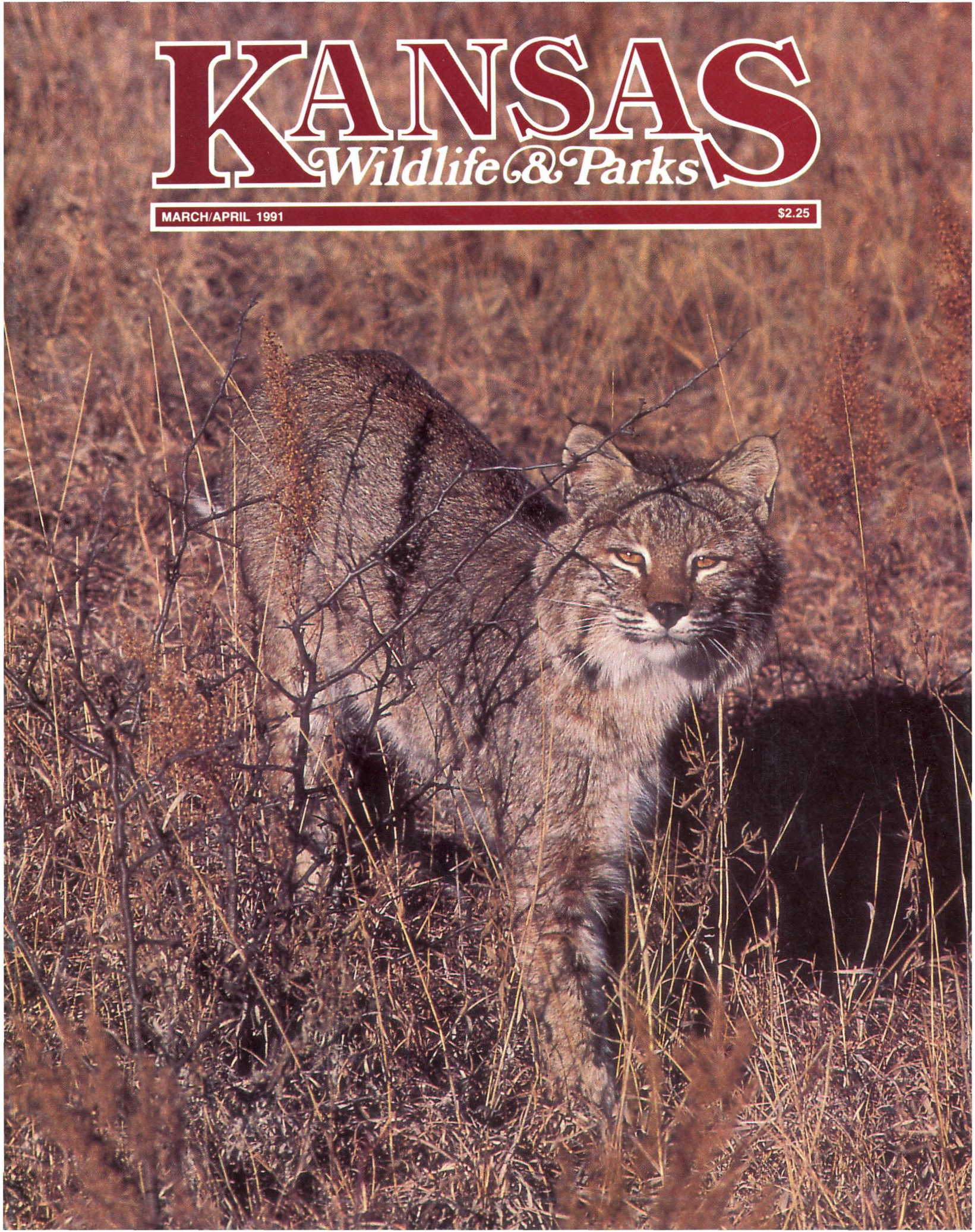
KANSAS Wildlife & Parks

MARCH/APRIL 1991 $2.25



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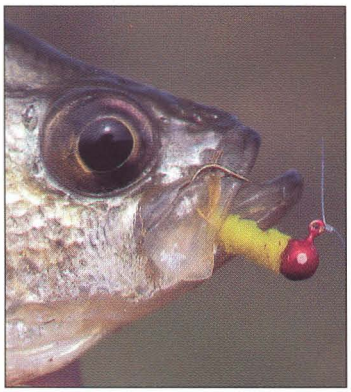

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About the Covers

Front: After a week of bitter cold temperatures, Mike Blair spotted this bobcat. The cat responded to a predator call, and Blair photographed it with a 400 mm lens, f/11, @ 1/125 sec. **Back cover:** A male red-winged blackbird greets the dawn at Quivira National Wildlife Refuge. Mike Blair filmed the bird with a 600mm lens, F/4, @ 1/500 sec.

Editorial Creed: To promote the conservation and wise use of our natural resources, to instill an understanding of our responsibilities to the land.

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THE BUCK STOPS HERE

Fishing Optimistically

I've never been a good joke teller. I love to hear a good joke, but I've usually forgotten it before the laughter dies down. I can remember the day I got my first fishing pole 27 years ago, but I can't remember jokes told ten minutes ago . . . except for one.

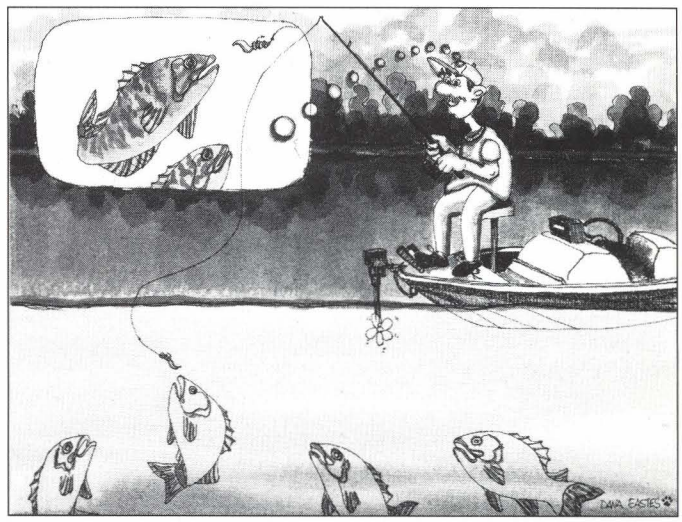
When I was 9 or 10 years old, a friend of my parents told a joke about pessimists and optimists. It seems that a group of scientists were studying child personalities. A young boy who exhibited pessimistic characteristics was observed in a room full of brand new toys. After several hours, the boy had touched not one toy. In fact, he appeared miserably uncomfortable. Puzzled, the scientists questioned the worried lad. "Why didn't you play with any of these wonderful toys? Don't you like them?" "Oh I would have loved to play with them," the youngster anguished. "But they're all so new, I just knew I'd break one."

In the other half of the experiment, a young boy who was optimistic in nature was observed in a room filled with horse manure. As the scientists watched in amazement, the little rascal was having a ball, digging in the manure and throwing it around, all the while laughing gleefully. Again perplexed, the scientists questioned the now grubby faced tot. "How is it you are having so much fun in a room with nothing but horse manure?" they asked. "Are you crazy?" the boy replied. "With all this horse poop, I just know there's a pony in here somewhere!"

I guess I remembered that joke not only because I liked it but because I've always been the optimist. I've always believed that pony was around somewhere.

I'm glad I'm optimistic by nature. Not only are optimists happier about things, they're better fishermen than pessimists. And Optimists always have something to look forward to. Maybe we just never grow up and always need a Christmas or birthday or last day of school before summer vacation to look forward to. For an optimist, there's always tomorrow, or next week or even next month when things will be better. And no matter how bad things are now, they could be worse.

"But wait a minute," says a worried pessimist, "what was that about optimists being better fishermen?" I swear that it's true. Optimists are better fishermen, and there's good reason. Here's my theory:

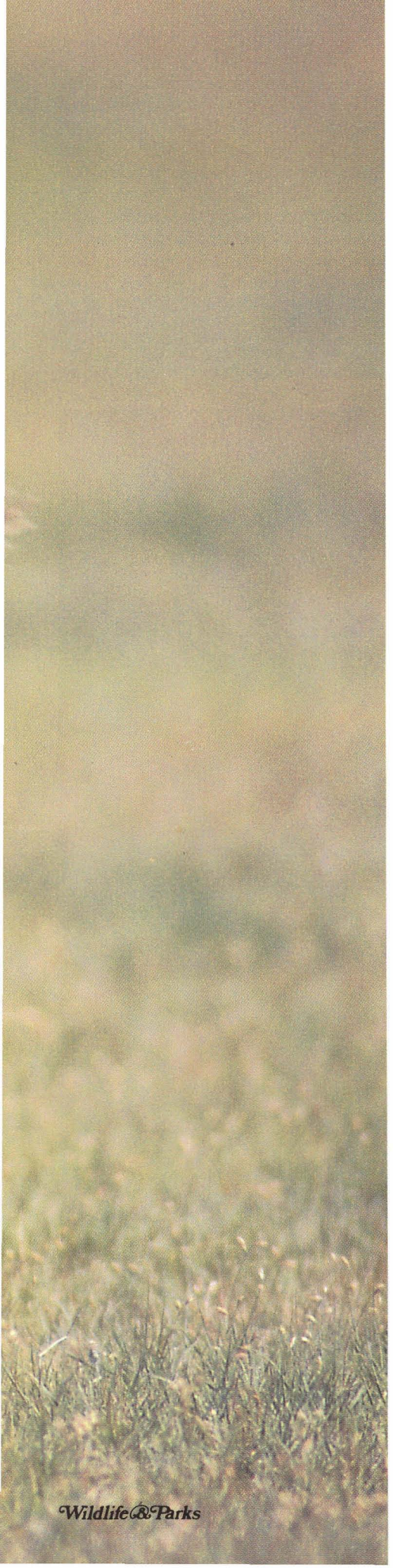


Dana Eastes illustration

Fishing is state of mind. Oh sure, you have to be in the right place with the right lure at the right time to catch fish, but beyond that, it's state of mind. "Anyone can catch fish if they're in the right place at the right time," you say. Sure. But why is there always several in the group who catch more than the rest, even though they're using the same tackle and lures in the same place? They're the optimists, and they're in the right frame of mind.

A true optimist expects to catch fish in a mud hole, and when he gets a strike he's ready. If the last cast triggered no response, the next one surely will, and then there's the one after that. The pessimist doesn't expect to get a strike and when he does, he isn't ready and misses it. For the optimist, if the fish aren't biting today, the weather will change and the wind will die and the moon phase will be right tomorrow. Whatever the reason, the fish will bite better, and the optimist will be there . . . looking for that proverbial pony.

Mike Miller



Predators

Predators come in all shapes and sizes and can be found just about anywhere you look. With remarkable adaptations and skills, predators go about the business of surviving.

by Bob Mathews
assistant chief
Education and Public Affairs

photos by Mike Blair

There is no mystery about the way they live. They ambush and incapacitate. They slash and maul and mangle. They rip, shred, crush, eviscerate, dismember, and devour. With no apology nor hesitation, predators practice butchery every day of their lives. It isn't pretty. But, as an integral part of the natural order, it is beautiful.

The interplay of predator and prey is the most direct, straightforward relationship there is. A predator kills to survive. Its prey knows that, and has developed a variety of skills to postpone the inevitable. A more honest relationship does not exist. It may be a little too honest for the "civilized" tastes of human beings. It's a little disconcerting to look too closely at the grisly, day-to-day existence of predators, but people have always held a keen respect for the proficiency and style of these wild hunters.

Cast as villains through centuries of mankind's stories and fables, the hunters of the animal world have only in the past 25 years gained the general understanding, if not unanimous favor, of us humans. We came by our ill will toward predators honestly enough. We were prey ourselves before we developed the means to be the supreme predator. After that, we viewed most predators as competitors. In some places, we attempted to wipe them out com-

pletely. Fortunately, the birth of the science of ecology in this century began to shed some light on our misconceptions. We discovered that predators actually benefit many of our own endeavors. We also discovered that these creatures possessed skills that are virtually magical compared to our own.

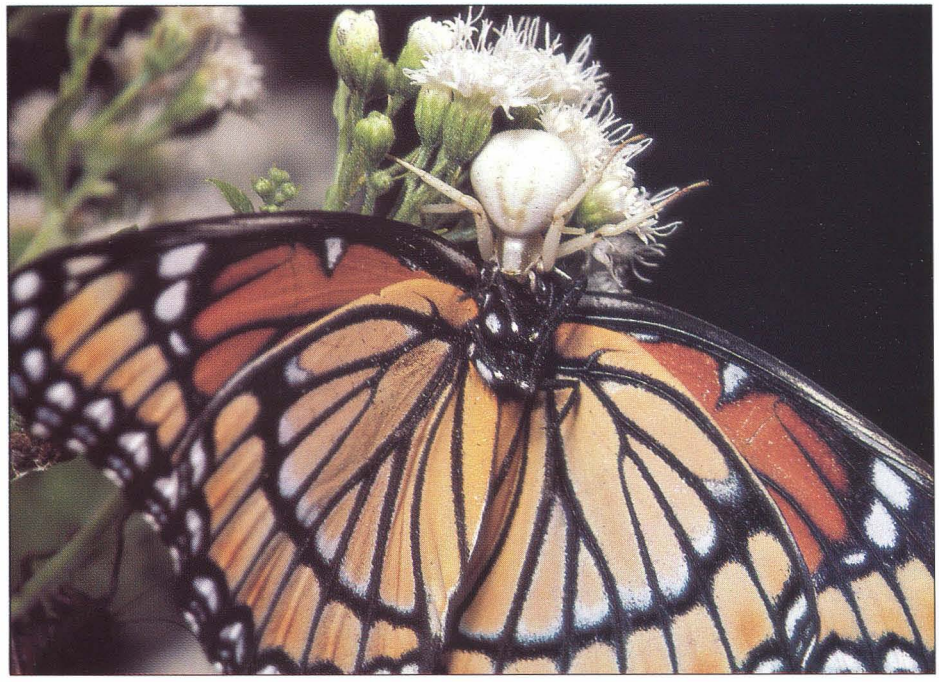
The predators of the world possess an enviable collection of tools. Consider, for example, how the specialized hearing capabilities of barn owls make these common Kansas residents such efficient mousers. It starts with a bowl-shaped face that collects and funnels sound to oversized ears. As with many owl species, the ears are not placed symmetrically, but are slightly offset to enable the bird to pinpoint the source of sounds in both horizontal and vertical planes at the same time. A barn owl's superlative eyesight assists the task, but it is primarily the ears which guide it toward its target. It sets sail face first toward its prey which, although quite literally proceeding "quiet as a mouse" is

Some predators are capable hunters at an early age. Below, a juvenile bullsnake kills and eats a deer mouse, a meal that will satisfy its hunger for days. As the snake matures, it will require larger amounts of food.

split seconds away from its ultimate fate: owl food.

Another form of winged predator—the bat—takes hearing a step further. By emitting a short pulse of sound, then listening for the echo of that sound off nearby objects, bats can obtain a wealth of information. Cruising bats produce only a few pulses of sound each second but increase that pulse rate—to bursts as brief as 1/2000th of a second—as they approach their prey. Some species of bats possess sonar capabilities so sophisticated that they can locate an object, determine how big it is, whether it is moving and how fast, and even its shape and texture. It's little wonder, with that degree of skill, that many bat species are such efficient predators they can consume half their weight in insects in a single night's feeding.

The eyesight of hawks and falcons has always been an object of envy for mankind. Their visual acuity is judged to be up to eight times that of humans. A hawk's retina—the image-forming tissue lining the posterior cavity of the eye—is elaborately developed and nearly twice as thick as in the human eye, with a higher concentration of light-sensitive cells. In addition, most predatory bird species have two foveae—sensitive spots on the retina for focusing sharply on an object—as opposed to the single fovea in each human eye. A red-tailed hawk, for example, uses one of these—the central fovea—for sharpened lateral (monocular vision) views as it scans a weed patch for prey. The temporal fovea is used for looking forward in concert with the other eye (binocular vision) as the hawk fixes its attention



Predators come in many different forms with a variety of skills and adaptations. At top, the crab spider used its natural camouflage and potent venom to catch and subdue a prey much larger than itself: a viceroy butterfly. The white-breasted nuthatch, at center, easily scampers up or down tree trunks to glean insects from the bark. The Swainson's hawk uses remarkable eyesight and excellent flight skills to catch rodents.

Swift foxes and other canid predators use a combination of sight, hearing, smell and incredible quickness to catch prey. Hunting occupies much of a predator's time, especially when young are being cared for.

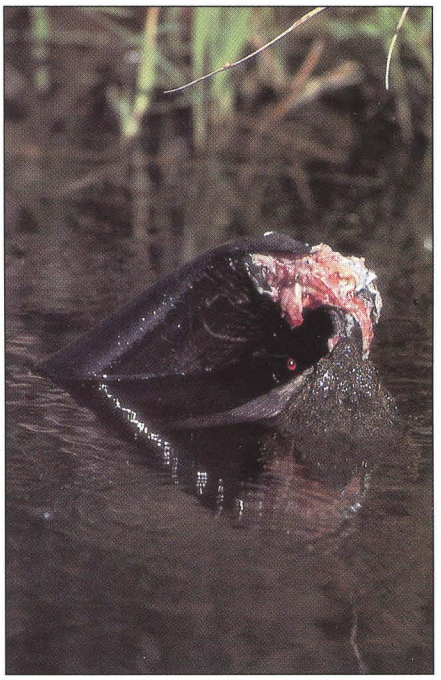
on its target and prepares to attack.

Aside from their physical attributes, predators possess a single-minded dedication to the task at hand. There are no holidays or handouts. They earn what they get. Invariably, a predator is the epitome of the "can do" attitude. One of the best examples of that is a half-pound bundle of fearless abandon known as the long-tailed weasel. Relying on their sense of smell, these low-slung, nimble killers will readily attack prey larger than themselves, such as cottontails. The weasel pounces onto the rabbit, holds on with all four feet during the ensuing struggle and inflicts a fatal bite at the base of the skull or in the neck. This species is strictly a carnivore. They often prefer to begin dining on their prey while it is alive and quivering.

Bobcats demonstrate the same instincts, as well as an infinite tenacity in the dispatch of their prey. In Kansas, bobcats rely primarily on rabbits for their food source. They are known to kill and consume deer, particularly in regions with deep winter snows. Their tenacity is best illustrated by the tactics they use when preying on deer. A commonly used bobcat hunting procedure is to sneak within close range of deer bedded in snow. Although they are warm-blooded animals, deer are lethargic in extremely cold weather and are easily caught under such circumstances. The cat will typically pounce on the deer, usually a fawn, imbed its claws in the nose and base of the ears, and position itself to bite the throat of the prey. Sometimes the bobcat will puncture a vein, but more often it will simply clamp down on the animal's windpipe and suffocate it—a mortal confrontation that extends for several minutes.

In individual confrontations between predator and prey, obviously, the prey seldom benefits. However, certain benefits do occur for a prey population over the course of its interaction with predators.

Various studies of wolves and their interaction with large mammals in



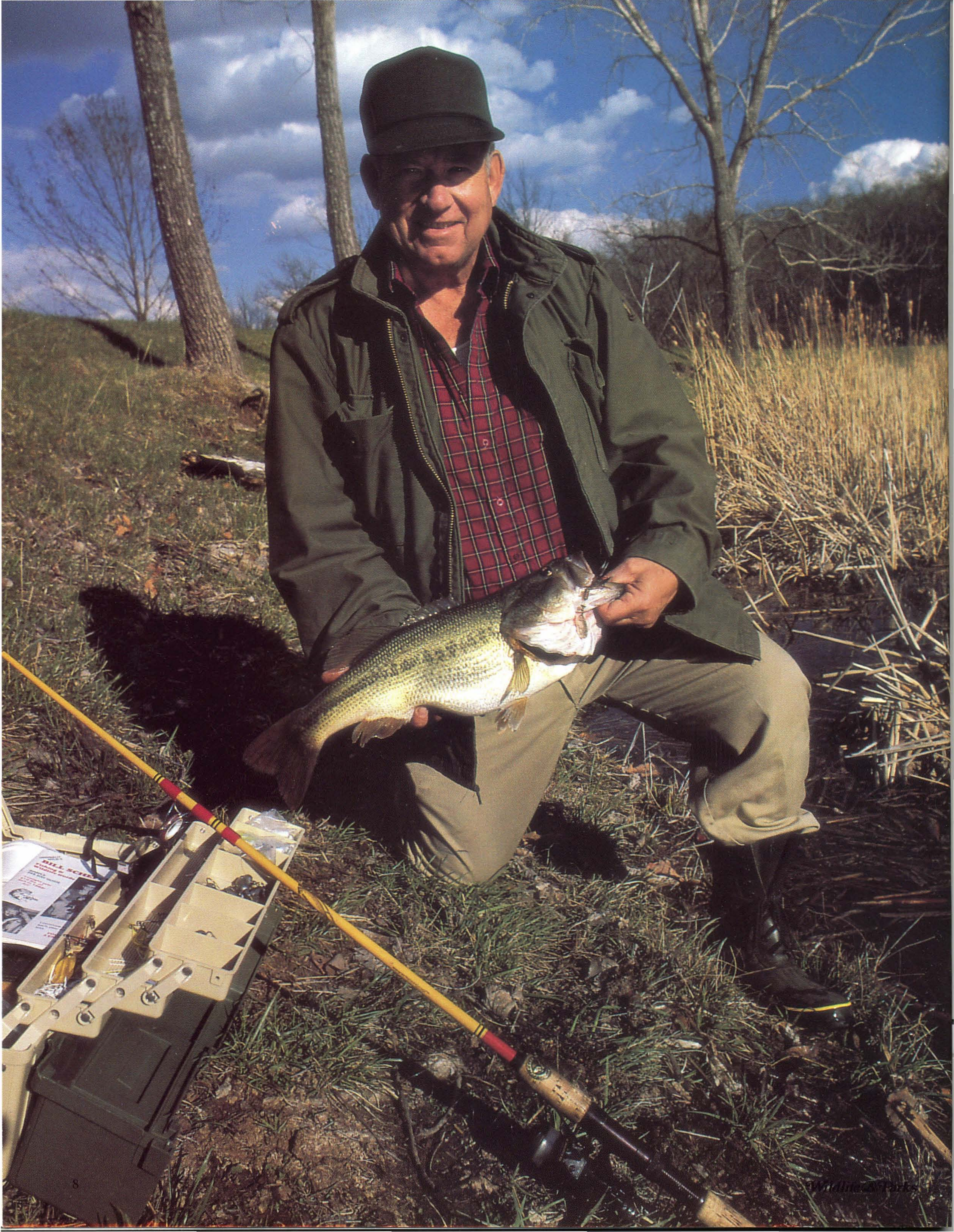
Snapping turtles, often considered scavengers, are also keen predators. Here a turtle wrestles with a 2-pound channel cat. It took the turtle an hour to subdue its prey.

North America reveal that, by removing sick animals from the herd, the potential for infection of healthy animals in the same group is reduced. In addition, predation contributes to the development and maintenance of various physical and behavioral traits which insure survival for the prey species. Some examples include the defensive, shoulder-to-shoulder formation of muskoxen who prohibit marauding wolves from reaching their young by forming a living bulwark. This defensive tactic is so ingrained in muskoxen that even calves will instinctively form a circle if they feel threatened. The size and strength of bison, and fleetness of deer are examples of other traits developed in prey species through ages of interaction with predators. The process continues even today, as those prey animals which survive their first year pass their genes on to their offspring, furthering the process of survival of the fittest.

People gain from the presence of predators, as well, although those benefits were often ignored in the past. Predators contribute substantial services to agriculture through their appetite for pest species. One biologist's summer-long observation of a family of ferruginous hawks revealed that these adult hawks consumed not less than one gopher per day. In the course of his three-month observation, he reported, the hawks consumed about 360 gophers. He estimated that a single gopher could destroy at least one bushel of wheat.

Besides the tangible benefits of controlling certain problem species, the predators of the world make other positive contributions to our lives. They demonstrate the efficiency of the natural world. They illustrate the interdependence of all life forms. They perpetuate the wildness that our civilization seems determined to exterminate. They embody the very qualities—vigilance, determination, bravery, adaptability, and diligence—we would most like to maintain in ourselves. And they add a color and vitality to our surroundings that we simply cannot live without.

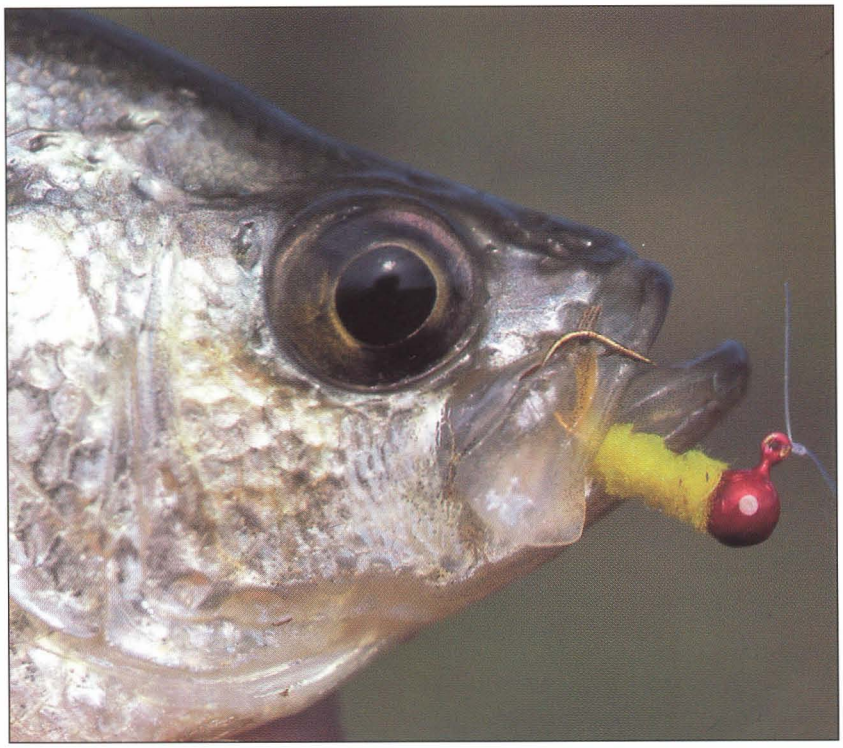
With two fast-growing eaglets to feed, golden eagle parents spend nearly all of the daylight hours soaring the prairie for prey. This particular nest was conveniently located near a prairie dog town.



Early Spring Pond Fishing

by Mike Miller
editor

photographs by Mike Blair



The water is still ice-cold and the fish are sluggish, but early spring farm ponds can provide fantastic fishing if you give the fish what they want. It's good to get out after a long winter layoff, but it's even better when you catch fish.

I'll admit it. I am a problem fisherman. I fish because I need to, not because I want to. And it's impossible for me to fish in moderation. I never seem to get enough. That's why winter seems so long to me, and why I'm on my way to some barely-thawed-out farm pond on that first sunny day in March. It didn't used to matter that I never caught any fish on these early trips. It was sweet relief to fish again after winter's long drought.

I theorized early spring water was too cold for the fish to bite. Then I discovered ice fishing. I've had some of the best fishing of my life through the ice and have caught largemouth bass, white bass, striped bass, walleye, channel catfish, crappie, bluegill and even carp. So my "fish won't bite in cold water" theory was shot full of holes. But that was alright because now I could fish all year long.

However, it wasn't that simple. My early spring fishing trips were still duds. I was using heavy bass tackle with the same lures that worked the summer before, fishing the deep water I believed the fish were in. Frustrated, I began putting the things I learned ice fishing to work for me after the ice melted. I had caught fish in as little as 5 feet of water through the ice, so I knew that shallow water was worth fishing. I also learned that cold, sluggish fish preferred smaller lures, slower presentations and hit softly.

I put the final piece into this puzzle by accident one warm Saturday in March. Naturally, a buddy and I couldn't resist, so we loaded up a two-man boat and pointed the pickup south toward a large farm pond. This pond has a large population of small crappie, so we took ultralight outfits and jigs. We weren't optimistic about catching bass, but we thought the crappie might hit. We started fishing in the very upper end of a brush-filled cove, instead of the deep water we usually fished in early spring. To our surprise, we caught both crappie and bass. Even though it was months before they would spawn and the water was frigid, the crappie were in less than four feet of water.

After catching several nice bass on a crappie jig, I switched to a bass rig and a larger bait thinking I'd catch bigger fish. I caught nothing, while my buddy continued to catch 1- and 2-pound bass and small crappie. I switched back to the jig and started catching fish. The bass *preferred* the tiny jigs.

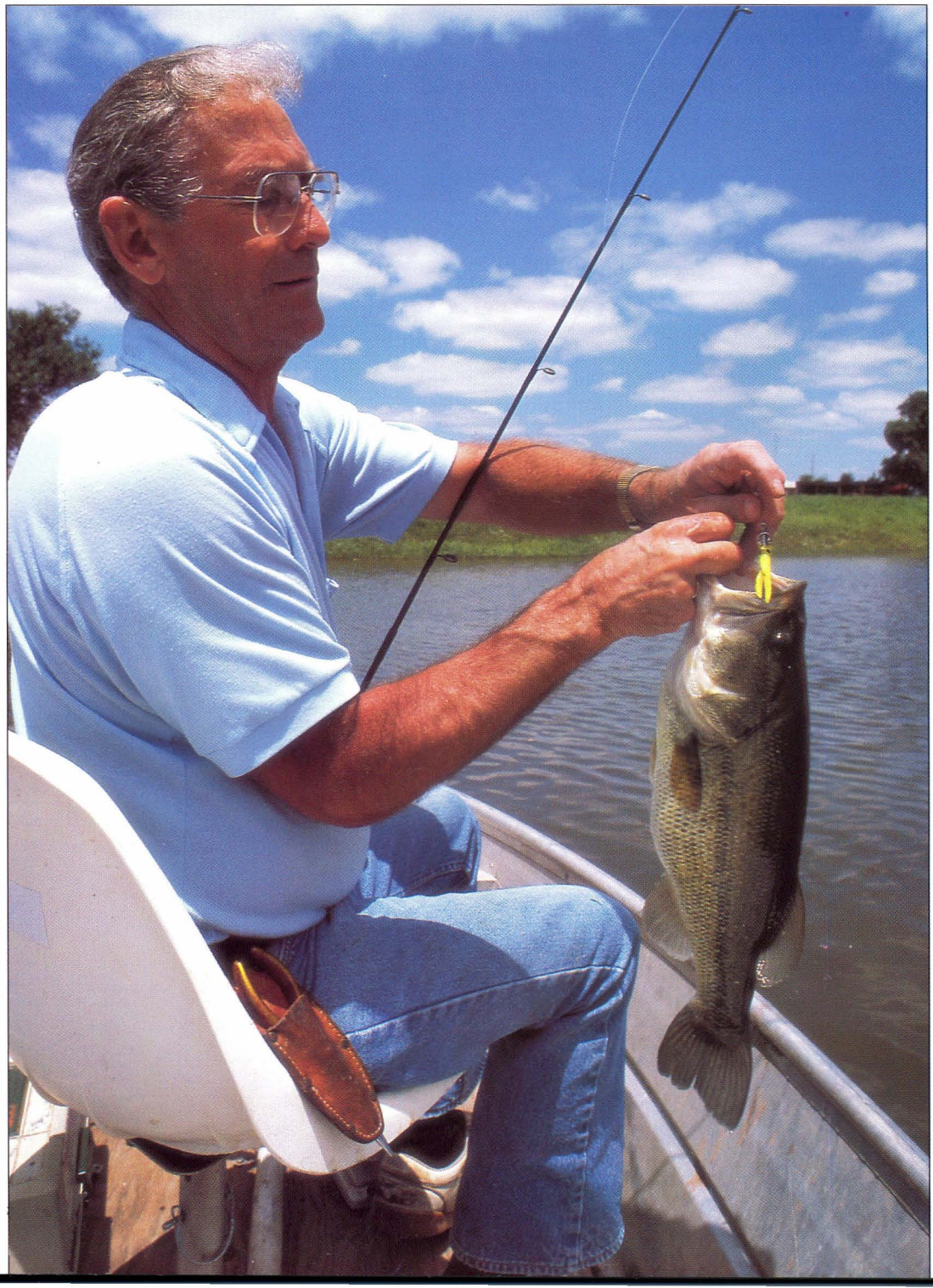
I finally realized the mistakes I'd made all those years. I had stubbornly stuck to heavy tackle, big lures and deep water. The need for light tackle and tiny lures was never more obvious than one March day last spring. Four of

Small jigs and light tackle are ideal for early spring crappie. Fishing the proper depth and using a slow presentation are critical elements for spring fishing. Cold-water fish are sluggish but sometimes hit aggressively.

us were fishing a small pond we knew was loaded with bass. Two of us started out casting a spinner bait and a jig-n-pig thinking we'd nail a lunker. But after watching the other two catch fish after fish on ultralight spinning gear and 1/8-ounce jigs, we quickly switched. We immediately began catching fish and before the afternoon was over, the four of us caught and released more than 40 bass weighing from 1 to nearly 4 pounds. Most of the fish were caught in the narrow upper end of the pond in less than 6 feet of water. Even though the water was cold and the fish were sluggish, they stretched our light outfits to the limit.

The light tackle not only makes playing the fish more fun and challenging, it's also necessary. You may prefer a light action spinning rod instead of an ultralight in case a really big bass hits. Either way, a limber graphite rod is needed to detect the light hits. You'll lose a few more jigs in the brush with 6-pound line, but 8-pound test won't cast light jigs very far. A quality spinning reel with a smooth drag is a necessity because, believe me, big bass will test it.

Just about any jig will work. I've used marabou, rubber twister tails, split tails and tube jigs. My two favorites are the marabou horsehead jigs with a spinner and the small tube jigs. I'll experiment with colors although chartreuse, black and chartreuse, yellow, and white are usually best. And I always have on hand a few off-the-wall colored tube jigs like pink, blue, orange or pumpkin seed. For some reason, they'll work on days when nothing else will.



Largemouth bass may surprise you by engulfing tiny jigs. The author's experience has shown that some early spring bass actually prefer the small jigs, often ignoring conventional bass baits.

Presentation is usually more critical than color. Even though the fish may bite readily, they are still slowed by the cold water. The jig should be retrieved slowly. I prefer a slow pumping motion, raising the jig off the bottom, then letting it free-fall. If I'm fishing brush, I'll use a flipping/doodlesocking technique, flipping the jig into an open pocket then bouncing it up and down. This puts the lure in the fish's strike zone for more than just a split second.

Strikes are usually light. In fact, "strike" is probably too strong of a word to describe early spring bites. Jig fishermen recognize the familiar taps that signal hits, but cold water fish may not even register a tap when they take a lure. It's important to keep contact with your jig. Get a feel for the weight of the lure and its drag through the water. A crappie taking the jig may just feel like a little added drag. If you don't recognize the difference and set the hook, the fish is gone. A bass hit may simply move the line to one side. The secret is to be aware of your line and jig at all times, and if anything is different, set the hook.

I usually start fishing a pond in the upper ends of coves, or where creeks or springs enter. Early spring fish often hold tight to structure such as brush, submerged logs or drop-offs. Rather than fan casting in a cove, I like to sneak a two-man boat in and around the structure, flipping the jig into likely looking spots. In heavy cover, I'll bounce the jig up and down slowly several times, then hold it still for several seconds before moving on. Often, the strike will come while the lure is suspended. Vertical jigging may also work, especially if you can position yourself directly over the structure. And even though vertical jigging is commonly thought of as a deep-water technique, it can be very effective in shallow water.

For fishing addicts like me, that first spring day on the water was always a pleasurable fix. But now, it's much sweeter to spend the day catching fish instead of telling myself that just being there is important. Early spring fishing is a sure way to cure cabin fever, repair a foul mood, lift the spirits or just plain relax. And now that I'm catching fish on these trips, it's even harder to wait for the snow to melt.

Botulism Breakout

by Karl Grover
area manager
Cheyenne Bottoms

Karl Grover photo

Unusual conditions at Cheyenne Bottoms created the right environment for the deadly botulism disease. Quick action and a huge effort kept the die-off from becoming catastrophic.

During the second week of October 1990, dead waterfowl were discovered in unusually high numbers on the Cheyenne Bottoms Wildlife Area. The first few carcasses were found in Pool 2, and it appeared the birds died despite being in good condition. Three of the carcasses were frozen and shipped to the U.S. Fish and Wildlife Service's National Wildlife Health Center in Madison, Wis. The lab is available to help wildlife managers unravel such mysteries. A fourth duck found was determined to have died from lead poisoning. After finding several more dead ducks, a wide-scale survey of Pool 2 was scheduled.

Biologists searched the pool by boat and recovered 245 waterfowl carcasses. Symptoms displayed by sick birds lead the biologists to suspect botulism, and it was confirmed by test results from the Wildlife Health Center.

Since duck season was approaching, the botulism outbreak was announced publicly and hunters were warned not to bring dogs to the area. Although somewhat common on waterfowl areas, botulism is little known. Much of the following information on botulism is taken from

Field Guide to Wildlife Diseases, by L.N. Locke and M. Friend, U.S. Fish and Wildlife Service, Resource Publication No. 167, 1987.

Avian botulism is an often fatal disease of birds that have ingested a toxin produced by the bacterium, *Clostridium botulinum*. There are seven types of toxin produced by this bacteria. Type C toxin is the one most commonly associated with waterfowl die-offs. At the current time, insufficient knowledge is available to identify the environmental factors that set the stage for an outbreak. Once an outbreak is underway, however, a bird-maggot cycle serves to continue the disease. This cycle begins when the bacteria growing on decaying protein (such as animal carcasses) begins producing the toxin. The toxin is concentrated in maggots feeding on the carcass. The poison maggots are then eaten by birds that will likely die and perpetuate and accelerate the cycle.

Some environmental factors which seem to contribute to the start of an outbreak are water depth and quality, water level fluctuations, presence of decaying protein, rotting vegetation and warm temperatures. Any factor which can cause the death of invertebrates can begin the growth of *C. botulinum*. Fluctuating water levels that flood upland areas and kill terrestrial invertebrates, such as grasshoppers, is an example. Dense vegetation can contribute to fish and invertebrate kills, either through entrapment or by reducing the oxygen level in the water while rotting. High ambient temperatures and the presence of decaying protein also contribute to the establishment of the bird-maggot cycle.

Waterfowl and shorebirds are the most frequently affected birds of type C botulism. A few cases of type C intoxication have been reported in dogs, but generally, dogs and cats are considered to be resistant to the toxin. Losses can vary greatly from a few hundred to tens of thousands. Avian botulism is considered to be one of the most important disease

Karl Grover photos

Department personnel searched the pools on air boats, picking up all carcasses and collecting any sick ducks.

Karl Grover photo

The rehab pen allowed sick birds to recover before they were released. With fresh water and food, most sick ducks fully recovered in seven days. Pintails, wigeon, green-winged teal and shovelers were the most commonly affected species.

problems threatening migratory birds.

Botulism is usually associated with the western United States, but outbreaks have occurred throughout the country. Most outbreaks occur July through September. Unusually warm weather in late September and early October contributed to last fall's outbreak.

Botulism affects the peripheral nerves resulting in paralysis of voluntary muscles. The first muscles affected are the flight muscles. Most generally the next muscles lost are the leg muscles. Paralysis of the neck muscles is normally noted next. This prevents the bird from holding its head erect and is the basis for the common name of the disease: limber neck disease. The inner eyelid is affected next, preventing the bird from opening its eyes. Often, death results from drowning once the bird can no longer keep its head out of the water.

According to the National Wildlife Health Center, 1990 was an unusual year for botulism in the U.S. Outbreaks occurred farther south than usual and were more severe. An outbreak in Colorado claimed 7,000 ducks while another in South Dakota killed 11,000 ducks. Bear River National Wildlife Refuge in Utah had an exceptionally heavy loss of approximately 75,000 ducks.

The 1990 outbreak at Cheyenne Bottoms was moderate in terms of birds lost. A total of 4,241 birds were picked up. The majority of the birds affected were puddle ducks. This reflects the feeding behavior of these birds. Puddle ducks prefer shallow water areas and will feed upon insects found in these areas. This places their feeding activity in the habitat zone most likely to have toxic insects and maggots. Of the total birds found, 87 were eventually treated and released once they recovered from the disease.

Treatment of the birds entailed confinement away from the affected areas and free access to fresh water and food. Recovery periods varied with the stage of the disease, but seven days was usually sufficient. An antitoxin is available and is still kept on hand for use if whooping cranes or bald eagles are found suffering from the disease.

Disposal of carcasses is important to break the cycle of the disease and entailed incineration and burial. Since the bacteria is now present in large concentrations, the possibility of an outbreak next year is more likely than in the past. However, experience gained this year as well as construction of equipment to deal with an outbreak will allow a much better response in the future.

Since the outbreak occurred during the peak of the whooping crane migration through Kansas, there was

concern for this endangered species. A permit was obtained from the U.S. Fish and Wildlife Service that allowed Wildlife and Parks personnel to haze any whoopers that might arrive. Whooping cranes were successfully hazed off on two different occasions.

There have been other waterfowl die-offs at the Bottoms in past years. In 1967, an estimated 10,000 to 15,000 ducks and numerous shorebirds died from undetermined causes on the area. It was speculated that these birds died from avian cholera. A verified outbreak of botulism was experienced in September 1968, killing approximately 2,000 waterfowl.

Cooperation in dealing with the 1990 outbreak was exceptional. All divisions of the Department contributed personnel to the effort. Two law enforcement boats from eastern regions were brought in to assist. In addition, Quivira National Wildlife Refuge personnel brought a boat and helped in the effort. The Fish and Wildlife Service's Rainwater Basin Waterfowl Management District in Nebraska loaned an airboat as well. In addition, Linda Glaser, the Central Flyway wildlife disease specialist from the Wildlife Health Center spent several days at the Bottoms not only collecting carcasses, but she was also a source of needed information about botulism outbreaks. The cooperation among divisions and the combined efforts of individuals prevented the mortality from being much greater.

There are several factors which probably contributed to the 1990 Cheyenne Bottoms outbreak. During the summer, Cheyenne Bottoms and several other bodies of water in Kansas experienced unusually large blooms of filamentous green algae. This algae formed extensive mats in open water areas and probably contributed to lower oxygen levels in the water, especially in areas where the algae concentrated. These conditions may have caused the large-scale insect die-off which started the bacteria's production of the toxin. The unusually warm temperatures of September and October may have contributed to any deoxygenation occurring in the water and the perpetuation of the bird-maggot cycle. The fact that fresh water could not be flushed through the pools allowed toxin concentrations to remain high. As a result, birds were forced to remain in toxic areas and were unable to recover from the disease.

Three factors helped keep bird mortality low and brought an end to the outbreak. The collecting and disposal of carcasses helped break the cycle, and the rain and snow that fell in early November helped dilute the toxin. Cooler temperatures and freezing at night also helped slow the cycle.

Charles Swank photo

The final step in slowing the cycle of the disease is disposal of the carcasses. A pit was dug and all carcasses were burned daily.

center section

Edited by Mark Shoup

LETTERS

REVELATION

Editor:

My wife, a first-grade teacher, plans to feature "A Bird a Week" in her class. To assist in this, I volunteered to look for bird pictures. Your publication has been a constant enjoyment to us, so we save our old issues. This was an obvious source of bird pictures, so I got out the stack. But an added bonus developed -- revelation!

Our first issue was dated March/April 1983 (KANSAS WILDLIFE). As the pictures were noted and marked, the entire contents of the magazine had to be scanned. Dates went by and I noticed the artwork changing, the photos changing, the overall interest level changing -- but the quality remained outstanding.

I realize that changes occur in life, but usually I am aware of them. However, your magazine changed, and I was totally unaware. I feel bad that I did not notice sooner. Your magazine has always impressed me, and I usually read it from cover to cover.

However, I have realized that an outstanding publication in 1983 has become more outstanding today. This "revelation" has elevated my opinion of you and your publication ... **and your entire organization**. Hard to believe you improved your magazine and I missed it, but better late than never. Thank you!

Bob Pinkall
Junction City

NOT FOR HER

Editor:

I read with great interest and much empathy the article about bowhunting in the Nov./Dec. issue of KANSAS WILDLIFE AND PARKS (Page 24). Deer hunting and watching grown men sit for hours in a tree is not the only unexplained phenomenon in today's world. Let me explain. Twenty years ago, I was a newlywed. I married a hunter, and I believed it was my duty to participate in his interests. I wasn't totally ignorant about the art of hunting. I knew what guns looked like, what colors blended with the outdoors, and that most wildlife were very alert and nervous. My father had taught me these things.

However, I was not prepared for my first prairie chicken hunt. I had been married less than a year, and I rose at 3 a.m. and fixed breakfast. We drove 50 miles to our hunting area, and I spent four hours crouched in a blind (I did not have a gun) in a position that would leave my young body bent for days.

I had worn my best outdoor gear for the hunt, but I quickly learned that what I knew about cotton, wool and layering clothing did not prepare me for an entire morning of rain. Nor did tennis shoes prepare me for a stream crossing.

I returned to base camp a very wet, cold but enlightened huntress. My next hunt would definitely be for bargains at the nearest department store.

Marcia Craft
Salina

HAPPY LANDOWNERS

Editor:

We wish to comment on the "hunt-on-your-own-land" deer permit and the positive effects we believe it has had. In the past, though we like to hunt, we have dreaded deer season because of road hunters and trespassers. There has been less road hunting in our area for the last two years, but an even greater decrease occurred this year. We believe there may be three main reasons for this.

First, the use of mechanical decoy deer put the fear in some of the road hunters, and we applaud and encourage the continued use.

Second, the reorganization of the Fish and Game Commission and the Park and Resources Authority into the Department of Wildlife and Parks has increased visibility and availability of official activity, it appears to us.

Finally, the modification of the landowner permit has added to the decrease in problems. It seems to us that our greatest problems have come from local people, landowners, who wish to "save" the deer on their own places. Our experience this year supports that belief. This year, we had very little road hunting or trespassing. In one case in which we asked assistance from officer Bob Funke, he was very attentive to our concerns and responded very satisfactorily.

This has made our own hunting more enjoyable and has reduced anxiety about being out, either hunting or working, on our own land during deer season. We would be pleased to see the same system used for turkey permits.

Victor J. and V. Rodney Vorhees
Fredonia

PERMISSION GRANTED?

Editor:

Last hunting season, my partner and I had an experience that has us concerned, and we need your advice.

We were hunting a farm with the new owner's written permission, obtained that morning. About an hour into our hunt, the former owner drove up and told us to leave, threatening to call the local conservation officer. He said he was leasing the ground for pasture. The new owner hadn't said anything to us about the lease when he gave us permission to hunt, but we

apologized and left.

We have no desire to hunt where we're not welcome, but we are concerned about our legal rights if the conservation officer had been called and about the validity of the written permission we had received.

Don Munger
Overbroook

Dear Mr. Munger:

I'm sorry to hear of your unfortunate experience. If, as you say in your letter, you had written permission from the landowner to hunt his property, you had every legal right be hunting on the property you mention.

A former landowner would retain no hunting rights unless they were written into the selling agreement. Even if a new landowner gave up all hunting rights when purchasing a piece of property, it seems unlikely that he would then give written permission to someone to hunt that property.

If the former landowner had, indeed, leased the property for agricultural purposes, he might have the right to hunt it and to allow others to hunt. However, unless there were a written agreement with the new landowner, the tenant could not prevent the landowner from letting someone hunt.

I would not worry about what the conservation officer might have been told. However, you should have a talk with the new landowner. Let him know what happened, and ask him if you may still hunt. If he grants permission, then ask him to notify the former landowner. --*Shoup*

PROTEST PROTEST

Editor:

I would expect your magazine to oppose an anti-hunting article. I was amazed, though, that you included *Outdoor Life*'s exhortation to attack the advertisers who happened to have ads contiguous to the piece your Mr. Shoup terms a "senseless diatribe." Why not go after everyone who advertised anywhere in that issue of Esquire? Better yet, why not remind your readers that AT&T, Gallo, Sharp, et al. did not publish "The Killing Game" -- *Esquire* did. You should have included *Esquire*'s address instead of JC Penney's. If you want your hunter-readers to shoot, point them at the right target.

Dr. Ronald G. Evans
Topeka

Dear Dr. Evans,

I appreciate your concerns on this subject, and I particularly appreciate your noting the exclusion of *Esquire*'s address in the article. This oversight will be corrected. (See below.)

However, I cannot agree with your assessment that it was unfair to include the addresses of those advertisers associated with the article. In a democracy, admonishment or boycott of businesses associated with causes contrary to one's belief -- whether that association is due to complicity or accident -- is the most effective means of protest.

Another incident involving JC Penney's last year illustrates how such protest can work. H. Cotler Co. distributed a line of clothing with anti-hunting messages on the labels. Penney's bought the line, and the clothes began appearing in their stores. Many active hunters noticed the clothes. Protest was immediate -- and aimed primarily at JC Penney's, not the producer of the clothing. By all accounts, JC Penney's officials were unaware of the political message in this clothing line and were simply fulfilling in good faith the terms of a contract with H. Cotler. Nevertheless, Penney's was the obvious target for protest, and they soon removed the clothing from their stocks nationwide.

Hunters expressed their concern, Penney's responded, and no one was hurt, excepting perhaps the producers of the clothing.

In the case of the *Esquire* article, protest *should* be made to the magazine as well as the advertisers. An "exhortation to attack," however, is not what the *Outdoor Life* article calls for. It simply says that a group of citizens is being slandered by a nationally known magazine. If you agree that this is the case, write all parties involved and register your protest in the most peaceful manner available -- write a letter.

I'm sure that most sponsors of *Esquire* do not want to be associated with an article as unjust and inflammatory as "The Killing Game." If you have not already read this article, I encourage you to do so. Whether you are a hunter or not, surely you will understand the outcry. --*Shoup*

NOTE: To write *Esquire* address letters to Editor, *Esquire* magazine, 1790 Bdwy., New York, NY 10019.

MUSHROOM QUERY

Editor:

You print a fine magazine from which I learn a lot, so I thought you might be able to help me. Is there such a thing as chanterelles mushrooms in eastern Kansas? If so, what time of year would you find them, and what kind of habitat would they be found in?

Blake R. Nelson
Baldwin

Dear Mr. Nelson:

Chanterelles mushrooms are of the family *Cantharellaceae*, and there are a number of species found throughout the United States. According to Bud Kramer, mycologist at Kansas State University, a number of official collections of chanterelles have been documented in Kansas.

The best time of year to find them depends on the particular species, but generally, mid-summer to early fall should be good times. Wooded areas are the most likely spots, but chanterelles are always found on the ground, never on or in wood.

Chanterelles are most easily distinguished by their characteristic trumpet shape, almost always accompanied by a depression in the cap. Many species are highly prized table fare, but a few cause gastrointestinal upset.

Unless you are an expert on mushroom identification, all mushrooms should be avoided until properly identified. Many are highly poisonous. If you find mushrooms that you cannot positively identify, take them to someone who can. Many college and university biology departments have mycologists on their faculties. Ask if they can help with identification before eating any mushroom. --*Shoup*

LAW

DICK KNOWS NOSES

Conservation officer Dick Duling, Quenemo, spends much of his free time looking for lost things -- people mostly, but often objects as well.

Duling has some help nosing around for lost objects, however, and his helpers have the best noses in the canine world--bloodhounds. He keeps one or two honed sharp for any time he may be called to find lost people, escapees or lost articles. He assists many other agencies and has been responsible for saving lives of children and old people who have become lost.

Duling is also developing ways to find drowning victims in cold water. There is a critical period for a drowning victim in cold water wherein they can be resuscitated without serious effect. This period is far longer than in warm water, so the quick find by a highly trained scent dog can often mean the difference between death, disability or a normal life.

He also takes his hounds to schools and other meetings to talk about his work. He is involved in the "Hug a Tree" program, which is a national effort to educate children about how they can keep from getting lost and what to do in case they do get lost. One of the teachings is that a child should not wander, but should stop at the largest tree they can find and "hug" it -- or stay beside it and let the searchers come to them. --*International Game Warden*

MARYLAND POACHERS

Last November, conservation officer Val Burrell, Ellsworth, received a call for assistance from Kansas Highway Patrol trooper Dennis Gassman, Russell. Gassman had been on patrol along Interstate 70 when he noticed a Maryland vehicle parked by the road and two men dragging a deer across a nearby field. Trooper Gassman detained the two men until Burrell could investigate.

When she arrived on the scene, Burrell realized that the incident had occurred just across the Ellsworth County line in Lincoln County, so she summoned that area's conservation officer, Tom Swayne, who arrived shortly. Trooper Bruce Hyman, Ellsworth, also arrived.

In the meantime, the two suspects pled their case, claiming the deer was a road kill. The four officers doubted this claim, however, especially since there was a heavy blood trail leading into the field and the deer had a single hole in its neck. Their suspicions would later be justified by the discovery of a .270 caliber bullet in the dead animal's neck.

Apparently the two suspects, a man and his adult son, had been hunting in Wyoming without much luck. While travelling through Kansas on the return trip, they saw a nice Kansas whitetail and couldn't resist. Their lack of restraint, however, made for an expensive trip. The son was fined $250 plus $32 court costs for hunting in a closed season. The father, who confessed to being the shooter, was fined $250 for hunting without a permit, $75 for hunting without a license, $30 for not wearing hunter orange plus $32 court costs. All tolled, this was a $669 side trip.

Burrell credited the Highway Patrol troopers for their outstanding performance in this case. "There had been snow previous to this incident," Burrell notes, "and I had foot surgery the previous day. Trooper Gassman not only detained the two men, but he and Trooper Hyman dragged that deer 150 yards through the mud. They really deserve a pat on the back for this. Trooper Hyman is always there when something happens with wildlife." --*Shoup*

GARBAGE NEVER LIES

On opening weekend of pheasant season, a concerned landowner called me at home. Someone had dumped a bag of garbage on the road near his home.

He had searched through the bag hoping to find some evidence that might lead to the owner of the trash. The bag contained soda and beer containers, fast food wrappers, red potato peels, lunch meat rind, an unusual metal-lined plastic cap and a hind quarter of deer with steaks removed. The trash looked liked something from a camp, and the landowner said he had noticed a large green tent at the city park in Randall.

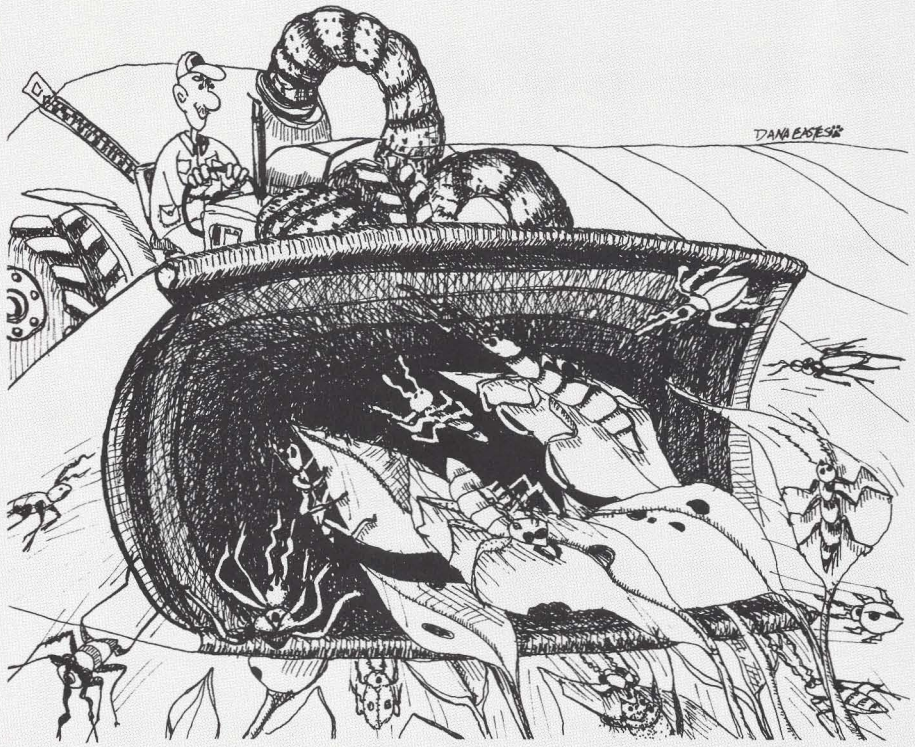
There were hundreds of hunters in the area, and the chances of finding the ones who dumped this trash were slim. However, I was near Randall and thought I'd check out the green tent. While I talked to two hunters in front of the tent, I noticed the same kind of trash I had found in the bag. Their fast food wrappers matched the litter I had seen earlier.

I asked if I could check their birds, which were in coolers in the tent. One cooler also contained what appeared to be fresh venison. I confronted the two hunters with the evidence, and they claimed they knew nothing about a deer. They said the tent belonged to their hunting companions. While we awaited the return of the companions, I finally realized what the metal-lined plastic cap was from. A can of camp fuel sat in front of the tent, the cap missing.

When the rest of the hunters returned, one man admitted to shooting a deer and showed the rest of the carcass hidden in the tent under his cot. A search of the tent also revealed a hen pheasant carcass in a trash bag.

The man was charged with failure to tag a deer, possession of a hen pheasant and unlawful hunt. --*Kevin Couillard, conservation officer, Aurora*

ISSUES



BUG SUCKERS

Vegetable growers are using huge tractor-mounted, custom-built vacuum sweepers to protect crops from spiders, mites and insects. The machines suck the pests from crops, and the fans that create the suction kill the bugs instantly. The sweepers can drastically reduce, and in some cases eliminate the need for pesticides.

California strawberry growers are having good success with the machines. The vacuum sweepers have reportedly reduced strawberry growing costs by at least several hundred dollars per acre per year.

The vacuums are also being used on other crops. Celery and lettuce growers have significantly reduced their use of pesticides, and Florida tomato and grape farmers are also finding success with the machines. A Massachusetts grower added a blower to a vacuum to knock Colorado potato beetles loose when a vacuum alone failed to suck to beetles from his potato plants. This has apparently been so successful that many farmers have been able to eliminate the use of pesticides on potatoes when using the machines.

Experiments are now under way to test the machines on insects that harm sweet corn, beans, peas, peppers and soybeans. --*The Furrow*

CLEAR WATER KIDS

The Soil and Water Conservation Society (SWCS) has released a new educational booklet on water resources. The 16-page, full-color illustrated booklet, "Water In Your Hands," focuses on water quality and management problems, the importance of a sustained supply of high-quality water, and prevention of water pollution and misuse.

The new cartoon booklet is the latest in an award-wining series by the SWCS. In the booklet, readers will follow 6th-grade students Martin and Heidi, and an ingenious cartoon character called "Fresh Water," on an adventure spanning millions of years and covering water quality and supply issues around the world. The knowledge and experience the children gain on a whirlwind trip around the world helps them discover a pollution problem in their home town and receive headlines in their local newspaper.

An instructor's guide to facilitate the use of the booklet in formal and informal educational settings is also available. Single copies of "Water In Your Hands" are 75 cents. The instructor's guide is $2. Substantial discounts are available on quantity purchases. For a free brochure describing all of SWCS's educational materials, contact SWCS, 7515 N.E. Ankeny Road, Ankeny, IA 50021-9764 or phone (515) 289-2331 or 1-800-THE-SOIL. --*SWCS news release*

1990 FARM BILL

Several provisions of the 1990 Farm Bill, which the President signed in December, will be of interest to farmers and conservationists alike. In terms of incentives for farmers to create or protect more wildlife habitat, this looks like a solid bill. What is now the Environmental Conservation Acreage Reserve Program (ECARP) replaces the old Conservation Reserve Program. ECARP is made of two subprograms -- the Conservation Reserve Program (CRP) and the Wetlands Reserve Program (WRP). Some interesting provisions of ECARP in the 1990 Farm Bill include the following:

Conservation Reserve

1) CRP eligibility was broadened to include marginal pasture land converted to wetlands or established to wildlife habitat prior to enactment of the 1990 Farm Bill.

2) Fifty percent cost-share will be available for replanting and maintenance costs over a 2- to 4-year period for land devoted to hardwood trees, windbreaks, shelterbelts or wildlife corridors. The 25 percent cropland cap does not apply to shelterbelts and windbreaks.

3) One million acres will be reserved for enrollment in both 1994 and 1995 to aid those producers who are having difficulty with compliance.

4) Existing CRP contracts in vegetative cover may be converted to hardwood trees, windbreaks, shelterbelts, or wildlife corridors and extended to 15 years.

5) Crop acreage bases will be protected upon contract expiration, as long as the original contract is adhered to.

Wetland Reserve

1) A Wetlands Reserve Progam (WRP) of 1 million acres will be created by 1995,

consisting of long-term or permanent easements on restored wetlands, riparian corridors that link wetlands, and associated lands.

2) Between 50- and 100-percent cost-share assistance will be available for wetland restoration under the WRP.

3) Land currently under a CRP contract can be restored to a wetland and entered into the Wetland Reserve Program if it was a prior converted cropland.

The wetland provisions of this new law are particularly encouraging. Landowners interested in any of these provisions should contact their local ASCS or SCS agent. --*Shoup*

ATRAZINE ANALYSIS

Atrazine is a widely used herbicide that is part of the triazine class. Triazine is the number one herbicide used in both the Kansas and the United States as a whole. Between 75 million and 100 million pounds of atrazine are used nationwide annually. In Kansas, nearly 6.1 million pounds of atrazine is used each year.

Most triazine compounds have a moderately low acute oral toxicity. Therefore, immediate acute health effect may not be seen. However, irritation of skin, eyes and respiratory tract may be noticed following exposure.

Evidence of other adverse effects associated with triazine exposure in humans is accumulating. Epidemiological studies have linked triazine exposure to increased risk of non-Hodgkin's lymphoma and epithelial ovarian cancer. Atrazine has also been implicated in the development of neurological problems following exposure to the skin for several days.

The latest re-registration standards for atrazine cite numerous data gaps, including chronic effects, carcinogenicity, reproductive effects, and mutagenicity. As long as there is insufficient information, a calculated scientific decision cannot be made. For now, the Environmental Protection Agency has classified atrazine as a class C, or possible human carcinogen, based on a study submitted in 1984 that reported malignant mammary tumors in female rats. --*Rural Papers*

POPULATION BOMB

Overpopulation has become so devastating to the environment that it has now formally been compared to cancer. Dr. Warren Hern, a researcher at the University of Colorado, has recently completed a study comparing overpopulation to a cancerous growth. The study, published in the September issue of *Population and Environment*, indicates that all four distinguishing traits that pathologists use to determine malignancies are present in the current state of human population. These include uncontrolled growth, invasion and destruction of adjacent areas, colonization of distant sites, and adaptability.

As cancer destroys the body it invades, overpopulation could destroy the earth, unless population stabilization is achieved. --*Population-Environment Balance, Inc.*

LIGHT RIGHT

Most Americans are unaware of the development of the compact fluorescent light bulb. This amazing bulb screws into standard sockets and gives off light that looks just like a traditional (incandescent) bulb -- not like fluorescents we're used to seeing in schools and offices. The compact fluorescents are the best; they come on instantly and produce no flicker or hum.

In addition, substituting a compact fluorescent light for a traditional bulb will keep a half-ton of carbon dioxide out of the atmosphere over the life of the bulb. --*EarthWorks*

NEW SCS CHIEF

An Ohio farmer, William J. Richards, has been appointed chief of the Agriculture Department's Soil Conservation Service (SCS). Richards replaces acting chief Mack Gray.

Richards is a strong supporter of conservation tillage and was one of the first farmers to put his entire farm under that practice. Conservation groups give Richards high marks and expect good progress under his leadership. --*Wildlife Management Institute*

CARBOFURAN KILLS

Laboratory studies show that carbofuran, a pesticide also known as Furadan, is acutely toxic to birds and is especially dangerous in its granular form. "Carbofuran may be killing as many as 2.4 million birds of all species each year," an unpublished Environmental Protection Agency report says. "Birds apparently mistake the pesticide granule for seeds or grit."

Secondary poisoning occurs when birds of prey consume the contaminated flesh. Bald eagles in the Chesapeake Bay area are especially affected due to the heavy use of carbofuran in the Delmarva Peninsula.

"In 1985, we treated the first bald eagle diagnosed as poisoned by carbofuran. It survived, but since then 23 other bald eagles found dead in Maryland and Virginia were poisoned by carbofuran," says Ed Clark, director of the Wildlife Center of Virginia.

Wildlife are not carbofuran's only victims. "Carbofuran also poses a threat to groundwater," states the EPA study. "The pesticide has been detected in test wells near treated corn and potato fields in Maryland, in some cases exceeding levels considered safe for human consumption."

Carbofuran has also been found in groundwater in Massachusetts and New York. After it showed up in drinking water wells in Long Island, Furadan was taken of the New York market. --*National Wildlife Federation's "The Leader"*

ENVIROMENTALITY

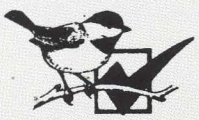
Some thoughts on technology:

"Technological progress is like an axe in the hands of a pathological criminal." --*Albert Einstein*

"The American people think technology waves a wand and the game goes on." --*Stuart Udall*

"There is [no] fuel or technological alternative to succeed oil and other fossil fuels. The only alternative is the human energy of restructuring our lives and economic activity for total conservation. No technological fix can bring back the America of the 1950s." --*Boone and Crockett Associates Newsletter*

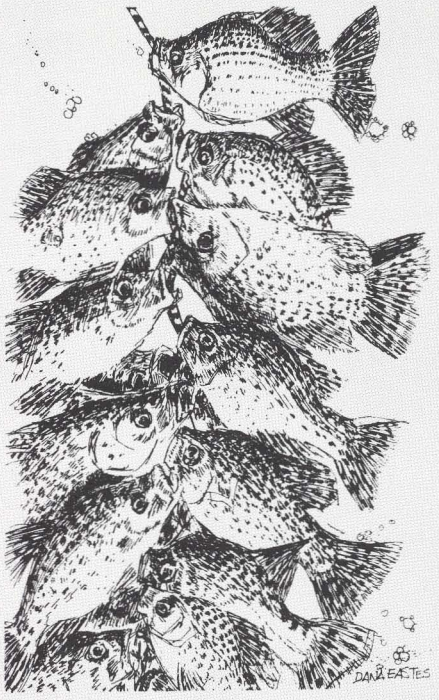
CHECKOFF



FOR WILDLIFE

CHECKOFF

FISHING



CRAPPIE PROJECT

Effective January 1, 1991, crappies less than 10 inches long cannot be possessed at Perry, Pomona and Melvern reservoirs. This restriction was imposed in response to public desire to catch bigger crappie. The objective of the project is to produce white crappie populations with as many as half 10 inches or longer, and as many as 10 percent 12 inches or longer.

A five-year study of white crappie in eastern Kansas reservoirs found the sizes of crappies caught by anglers in the winter and spring to be dependent primarily on how well two-year-old fish grew the previous summer. Two-year-old crappie are too small (5-8 inches) in the spring to be harvested by most anglers, and little harvest occurs during the summer. By fall, however, these fish can be 10 inches or longer if spring water levels allow successful gizzard shad reproduction -- the primary prey of adult crappies. If water levels were low in the spring, as has recently been the case, shad production is poor and crappies grow slowly.

To date, the bulk of the harvest during the winter and spring has consisted of three-year-old fish. Anglers have been so successful at taking these fish that age analysis (from scales) of crappies captured in trap nets has revealed that fewer than 20 percent of the two-year-olds one fall survive to age 3 the next fall. A crappie tagging project at Melvern Reservoir found that 45 percent of the fish tagged in April, 1988, were caught by June; 55 percent of all tagged crappie were harvested by fall.

Northeast Kansas reservoirs contain some crappies as old as 7 years, but populations are dominated by young fish because anglers prevent most from living past their third year. It is hoped that the length limit will increase the longevity of crappies. If the previous summer produced good growing conditions, the length limit will protect less than half of the three-year-old crappies from harvest during the following winter and spring. If growth was poor, most of the three-year-olds will be protected during that period.

During 1991, most of the crappies caught by anglers from Perry, Pomona and Melvern will be small three-year-olds, protected by the length limit, and about half as many crappies should be harvested compared to previous years. The 8- to 9-inch fish that might normally be kept by anglers should attain lengths of 10 to 11 inches or more and double their weight by the fall of 1991. Unless natural mortality is worse than expected, the length limit should help stabilize the quality of the crappie harvest. This means that sizes of fish present in winter and spring will not be as dependent on growth by two-year-olds the previous summer.

Perry, Pomona and Melvern reservoirs were selected for the length limit because these impoundments typically contain crappie populations dominated by young, fast-growing fish heavily harvested by anglers. Clinton Reservoir will serve as a "control." Crappie populations in all four impoundments will be evaluated through fall trap-net samples, and angler impacts and benefits will be assessed through creel surveys. In addition, gizzard shad populations will be monitored by seining in August to determine food availability.

Many people advocated the creel limit to reduce crappie harvest. The five-year crappie study indicated, however, that it would require a creel limit in the single digits to substantially reduce the harvest because most of the harvest was a result of many anglers each taking a few fish. The new statewide creel limit of 50 crappies per day is not expected to play a role in the project. This restriction was imposed by the Commission for social/ethical purposes and will not impact the number of crappies available. *--Don Gabelhouse, aquatic coordinator, Emporia Wildlife Investigations Office*

BOAT REGISTRATION

Effective Jan. 1, 1991 the Kansas boat registration procedure was changed. The new procedure will allow those who purchase boats to register them at local state park and regional Wildlife and Parks offices, and at selected county clerks and boat dealers.

In order to do this, any boat bought from a dealer must have proof of sales tax payment. For a boat bought from a private individual, a bill of sale is required. This information, along with the 12-digit hull identification number, model, length and year of the boat, will be needed for registration.

A three-year registration is $9.50. A temporary certificate will be issued as a part of this process for those who would like to use their boats immediately. The temporary certificate will replace the 30-day, $2.00 temporary permit that was previously available. Registration is still available by mail through the Pratt office, but this method will have a waiting period while the registration is being processed.

This change was prompted by boat owners who evaded personal property tax. They would buy several 30-day temporary permits during peak use times and would never permanently register their boats with the state. With no permanent record of boat ownership, these owners would simply not declare boats as personal property.

The new system will require all boats with sails or motors to be permanently registered. It should also be noted that sailboats used only for regattas are no

longer exempt from these registration requirements. Boat registration certificates must be in possession while boating and registration number must be clearly displayed on the boat. *--Marc Murrell*

FISHING PALS PROGRAM

Fishermen who like company now have a new way to meet fellow anglers, thanks to Topeka bait and tackle retailers Roger and Caroline Huff. To get solitary fishermen in touch with one another, they created the "Fishing Pals" program last summer.

Caroline Huff said that it was an idea she and her husband had been working on for several years. They were inspired to pursue the concept by the stories they heard from their customers.

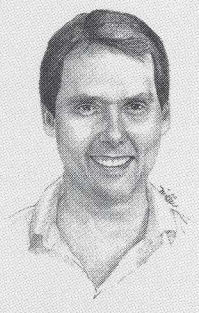
"One day a guy came by and said that he wouldn't be coming in any more because his fishing buddy was moving out of town," Caroline said. Another customer said he would like to go fishing more often, but his son was too busy to go. Another retiree commented that he loved to fish but had asthma and was uncomfortable going out alone.

The Huffs decided to put their ideas into action and began "Fishing Pals." The program is in its second season. The Huffs try to find out where the participants want to go and what kind of fishing they like. Even with the initial interest, they are finding that it takes more than exchanging telephone numbers to get people out to the lake. "People seem to be reluctant to call a stranger about going fishing," Caroline said.

In order to break the ice, the Huffs are planning Saturday afternoon get-togethers to allow everyone to meet face to face. "We just need to find the right key to get everyone interested," Caroline says. The hope is that some coffee and donuts, plus a few fishing tales, will do the trick. Some local advertising is also planned to spread the word about the program.

The Huffs emphasize that the program is for anyone, young or old, male or female, who would like a fishing companion. If you live or fish in the Topeka area and want to get involved with the "Fishing Pals" program, contact Roger or Caroline Huff at (913) 862-0312. *--Marty Burke, region 1 wildlife information representative*

FOR WHAT IT'S WORTH



THE PATIENCE OF WATER

Nature is tenacious. Man may clear forests, plow grasslands, and build roads, but all this must be maintained. A century to nature is the blink of an eye, and the moment man's attention is diverted from a generation's undertaking, nature claims its own. Weeds, then grass return. Saplings sprout, cracking asphalt. Man's work is less than a memory.

The most tenacious of nature's elements is water. The Colorado River's Grand Canyon bears awesome testimony to water's relentless energy. Even the smallest mountain stream will pound a gigantic boulder for centuries; eventually, the boulder will crumble under the assault. Observation of a stream's relationship with it's landscape can put the relationship between nature and man in better perspective. A small Colorado stream once provided me such insight.

About 12 years ago, a friend of mine and I hiked to a place called Ouzel Falls in Wild Basin, north of Allenspark, on a tributary of the St. Vrain. Just below the falls, we crossed the stream on a log that spanned the rushing water. The roar of the falls was so loud we could hardly hear each other speak, and the spray from the roiling water made our skins tingle. I imagined nature as a repository for man's spiritual needs, a place of stability and renewal.

Five years later, I returned to the same spot by myself. I tried to find familiar landmarks, but beyond the beaten trail, little remained the same. Even the log where we had crossed the river was gone.

A forest fire had gutted the area; it was burned out, cauterized. I had wanted to recapture time on this hike, but nature would have nothing of it. A lightning bolt had changed everything but the stream. I was unable to generate any of the feelings of reverie and reminiscence I had hoped for. No visions from the past, pleasant or bittersweet, appeared. New foliage grew wild and rich where the forest once blocked the sunlight. Nature had made room for a new life cycle, no regrets, no looking back. The scene had changed my internal landscape, as well. A different perception of nature emerged.

Nature is relentless. For her, time is meaningless; success does not require haste. Mankind, on the other hand, is in a hurry. We must make our marks, for our time is short. Nature acts as a constant reminder of our mortality, so she must be molded to fit our perception of a better world. Because we are driven to control the earth, it seems impossible for us to follow the rhythm of nature.

Still, we are a part of nature, like it or not, both in life and in death. Our blood cascades in cycles of its own, as rivers travel through time, bound for the sea. That the blood in my veins is a creation of nature gives me cause for hope. I find faith in the endless reliability of nature that the works of man can never approach. Despite my worries about the future of this earth, nature was built to last. The builder's genius is manifest in the patience of water.

HUNTING

KANSAS ELK

Elk, sometimes called wapiti, were common throughout Kansas prior to settlement. In the mid 1800s, huge herds were still being recorded. Like other big game animals, it is thought that the last free-roaming elk were probably killed in western Kansas at the turn of the century.

Until 1981, the only elk present in Kansas were confined to the 2,560-acre Maxwell Game Refuge northeast of McPherson. In January 1981, animals from the refuge were released on the Cimarron National Grasslands in Morton County to establish a free-roaming herd. The area can support about 50 animals and herd growth would be controlled by regulated hunting. The first Kansas elk season was held in 1987 and four permits were issued.

Another free-roaming herd was established on the Fort Riley military reservation in Riley County in 1985. The elk herd utilizes about 30-40,000 acres of the area. The first limited season was held for this area in 1990 with four permits issued. Currently, all elk permits are once-in-a-lifetime opportunities.

In order to add genetic diversity to these two free-roaming herds, the Kansas Department of Wildlife and Parks has received assistance from the National Bison Range in Montana. Eight Montana elk including three adult cows, two bull calves, and three cow calves were released on Nov. 26 on the Fort Riley military reservation. A group of ten Montana elk were released earlier on the Cimarron National Grassland area. Various animals from each area were fitted with radio collars to assist biologists with monitoring the herd's movements.

The elk stocking was made possible by financial funding from the Rocky Mountain Elk Foundation, a conservation organization committed to the future of elk throughout the country. Other support came from the Kansas Department of Wildlife and Parks, the Fort Riley Natural Resources Office, and the Geary County Fish and Game Association. National Carriers of Liberal donated transportation for the animals. --*Marc Murrell*

PHILLY HUNT

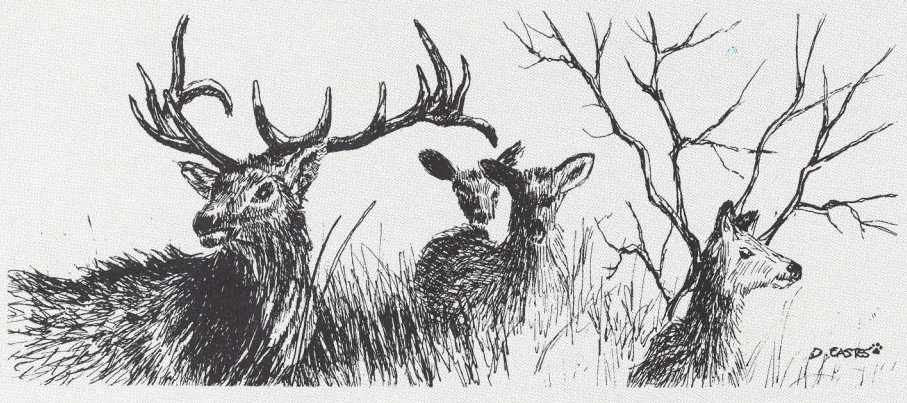
When the Pennsylvania Game Commission announced it would issue 500 antlerless deer licenses in Philadelphia County last year, many thought hunting could take place anywhere in Philadelphia, especially in the parks. The agency was subsequently deluged with calls.

"The Commission in no way implied that city parks are open to deer hunting," said Commission Executive Director Peter S. Duncan. He said city officials have told him the city has, by ordinance, banned hunting in city parks.

"All the Commission has done is make possible an antlerless season in Philadelphia, by offering antlerless licenses. Nothing else has changed. There has been an archery deer season, a small game season and an antlered deer season there for years," he noted.

However, firearms may not be used to take deer in Philadelphia. Deer that have been harvested in Philadelphia have been taken with bow and arrow, as was the case during the archery, antlered deer and antlerless deer seasons.

Access to land is controlled by the owner of the property in Pennsylvania. A municipality or authority or commission may prohibit or permit hunting on its property in the same manner as a private landowner may forbid or allow hunting. Thus, there are places in Philadelphia where hunting does legally occur. --*Pennsylvania Game Commission release*



PREMATURE SHOT

When the outdoor press (including KANSAS WILDLIFE AND PARKS, Nov./Dec. 1990, Page 24) reported a new nontoxic shot entering the market, hunters looking for an alternative to steel shot for waterfowling had high hopes.

However, reports of a reasonably-priced nontoxic shot that duplicates lead performance and can be used in thin-walled shotgun barrels may be premature. Although samples of the new tungsten polymer shotshells have been difficult to obtain in the U.S., a few tests have been performed. To date, the shot has not been approved for use in nontoxic shot areas in the U.S., but it is being tested.

The shot is molded of a mixture of powdered tungsten and plastic and is claimed to be soft enough to be fired in any gun without risk of barrel damage. The manufacturer claims that hundreds of rounds have been fired through a high-grade double barrel without damage.

The performance in the field is another matter. According to several sources, the shells pattern worse than lead or steel. The poor patterns are apparently the result of the very soft shot deforming during firing. A few shooting trials have shown the load to be adequate for ducks only at very short distances, 30 yards or less. It is less effective than typical steel shot loads used for duck hunting.

Another big obstacle to widespread use of tungsten-polymer shotshells is that they currently cost $36 per box in England. The makers expect the cost in the U.S. to be about $53 per box. --*South Dakota Game, Fish and Parks News*

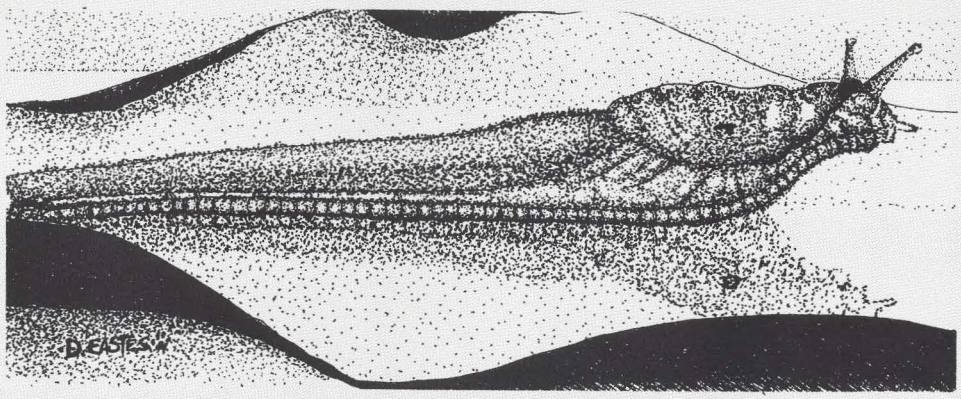
NATURE

EXTINCT NO MORE

Professor Max Thompson of Southwestern College in Winfield spent last September and October on sabatical in Australia. Thompson spent his time "down under" with a team from Sydney's Australian Museum on an expedition to identify birds in northwest Australia. As it turned out, this was no ordinary survey expedition. Thompson and team leader Wallace Boles discovered a species of bird thought extinct since 1912 -- the night parrot.

On the return trip across Australia, the four-man team decided to take the long way home through southwestern Queensland. During this drive, Boles' vehicle pulled off the road to observe some birds. Thompson, meanwhile, drove his vehicle ahead, pulled over and waited. When Boles caught up, he got out of his vehicle and walked over to Thompson, who was standing by the road.

"It was complete serendipity," says Thompson. "Nobody had even thought about finding extinct species on this expedition. But I just asked Wally [Boles] for a stick lying beside the road, and when he bent down to pick it up, there the [dead] bird was."



As luck would further have it, the Australian Geographic Society had earlier announced a $40,000 reward for acceptable scientific evidence that the night parrot lives. Few experts believed the bird might still exist. Exist it does, however, and the reward for its dicovery will go to the Australian Museum, which sponsored the expedition.

Thompson was invited on the expedition by his old friend Boles, who is a native of Emporia and is now curator of birds at the Australian Museum. Thompson collected several hundred scientific specimens while in Australia, 300 of which he turned over to Kansas University. This addition to the KU Natural History Museum gives that school the largest scientific collection of Australian birds in North America. In addition, Thompson brought back a number of species for Southwestern's natural history museum, which already houses one of the largest collections of birds in the Midwest.

Another bonus to the expedition was the discovery of two previously unkown lizard species. --*Shoup*

SLUG NOTES

The banana slug lives in the western coastal forests of North America, and it is the largest slug on the continent. Most adult banana slugs are about 6 to 8 inches long, but they can be as long as 10 inches.

A thick slime protects the banana slug's soft body, acts as a predator repellent, and enables it to stick to slippery surfaces and even climb upside down. The banana slug also produces a slime cord from which it can hang, allowing the mollusk to make quick returns to the ground from high places. This can lead to interesting encounters for humans hiking through the giant redwood forests

Perhaps the most curious fact about banana slugs has more to do with college students than with the slugs themselves. In 1986, students at the University of California at Santa Cruz (UCSC) rebelled against their chancellor and demanded that the banana slug become their university mascot. You can only imagine such slogans and chants as "Slime 'em, slugs!" "Go big yellow!" or "How 'bout them slugs!"

Luckily, UCSC has no interscholastic sports. --*Shoup*

TURTLE REDISCOVERED

Last year, Dr. David Edds and three Emporia State University students rediscovered the common map turtle (*Graptemys geographic*) in Kansas. The species was last seen 38 years ago in a creek in Osage County. The Kansas Department of Wildlife and Parks had classified this species as extirpated from Kansas.

Common map turtles are small- to medium-sized and have a low ridge along the center of the upper shell. The rear edge of the upper shell is serrated and the shell is normally brown with a net-like pattern of fine yellow lines, looking like a road map. The lower shell is light yellow. Head and limbs are brown with yellow lines. A small yellow spot is present behind the eye.

Rivers, sloughs and oxbows are their preferred habitat. They eat snails, mollusks, crayfish, some insects and vegetation such as mulberries.

As of September 1990, the investigators had captured 277 aquatic turtles at 66 sites in southeast Kansas. Nine of these were common map turtles found at six of the sample locations. The map turtles were located in smaller streams or creeks in Osage, Anderson, Allen and Franklin counties. All nine were marked and released. As the study continues, individuals will be recaptured to estimate population densities and learn about species biology, growth rate and home range.

Dr. Edds' investigation was funded by the Kansas Department of Wildlife and Parks through the Kansas Nongame Improvement Fund (Chickadee Check-off) and Emporia State University. --*Jerry Horak, wildlife researcher, Emporia Wildlife Investigations Office*

NOTES

MEET SECRETARY LACEY

In January, Governor Joan Finney appointed Jack Lacey acting secretary of the Kansas Department of Wildlife and Parks. Lacey, who is from Oswego, was a member of the Kansas Legislature for the last six years.

"I fondly remember my younger days spending time along the woods and along the creek bank. Back then I spent most of my spare time hunting whatever was in season and trapping in the winter. Today, I spend much of my outdoor time bowhunting deer," Lacey said.

Lacey grew up on a farm in Iowa. There he developed a deep love for the outdoors. His interest in and appreciation for Kansas natural resources is what lured him to his Wildlife and Parks position.

"I think the Department is put together on a very sound basis. And I think we have a good base to build on. I want to look at things as we go along and then consider things we'll want to change."

Lacey's first priorities consisted of visiting with Department employees and appointing the assistant secretary positions. *-Miller*

WETLANDS WANTED

The U. S. Fish and Wildlife Service is offering to restore, enhance or create wetlands on selected private lands at no expense to landowners. They are looking for drained wetlands and bottomland timber. Land may also include crops, grass or other timber. The landowner keeps all rights except those leased.

For more information, call Jim Minnerath at the Flint Hills National Wildlife Refuge, (316) 392-5553.—*U.S. Fish and Wildlife Service*

KIWANIS SHELTERS

Sand Hills State Park, located near Hutchinson, has two new information shelters for park visitors. The shelters are located at the parking areas on East 69th and East 56th streets.

The shelters were funded and built by the Hutchinson and Buhler Kiwanis clubs. Jerry Stucky, of Stucky Wood Products in Buhler, provided the use of his workshop, tools and equipment.

For their part in this effort, the Buhler Kiwanis Club received a Special Service Project award from Kiwanis Club International. The award is granted to clubs that complete a new community service project involving at least 75 man-hours. *—Cheri Miller, general repair maintenance technician, Sand Hills State Park*

SILK MOTH ARTIST

Dr. John Cody, Hays, has spent a lifetime studying and painting giant silk moths, which emerge from their cocoons, mate and die within a week.

Cody's paintings of these moths have been shown at the American Museum of Natural History in New York and the National Museum of Natural History at the Smithsonian Institute. Thirty-five of his paintings are featured in the University of Kansas Natural History Museum through April 28. *—KU Museum of Natural History*

CREATURE FEATURES

On April 25, the Milford Conservation Education Center will hold its grand opening. The center has numerous wildlife exhibits and programs, and recent new exhibits should enhance the facility greatly.

The Center lobby includes a scale model of the Milford Fish Hatchery, as well as wildlife display cases, live animals and 24,000 fishing lures.

A new addition -- a 350-square-foot aquatic diorama -- is now complete. It includes models of a pond, a reservoir and a stream, as well as 242 fish models in simulated environments. Wall graphics feature food-chain and land-sharing panels and provide information on woodlands, streams, marshes and grasslands. A terrestrial diorama is complete, and a game bird display being assembled.

The Center is open from 8 a.m.-5 p.m. Monday through Friday and by special appointment for groups. For more information, call (913) 238-5323. *--Shoup*

TREE PLANTING

The Kansas Conservation Tree Planting Program is accepting orders for low-cost tree and shrub seedlings for use in conservation tree plantings. Twenty-eight different species are available. The plants are offered for use in establishing wildlife habitat, windbreaks, erosion control, woodlots and Christmas tree plantations.

For more information, contact your local office of the Kansas Department of Wildlife and Parks, the Soil Conservation Service or the Cooperative Extension Service, or contact the Extension Forestry, 2610 Claflin Road, Manhattan KS. 66502, (913) 537-7050. *—William Loucks, Tree Planting Program leader*

LEOPOLD'S LEGACY

Eight northern Illinois conservation districts are distributing 11,000 copies of Aldo Leopold's *A Sand County Almanac* free of charge to local schools, landowners, government officials and business leaders. The environmental classic, originally published in 1949, is a series of essays in which Leopold lays out his philosophical and ethical views of the human relationship with the land. The districts hope to use the book to engender a greater sense of responsibility toward the environment, especially among students. They also hope to lay the groundwork for similar projects elsewhere.

For more information, contact Dan Kane, Boone County Soil and Water Conservation District, P.O. Box 218, Belvidere, IL 61008. *—E magazine*

THINK
EARTH DAY
APRIL 22, 1991

NATURE'S NOTEBOOK

by Dana Eastes

ANIMAL TALK

Take a walk on the wild side. Challenge your sense of hearing in the great outdoors.

You can do it in your neighborhood, or even better, grab your parents and head to a state park or wildlife area.

As you walk quietly, listen for wild sounds. You may or may not see an animal, but you can identify it by its sound.

Animals make sounds for different reasons, such as attracting mates, defending terrritory and fear. A cardinal sings to warn others to stay out of its neighborhood, and at the same time, it might be trying to attract a mate. A squirrel will chatter to alert others of your intrusion. Prairie dogs will warn other town members of danger by making a high-pitched chirp or yip, sounding like a small dog.

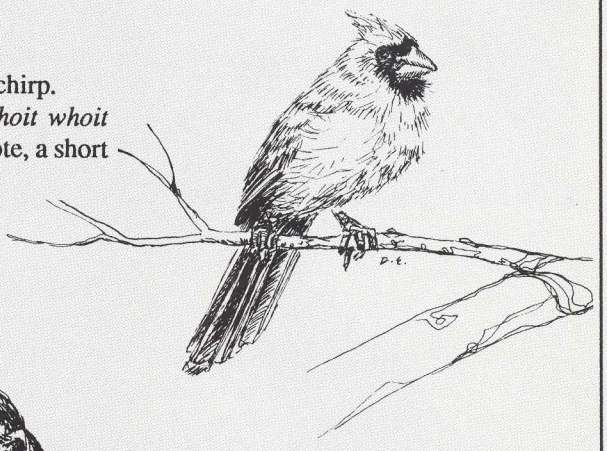
Animals will also use calls for more social reasons. A mallard duck will call to the rest of the flock to let them know where food can be found. Sitting on a hill, a coyote may howl, just to let other coyotes know that its there. Like all animals, a coyote can communicate fear, defend territory and attract a mate with the different sounds it makes.

Many animals are named by the sounds they make such as the *bobwhite* quail and the black-capped *chickadee*.

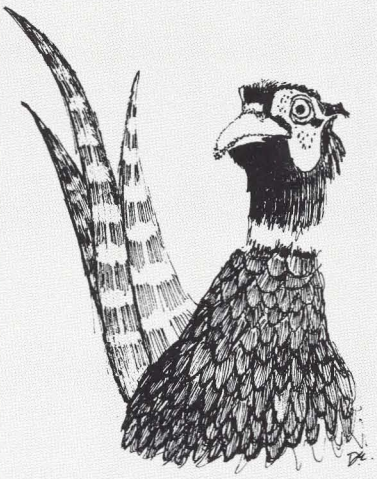
Here are just a few animals you may hear on your next walk on the wild side. Try this animal talk with your classmates or at home with your family. If you would like to identify more animals by the sounds they make, ask your teacher to order materials such as records, tapes or films from the Kansas Department of Wildlife and Parks Reference Center, RR 2 Box 54A, Pratt, KS 67124.The next time you're outdoors, turn on your ears and try to identify animals by the sounds they make.

Prairie dog
A high pitched *yip* or *chirp*.
chirp, chirp,chirp.
yip, yip, yip.

Cardinal
Song, a loud, high whistle or chirp.
what - cheer cheer cheer, whoit whoit whoit or birdy birdy birdy. Note, a short thin chip

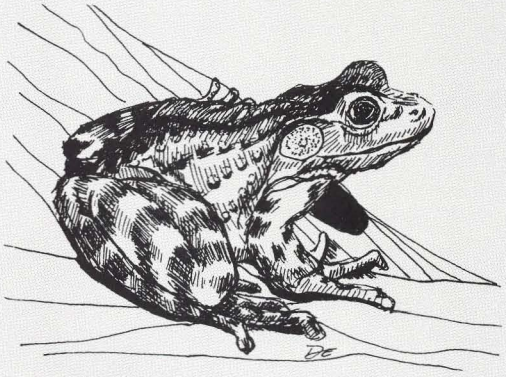


Bobwhite Quail
Bob - white! or *Poor, Bob - whoit!*
Covey call, *ka - loi - kee?* Answered by *whoil - kee.*

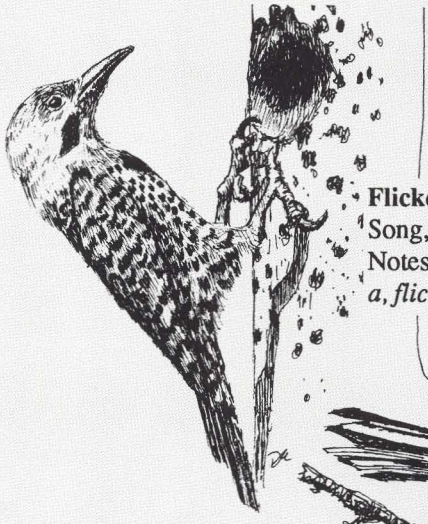


Ring- necked Pheasant
High-pitched *kutuck - kutuck*
Loud double squawk, *kork - kok*

Red-tailed Hawk
An raspy squeal, *keeer -r -r -r* (slurring downward)

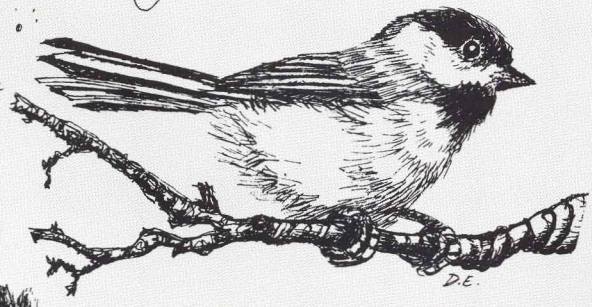


Bullfrog
Low-pitched and gravelly
Aarr - rumph, Aarr - rumph

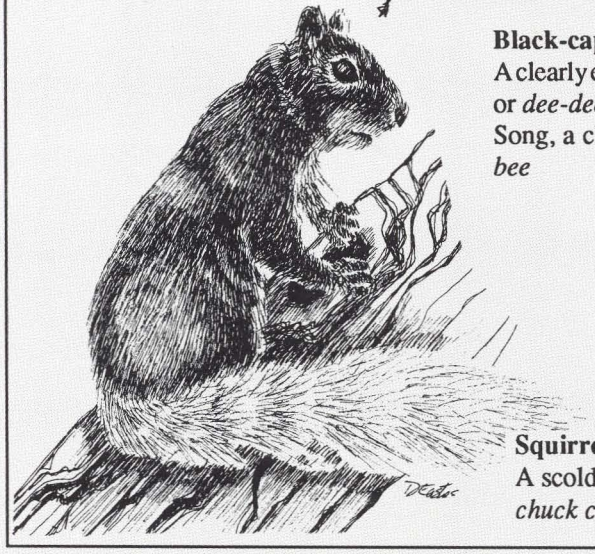


Flicker
Song, a loud *wick wick wick wick.*
Notes, a loud *klee - yer* and squeaky *flick-a, flick-a.*

Coyote
Howls and yips
Howls: *ahu, ahu, Haahh-o-o-o-o-o-l*
yips: a high pitched shrill.
yip,yip yip yip, yip



Black-capped Chickadee
A clearly enunciated *chick-a-dee-dee-dee* or *dee-dee-dee.*
Song, a clear whistle, *fee-bee-ee* or *fee-bee*



Squirrel
A scolding rattle.
chuck chuck, chuck chuck chuck chuck

Tribute To The Past And Promise For The Future

by Sally Wilk
field supervisor II
Melvern/Pomona Unit

photographs by Mike Blair

In honor of our only Kansan President, Dwight D. Eisenhower, and our veterans of war, Melvern State Park has a new name and theme. The same great services are still provided, but the area has a new look and deserves a visit.

A flurry of activity enveloped the park office as final preparations for the big event were being made. A gentleman walked in and quietly demanded "What's going on here?" He had seen the newly erected signs on the highway proclaiming Eisenhower State Park. "What's happened to Melvern State Park?" he asked. As had by now become routine with all park staff, I dove into my explanation of how the 1990 Kansas Legislature and then Gov. Mike Hayden had enacted legislation to change the park's name. I added that a ceremony would be held the next day to officially recognize the name change intended to honor veterans and the centennial birthday of the only U.S. President from Kansas. With a doubtful expression, he mumbled something about taking a look at the park's new theme as he made his way out the door.

The following day, Oct. 12, 1990, was a big success. In the midst of a beautiful Kansas fall day, then Wildlife and Parks Secretary Bob Meinen remarked how fitting it was to honor Dwight Eisenhower by naming a state park for him. Growing up in rural Kansas, Ike loved to camp, fish, hunt and explore the outdoors. Meinen encouraged today's park visitors to enjoy similar outdoor pursuits while reflecting on the Eisenhower legacy.

Highlighting the ceremony was the unveiling of the new park entrance sign by Lyn Eisenhower, great-niece of the late President. Ron Parks, executive director of the Kansas Eisenhower Centennial Commission, assisted with the unveiling. Ms. Eisenhower related how all the Eisenhower brothers, not just Ike, were fond of outdoor pursuits and had many pleasant memories of camping adventures. Referring to the new park name, Ms. Eisenhower stated "I am sure he is quite proud to be a Kansan."

Abilene, Eisenhower's boyhood home, has immortalized the world leader with a larger-than-life statue. A fund raising drive to erect an identical statue in the state park was announced by the Osage County Economic Development Corporation (OCEDC) during the ceremony. Representative Elaine Wells, primary sponsor of the legislation to change the park name, presented a memorial bronze plaque for the statue base to Secretary Meinen on behalf of OCEDC.

To symbolize his Kansas "roots", Kansas Gas and Electric Company of Wichita sponsored the Eisenhower Centennial Tree program as a part of the year-long centennial celebration throughout Kansas. Jerry Coonrod of KG & E presented a redbud and hackberry tree grown from seeds collected at Ike's boyhood home.

Last fall's official dedication ceremony resulted in a new appearance and theme at the park that will greet visitors this spring. Eisenhower State Park will not only continue to provide the same exceptional outdoor experience previously provided, but visitors will also enjoy new opportunities. Visitors can continue to enjoy 197 modern campsites and numerous primitive campsites at the newly named Abilene, Blackjack, Churchill, Doud, West Point and Five-star campgrounds. Swimmers can enjoy a pleasant outing at Omaha Beach with its sand beach and convenient shower house. A new one-half-mile long interpretive trail allows visitors to take a leisurely walk and learn about the environment.

Boating and water sports enthusiasts find the park to be an ideal base for water fun on the 6,930-acre Melvern

Melvern State Park was officially changed to Eisenhower State Park at a ceremony on Oct. 12, 1990. Areas within the park were also renamed to reflect a tribute to war veterans and patriotism.

Reservoir. Eighteen lanes of boat ramps easily accommodate anglers, skiers and pleasure boaters. Sailboat Beach serves as a popular launching point for catamarans when colorful sails decorate the lake during the Flint Hills Yacht Club's annual June regatta.

Following a one-year absence, the 9th Bluegrass Festival will be held July 12-14, 1991 at Blackjack Campground. Abundant shade trees will set the stage for professional bluegrass bands from throughout the Midwest. Visitors can enjoy a weekend of camping amid the sounds of traditional bluegrass music or come just to enjoy the three stage shows scheduled throughout the weekend.

Excellent stands of native prairie dominate the 1,785-acre park. Management activities emphasize the conservation and enhancement of this prairie. The result is a colorful blanket of native wildflowers and grasses throughout the spring and summer. Abundant habitat provides ample opportunity for wildlife viewing. White-tailed deer, coyote, quail, prairie chicken and bobcats are commonly seen in the park. The park's wildlife habitat along with the reservoir attract a wide variety of birds for the birdwatcher.

Approximately 620 acres on the west side of the park were opened to hunting for the first time in 1989. Restricted to archery and shotgun hunting from October 16 through March 31, the area is most frequented by quail, prairie chicken and deer hunters.

As a natural resource manager, I have often thought of my work as more than providing outdoor opportunities for today's citizens; it's a promise to ensure natural resources and outdoor recreation for future generations. Now I also realize our strong ties to the past.

After completing his stay at the park, our disgruntled visitor returned to the park office. His mood, however was greatly changed. "I want to compliment you on your nice park! It really means a lot to me to see those names. I was 'over there' you know." After weeks of worry and work to rename the park, I finally realized what had been accomplished. We were not just renaming the park and campgrounds, we were allowing people to reflect on an important time of our world's history. For those who lived it, the reflection was very personal. For people like me who have only read about it, the new theme reminds us of the world impact one great Kansan had and what a sacrifice our veterans made.

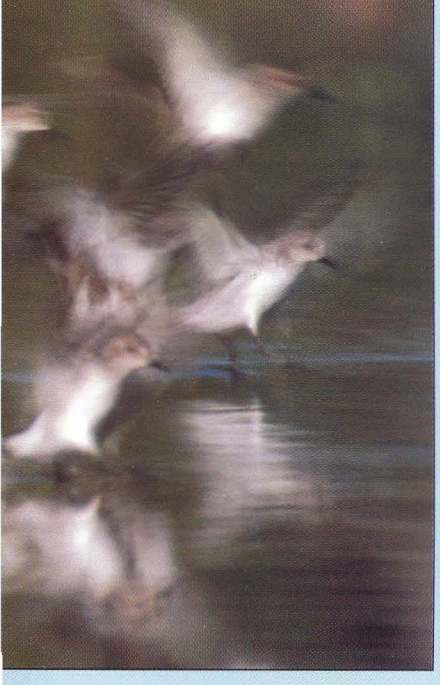
Gallery

by Mike Blair

Motion

Landing shorebirds; 600mm lens, f/22, @ 1/30 sec.

Running white-tailed buck; 400mm lens, f/3.5, @ 1/15 sec.



Still photographs record wildlife in the dimensions of time and space. At their technical best, they freeze action of beating wings and pounding hooves, allowing insights into motion. But at slow shutter speeds, the camera records the motion, sweeping precise movements into the artistic realm of blurred imagery. In this format, photography captures the drama of the outdoors.

Running pheasant; 600mm lens, f/5.6, @ 1/60 sec.

Rising wigeons; 80-210 zoom, f/2.8, @ 1/30 sec.

Fairies On The Wind

by Mark Shoup
associate editor

photographs by Mike Blair

Almost like magic, seemingly insignificant potholes can suddenly explode with life when freshwater shrimp hatch.

Where there's water, there's life. From the smallest farm pond to the largest reservoir, from the littlest spring to the mightiest river, water teems with life. Everyone knows this basic axiom of nature. Yet when it comes to intermittent waters, especially those potholes and low spots that dot the midwestern landscape and may hold water only a week or two each year, we often disregard this fact. "Good for a few mosquitoes, " we may say, "but that's about it."

This belief couldn't be further from the truth. Many times these waters explode with life as soon as water meets soil. Plants, protozoans and a variety of insects depend on the potholes, playa lakes and other seasonal wetlands in the Kansas plains, but there is something even more fascinating—shrimp. Yes, in the Great Plains, shrimp, crustaceans, much like those delicacies from the deep sea. Prairie shrimp eggs are carried on the wind to dry water holes where they lie dormant until conditions are perfect. Then, when winter snow melts or spring rains fall, these pools dance with activity. Usually dry depressions become important sources of protein for migrating shorebirds and waterfowl. Anthropologists believe that even Indians enjoyed plains shrimp.

Shrimp have not always occupied prairie water, however. The origins of modern freshwater species are most certainly marine. What we have now are highly evolved immigrants from coastal estuaries and tidal pools, creatures that have developed the ability to retain salt and endure extremes of temperature, dryness and lack of oxygen. They can adjust to a variety of aquatic habitats. Their eggs are blown from place to place by wind and storms or are carried on particles of dust and on (or in) the bodies of birds and aquatic insects.

I learned about these amazing creatures shortly after I came to work for the Department. Staff photographer Mike Blair came into the office one spring day with a gallon-sized pickle jar full of murky water. He let us know that we were about to witness something very special, and he was right. The jar was full of fairy, tadpole and clam shrimp, swirling from the top to the bottom. They were almost surreal in this setting, creatures I imagined only lived in the ocean. But here they were, fresh from Texas Lake, a wetland west of Pratt.

The fairy shrimp resembles its marine cousins, but is smaller and less colorful. Freshwater shrimp eggs may survive in dried mud for years before conditions may allow them to hatch.

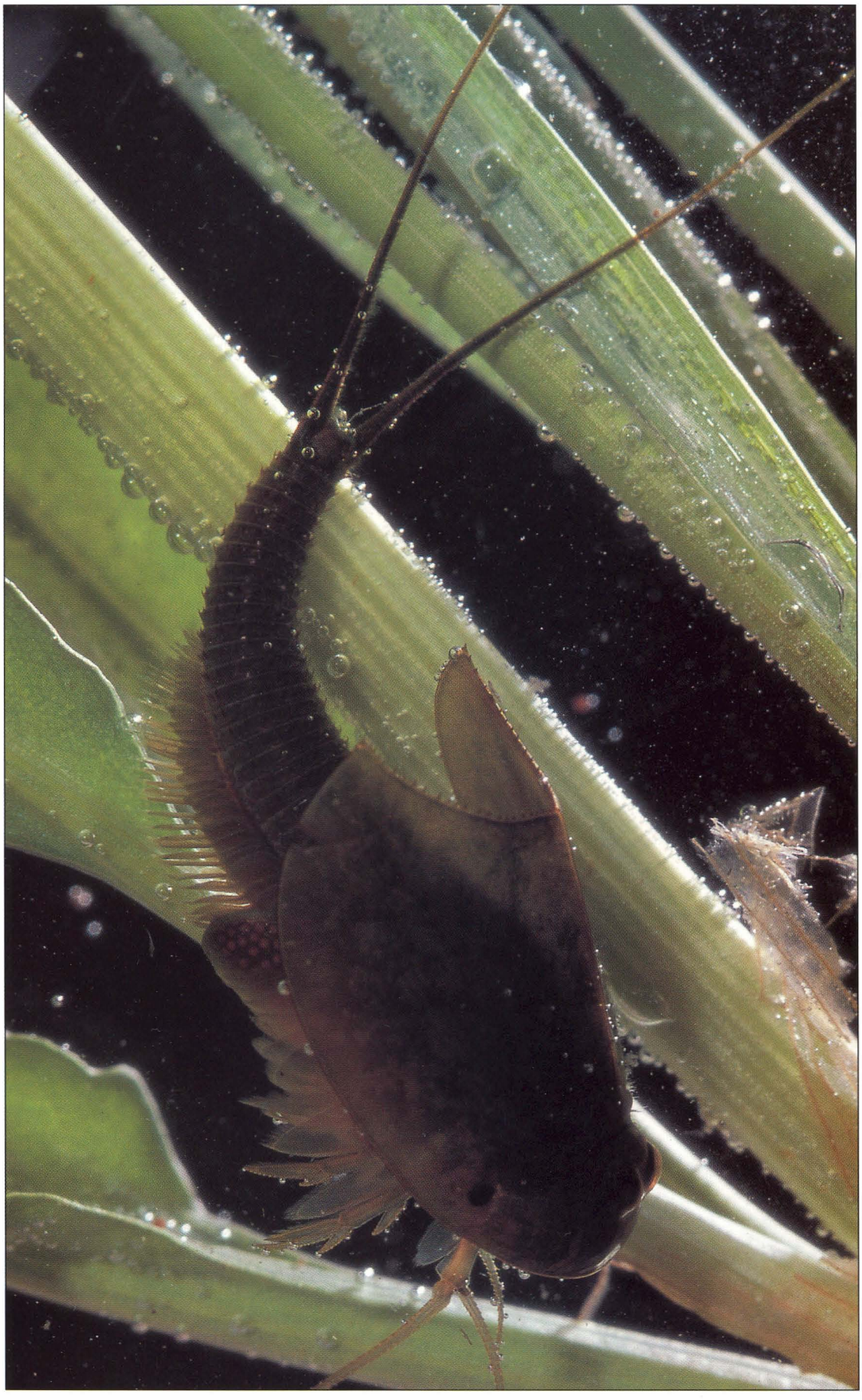
Dr. Robert W. Pennak, of the University of Colorado in Boulder, is a foremost authority on freshwater invertebrates. According to Pennak, plains shrimp are crustaceans of the Division Eubranchiopoda and are relatives of crabs and lobsters. There are three orders in this division: Anostraca (without shield), which includes fairy shrimp; Notostraca (back shield), which includes tadpole shrimp; and Conchostraca (shell shield) which includes clam shrimp. There are 66 species in this division, the only taxonomic category of invertebrates exclusive to North America. Most specimens are about 1/4-1 1/2 inches long.

Although the species within each order display similar features, freshwater shrimp look quite different from order to order. Fairy shrimp look much like their popular marine cousins, and they are the most common of the three. Unlike tadpole and clam shrimp, fairy shrimp have no protective carapace, or shield. They have stalked, compound eyes and 11 pairs of swimming legs that propel them upside down through the water. The large shield on the tadpole shrimp's back makes it a dead-ringer for the larger marine horseshoe crab. They have attached, compound eyes and 35-71 pairs of legs with which they crawl or swim. Clam shrimp look exactly like their name suggests. They have two clamshell-like shields that protect the body, attached compound eyes and 10-32 pairs of swimming legs.

Freshwater shrimp are not as colorful as many marine crustaceans. Most are translucent to white, occasionally showing some hint of gray, blue, green, orange or red. Fairy and tadpole shrimp drift and dart through the water with the complex, graceful beating of their legs. Clam shrimp "row" through the water using their large biramous, or second antennae.

They all eat algae, bacteria, zooplankton and bits of decayed matter in the water. They feed continuously, gathering floating objects with their legs. Tadpole shrimp will also eat dead tadpoles, worms and frog eggs, and some are even carnivorous, feasting on other shrimp.

The reproductive activity of freshwater shrimp is one of their most fas-



The tadpole shrimp's carapace, or shield, makes it look much like the marine horseshoe crab. Early spring rains or snowmelt can trigger an explosion of freshwater shrimp. Previously dry and inconspicuous potholes will suddenly be teeming with life.

The clam shrimp is named appropriately for its two shell-like shields. Often unnoticed by man, freshwater shrimp are critically important food supplies for migrating waterfowl.

cinating attributes. Although both males and females are produced, males are often absent from a population. This does not, however, deter females from reproducing because they are capable of parthenogenesis—the ability of eggs to develop without being fertilized by a male. After eggs have been retained in the female's body for several days, they are released into the water. Two types of eggs are produced. Thin-shelled summer eggs hatch immediately. Thick-shelled winter, or resting, eggs may lie dormant for extended periods until conditions favor hatching. Resting eggs can also withstand unusual heat, can be frozen solid and can endure complete drying. According to Pennak, viable eggs have been kept in dried mud on the lab shelf for as long as 15 years before being hatched. Once hatched, they may live three to 24 months, depending on the species and environmental conditions.

Freshwater shrimp can be found in a variety of habitats—roadside ditches, grassy spring ponds, cattail marshes, woodland pools, playa lakes—almost wherever there is water. Freshwater shrimp can make amazing adjustments to the fluctuating water levels and salt or alkaline contents of prairie water holes, but they are conspicuously absent from lakes and running water.

A number of mysteries surrounding freshwater shrimp continue to baffle scientists. Sometimes a species is abundant for several successive years in a particular water hole, then suddenly is absent. In other ponds, populations may be present or absent from year to year in a completely unpredictable fashion. In a restricted group of small ponds or pools, freshwater shrimp are usually present only in scattered pools and absent from most of those surrounding the inhabited ones. Seldom does a pond contain more than one species of a particular genus at one time.

Fairy, tadpole and clam shrimp are very important to migrating waterfowl and shorebirds. These birds load up on protein-rich invertebrates during rest-over periods as they fly north to their nesting grounds. A good supply of freshwater shrimp and other invertebrates can not only ensure migrating birds have the strength to make the trip but are also in good enough physical condition when they arrive to successfully nest. Unfortunately, shrimp have become in short supply in recent years as wetlands have been increasingly drained for development, industry and agriculture.

Marvin Kraft, waterfowl coordinator for the Department, emphasizes the importance of freshwater shrimp. "I think they are really important to waterfowl, females in particular. They need [this source of protein] to get in good condition to lay eggs, and the young need them to develop."

George Swanson, of the Northern Prairie Wildlife Research Center in North Dakota, conducts research on freshwater shrimp. Swanson believes they are very important compared to other freshwater invertebrates. "Fairy shrimp are the first ones that show up as the snow melts," usually sometime in February in North Dakota. "They are particularly important to breeding females. Some shorebirds, such as avocets, use them too."

So, you find this all very fascinating, but wouldn't it be great to recreate a freshwater shrimp scene in your home or classroom, just to get a better idea of how they look and behave? Well, according to Swanson, it might be possible, though tricky. The first trick, of course, would be to find a pool with freshwater shrimp. Talk to farmers, county agents or wildlife biologists who may have found fairy shrimp in the past. Shrimp will be absent from any area that has been recently treated with pesticides. Once you find an inhabited pool, collect some shrimp for viewing, but remember the pool's location. Then wait.

After the first frost in the fall, go back to your pool and collect a bucket of mud or dried mud. Clean an aquarium and fill it with fresh water. Don't use tap water; snow melt or rain water would be best. Place a small amount of fertilizer or fish food in the water. The bacteria and algae that develop from this will provide food for the hatched shrimp. Keep the water cool to allow early-hatching species the best chance to come on. If you are very lucky, you may witness the dramatic spectacle of many-legged creatures—all exotic but some looking very familiar—swimming in your tank.

Few of us comprehend the variety of nature, yet we all have some idea of how strange and wonderful it can be. We've watched "Nature" and other programs on television and marveled at exotic creatures in far-off lands. All too often, however, we fail to realize that many natural wonders can be found right here in Kansas. Look around. Look hard, for miracles are not easy to spot. But they're worth the effort. Witness the graceful glides and turns of freshwater shrimp, swept on the wind and burst from nowhere in the tiniest water hole, and you can make testimony, as did Aristotle, that "In all things of nature there is something of the marvelous."

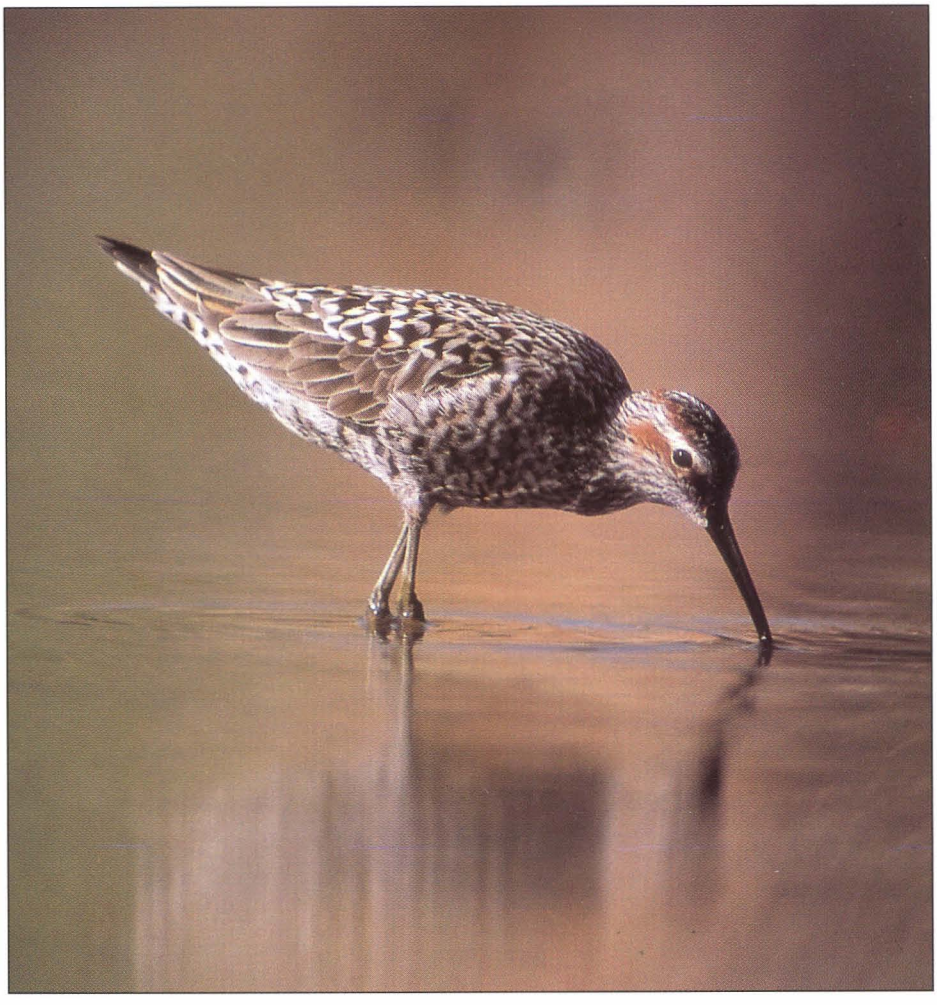
A Birdwatcher's Paradise

by Margy Stewart
Topeka

photos by Mike Blair

The author was afraid that birdwatching in Kansas would be limited to a few prairie species. Instead, she was pleasantly surprised to find a wide variety of habitat and a huge array of birds.

When my husband Ron accepted a job at Kansas State University, I felt some apprehension. We had begun birdwatching several years before, while we lived in the woodland states of Wisconsin, Indiana and Kentucky, and I wondered if a prairie state would have as much to offer. I hoped I was not so geographically ignorant as to equate the plains with monotony. I had heard the prairies compared to the ocean too many times to doubt their power. And I was looking forward to seeing the prairie chicken and other grassland birds. But I was bracing myself for an environment where the species range might be narrower and where individual birds might turn out to be fewer and farther between.



And yet during the spring migration, while I was finishing up my teaching duties in Indiana, Ron's nightly calls from Kansas became increasingly filled with reports of interesting birding. Manhattan, Kansas, he was discovering, combines a surprising variety of habitat. It is a wooded city near a lake, at the confluence of two rivers and on the edge of the tallgrass prairie. During casual walks after work, Ron was seeing great-crested flycatchers, scis-

Kansas is often thought of as flat featureless grassland — a good place to see prairie chickens. But it actually harbors a huge variety of bird species.

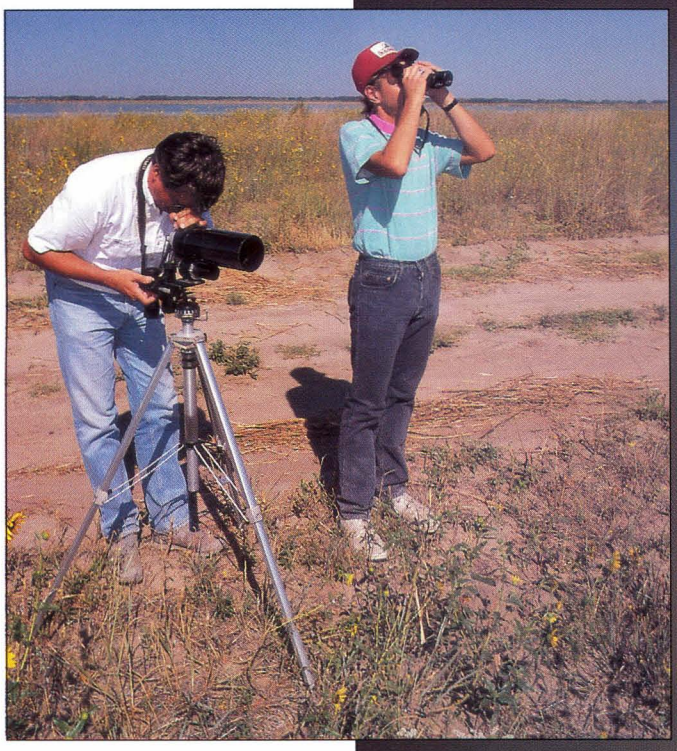
sor-tailed flycatchers, brown creepers, flocks of ruby-crowned kinglets, great blue herons, snowy egrets, red-headed woodpeckers, a variety of warblers, rough-winged swallows, phoebes, kingfishers, flickers, teal, scaup, shovelers, coots, and bufflehead. And during his business trips around the state, he had encountered some life birds: lark buntings, marbled godwits, black-necked stilts, Mississippi kites, peregrine falcons, lark sparrows and Harris' sparrows.

By the time I was able to join Ron in Kansas, the spring migration was over. Yet during our house-hunting trips around the city, we were frequently distracted by comfortingly familiar sounds: the calls of Eastern wood peewees, the chatter of black-capped chickadees, the songs of both Eastern and Western meadowlarks, the trill of red-bellied woodpeckers, the buzz of grasshopper sparrows and, surprisingly, since our range map indicated that they had not yet reached Kansas, the bubbling songs of house wrens. And one June weekend, after we had reached agreement on a house, we headed for Barton County to witness what we had been told was one of the most important wetlands in the world: Cheyenne Bottoms.

We had received information about the Wildlife and Parks-managed wildlife area from the Kansas Audubon Council and learned that more than 300 of the 417 Kansas bird species had been sighted at the Bottoms. We read that Cheyenne Bottoms hosted endangered species such as bald eagles, least terns, piping plovers, peregrine falcons and whooping cranes, provided nesting territory for more 100 species of birds and was a migration stop for almost half the North American shorebird population. I was quickly revising my opinion of what it meant to be a birder in a prairie state.

"Flat," my friends had warned me when I asked what Kansas would be like. But as we drove southwest toward Cheyenne Bottoms, "flat" seemed the wrong word for the expanse of prairie around us that gathered itself into ridges, swells, folds and gullies, occasionally accented by dark emerald-green rows of trees. "Vast" seemed a better word, for I

Sandhill cranes lead the fall and spring migrations, passing over Kansas. Because Kansas lies at the heart of the Central Flyway, wetlands are critical resting sites in the state.



A birdwatcher's paradise? You bet Kansas is. Of the 417 bird species seen in Kansas, more than 300 have been documented at one wetland: Cheyenne Bottoms. This 19,000-acre wildlife area offers bird enthusiasts a tremendous variety of species to view, especially during the migrations.

could not remember ever feeling that the horizon was farther away. I was struck by the rapidity of the prairie sunset: one minute the sun was on the horizon, shining with midday intensity, the next it was gone, abruptly succeeded by thickening dusk. It was in that early darkness that we reached the entrance of Cheyenne Bottoms. We decided that finding a motel could wait. We would take a look at this prairie wetland in the dark.

As we turned off the highway onto one of the gravel roads dissecting the wetland, our car was suddenly engulfed in clouds of insects, the headlights illuminating a startling variety of size and shape. We stepped out of the car with some fear for the integrity of our skin—but Kansas' famous wind came to our rescue, allowing not one bite.

As we climbed the observation tower, we were surrounded by the uproar of the wetland dusk—such croaking, piping, quacking, honking, warbling, whistling and trilling! From this very avant-garde symphony, we could separate out the red-winged black bird's *co-co-ri* and something that sounded like a raucous parody of that beloved song. As our eyes adjusted to the dim light, we could make out a muskrat swimming in the canal beneath us and the outline of first one and then another great blue heron settling down into the grass. Ron pointed across the pool to the top of a dead tree, where looming over the water was the giant silhouette of a great horned owl. Most of the birds were falling silent now, leaving the night chorus to frogs and bugs. As we started back to our car, we saw a large bird flying toward us. We saw that it was smaller than a great blue heron and heftier in the middle. We dubbed it the "mystery heron" and vowed to identify it in the morning.

The next day was uncomfortably hot in nearby Great Bend, but thanks once more to the friendly wind, almost chilly at the Bottoms. For awhile it seemed that we were going to spend the whole day ten feet from the entrance, where we stopped to watch the cliff swallows scooping up mud for their nests.

Every time we started to get back in the car, we saw something new.

A common golden eye is just one of the many species of ducks that pass through Kansas.

Two snowy egrets and an immature little blue heron pose to illustrate just how challenging birdwatching can be. And only the veterans will tackle identification of shorebirds.

The lesser yellowlegs is a common shorebird at Cheyenne Bottoms. As other wetlands disappear, places like Cheyenne Bottoms become increasingly important. It is estimated that nearly half of the North American shorebird population stops at Cheyenne Bottoms.

First we saw a large turtle, at least 2½ feet in diameter, digging a hole with painful slowness. It scratched earth with one hind leg, paused, then scratched it with the other. Then a flock of blue-winged teal rose into the air and turned toward us so that their wing patches caught the sun, giving off a bluish, opalescent glow. Next Ron spotted a pair of cinnamon teal motionless in the water, while a shoveler poked through the reeds behind them. Then out of the grasses flew a Wilson's phalarope. It hovered for about 30 seconds 3 or 4 feet above the ground, its long needlelike bill pointed downward, and then sank back down into the grass. Meanwhile, from signposts, tall reeds and prominent rocks were heard male red-winged blackbirds and—clearly the source of the grating parody of red-wing song—their brilliantly colored cousins, the yellow-headed blackbirds. We *could* stay all day in this one spot and not exhaust its wealth.

Usually we birdwatchers have to work for what we see. We get up early, plan, search, lurk and wait. But Cheyenne Bottoms provided a different kind of experience, one of effortless abundance, of seeing without trying, and of feeling one pair of eyes was not enough. In the early afternoon, on the dike between Pools 1 and 4, we set up the scope to watch some avocets feeding. As I watched these elegant birds stepping slowly through the shallows, sweeping their curved bills through the water, three white-faced ibis landed on the bank behind them and an eared grebe surfaced in front. Before I could decide which creature to focus on, a wood duck swam across my line of vision. Following it led me to a pair of gadwalls, a pie-billed grebe and a redhead duck. Meanwhile, out of the corner of my eye, I saw in the nearby bushes what looked like a brilliant red flower—a flower that turned out to be the scarlet eye patch of a ring-necked pheasant. But before I could take a good look at it, I was distracted by a flock of white pelicans overhead.

Such an unexpected embarrassment of riches became a source of conflict between Ron and me: we each wanted the other to see what we were seeing but neither of us wanted to abandon the wonders in our own binoculars. About mid-afternoon, for example, Ron wanted me to see the cormorant that had just landed and was spreading its wings

to dry, but I wanted him to see the preening ruddy duck that was rearing up so that its auburn back, sky-blue bill and fishscale breast were all glinting in the sun. Neither of us had ever known the other to be so uncooperative. Luxury was coming between us in a way that scarcity never had.

Such a wealth of choices could have meant constant distraction, a frantic looking from one bird to another without observing any very closely. To avoid such superficiality, we made an effort to watch certain birds long enough to seen entire sequences of behavior. Watching birds can be something like watching a play in a foreign language. Some of the action needs no translation, but much of it has meanings we don't quite catch. Ron saw an American coot with nesting material in its bill go into a small inlet and then come out, without the grass. A few seconds later a beaver poked its nose into the same inlet. The coot hurried back and pecked the beaver until it swam away. Here the drama seemed clear.

Another scene puzzled us. A female yellow-headed blackbird was knocked into the water by a male during a courtship chase. As the bird floundered in the water three other yellow-headed blackbirds, two males and a female, hovered overhead. The female made it to shore and was perched on a reed stem there when we left. This drama left us wondering. We understood what the main characters were doing, but what about the other three supporting actors, were they there to help, challenge or just observe?

On our way to the exit, the sun now setting, we stopped to watch a colony of Forster's terns. While I looked at those companionable birds nesting side by side, Ron scanned the pool behind us. "Here's our little heron," he called to me. Standing on a low island was a hunched-up heron, gray and white with a black back and cap. Ron was looking through the bird book. "It's a black-crowned night heron," he said. As I focused my binoculars on the bird, It straightened out and launched into flight. Lit up by the setting sun, it turned slightly and I caught its profile—neck crooked, legs out in back, chunky body. It was our mystery heron!

As we left the Bottoms in the gathering dusk, we saw dozens of shapes just like it winging into the wetlands, coming to feed in the dark. Ron and I didn't even need to say it to each other: we were lucky to be living in Kansas. Now the mystery herons were taking over for the night, reminding us that we humans are only co-owners at best. Ron and I had had only a glimpse of wetland life, but it was enough to put us in our place in every sense of the word. It reminded us that we are only yet blessedly part of the whole and so gave us a feeling of belonging in our new home.

Kansas actually provides many different habitats for a huge variety of bird life, especially in the transition zones from one habitat type to another. The habitats range from dense hardwood forests to tallgrass prairie to arid, almost desert like conditions. This cardinal is a year-round resident.

HIGH GROUND

by Mike Blair

Creek Crossing Fundamentals

"Not a bad little catfish hole," I thought, as I struggled to climb out of the only water 3-foot deep for a half mile in either direction.

The small stream averaged only 8 inches deep, and I had already crossed it a dozen times in my high top rubber boots. But this time, just for the fun of it, I had chosen to walk across on a fallen log. I knew better.

Right in the middle, I lost my balance and fell into the icy water up to my waist. With a 20 mph north wind fanning my wet pants and a gallon of water in each boot, there was nothing to do but remove the clothing and wring it out as dry as possible. It would only be five or six hours before I was warm and dry again.

I couldn't help but snicker at the bad luck though, in light of my foresight to wear cheap rubber boots. Usually when I fall off a log into deep water, I soak an expensive pair of leather Red Wings. Still smirking, I walked 10 feet upstream and waded easily across.

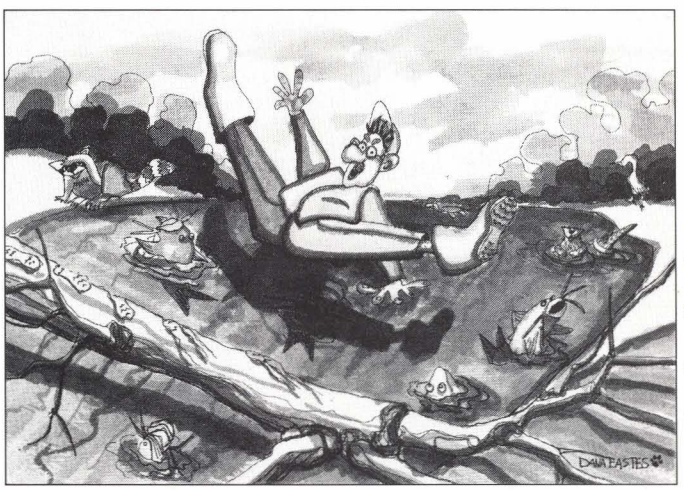
I wouldn't say I have a fetish for falling into woodland pools — it's more like a knack. But I do often carry a spare set of clothing for the unfortunate times when taking a shortcut across a creek seems like a good idea, and isn't.

Admit it, you've fallen from logs, too. But in case you're a novice, or perhaps haven't known the peculiar thrill of going overboard when you needed to stay dry, the following categories of log-diving will give you some idea of what to expect. Proper etiquette for each situation is included:

THE BIG SPLASH—Best done from logs at least 6 feet above the water, or from grapevines which swing short of far bank. Lean back slightly, pull one knee into chest (proper swimming pool term for maneuver is cantaloupe), and hope water is more than 6 inches deep. Shout something appropriate.

THE MOONWALK—Less spectacular than the above, this maneuver is suited for logs which do not reach far bank. From end of log, do standing broadjump for shore. When feet slip on opposite muddy bank, do back handspring into water, shuffling feet backward to maintain balance. Executed properly, all clothing above waist should stay dry. (Breakdancers frequently use this technique on dry land.)

THE TESTER—This method is reserved for weathered logs which look unsafe. Gingerly move forward until log pops in middle. Before going under, yell "I knew it!" at the top of your lungs, so that anyone watching won't think you're stupid. Remove fish from pockets before exiting stream (always practice "splash and release").



Dana Eastes illustration

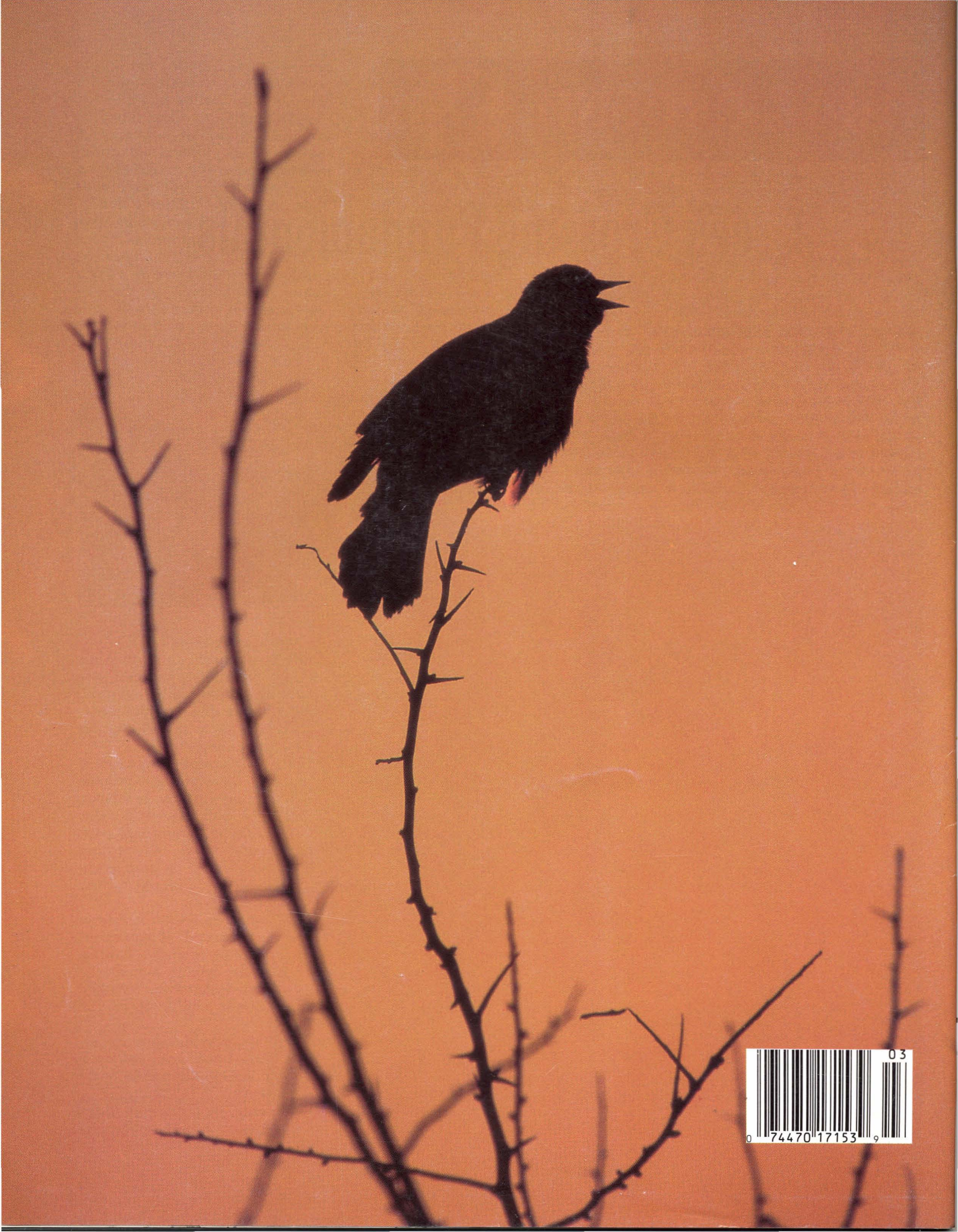
THE SPLIT WISHBONE—Properly done, this one should catch you by surprise. Walk along log until bark suddenly sloughs off underfoot. There are two choices. Either (A) make a clumsy, sidelong dive into the water, or (B) kick both feet high in the air to straddle the log on the way down and wish you'd chosen (A).

THE OBSTACLE COURSE—Log jams present special challenges to the creek crosser. Score points as follows: Step on rolling log, wet to knee one leg only, one point; slip on log, drop to sitting position, both legs wet to waist, two points; hook foot on limb, do full header into pool, three points; lose balance in center of logs, with ensuing struggle dislodge jam and destroy future crossing potential, five points. When 10 points are achieved on any crossing, abandon effort and swim across.

THE WASHOUT—This most often occurs on beaver dams and low water bridges during periods of high water. Stretch arms for balance and tip-toe carefully, ignoring the plume of water created by the current around your boots. When feet are swept away, make diving lunge for dam. After building fire and drying out, search for lost gear downstream.

There are other forms of this art which may be experienced, varying with individual skill level and creativeness. But a beginner should master these basics before attempting more difficult maneuvers.

Anytime you think you're ready, we'll move on to the science of woodland pole-vaulting.



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