all day — can be physically demanding, so bring a variety of snacks. Make sure to have at least one gallon of water per person per day.

When packing for the trip, be prepared for all types of weather. Pack clothes to keep children comfortable in cold, heat, rain,

sunshine, briars and bugs.

A first aid kit and prescription medicines are essential. Be

Children can get bored if they don't have enough to do. Pack the kids' bikes whenever possible.

prepared for cuts, bumps, stings and bruises, and know how to treat extreme ailments such as heat exhaustion and hypothermia.

Make camping a learning experience. Take a walk along the trail, or for a little more adventure, explore deep into the woods. Along the way, point out interesting plants, flowers, insects, wildlife and rocks, and see who can identify them. Explain the dangers of poisonous plants and disturbing the natural surroundings. Take along field guides, preferably with pictures. If the park offers an interpretive activity (see above), take advantage of it.

Above all, establish that safety comes first. Set rules about the campfire, cook stoves and checking in, and make sure children are always monitored when they are near water or park roads.

Camping with kids requires a little more foresight and preparation, but it can be a rewarding and educational experience for the entire family.



Ken Formanek

Eggshell Sidewalk Chalk

- 6 eggshells
- 1 tsp very hot water from the tap
- 1 tsp flour

The eggshells should be washed and dried well. Grind the shells into a fine powder, making sure the grinding tool is clean. Remove any shell fragments that are not ground up and set powder aside. Mix the flour and hot water into a paste. Add the egg shell powder, about one soup spoon per stick, and mix well. Shape the mixture into a chalk stick and wrap in a paper towel. Let dry for three days, and peel the paper off one end to use.

Bargain Bubbles

There are about as many bubble soap recipes as there are utensils for blowing them. All have varying ratios of soap to water. Some add glycerin to help form and strengthen the bubble, while others call for corn syrup or cooking oil. One thing remains constant; all can be made quickly and economically with ingredients commonly found in the house or easily purchased. Below are two common recipes, with tips on how to "get the most out of your bubbles."

Recipe #1

- 1 cup dish soap
- 3 cups water
- 1/4 cup white corn syrup

Recipe #2

- 1/4 cup dish soap
- 2 cups water
- 1 T glycerin

Mix ingredients well. Use commercial bubble wands, or fashion one from a coat hanger. Take a clothes hanger and untwist. Use heavy tape, such as duct tape, to tape the ends. Shape the hanger into a circle, diamond or other shape, leaving one end straight for a handle. Make sure to tape any unsecured ends that could cause injuries. Dip the hanger in the mixture and have fun.

Bubble Tips

- Recipes can easily be doubled or tripled.
- For best results, let mixture set for at least four hours before using.
- For larger bubbles, wrap the wire with material, such as cotton or rope, to absorb more of the mixture.
- For colored bubbles, add a few drops of food coloring
- Dip the wand gently in the mixture; don't agitate.
- Experiment with ingredient quantities and soap brands (ultra versus regular) to produce the best results.

Parental "Survival" Pack

Iowa campgrounds are packed with things to do, from swimming and boating to fishing and exploring. However, when children get bored, which can often happen, packing a few toys and games can help fill the days, and salvage patience at the same time. Make sure to pack at least a few of the following items:

- Football, soccer ball, beach balls, whiffle balls and plastic bats. Avoid smaller balls that could get lost in the weeds or brush. Make sure balls are contained within your own campsite or open space.

- Board and card games. Nothing spoils a day (and stretches patience) quicker than a rainy day inside with nothing to do.

- Bikes are a fixture at state parks. If nothing else, at least make room for the kids' bikes.

- Bubbles/sidewalk chalk: (see bubbles and chalk recipes). Find a "concrete canvas" away from park traffic, and refrain from drawing on benches, picnic tables, buildings and other park fixtures.



Clay Smith

KIDS CORNER

State Park Trivia

- Which state park is named for a champion wrestler?
- What was Iowa's first state park?
- Where is Iowa's largest natural bridge?
- Which is Iowa's newest state park?
- Which three Iowa state parks are located in the unique "Loess Hills?"
- Which state park contains a landmark used by pioneers crossing the Iowa prairie in the mid-1800s?
- Which state park was once part of land owned by France, Spain and the United States and was also the site of Iowa's only Revolutionary War battle?
- True or False. Lake Keomah State Park near Oskaloosa is named for a Native American.
- Which state park has both a historic grist mill and one-room schoolhouse?
- Which state park is named in honor of one of the most important American conservationists of the 20th century?
- Which state park commemorates two of the founding fathers of Iowa state parks?
- Which state park is named for Iowa's state rock?
- A famous explorer visited this park and also provided his name to another famous American site far to the west of Iowa.
- America's most famous architect, Frank Lloyd Wright, designed this residence, now part of the Iowa state park system.

Answers: 1. Frank A. Gorch State Park near Humboldt. 2. Backbone State Park in Delaware County. 3. Maguoketa Caves State Park in Jackson County. 4. Elmer Bedell State Park in Dickinson County. 5. Wabouonsie in Fremont County. Stone in Woodbury County and Preparation Canyon in Monona County. 6. Pilot Knob State Park in Hancock County; a high point which has a stone tower constructed by the Civilian Conservation Corps in the 1930s. 7. The Mines of Spain Recreation Area in Dubuque. 8. False. It is named for Keokuk and Mahaska counties. 9. Wildcat Den State Park near Muscatine, which has the 1847 Pine Creek Grist Mill and the historical Melpine School. 10. Lake Darling State Park, named for J. N. "Ding" Darling, editorial cartoonist and founder of the U.S. Fish and Wildlife Service. 11. Lake Macbride State Park in Johnson County, named for Dr. Thomas H. Macbride, and Pammel State Park, named for Dr. Louis Pammel. 12. Geode State Park in Henry and Des Moines counties. 13. Pikes Peak State Park, visited by Zebulon Pike in the early 1800s. 14. Cedar Rock, on the Wapsipinicon River in Buchanan County.

Nature Bingo

The next time you visit an Iowa state park to fish, hike, bike, camp or have a picnic, bring your bingo card and mark off the items you find. The first person to get five blocks in a row or diagonally and yell "BINGO" is the winner.

For younger children, you can make your own bingo card with pictures from the magazine and use this card as a guide. For older children, use words instead of pictures to encourage reading. Use leaves or small pebbles as markers.

Bingo Card Key (left to right): ladybug, cloud, fly, bird, leaf, picnic table, tree, rabbit, bike, campfire, spider, tent, FREE SPACE, butterfly, flower, fish, dandelion, logs, clover, nest, river or stream, rain, mushrooms, squirrel, bee.



State Park Hike Word Scramble

Hiking in Iowa's state parks offers a great opportunity to see a variety of plant and animal life. Unscramble the words below to see what may be spotted on a typical stroll through the park.

TIHEWAILT ERDE _____
 XFO URQIRSL E _____
 MREACANI FGIONLCDH _____
 INALPS GTRARE KNEAS _____
 DWIL ERSO _____
 HIWET KOA ERET _____
 NAMROHC TFELRFBTUY _____
 AKCJ-NI-HET-LPIPUT _____
 ETLIAPDE OPDCKREWEO _____

Top to bottom: Whittail deer, fox squirrel, American goldfinch, plains garter snake, wild rose, white oak tree, monarch butterfly, jack-in-the-pulpit, pileated woodpecker

State Park Symbols

Iowa's state parks are filled with picture signs to guide visitors to recreational opportunities. To help recognize the various signs, match the correct meaning to each state park symbol.

- _____ Swimming
- _____ Biking
- _____ Hiking
- _____ Snowmobiling
- _____ Fishing
- _____ Picnic Area
- _____ Cross Country Skiing
- _____ Boat Launch
- _____ Camping
- _____ Equestrian Trail

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 

Camping Cuisine

Gorp Mix

- 4 cup Chex cereal
- 1/2 cup dried fruit bits
- 1/2 cup raisins
- 1/2 cup peanuts
- 1/2 cup M & Ms

Place ingredients in a large resealable plastic bag and shake.

Banana Boats

- 1 banana (not peeled)
- Mini marshmallows
- Chocolate chips

Peel banana down one side and cut a wedge into it. Place marshmallows and chocolate chips into the wedge, and cover with peel and aluminum foil. Put into coals for five minutes.

Hobo Pies

- Bread and butter
- Filling of choice
- Pie iron

Butter one side of two slices of bread. Place one slice in each side of the pie iron, butter side down. Add filling to one side. For dessert pies, use your favorite pie filling, peanut butter and marshmallows or cinnamon and raisins. For sandwich pies, add ham and cheese; pizza ingredients; or any other favorite sandwich combination. Close pie maker and toast over open fire or stove top until golden brown, about 10 minutes. Check occasionally for doneness. For dessert pies, top with frosting when done if desired. Be careful, filling will be hot.

CONSERVATION UPDATE

Summer Outdoor Camps for Youths Offered

The Iowa Department of Natural Resources and Pheasants Forever Chapters around the state are once again teaming up to provide outdoor skill training workshops for Iowa youths. The programs target kids ages 12 to 15 years in four different camps this summer.

A nontraditional workshop, Outdoor Journey for Girls aimed at improving the outdoor recreation skills of young girls will be offered June 6-8 and July 25-27. Activities planned include canoeing, fishing, shooting, orienteering, furharvesting and camping. Campers will also become certified in Iowa's hunter education program.

Hunting and Conservation

Camp for Boys will be held June 20-22 and Aug. 8-10. The camp focuses on shotgun shooting, muzzleloading, furharvesting, bowhunting, dog training and handling, and development of habitat.

Iowa Pheasants Forever chapters have played a key role in the camps for years. They recruit campers and cover registration fees. Pheasants Forever encourages educating youth about natural resources and their wise use to help preserve habitat and hunting heritage.

Contact your local Pheasants Forever representative for registration information or call Gloria Baker at 641-747-8383 or by e-mail at gkbaker@netins.net.



Clay Smith

New, young friends team-up to test their rifle shooting skills at a Hunting and Conservation Camp for Boys.

Wisconsin Sets Bag Limits on Mississippi

Anglers who frequent the Mississippi River need to be aware of new panfish bag limits adopted recently by the Wisconsin Department of Natural Resources (WDNR).

This year, the WDNR set Mississippi River aggregate daily limits of 25 for bluegill and sunfish, white and yellow bass, and white and black crappie, and 25 each on rock bass and yellow perch. Possession limit is twice the daily bag limit. Previously, there were no limits. There are no panfish limits on the Iowa side.

Iowa has an agreement with Wisconsin allowing anglers with a valid sportfishing license from either state to fish on both sides of the Mississippi River. However, when there are differences in sportfish regulations between two states anglers must obey the regulations of the state in which they are fishing.

The state line between Iowa and Wisconsin is the center line of the main navigation channel on the Mississippi River. However, there is one exception. The Iowa/Wisconsin boundary runs down the center of State Line Slough and Cassville Slough, from near Clayton, Iowa on lower Pool 10 downstream to near Cassville, Wis. on upper Pool 11.

Anglers with a valid license from either state may harvest more than the Wisconsin limit on the Iowa side and return to the Wisconsin side, however, they could not legally fish anymore on the Wisconsin side.

Coupon Books Save Campers Money On Camping Fees

Campers looking for a way to save money can save up to \$3 per night on camping fees with coupon books available through the DNR.

Camping coupons are available in books of seven for \$91, or 14 for \$182, an average of \$13 per coupon. Each coupon is good for one night's camping at a modern or nonmodern site, with or without electricity, anytime during the year. However, campers are encouraged to compare the cost of their camp-

site with the coupon value to determine if using the coupon is worthwhile.

For example, campers who redeem coupons for modern, electric sites during the peak camping season (the Monday before Memorial Day through the Labor Day holiday) save \$3 per night. If a coupon is used for a nonmodern, nonelectric site, there is no savings.

Coupons do not cover additional fees, such as water, sewer and cable television

hookups, or equestrian fees. They are valid from the date of purchase through the end of the following calendar.

Coupons are easy and convenient to redeem. Simply place one coupon for each night's stay in the self registration envelope. They are great for avid, frequent campers or occasional campers who want to split the cost and coupons with friends.

Coupon books are available at any state park office or the DNR Central Office in Des Moines.

2001 Iowa Nongame Support Certificate

The 2001 Nongame Support Certificate is now available from the Iowa Department of Natural Resources. A green heron decked out in his finest breeding plumage is the subject of this year's certificate. The green heron is a common yet seldom seen bird along wooded edges of Iowa rivers, lakes and ponds. It's found in every county of Iowa. The photograph was taken by Jim Zohrer, DNR wildlife diversity program coordinator.

These limited-edition certificates are individually numbered. To order by phone, call 515-281-5918. For mail



303/2000

2001 Nongame Support Certificate
IOWA DEPARTMENT OF
NATURAL RESOURCES

Green Heron
(Butorides virescens)

Price: \$5.00

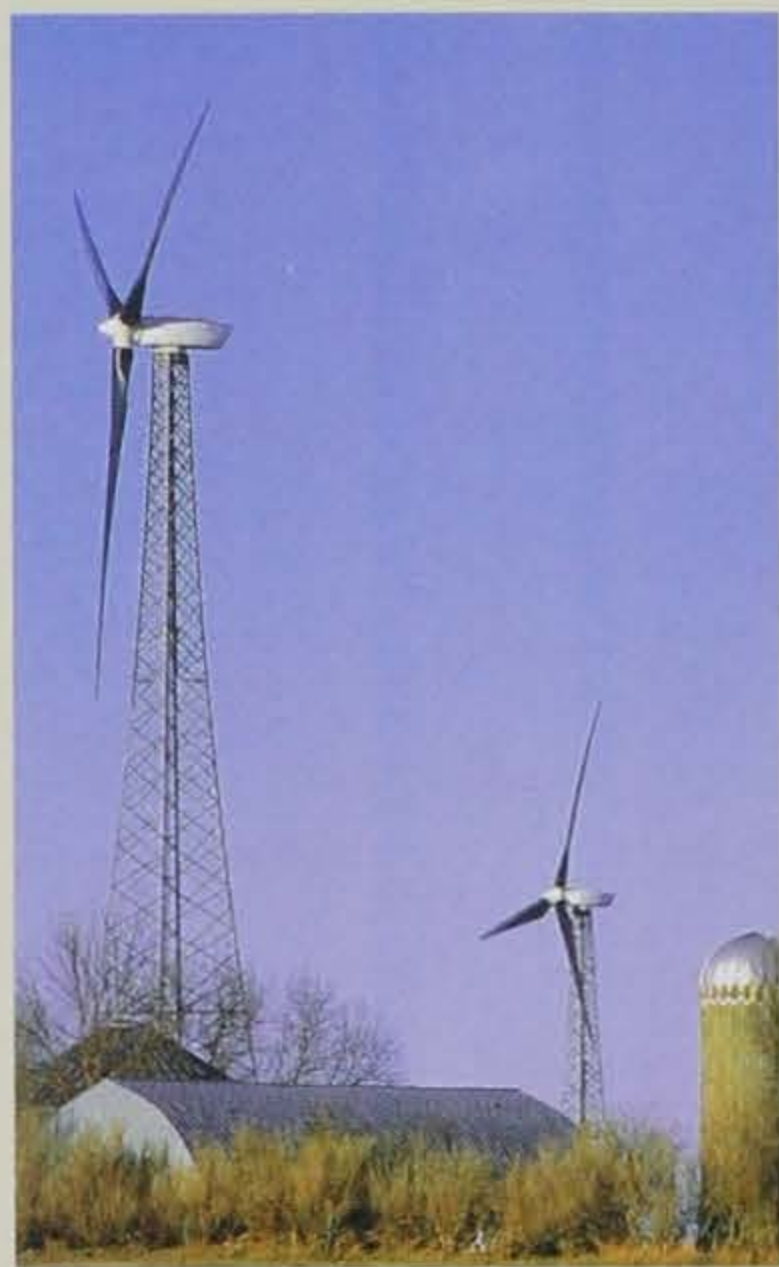
orders, send a \$5 check or money order to the DNR, ATTN: Support Certificate, Wallace State Office Building, Des Moines, Iowa 50319-0034.

A limited number of the 2000 certificates are also still available. The 2000 certificate features a black-capped chickadee on a

snow-covered wooden fence.

Proceeds from the sale of certificates support the Wildlife Diversity Program in Iowa. The program works with all non-hunted wildlife species including trumpeter swans, peregrine falcons, eagles, frogs and toads, among others.

CONSERVATION UPDATE



Clay Smith

Wind turbines in Buena Vista County

DNR Introduces New Wind Study For Iowa

A new study sponsored by the DNR evaluates the costs and capabilities of wind hybrid systems, which combine wind energy with other power sources for electricity generation.

The study, conducted by Tom Factor of the Iowa Wind Energy Institute in Fairfield, is available on the web at www.state.ia.us/dnr/energy/wind. It provides a calculator for inputting a location's wind resources, electricity needs and other factors. The information can then be used to compare a variety of potential hybrid systems for their costs and ability to meet the locale's electricity needs.

The study was sponsored by the DNR with funding from the U.S. Department of Energy.

Getting The Most From Each Gallon Of Gas

With higher gasoline prices expected this summer, Iowans can expect less mileage from their fuel budget.

Gasoline prices are expected to average \$1.50 per gallon, with price spikes up to \$2 possible. However, maximizing vehicle fuel efficiency allows consumers to get the most out of their fuel dollars, and can actually result in a savings of more than \$100 over the course of the summer.

For example, the consumer who travels 3,000 miles this summer in a vehicle getting 25 miles per gallon (mpg) will spend \$180 based on the projected average price. However, another consumer driving a vehicle getting 15 mpg would spend \$300.

Fuel efficiency not only saves money, it also protects the environment. Transportation is the single greatest contributor to air pollution, including carbon monoxide, carbon dioxide and toxins. A car that gets 25 miles per gallon instead of 20 avoids 10 additional tons of carbon dioxide released in the air over the lifetime of the vehicle.

To obtain better gas mileage:

— Tune up the engine. A poorly tuned engine uses 10 to 20

percent more gasoline.

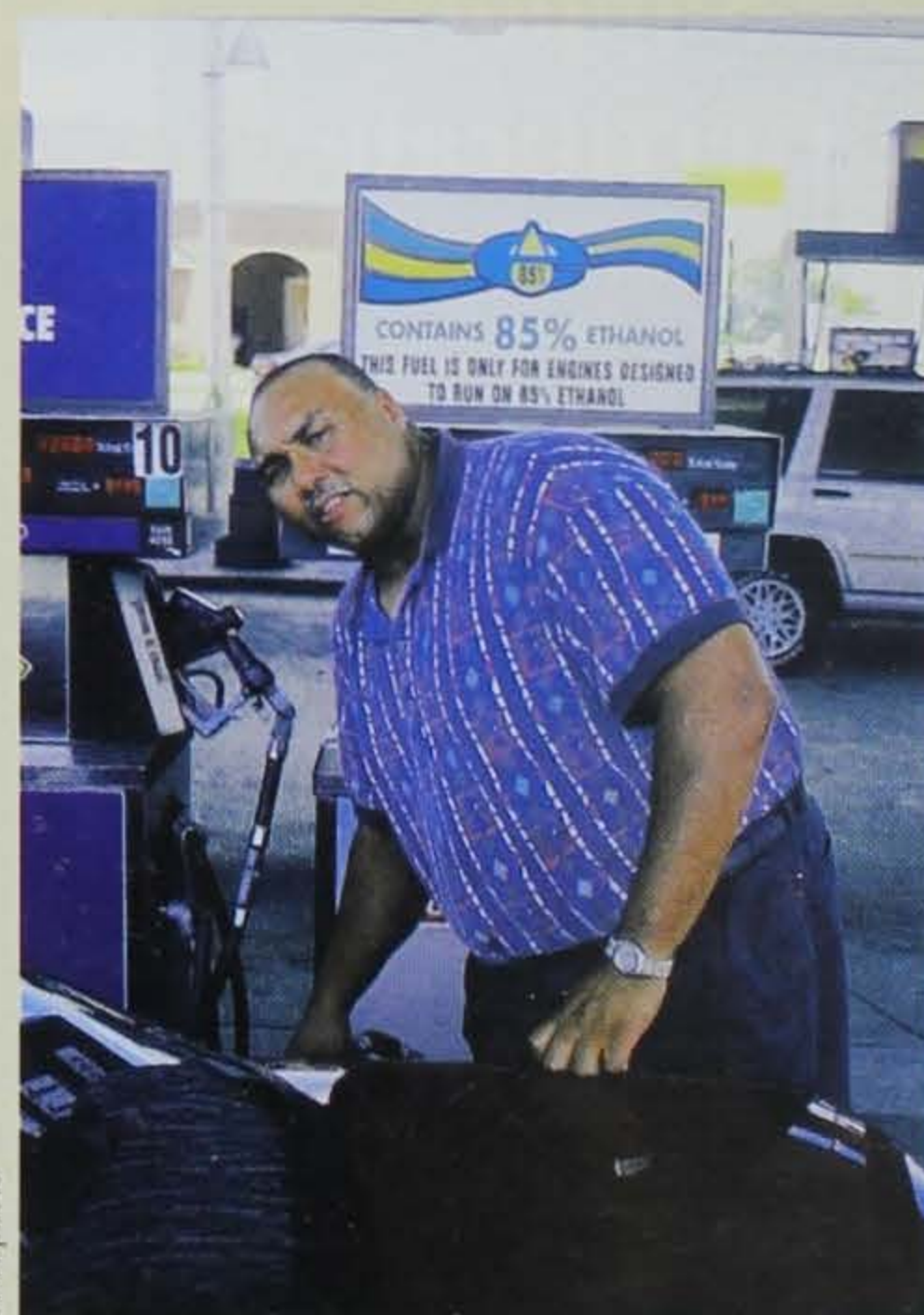
— Inflate tires to proper levels. Under-inflated tires can cause fuel consumption to increase 6 percent.

— Avoid "start and stop" traffic to improve fuel economy 5 to 10 percent.

— Change air filters regularly. A clogged filter can increase fuel use by 10 percent.

— Drive the speed limit. Fuel efficiency goes down significantly from 55 mph to 70 mph.

For more tips on fuel economy and a complete comparison guide on car and truck fuel efficiency, go to the U.S. EPA's website at www.fueleconomy.gov.



DNR photo

Maximizing vehicle fuel efficiency can save hundreds of dollars at the pump.

Volunteering Today For A Better Iowa Tomorrow

Falcon Stewards Extraordinaire

The DNR's Wildlife Diversity Program is fortunate to work with a variety of wildlife species and a diverse group of volunteers, like Tim Schraeder and Mike Brown of **Larry's Window Service** in Des Moines, who help band young peregrine falcons in Des Moines.

In 1990, 19 falcons were released atop Elsie Mason Manor. Each year, the young have been banded to track population growth of this endangered species. Many people have seen the peregrines' amazing aerial displays in pursuit of prey. Schraeder and Brown, however, have the bird's-eye view.

Schraeder and Brown are the two who keep windows clean and provide a sparkling perspective on city life for their clients. Since 1993, when a falcon pair began nesting at the American Republic Insurance building, each year Schraeder and Brown have had the potential to interact with the falcons at any moment.

Each year, the two assist in banding the young falcons, a task not without its challenges. Peregrine falcons have been known to attack window-washers, because they perceive the climbing intruders as a threat to their territories. With each succeeding year, the parents' defensive intensity has grown. The male has become noticeably adept at streaming from behind and knuckling intruders with clenched talons.

When the banding has finished, the chicks are returned to the

eyrie, and Schraeder and Brown hastily retreat from the territory. The falcons seemingly "win" each conflict, and all returns to normal.

Everyone is a winner, however, when volunteers like Schraeder and Brown connect with projects that benefit us all. They deserve thanks from all outdoor enthusiasts.



Mike Brown (left), and Tim Schraeder.



Upcoming NRC and EPC Meetings

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

Agendas are set approximately 10 days prior to the scheduled meeting date. For additional information, contact the Iowa Department of Natural Resources, Wallace State Office Building, 502 E. 9th St., Des Moines, Iowa 50319-0034.

Natural Resource Commission:

- June 14
McGregor
- July 12
No meeting.
Teleconference if necessary.
- August 9
Gull Point State Park
- September 13
Davenport
- October 11
Keosauqua

Environmental Protection Commission:

- June 18
Des Moines
- July 16
Des Moines
- August 20
Des Moines
- September 17
Des Moines
- October 15
Des Moines

WARDEN'S DIARY



By Chuck Humeston

Patrolling Iowa's waters from a personal watercraft might seem more like fun than work. I tend to disagree. Take the day I encountered the "three from New York City."

I was patrolling Little Wall Lake on a hot, summer afternoon and people were just starting to crowd the boat ramp. I was working my way around the lake checking boats and anglers.

I noticed the three men fishing from an aluminum v-bottom about the same time they noticed me. Almost immediately, they moved away from me as fast as their electric motor could propel them. With 780 cubic centimeters of Polaris under me, I wasn't too worried about a high-speed pursuit across the lake. However, it does get my attention when people disobey my requests to stop.

I gunned the throttle, sending the jet ski planing across the water. I was beside them in a flash before they could even get their lines out of the water.

"How are you doing today?" I asked as I pulled alongside. By then, my uniform was considerably more obvious. "I need to see your

fishing licenses and safety equipment."

"Oh, hi," answered the man who had been trying to squeeze the last ounce of horsepower

if I showed you a membership card to the New York City Police Department Protective and Burial Association?"

"No, it wouldn't. As a matter

"The Warden Will Never Find Us"

from the electric motor. "We didn't realize who you were."

"I need to see your licenses and safety equipment," I repeated. Evidently figuring I would go away if they evaded the directive, the boat operator asked what kind of fish were in the lake.

"Bass, bluegill, northern pike, and I need to see your licenses," I responded

"Oh that," he laughed. "We're from out of state. We don't need one."

"Really," I said.

"Yeah, we're from New York City. We don't need a license."

Oddly enough, the familiar picante sauce commercial flashed through my head.

"I could tell you aren't from around here," I said. "I'm sorry, but you're mistaken. You need to have a license."

"But the guy who rented us the boat said we didn't need one."

"I'll check on that," I told them. "None of you have licenses?"

"No, we don't," the spokesman answered as he reached into his wallet. "But," he said pulling out a card, "would it help

of fact it would offend me."

"Oh, well then, now what do we do?"

"You show me identification, and I cite you for fishing without a license," I said.

Their smiles turned to frowns. I told them to meet me at the boat rental.

I headed to shore for a one-on-one talk with the boat renter. I pulled up to the dock and peeled off my life jacket, which in the heat tended to stick like Velcro. I went into the office and asked about the three in the boat. I already knew the answer.

"They came in wanting to rent a boat and fishing rods," he said. "I asked if they needed licenses too. They told me they wouldn't be needing any."

By then the three had arrived at the dock. "Do you need a license to fish in New York?" I asked. They nodded. "You told this gentlemen you would not need one. Why?" There was no answer.

They gave me their driver's licenses and I wrote the tickets. Bond was posted, and they left. It just goes to show, failing to follow the rules on the chances of not encountering a conservation officer doesn't always pay.

Remember When . . .



Photo courtesy State Historical Society of Iowa, Des Moines.

Three children in a Clarion farm yard, 1895. Two boys dig for fishing worms, while the young girl stands ready with the fishing poles.

