KANSAS Wildlife & Parks

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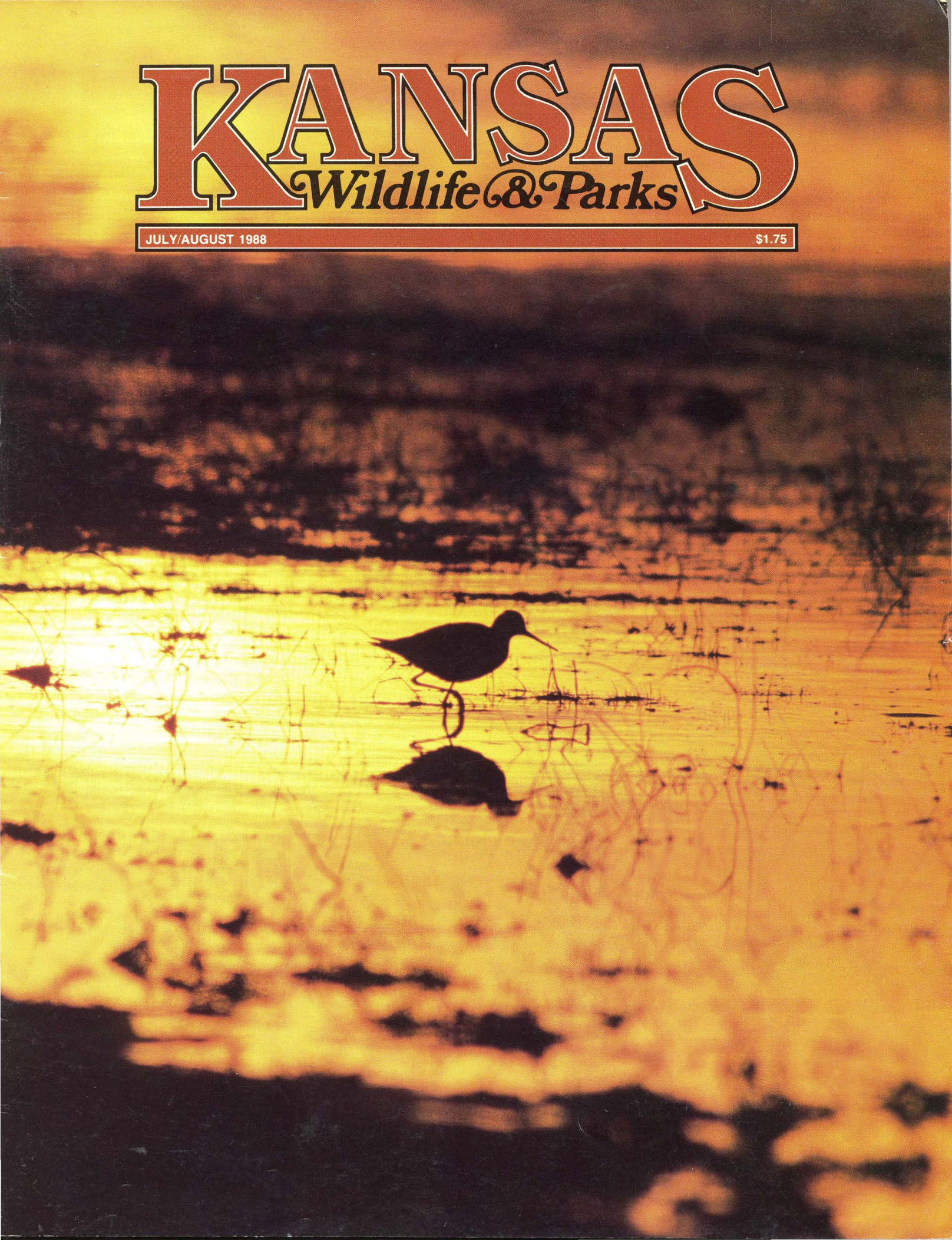

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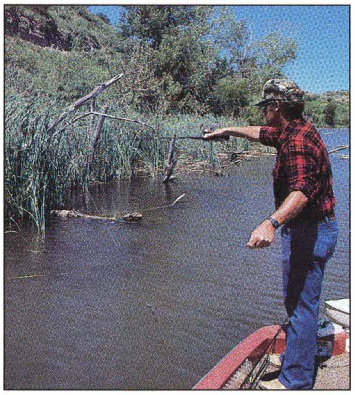

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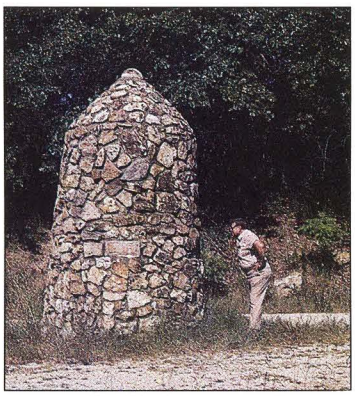

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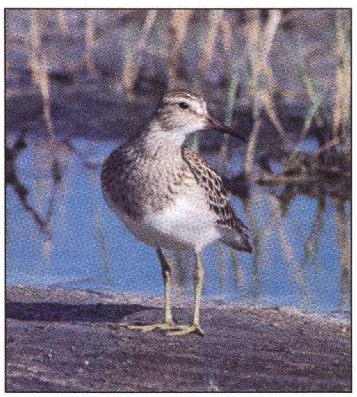

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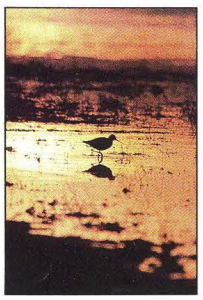


About The Covers

Front: A lesser yellowlegs probes the shallows of Cheyenne Bottoms in the first light of day. Mike Blair captured the moment using a 600mm lens. His aperture was set at f/22, his shutter speed at 1/500. (See related story on Page 29.)

Back: Gene Brehm photographed this little blue heron using a 400mm lens. He set his aperture at f/8, his shutter speed at 1/250. (See related story on Page 29.)

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

THE BUCK STOPS HERE

The Duck Stops Here

The idea went public in mid-January at the monthly Commission meeting, and W. Alan Wentz, the Department's Assistant Secretary, was the bearer of good news. Wentz told his Liberal audience that the Kansas Department of Wildlife and Parks was recommitted to "maintaining the high wildlife value" of Cheyenne Bottoms Wildlife Area, a precious 19,857-acre wetland six miles northeast of Great Bend.

"More to the point," Wentz has said, "Cheyenne Bottoms is the most important ecosystem in Kansas and the most important migration point for shorebirds in North America and perhaps in this hemisphere.

Heavy stuff, but information the Department has been aware of for some time. So why now? Why the big push to enhance management on the area? Why improve the water-delivery system, buy or lease lowlands adjacent to the Bottoms and conduct studies aimed at reducing water evaporation losses, to name some of the plans called for.

Because the timing is right, major studies have been received and reviewed, and it's time to go to work.

Karl Grover, the area manager at Cheyenne Bottoms, tells why the Department must act now.

"If we don't make any additional commitment, we'll continue to limp along with inadequate attempts to control sediment buildup. That would result in a buildup of cattails, and that would lead to less efficient use of the water," he says.

And what would that lead to?

"An eventual deterioration of the habitat," Grover says. "If we lose (the area), it would affect shorebirds and waterfowl. What will they do? Maybe they'll find somewhere else to go. Maybe they won't."

Back to the timing of it all . . .

The most important study on the Bottoms, a 719-page environmental assessment submitted in January 1987, provided an excellent history and review of the area's status. Then last June, the Department called on 20 staffers and technical experts to review that assessment and recommend management options based on their review. On July 1, the Fish and Game Commission merged with the Park and Resources Authority to become the Kansas Department of Wildlife and Parks.

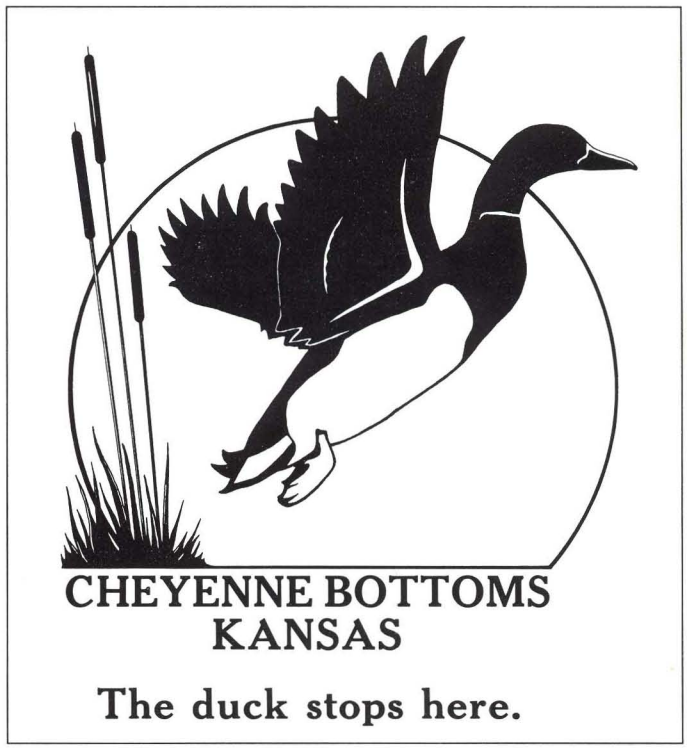
Robert L. Meinen, the Department's cabinet-level Secretary, and Wentz began their new positions in September. Four months later, they were ready to announce the new agency's first major conservation effort — Cheyenne Bottoms.

A 16-page special report on Cheyenne Bottoms begins on Page 29.

* * *

Credit staff illustrator Patti Murphy with designing the Cheyenne Bottoms logo and agency videographer Gene Brehm with the catchy phrase "The duck stops here."

Logos are supposed to be simple and straightforward, and the one shown here — a springing mallard and a clump of cattails — is symbolic of Cheyenne Bottoms' importance to waterfowl and shorebirds, especially threatened and endangered species.



Patti Murphy logo

So why the mallard-and-cattail look?

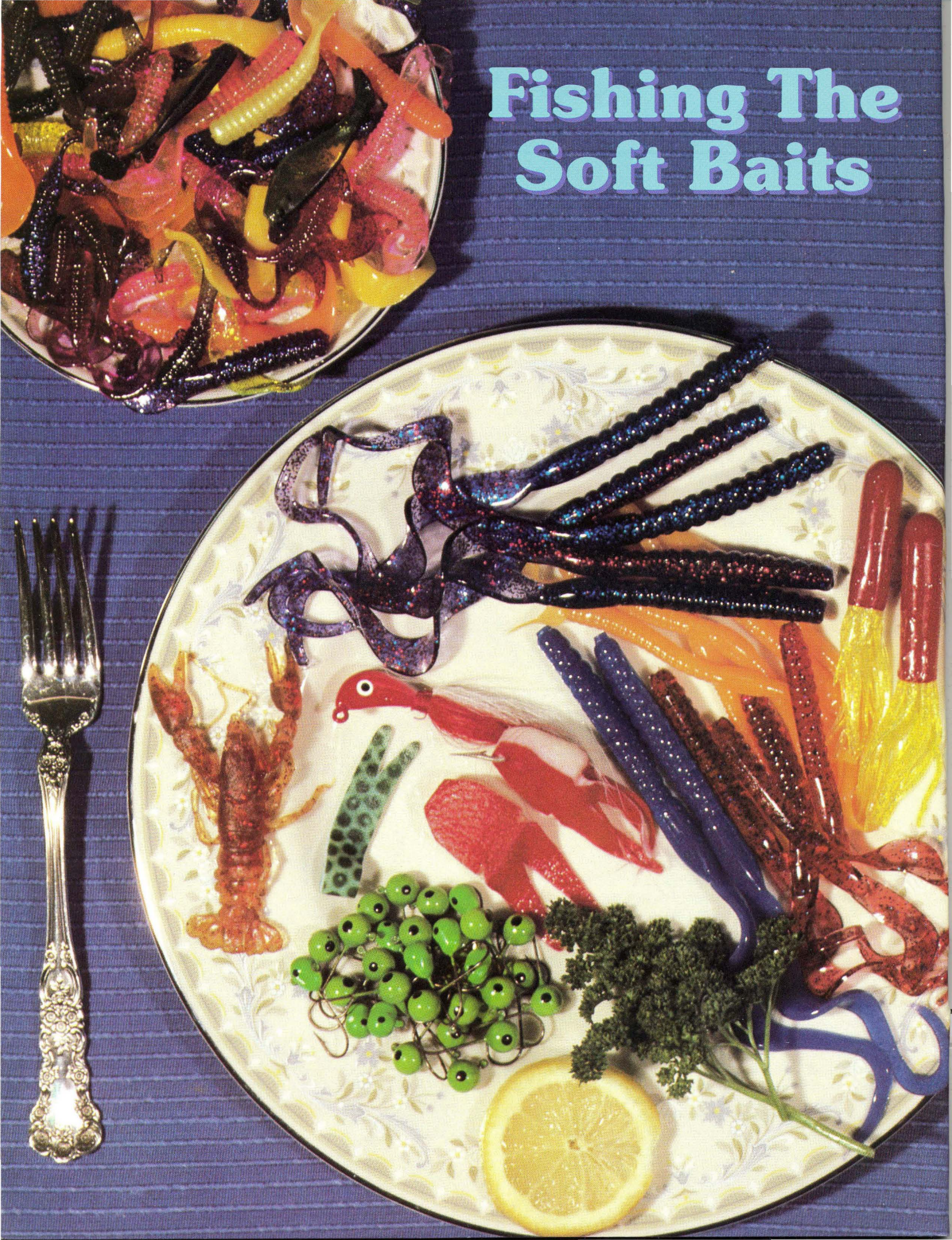
"There are very few people who don't know what a mallard looks like, and most folks readily associate cattails with marsh," says Mike Cox, chief of the Department's Information-Education Division.

Before making his decision, Cox entertained ideas from other Department personnel and concerned citizens. Someone suggested going with a pintail, another thought a non-game bird would be appropriate and yet another was keen on a stand of bulrush. All fine ideas, no doubt, but simplicity is the rule of thumb in creating eye-catching logos. So Cox went with the mallard-and-cattail idea, tied together by a rising sun.

Just in case you were wondering.

Paul

Paul G. Koenig
Editor


Fishing The
Soft Baits

Let's take a close look at plastic worms, other plastic baits and the jig-and-eel combination. Last in a three-part series on artificial fishing baits.

by Tommie Berger
District Fisheries Biologist
Dodge City

A good angler knows his fishing lures — how, when and where to use them to get the most strikes for the particular gamefish he's after. He learns these things by fishing often, learning how to use his equipment and how to find fish. And it's sometimes hard to believe that a mere piece of plastic can be his most productive artificial bait.

In the first two articles of this series, I've talked about the versatility and fish-catching abilities of spinners and crankbaits. But plastic worms and other plastic baits, the subject of this article, probably catch more fish statewide than any other type of artificial lure. Also worthy of mention here is the jig-and-eel combination, not a true plastic bait but a pork rind bait fished similar to a plastic worm.

Plastic baits and pork rinds are indeed versatile. They can be fished alone or added to spinnerbaits and crankbaits to improve or increase their action. Most Beetlespins and some spinnerbaits have plastic bodies or skirts. Some crankbaits such as the Tubby Eel and Dance's Eel have incorporated soft plastic tails into the bait.

But plastic worms and other plastic baits are effective without a trailer. When we discuss plastic worms and the jig-and-eel, we limit ourselves primarily to bass fishing. Small plastic worms will catch bluegill and other panfish as will small jigs adorned with panfish pork rind. And you'll occasionally catch a crappie on a plastic worm; even a walleye or flathead will inhale one once in a while.

I recall a bass tournament on Melvern Reservoir years ago when I had four bass in the boat and was looking for a fifth. The fish had turned off on topwater by mid-day, and I went to a purple plastic worm. Soon after dragging it up the side of the underwater island, I set the hook into what I thought would be the bass that would win the tournament. Imagine my disappointment when a 5-pound walleye rolled to the surface.

Remember when you go to other plastic baits such as grubs, minnows, leeches and insects (generally fished on jig heads), you increase your chances of catching other gamefish such as crappie, white bass, walleye, stripers, wipers and catfish.

Let's take a closer look at plastic worms, other plastic baits and the jig-and-eel. The plastic worm seems the simplest of all lures, yet it's so versatile that it can be fished anywhere from the surface to the bottom. There's definitely more to worm fishing than its simplistic image. The book *How to Rig Plastic Worms* depicts 37 different ways to rig and fish a plastic worm.

If you go to a tackle store or flip through a mail-order fishing catalog, you'll likely be overwhelmed by the different sizes, varieties and colors of worms available. You'll see every color in the rainbow, find salt-impregnated worms, jelly worms, tube worms and worms that smell like garden fruits, to name a few.

Have you ever known a bass or walleye that likes strawberries or grapes? A number of the gimmicks are designed to catch fishermen, not necessarily fish.

Plastic worms are made in different sizes, from tiny 2- or 3-inch worms up to giant 12-inch snakes. Most anglers carry a variety in the 4-, 6-, 7- and 8-inch sizes. You may want a few larger 10- or 12-inchers for use in heavy cover. One

Mike Blair photo

Virtually every natural food a bass prefers is now available in plastic. Add the proper hardware and you're in business.

of the biggest mistakes worm fishermen make is that they use one particular style or size of worm almost all the time. Veteran fishermen have some fairly common rules they use when worm fishing. The most important? Keep a variety of worms in your tacklebox.

The 6-inch worm is probably the best all-around size, however, but super-clear water may call for 4-inch worms and muddy water may call for an 8- or 9-inch worm. The thicker the cover, the bigger the worm. The colder the water, the less tail action needed. Warm water dictates worms with large, more active tails such as twistertail worms.

When it comes to colors, a basic selection for most bass fishing situations should include purple, grape, black, blue and red. Other colors such as green, brown, motor oil and gray also work at times. Two-toned worms with dark backs and light bellies or a dark body and light-colored tail are becoming increasingly popular. Fluorescent firetail worms were hot several years ago, and today the metalflake finish seems to be the trend.

Because of the effects of depth and water clarity on light penetration, the deeper a lure goes the less apt that color will play an important factor. Most colors turn brown, black or blue when deep underwater. That's why black, brown, blue or purple worms are the best, especially when fishing deep water or dense cover. But there always seems to be an exception to the rules. I used to fish Pottawatomie State Fishing Lake No. 1 (near Westmoreland) years ago. Red plastic worms were the answer there. Red would outfish blue or black or purple 10 to one.

When artificial worms first came out, they were hard and quick-sinking. Many called these early models "rubber" worms because they had the consistency of a rubber ball. Today worms are softer; many are made to float. They have better action, feel more natural to the fish and make hook-setting easier when the hook point is buried in the worm, also known as the Texas-style worm rig.

The size of the worm hook you use depends on the size of the plastic worm. In general, use a 1/0 or 2/0 hook for worms up to 6 inches. A 3/0 hook is good for 7- to 8-inch worms and 4/0 and 5/0 hooks are used on larger worms when fishing for big bass. Some hooks come with their own weed guard; others can be rigged weedless.

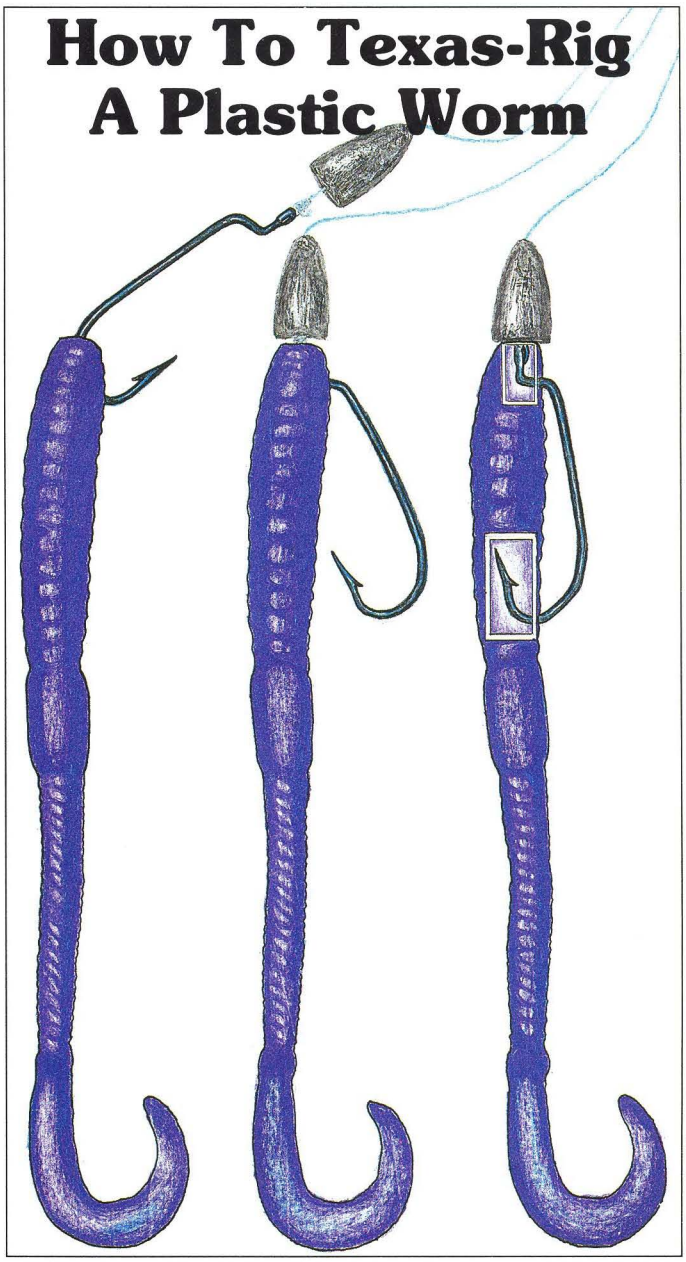
The most common worm sinker is the sliding-bullet type called a slipsinker. Always thread the pointed end on your line first so that the hollow end slides down against the head of the worm. Depth of water, wind conditions and line size are all factors in selecting worm weights from one-eighth to 1-ounce sizes. Use the lightest weight possible.

Common rods and reels are either spinning or baitcasting outfits spooled with 8- to 25-pound test line. Heavy cover dictates heavier line. Rods need to be a bit heavier than normal. So-called worm rods are designed to be sensitive to the tip but heavy in the butt section. Graphite, boron or combination of materials are used because they're strong yet extremely sensitive. Long 7- to 8-foot rods are often used with a technique called flipping. A wimpy rod and light line don't have enough force to set a worm hook.

There are many worm fishing techniques. Plastic worms are popular because they can be fished in brush, weeds and even rocks. When rigged on a weedless hook or rigged Texas-style, the worm can be thrown into a brushpile, logs, cattails or even up into trees without fear of snagging. When fishing rocks, the main problem is the weight, which falls into cracks and can become wedged.

Most anglers simply cast the rig out, let the worm sink to the bottom, then retrieve with a slow, pumping motion. Most worm strikes occur on the fall, so watch the line and "follow" the worm with a tight line back to the bottom. This technique has many variations. Some anglers have good luck with a technique called "dead sticking" or "dead worming." This method calls for letting the worm lie still for 15 or 20 seconds. Then jiggle the worm a bit, let it set, then move it a few feet and drop it again. Patience is the key.

Another technique is swimming the worm. Instead of letting the worm fall to the bottom, retrieve fast enough to work the worm back to the boat in an undulating, swimming motion. You can also float the worm when fishing around weedbeds or heavy cover. Or peg the sinker 18 inches up the line so the worm floats above the bottom.



Patti Murphy illustration

To Texas-rig a worm, run the point of your hook about one-quarter inch down the head of the worm, then back out to the side. Then run the worm up the hook shank and pull the knot just into the head of the worm (see middle illustration). To complete the rig, bury the hook into the body.

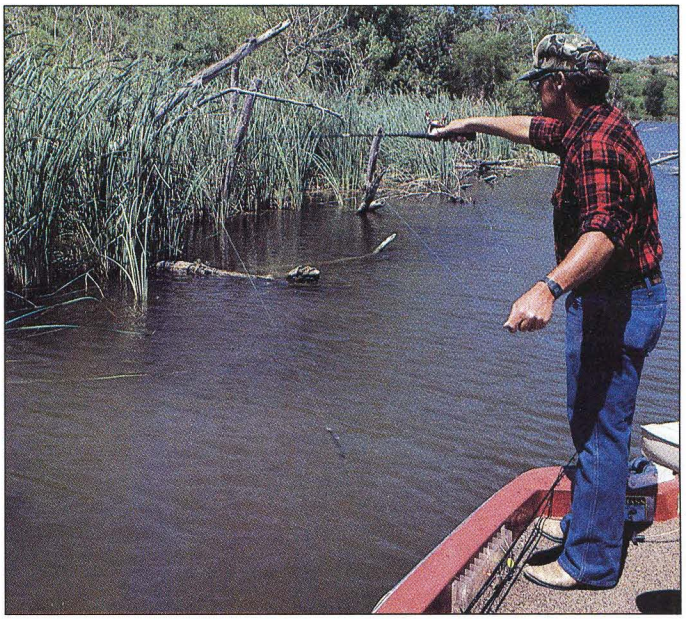
The most-often asked question I get about worm fishing is: "When do you set the hook?" The secret to worm fishing used to be to drop your rod when you felt a tap, then let the fish run with the worm a bit. Today, however, I set the hook immediately upon feeling a tap or seeing my line move. If you let the fish run, it will do one of two things — swallow the worm or spit it out. Swallowed worms make catch-and-release fishing a problem. The pros say the first tap you feel is the bass picking up the worm, the second is him spitting it out. Sometimes those two taps aren't even a second apart.

Enough about worms. Let's take a quick look at other pieces of plastic that also catch fish. Many are simply smaller plastics that are molded to look like minnows, leeches, grubs or insects. Most of these plastic lures are fashioned after plastic worms and made to be used with leadhead jigs. These baits will catch bass as well as crappie, walleye, white bass, wipers and other gamefish.

A few years ago, jigs made of marabou or feathers were the popular item for jig fishing. But with the advent of soft plastics, a simple hair jig or marabou jig is hard to find. One of the newer models today is the Lindy Fuzz-E-Grub, which combines the soft plastic bait with tantalizing undulations of a marabou tail.

These jigs come in all sizes, from one-thirty-second ounce up to three-eighths ounce sizes. Again, you can get any color you want with twister-action tails, wiggling arms or hollow, tentacle-tail tubes. My favorite colors for both marabou jigs and twistertails are chartreuse, white and yellow. Some jig heads come with weed guards, which allow you to fish these baits in dense cover.

For farm pond fishing, it's hard to beat twistertail jigs. I use small chartreuse or white jigs to catch small, stunted bass from farm ponds, sometimes at the rate of 40-50 per hour. Last year we were trying to catch small bass in a Barber County farm pond, but we couldn't keep the one-half to three-quarter pound bluegill and sunfish hybrids off our twisters. In just over an hour, two of us caught about 60 of those panfish.



Mike Blair photo

The author carefully flips a plastic worm into bass cover.

Every year I hear the question: "What the heck is a jig-and-eel or a jig-and-pig?" A jig-and-pig combination consists of a jig, which might be adorned with hair, feathers or a rubber or plastic skirt that's rigged with a piece of pork rind. The jig is generally one-eighth ounce and larger (up to 1 ounce), and the most popular colors are brown, black and purple or a combination of these colors. The pork rind is a bait fashioned out of the hide of a hog and sold commercially.

Jig-and-eel baits are good bass baits to use in cold water. Plastic worms don't seem to work as well in water cooler than 60 degrees, perhaps because the cold slows down the worm action and because worms and snakes aren't available to fish till the water warms to 60 degrees. The jig-and-pig is designed to imitate a crawdad, a favorite springtime bass food that starts moving around soon after the water temperature reaches about 45 degrees. Pork also provides greater buoyancy than plastic, thus slowing the fall of the bait and giving the fish more time to strike.

But don't think this bait is only a springtime bait. It'll work all summer long because crawdads are available then, too. I learned that lesson the hard way. I'd entered a bass tournament on Clinton Reservoir one September and got paired with an old friend. At the time, I hadn't mastered the jig-and-eel and he, a veteran bass fisherman, had. Tommy proceeded to fish the bait all day long, catching a limit of 3- to 4-pounders and winning the tournament out of the back of my boat. I didn't boat one fish that day, even though by noon I had a jig-and-eel tied on and was imitating his every move. Folks, a jig-and-eel will work all year long.

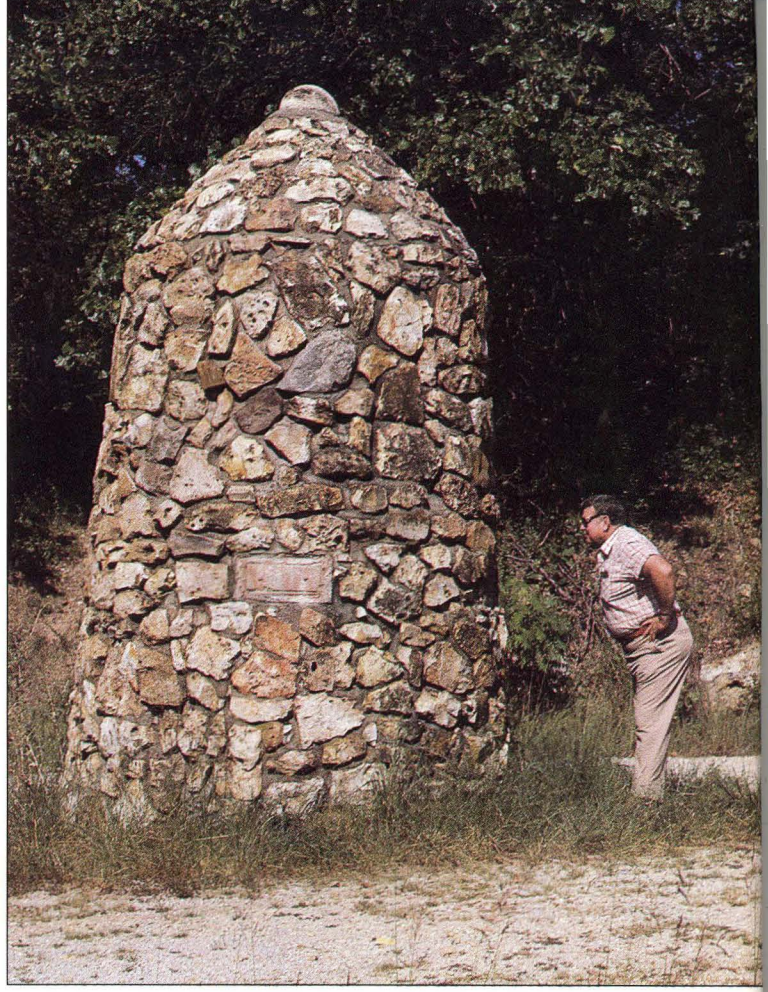
Most jig-and-eel jigs are weedless, so you can throw them in the densest cover imaginable. They work best on steep, rocky banks with lots of trees and stumps. Fish them just like a worm — cast them to the bank, let them sink to the bottom and slowly hop or pump them down the slope. Sometimes a fish will smash the lure, but most often you'll notice a simple twitch of your line or notice that your lure feels like it just went into cold syrup. When you feel this, set the hook immediately.

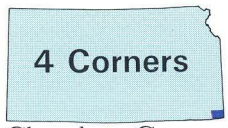
I fish the jig-and-pig in early spring when the water is cooler than 60 degrees. Then I switch to a plastic salamander, a deadly bait for spawning bass. After the water reaches 65-70 degrees, I'll go to a regular plastic worm for most situations, but I always keep a jig-and-eel tied on. Worms are good all summer till the temperature drops to about 60; then I go back to the jig-and-eel.

Most bass fishermen agree that the plastic worm is one of the deadliest and most effective lures ever created. Few would argue that they'll catch more bass under more conditions than any other lure. Plastic jigs also fall into this category.

Plastic baits can be fished year-around, but the jig-and-eel might be the better cold water bait. Since these lures are relatively inexpensive when compared to spinnerbaits or crankbaits, they can be fished in heavy cover, weeds, brush, sunken trees, among rocks or crawled across a clean bottom. If you hang up and lose a lure — so what? Just reach for another one and tie it on.

If you learn to fish a plastic worm, your tacklebox will never be without an assortment of them. And as for the jig-and-eel baits? Don't leave home without them. W&P





Cherokee County

Little Balkans

Cherokee County, the southeasternmost county in Kansas, is a land of contrast and subtle similarities. Second in a four-part series.

by Mary Kay Spanbauer
Wildlife Information Representative
Kansas City

photos by Mike Blair

Few counties in Kansas can match Cherokee County in its diversity and richness. And perhaps no other county landscape in Kansas has been so severely altered. It is a land of contrast and subtle similarities.

The story of Cherokee County, tucked in the southeast corner of the state, begins millions of years ago. Early geologic actions created two distinct topographic areas — the Ozark Plateau and the Cherokee Plain.

The Ozark Plateau is a 52-square-mile triangle in the southeasternmost corner of the state. Its rugged and hilly topography claims the oldest rock at the surface of Kansas. The limestone here is relatively soft and soluble. Millions of years of precipitation, in addition to erosion from swift streams and springs, have shaped the Ozark Plateau of Cherokee County into a land of bluffs, cliffs, caves and caverns. Schermerhorn Cave, on Shoal Creek, is one such example. Kansas is fortunate that its boundary includes a small chunk of the Ozarks. Typified by high rainfall, dense woodlands and swift streams, this small piece of the Ozarks is unique in Kansas.

Mining has an interesting and colorful history in Cherokee County, literally shaping the land and the way of life. This area earned the nickname "Little Balkans" because of the many Slovaks, Germans and Italians who immigrated here to work the mines.

The Ozark Plateau is in the heart of the richest lead and zinc area in the country. The first discovery of ore occurred in 1870 on a site still known as "The Cook Forty." A significant find was made on Shoal Creek in 1876. And a major discovery in March of 1877, at the north end of Main Street in what is now Galena, caused a near stampede. Within a month, more than 10,000 prospectors flooded the town. So fast, in fact, that Galena became incorporated three months later.

Lead and zinc production peaked in the late 1890s, and the Galena area became one of the greatest lead producers in the country. The tri-state area, including Oklahoma and Missouri, produced 2.8 million tons of lead and 11 million tons of zinc during the last century. The last active mine, near Baxter Springs, shut down in 1970.

Lead and zinc mining may have ceased, but evidence of that activity still lingers. Large, gray piles of the gravelly mining waste known as chat tower hundreds of feet in the air. Much of that chat has been used for roadbed material and construction purposes, but these man-made badlands still stand, attracting tourists and curiosity seekers.

The Ozark Plateau's natural resources include more than zinc and lead. Numerous natural springs became favorite gathering spots. A series of 10 springs is said to have made Baxter Springs famous. A hotel and bathhouse built there in 1883 served the county until the turn of the century.

From adjoining page: This pecan grove (upper left) is part of Kansas' famed pecan country in western Cherokee County. The stone marker (upper right) sits 50 feet from the three-corner junction of where the Kansas, Missouri and Oklahoma borders meet. The endangered cave salamander inhabits the twilight zone of limestone caves and rock crevices and beneath woodland debris near water. This species is found only in Cherokee County's Schermerhorn Cave.

Natural sinkholes, which are common in Cherokee County, occur when underground caverns and caves collapse, creating a depression. Several Cherokee County sinkholes contain fossils of creatures and plants found nowhere else in Kansas. One awesome sink, about 10 miles

southeast of Weir, measures 80 feet deep. Not so nifty are the man-made sinks that occur when old mines collapse.

The same can be said of several environmental problems, a result of those mining practices. Old mine shafts and tunnels near the surface occasionally collapse. Studies indicate that more than 2,000 acres of Cherokee County have been undermined, including the first mile of US Highway 69 in Kansas. In *Roadside Kansas*, the authors refer to a mine collapse (just north of the Oklahoma line) that measures 150 feet wide, 300 feet long and 50 feet deep. They cite 1983 studies that chronicle 307 mine collapses in Kansas, ranging from 10 to 500 feet in diameter and up to 100 feet deep. Nearly 600 hazardous mine shafts were located and mapped.

Old mines contribute to severe groundwater contamination. One of the most polluted sites in the United States occurred on Tar Creek in Cherokee County. In 1979 acid mine water with high concentrations of heavy metals began to contaminate surface water and flow into the aquifer. Tar Creek, named for the oozing black oil that occasionally surfaces, was placed on the Environmental Protection Agency's (EPA) priority Super-fund cleanup list. The EPA's cleanup project, completed in the fall of 1986, cost $5 million. Several other EPA mine-related cleanup activities in Cherokee County are pending.

Cherokee County is a land of extremes – one of wealth and beauty and one of degradation. What first gave Cherokee County its prosperity and notoriety today provides a challenge to be dealt with, environmental problems to be solved. Some success stories have been logged; others have yet to be written. But it's a challenge that needs to be met. Cherokee County is a piece of Kansas worth exploring.

Most of Cherokee County is in the Cherokee Plain, a soft, rolling land that developed on sandstones, shales and silts during the Pennsylvanian geologic period. The plain, with its characteristic broad flatlands, gentle low hills and shallow draws and valleys extends into central Kansas.

Mining of a different kind occurred in the county's Cherokee Plain. Heat and pressure turned leaves, tree-sized ferns and other organic matter into coal. It took about 10 feet of organic material to make a foot of coal. Most of the coal deposits, formed millions of years ago, were close to the surface and easily tapped.

The Scammon brothers of Illinois sunk the first coal shaft in Cherokee County in 1874. The shaft began producing two to three carloads a day and soon began rolling out 40 a day. Coal was extracted in much the same way as lead and zinc — by creating large underground rooms. Miners removed about 55 percent of the coal, leaving the rest as support columns. This technique was used until the mid-1950s. If a coal deposit is too thin to be mined underground, it can sometimes be excavated from the surface with large shovels, *extremely* large shovels. One, though silent today, still towers 20 stories over southeast Kansas.

Big Brutus, located a mile southwest of West Mineral, is now a tourist attraction and mining museum. In its heyday Big Brutus, weighing in at 12 million pounds, would scoop 135 tons of coal in a single swipe. It worked the ground and left Paul Bunyan-sized trenches, 100 feet wide and 50 feet deep, in its wake.

More than 50,000 acres in Cherokee and Crawford counties have been strip-mined. This method, albeit efficient, devastates the land and scars the surface, leaving it devoid of vegetation and wildlife. Since 1969 Kansas law has required mining companies to return mined land to a pre-mining state by leveling the area and planting grasses, trees and shrubs. But there is little coal mining in Cherokee County these days. Scott Williams, district conservationist with the Soil Conservation Service, says only one small mine remains active today.

Strip-mined areas have also been reclaimed by conversion to public wildlife areas. The state of Kansas received its first mined land donation in 1926. To date more than 14,000 acres have been donated to the Kansas Department of Wildlife and Parks. In 1981 the P & M Coal Company made the largest donation — 8,208 acres. These areas, in both Cherokee and Crawford counties, provide excellent outdoor recreational opportunities.

The trenches or pits left by mining activities often fill with water. Intensive fish management on these blighted areas has resulted in remarkable fishing. More than 1,500 acres of water provide some of the state's best redear sunfish and largemouth bass fishing. Songbirds and other nongame species are abundant. Quail, deer, doves and furbearers also inhabit the surrounding areas.

"The soil in Cherokee County is very different between the Ozark Plateau and the Cherokee Plain," says Williams. The well-drained, extremely fertile soil of the Cherokee Plain makes it good for farming. Almost no farming takes place in the Ozark Plateau, however, because of the rugged terrain and rocky soil. About 57 percent of Cherokee County is in

Once in the hub of lead-mining activity in Cherokee County, these ruins lie northwest of Treece.

A scenic view from Big Brutus down into the Mined Land Wildlife Area in northwestern Cherokee County.

agricultural crops — primarily soybeans, wheat and milo — and nearly 80 percent of the county is designated by the U.S. Department of Agriculture as prime farmland. Cherokee County's high annual rainfall (about 40 inches) and high humidity are conducive to crop production. This area of the state has a growing season 40 days longer than northwest Kansas.

Woodlands, which comprise 9 percent of Cherokee County, usually occur in irregular tracts along stream corridors, on steep slopes and in reclaimed mine areas. Woodlands are decreasing, unfortunately, due to cropland conversion. Only a small area of the county is actually managed for commercial wood production. Black walnut veneer and lumber are the most common wood products. But perhaps the most unusual wood product (and most tasty) is found growing in the warm soils of the Cherokee Plain. Kansas' pecan country, in western Cherokee County, extends west where pecan stands and stores dot the highways. More than 2,000 acres of native and grafted pecans produce the sweet nutmeat that finds its way into delicious pies and rolls.

The same conditions conducive to growing agricultural crops apply to the diverse, native vegetation. The Ozark Plateau is covered with dense, deciduous woodlands. Oak and hickory predominate along with other Ozarkian trees, shrubs and vines. Many of these such as farkleberry, highbush huckleberry and mistletoe are found nowhere else in Kansas. Brian Bigley, a Pittsburg State University graduate student studying the Ozark Plateau, notes that the plateau is home to many common woodland wildflowers. "There are several," he adds, "such as heart-leaved alexander, royal catchfly and butterfly pea that, to the best of my knowledge, are found nowhere else in Kansas." Not to be outdone in diversity, the larger, more rolling Cherokee Plain has the most varied collection of wildflowers and grasses in the state — about 900 native species.

The waterways of Cherokee County are also unique in Kansas. In the Cherokee Plain, the Neosho River wanders in and out of the western border, carrying more water out of the state than any other river, excluding the Kansas. The Neosho provides an unusual fishing opportunity — spoonbilling or paddlefishing. Paddlefish travel up the Neosho from Oklahoma to spawn. The paddlefish is not a meat-eater and is hard to catch on rod-and-reel. A special snagging season allows fishermen to catch these huge fish. The state record weighed 81 pounds.

The Ozark Plateau is characterized by the large, clear Spring River and the brisk and bubbling Shoal Creek. The Ozark Plateau with its Spring River drainage is home to more than 80 species of fish — more than any other area in the state. According to Dr. Frank Cross in *Fishes in Kansas*, 20 of these species can only be found in this drainage. Shoal Creek alone has more species of fish than any other stream or river in the state. Forty species have been recorded in a 5-mile stretch.

The Ozark Plateau may be one of the few places that a

Schermerhorn Cave in Cherokee County is unique because it is home to several threatened and endangered species.

favored gamefish, the smallmouth bass, may have been native although the Kansas Department of Wildlife and Parks now stocks this fish in suitable areas. "This is one of the few waterways in Kansas where an angler can catch all three species of black bass (largemouth bass, smallmouth bass and spotted bass) that occur in the state," says Ken Brunson, a Department stream biologist. Brunson adds that the Spring River drainage is one of the only places you can find rock bass. Sunfish and other sportfish are abundant and provide good fishing. In addition to sportfish, this drainage also has a colorful parade of little fish including the emerald shiner, rosyface shiner, greenside darter, orange throat darter, freckled madtom and appropriately, the Ozark minnow. Many of these little fish occur nowhere else in the state.

Diversity in the Ozark Plateau is not for fish alone. According to J.T. Collins in the book *Natural Kansas*, the Ozark Plateau is the wettest and most densely forested area in Kansas and the abundance of rainfall, high humidity and plentiful tree shade creates conditions favorable to frogs, toads and salamanders. The plateau has more species of amphibians than any other area in the state. The pickeral frog, American toad, western chorus frog, tiger salamander and 18 other species of amphibians are found in Cherokee County.

Due to its unique topography, Cherokee County is host to almost half of the state's 44 threatened and endangered species. Perhaps most significant is that three endangered and two threatened species are associated with the Ozark Plateau and therefore occur only in Cherokee County. All are amphibians. The cave salamander, a bright orange creature with black spots, likes cold springs and limestone caves and can be found under leaves and forest debris. The dark-sided salamander spends its time in caves or along moist areas of streams. The eastern narrowmouth toad is found in clear temporary pools and in the shallows of impoundments. The graybelly salamander, the smallest salamander in Kansas, requires caves and associated spring flows. The grotto salamander, probably the rarest amphibian in Kansas, lives its adult life in the caves of southeast Kansas.

Currently the only known Kansas populations of four other threatened and endangered species — the green frog, central newt, Northern spring peeper and redspot chub — are found in Cherokee County. These species might occur in other counties where suitable habitat is available. Critical habitat has been designated in Cherokee County for 13 of its 25 threatened and endangered species.

Many bird species are more common in the county's Ozark Plateau than any other place in Kansas. According to Marvin Schwilling, the Department's nongame project leader, the only Kansas nesting record of the yellow-throated warbler is in Cherokee County. Because of the densely wooded area, the Ozark Plateau is home to many other wood warblers such as the cerulean and the parula. A good population of pileated woodpeckers lives in the county's heavily forested areas. The open, flatlands of the Cherokee Plain provide a home for many bird species such as the dickcissel, horned lark and scissortail flycatcher.

Cherokee County has a variety of mammals, too. Deer, rabbits and squirrels are a familiar sight. Armadillos occasionally venture north into the county. Not yet found, but highly suspected to exist, is the Texas mouse. A good climber, this mouse uses its long, tufted tail for balance and support while it scrambles along cliffs. Schwilling says the Texas mouse should be found on the rocky outcrops and bluffs of Shoal Creek.

Cherokee County is a land of extremes — one of wealth and beauty and one of degradation. What first gave Cherokee County its prosperity and notoriety today provides a challenge to be dealt with, environmental problems to be solved. Some success stories have been logged; others have yet to be written. But it's a challenge that needs to be met. Cherokee County is a piece of Kansas worth exploring. W&P

The dark-sided salamander, an endangered species, is restricted to the county's Ozark Plateau. This salamander requires small spring-fed streams in or near caves or where moist rocky cover is available.

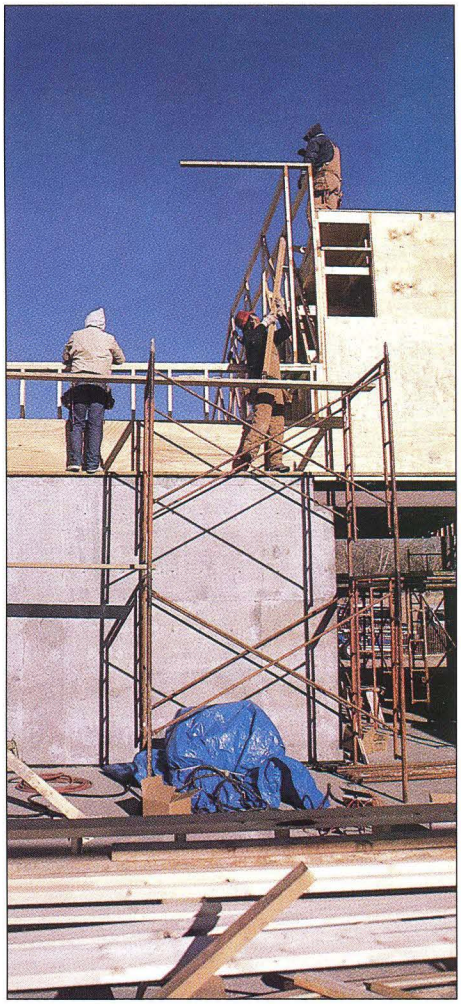
Mike Blair photos

Taken in mid-May, this photograph shows the Milford Conservation Education Center nearing completion. The Center, near Junction City, will educate Kansas youth about wildlife conservation. Below, three workers carry out their duties in mid-April.

Milford Conservation Education Center

UPDATE

by **Mike Miller**
Associate Editor



Construction of the state's first conservation education center will be complete in July. The Milford Conservation Education Center has been built on the Milford Fish Hatchery grounds near Milford Reservoir.

Just a few miles off Interstate 70, the education center is easily accessible. The facility will include displays and actual raceways to demonstrate how an intensive fish hatchery works. But the Milford Conservation Education Center will include much more. Plans call for terrestrial and aquatic dioramas to show our state's native wildlife in their natural state. Visitors will learn about ecosystems, predator-prey relationships, habitat needs and natural resource management. Conservationists believe that educating youth about conservation is vital to the future of our natural resources.

But there is still much to do before the Center can open. Nearly all the funds raised so far have gone into construction. The actual wildlife and educational displays will require additional dollars. If you're concerned about the future of wildlife, donate to the Milford Conservation Education Center. Help open the door to wildlife education for Kansas youth. For information on how you can help, call Wildtrust coordinator Bill Hanzlick at 913-296-2281.

Ribbons Of Green

Greenways are a network of open areas and trails that connect people to the outdoors. A look at one Johnson County greenway.

by Mary Kay Spanbauer
Wildlife Information Representative
Kansas City

photos by Mike Blair

The 1987 President's Commission on Americans Outdoors reports that Americans increasingly spend their free time near home. A shortage of time and unstable gasoline prices make local parks an attractive adventure. The demand for outdoor space close to home is high. One way to meet this need? Bring the parks to the people via greenways.

Greenways are a network of open areas and trails that connect people to the outdoors. The ribbons of green provide recreational and conservation areas along streams and other corridors. Greenways come in many shapes and sizes and follow many paths.

Hal Salwasser of the President's

Although only a small part of the greenway is completed, Johnson Countians are eager to travel what is available.

Commission likens the greenways concept to the interstate highway system begun in the 1950s. People thought the idea of four-lane roads far-fetched, but today interstates are our primary means of travel. Greenways could go the same route. Backers of this concept want to connect the contiguous 48 states with natural areas for hiking, biking, canoeing, horseback riding, running and walking. Greenways are an old idea with a new following.

According to the 1983 *Statewide Trails* report, Kansas is deficient in all types of trails except historic. The 1985 *Kansas State Comprehensive Outdoor Recreation Plan* indicates emphasis needs to be placed on trail development, since demand for all types of trails outweighs the available resources. The plan also suggests trail development should be coordinated to include both governmental and private interests and that the thrust of this development be near urban areas. A comprehensive trails system should be established that provides for multiple-use activities — not just one-concept trails such as one exclusively for nature interpretation.

Several states have established greenways, some with elaborate systems. Oakland, Calif., has 14 regional trails covering 100 miles and internal park trails totaling more than 600 miles. This project links 46 parks and 59,000 acres of park lands, which can be traveled by bike or foot. Other examples include the New York Staten Island Greenway and a bicycle trail along Interstate 70 in Colorado.

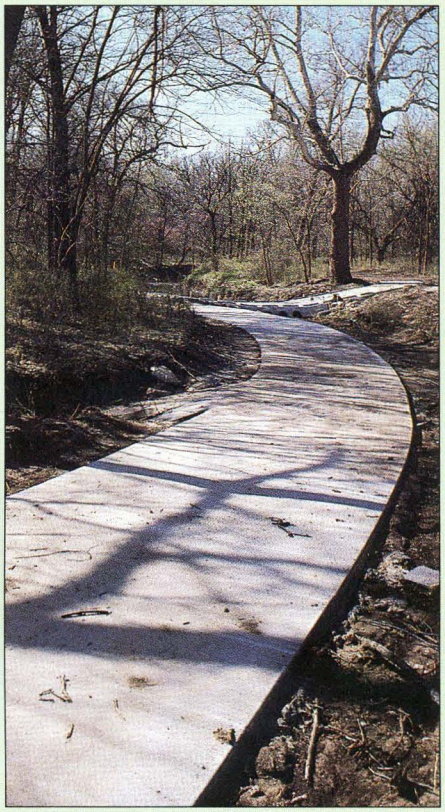
Greenways in Kansas could include park lands, flood-plain land, public wildlife areas, scenic roadways and abandoned rail lines. Kansas already has 200,000 acres of public wildlife areas and 34,000 acres of state park land. This doesn't include the thousands of acres in federal and private ownership. Kansas greenways already exist in Lawrence and Topeka. And an ambitious project has begun to unfold in Johnson County. This project could be the beginning of a statewide network.

On August 5, 1986, Johnson County voters passed a one-half mill levy increase for the Johnson County Park and Recreation District (JCPRD). This levy is expected to generate $600,000 annually in the early years of the project. The funds will pay for acquisition, development, operation and maintenance of a county-wide streamway park system.

Johnson County's population continues to increase, and so does the demand for natural areas. JCPRD currently has seven parks totaling 3,580 acres. In addition, a large number of city parks are situated throughout the county. Total visitation in JCPRD parks jumped from 2 million to more than 4 million in the past five years.

"The concept of a streamway park system along the county's major stream corridors was first proposed as early as 1979 . . .," says Bill Maasen, land acquisition specialist for JCPRD. The concept was identified as a county goal and adopted by the board of county commissioners in winter of 1986. All 20 cities in the county reviewed the proposal and supported it unanimously. Officials agreed the proposal met the county's long-range park resource needs.

The county's first greenway, however, was actually developed several



The earliest finished parts of the trail (right) were those that cross the stream. These strengthened sections will prevent washouts during high water. An aerial view shows the proximity of the trail to urban development.

The Johnson County trail will eventually tie in with Shawnee Mission Park Lake, (above).

years ago. According to John Stone, Overland Park planner, the first parts of a trail along Indian Creek were developed privately in the Corporate Woods Office Park in the early 1970s. Leawood, Prairie Village and Overland Park completed additional segments along the creek. The entire stretch was finally linked up in 1981 and formed a greenway from the state line in Leawood to Alternate 69 Highway in Overland Park. And now, according to Maasen, the effort will be picked up by the district on other streams in the county. "It's now a collective effort," says Maasen. "We plan to coordinate activities with local communities. This joint cooperation is what will make the concept work."

"Development of streamway parks will help us ease the overpopulation of our county's natural park areas as well as provide additional lands for a variety of recreational pursuits," says Maasen. The project will ensure preservation of flood-plain lands, which can be used as natural resource areas and also provide economical recreation.

Of the many benefits associated with greenways, perhaps the most significant is that they provide natural areas for the public. Greenways give people a place to take an early morning jog, a Saturday afternoon bike ride or a school nature hike. The beauty of a greenway system is its simplicity. Greenways are accessible to the masses and when the network is finished, it can take you almost anywhere. You can walk to school or work without worrying about traffic or pollution hazards. Greenways provide a nearby place to enjoy the outdoors and experience our natural world. Other major benefits include wildlife and fisheries habitat conservation as well as increased aesthetics and higher property values.

Another significant benefit is the conservation of drainage courses and the reduction of flood damage. Drainage and flooding problems increase when we remove native vegetation and replace it with blacktop. A storm water committee in Johnson County lists an estimated $120 million in storm water projects that need to be addressed. Greenways have eliminated some flooding problems by providing increased stream capacity during high rains.

How will the land for the streamway parks be acquired? Greenways use land that's no longer being used (abandoned rail lines, for example) or that has little potential for development. Much of the land for streamways in Johnson County lies within the 100-year flood plain, which makes it unsuitable for building and development. According to Maasen, probable means of acquisition include donation, easements and purchase. Condemnation will not be used. "We're striving to obtain easements," says Maasen, "where the owner retains title to the land but agrees to allow access." Outright purchase is expensive and will only be used when absolutely necessary. JCPRD will assume liability and security of the streamway park areas and will be responsible for the property and facility maintenance.

City planners and builders have become more aware of the benefits involved with park development adjacent to office parks and subdivisions. "We encourage developers to donate flood-plain lands," says Maasen. The numerous tax and economic benefits associated with greenways make donations profitable. Lands donated will not be subject to sewer assessment and taxation.

Housing divisions close to greenways become attractive to potential homeowners, and the location increases sales. Maasen notes a survey done in Washington state that shows property near greenways significantly easier to sell; the land sold for about 6 percent more as a result of its location. And it's easier to incorporate a greenway system into a community that's still on the drawing board than to develop one in an existing area. With a little creative

thinking, greenways can be built right along with housing subdivisions. Property owners will also be informed of the economic and aesthetic benefits and encouraged to donate land to the streamway system. "So far," says Maasen, "people have been very positive and cooperative."

Landowners have expressed concern about private loss and the possibility of vandalism. The Washington state survey indicates that greenways have little impact (no increase) on crime and vandalism, due primarily to the absence of motor vehicles. Maasen believes these concerns have been addressed in Johnson County. "The streamway parks will only be open during the day, which will eliminate night-time activities. In addition, the property will be patrolled by the county park rangers," he says.

The Johnson County streamway system will develop over the next 20-30 years. Current plans call for development on Mill Creek, Cedar, Turkey, Tomahawk, Indian, Bull and Kill creeks and the Coffee Creek/Blue River corridors. Mill Creek is the home of the pilot project.

According to Maasen, Mill Creek was chosen because development has been minimal, making it a prime area to obtain flood-plain lands and encourage land donations. The creek also flows adjacent to Shawnee Mission Park, the county's largest park, which provides a ready tie-in. Proposed development of this corridor involves acquisition of 1,850 acres, 1,450 of which lie in the 100-year flood plain.

The Northwood Trails housing development (at 114th and Ridgeview in Olathe) is the first area to be developed on Mill Creek. The 17-mile-plus trail will eventually run from the city of Olathe north to Holliday, Kan. The 8-foot-wide trail is constructed of high-grade asphalt, ideal for walking and biking trails. Plans call for public access points to be located along the stream at 1 to 1½ mile-intervals. Some possible features at the access points include picnic shelters, restrooms, launches and benches. The size of the greenway depends on the location and extent of the flood plain — anywhere from 200 feet to one-eighth of a mile on one or both sides. Where possible, greenways will be linked with existing parks, creating a continuous network. The Mill Creek project will continue over the next 10 years, but sections will be open to the public this year.

Johnson County government has taken charge of the greenway effort although much still depends on the public's giving of time and money. Across the country, greenways have been built and maintained entirely by volunteer organizations.

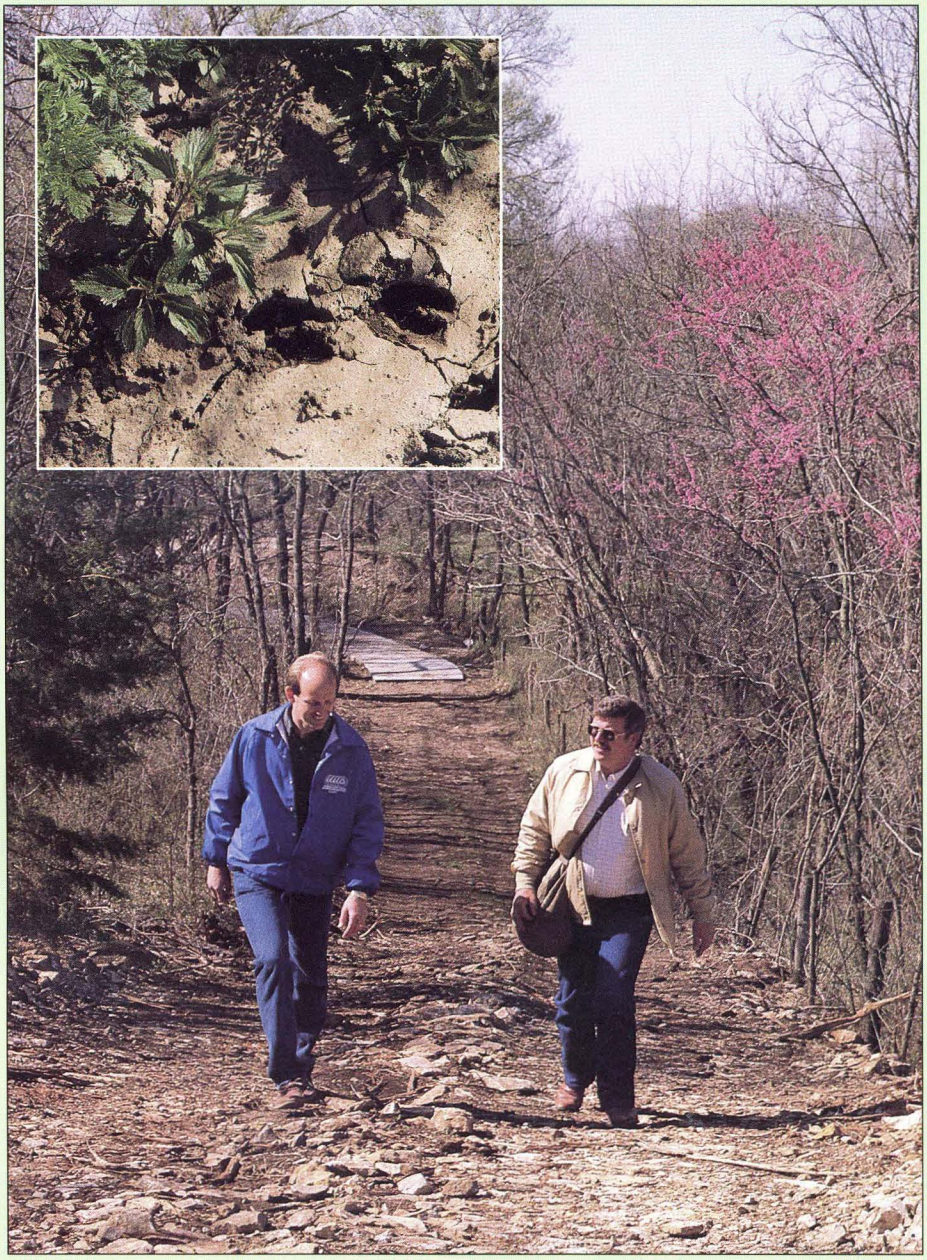
Although greenways logically occur along streams, other site possibilities exist. Scenic drives, utility corridors, wildlife areas and even abandoned rail lines can be converted to natural areas.

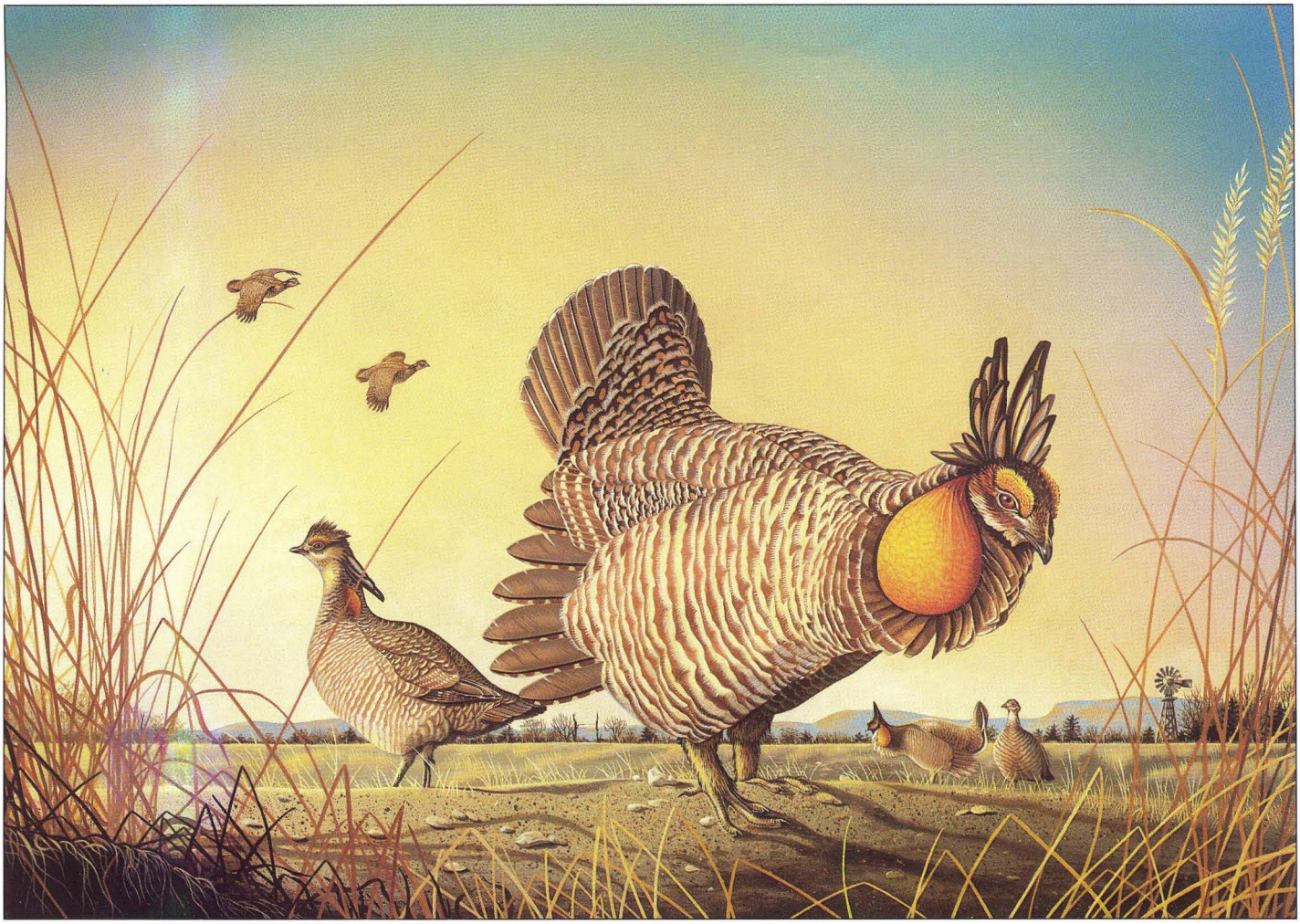
Kansas has more than 10,000 miles of streams and rivers that are a natural for greenways. The potential for greenway development along Kansas streams is great, yet due to the water laws, gaining access may prove to be a challenge. In Kansas only three rivers — the Kansas, Missouri and Arkansas — are in the public domain. All other rivers and streams are in private ownership.

This is an ambitious project and one that deserves our consideration. The President's Commission on the American Outdoors concludes that greenways provide close-to-home recreational areas and are our vision of the future.

In Kansas, we are just beginning to see. W&P

Hikers on the streamway system may see evidence of deer (inset) and other wildlife.





Jerry Thomas painting

Jerry Thomas' painting, titled *Kansas Daybreak — Greater Prairie Chickens,* was selected as the 1988 winner of the Kansas Wildlife Art Series. Both prints and stamps are available. A mailing address is given at the bottom of this page.

The Kansas Wildlife Art Series

THE SERIES

To promote awareness of Kansas wildlife and to recognize the talent of Kansas wildlife artists, the Kansas Wildlife Art Series was established in 1984. The series is an annual, limited-edition sale of signed and numbered art prints and stamps depicting Kansas wildlife. Each print in the series will be reproduced from an original painting by a noted Kansas wildlife artist. Jerry Thomas of Manhattan was selected as the 1988 Wildlife Art Series winner. An active member of Ducks Unlimited (DU) and Quail Unlimited (QU), Thomas has donated artwork to support a variety of conservation groups.

THE PRINT

The design is printed in full color on rag paper stock. Image size is 20⅝ inches × 14¾ inches. Each print, signed and numbered, will be presented in a protective portfolio complete with artist's biography, along with a statement of the Kansas Wildlife Art Series' long-range objectives. There will be a limited-edition of 1,000 prints available, which sell for $100 each. Unsigned stamps are available at $10 each. For an order blank, write: KANSAS WILDLIFE SERIES, Travel & Tourism Dev., KDOC, 400 W. 8th, 5th Floor, Topeka, KS 66603-3450.

the center section

Edited by Mike Miller

LETTERS

ENOUGH ZIP

Editor:

I'd like to express my appreciation for KANSAS WILDLIFE & PARKS magazine. I am 14 years old and as a young person, I can say the magazine has enough zip to appeal to young people as well as old.

I am interested in fishing, deer hunting and duck hunting. I hope the magazine will cover these activities in Kansas. Thanks again.

Cleve Craig
Baxter Springs

Dear Mr. Craig:

Thanks for the letter. Keep on reading, and we'll do our best to cover your favorite topics. *Miller*

THRILLED TO TEARS

Editor:

My May/June issue of KANSAS WILDLIFE & PARKS magazine arrived this afternoon, and upon opening it my first reaction was tears. Yes, tears caused by Page 2. How wonderful to have a large magazine quote the Bible. It just sort of renews my faith in our Kansas world. But with the tears I chuckled aloud at the very endearing photo of the hungry baby birds. It made my day.

I enjoy the magazine a great deal. I am an 82-year-old nature lover, and through the magazine I relive my growing up years experiencing the joys and wonders of roaming the creeks and hills along the Solomon River near Woodston, Kan. I especially enjoyed the May/June issue with the wonderful photography of birds — my special love.

Mrs. Nellie P. Propp
Peabody

PRO NON-RESIDENT

Editor:

I was disappointed to hear that non-residents will not be eligible to hunt deer in Kansas again this year. I have been waiting very patiently for this to become reality. I also understand that the good people of Kansas would rather take two deer than allow permits for non-residents. I don't agree with this at all.

I spent my first 22 years in Kansas, and my parents still live there. My wife and I return every Thanksgiving to visit and hunt. Since I moved to Wyoming in 1976, I could not buy a lifetime license.

I wish Kansans would think of someone other than themselves. How would they like it if the state they were from wouldn't let them return to hunt deer with their dad? Think about it.

How about letting former residents buy a lifetime hunting or fishing license?

Jerre Porter
Rock Springs, Wyo.

FALCONER REFUTES

Editor:

As a master falconer with nine years experience, I find Mr. Weidhaas' letter being published without a rebuttal an obscenity.

Falconry has been practiced by man since the time of the Egyptian pharaohs and is an ancient art form (and sport) that must be allowed to survive. That is if Mr. Weidhaas considers freedom in America and personal rights important at all.

First of all, the first-year mortality rate for raptors is anywhere from 60 percent to 80 percent. Secondly, falconry is so limited by the federal government that only people who pass a rigorous test and equipment inspection can practice the sport. Only falconers with three years or more of experience are allowed to fly rare birds.

I've taken photos of birds, painted pictures of birds and have hunted a given bird in the woods 20-30 hours a week. Falconry is a hunting sport and falconers are not prima donnas. Falconry has enriched my life immensely.

Finally, were it not for the efforts of falconers and captive breeding projects by falconers, the peregrine falcon would probably be extinct today. Falconers are successfully breeding peregrine falcons and repopulating the wild with many of these birds. Power lines kill more birds than falconers will probably use this century.

Bob Thompson
Beaumont, Tex.

RAISING 'EM RIGHT

Editor:

We just finished our first KANSAS WILDLIFE & PARKS magazine and are glad we subscribed. My husband and I hunt and are tent campers. Our kids are nature lovers, as we are. There was lots of good, useful information in your articles and the pictures are wonderful.

We enjoyed the lively "Letters" page and your replies. A lot of people don't realize that hunters and fishermen are important to wildlife conservation.

The article Ken Brunson wrote about environmentalism ("For What It's Worth," January/February issue) really hit home. We're from than era. Nothing aggravates us more than to see people throw garbage out of their car windows or trash at campsites. Our kids respect nature, are kind to even a grasshopper and can clean a campsite in ten minutes. They know every bug and creature in the garden and can field dress a pheasant.

Stephanie & Richard Spacek
Lansing

YOUNG BIOLOGIST

Editor:

There are several reasons I am writing this letter. First of all, I'd like to say I am a regular reader of KANSAS WILDLIFE & PARKS magazine, and I love it. I especially like your in-depth articles on individual types of wildlife. I learn a great deal from every issue.

I'm very interested in wildlife and have strong feelings for their preservation. I've thought about a career in the area — a biologist perhaps. I really enjoy science. I'd like to know more about possible wildlife camps, jobs or volunteer opportunities.

Amy Schwarz
Menlo

Dear Miss Schwarz:

It's refreshing to hear from young people like you with interest and enthusiasm for wildlife. I encourage you to follow that interest. Many of our state colleges offer outstanding wildlife biology curriculums. All of our biologist positions require a four-year degree in wildlife or fisheries biology. The Department also hires college students who are studying wildlife biology as summer aids. A summer aid works closely with a biologist, and gains valuable experience.

I would also direct your attention to the note on Page 26 about the wildlife camp sponsored by 4-H and the Kansas Wildlife Federation. It could be just what you're looking for. *Miller*

RESPONDS TO CRITICS

Editor:

I would like to respond to some of the critics of the Kansas Department of Wildlife and Parks.

I was a resident of Kansas for 60 years and have followed the many programs implemented by the Department. In 1937, Kansas did not have white-tailed deer, mule deer, antelope, elk, Rio Grande or Eastern turkeys. Nor did Kansas have white bass, striped bass, wipers, walleye, northern pike or trout. At that time we didn't have 25 state fishing lakes, which have been built and maintained by fishing license money. We didn't have one of the best hunter education programs in the world nor fishing clinics for youth.

In 1988, Kansas has all of the above.

I was fortunate to be involved in the first turkey trapping and release programs. And the state is now involved in a Canada goose restoration program. All of these accomplishments were made possible by the hunting and fishing license monies and excise taxes on sporting equipment. The "anti-hunting and anti-everything" group didn't pay a penny if they didn't buy some of that equipment or a fishing or hunting license.

The Chickadee Checkoff Program is excellent. It's about time someone else helped pay for nongame programs.

The Kansas Department of Wildlife and Parks may not have done everything right, but it seems to me they have done a pretty good job.

Bud Crumrine
Odessa, Tex.

POSITIVE IMAGE

Editor:

Thank you for putting out such a quality magazine. It really helps promote Kansas' image. Most of the people I work with over here in Germany have never been to Kansas or have only driven through and don't think that our state is anything more than mile after mile of flat farmland. They can't believe that all the photography in your magazine was taken in Kansas.

SSgt Jim Nelson, USAF
Bitburg, Germany

HUNTER EDUCATION

Editor:

Because of the hard work of many, the Kansas deer herd has increased phenomenally. One problem associated with a growing deer herd is the new deer hunters who do not know what to do once they have shot at a deer.

Most Kansans were brought up hunting pheasants and quail, not deer. They have had little education as to how a deer reacts after being hit. Every year I hear of people who shoot at five or six deer at less than 100 yards, but never bring a deer home. Many new deer hunters believe a hit deer will fall just like a pheasant. The lady that shot the three elk illegally in 1986 is a perfect example.

The Hunter Education Program would be an excellent way to teach new deer hunters (and their parents) about deer hunting. Perhaps a video could be used to teach students about deer hunting, sighting in their firearms, where to aim, how to properly track and mark the trail of a hit deer and how to handle and transport a carcass.

Michael J. Windisch
Liberty, Mo.

Dear Mr. Windisch:

Since you completed the Kansas Hunter Education course in 1977, the program has changed considerably. A new manual and expanded curriculum now include training in these areas. In addition, Department of Wildlife and Parks personnel offer special big-game seminars, which often include this type of information. *Rob Manes, wildlife education coordinator*

INDIAN GIVER FAN

Editor:

We are grateful for people like Peter Toth. "The Indian Giver" on Page 43 of the May/June issue is inspiring. Where can we obtain a copy of Mr. Toth's book, *Indian Giver* (Tribal Press, 1980)?

Thank you for using such quality material and authors in your quality magazine.

C. Sexton
Smithville, Mo.

Dear Mr. Sexton:

You can write for information on Peter Toth's book *Indian Giver* **by writing Peter Toth, c/o Lowell Jensen, Rt. 2, Box 599, Cable WI 54821.** *Miller*

FURRY BIOLOGIST

Editor:

Kudos and compliments downloaded to Mr. Fox for "Cuckoos and Databases" (March/April). Delightful insight into the memory banks of a furbearer biologist. Or as my youngest adolescent home unit is wont to say, to a "furbearing" biologist, which may or may not be descriptively apt.

Randall Winter
Manhattan

THE LAW

ILLEGAL TRAPPING

In early December, Garden City wildlife conservation officer Dennis Sharp received a call reporting a possible trapping violation. A landowner was concerned that a trapper wasn't checking his traps regularly. State law requires that a trapper check his traps every 24 hours.

Sharp and park ranger Dave Adams went with the landowner to the trap site. The trapper's name was on the trap tag, and more traps were found. Sharp then watched the area for five days, but the man never showed.

Sharp then contacted the trapper and issued a notice to appear in Finney County court. The trapper pleaded no contest to the charge of failure to check traps every 24 hours. This was his second offense, and he was fined $500 plus court costs. In addition, three of his traps were confiscated. *Miller*

MARIJUANA BUST

Ottawa wildlife conservation officer (WCO) Johnny Ray and Pleasanton WCO Mark Johnson found more than they were looking for when they searched a house last February. While searching for illegally possessed furs, the officers spotted 90 marijuana plants growing under a heat lamp.

It all started when a fur dealer called Ray on Feb. 7, 1988. The fur dealer asked about purchasing raccoon pelts. Further investigation revealed that the pelts were being offered for sale after the date they could be legally possessed. (Raccoon pelts may not be possessed after the running season has opened.) Ray tried to contact the man with the pelts, but be was not at home. A search warrant was requested and served.

Ray and Johnson did not find the number of raccoon pelts they anticipated, but the man's wife said the pelts had been sold the evening before. As the two officers searched the house, they noticed the marijuana plants growing in the basement.

The WCOs contacted the Miami County Sheriff's Office, who then obtained another search warrant. The sheriff's officers search turned up one raccoon pelt and more than 13 pounds of marijuana with a street value of $19,500.

Both persons living at the house were arrested and held for appearance in Miami County District Court. The man pleaded guilty to possession of marijuana without having an official stamp, and the woman pleaded guilty to possession of marijuana. The charges against the man of possession of marijuana and illegal possession of raccoon pelts were dropped in a plea bargain. Thirteen raccoon pelts were confiscated. *Miller*

LOST AND FOUND

At 2:30 a.m. on March 8, the Montgomery County Sheriff's Department received a call from a worried parent from Wichita. The mother said that her daughter and a friend had been hiking at Elk City State Park's Nine Mile Trail. The girls had not returned and didn't plan on spending the night.

Montgomery County sheriff's deputy Gary Simpson checked the Elk City State Park area and found the girl's vehicle. A search party was organized that included Wildlife and Parks officers David Ellis and Dennis Knuth, sheriff's deputy Don Morris, Corps of Engineers project manager Tim Rasmussen, Corps of Engineers ranger Eugene Goff and special deputy David Fritzmeyer. The officers split into three groups and each covered a different section of the trail. At 6 a.m., officers Ellis and Knuth found the lost girls. They had lost their way on the trail and had taken shelter under a large rock overhang. The girls had wisely made a fire and stayed put. *David Ellis, park ranger*

THRILL KILL

Jetmore wildlife conservation officer Jim Kellenberger was on vacation the day after Christmas when an upset landowner called. The Hodgeman County resident reported suspects shooting deer and leaving them lay. He had a license tag number and descriptions of the vehicle and suspects.

Kellenberger went to the area and found three dead deer. With the tag number and descriptions, it wasn't hard to find the suspects. Each was charged with taking deer during closed season.

Each suspect was fined $500, plus $29 court costs in Hodgeman County court. The judge also revoked their hunting privileges for one year, revoked their hunter education certificates, sentenced them to 10 days in jail (which was suspended) and placed them on 10 months of unsupervised probation. *Miller*

PARTS IS PARTS

In February of 1987, an anonymous caller reported finding deer remains in the southwest part of Coffeyville. The sheriff's office immediately called wildlife conservation officer (WCO) Dennis Knuth.

Knuth went to the area the caller had described and found hides, heads, entrails and bones of eight deer. Some of the deer parts were in plastic trash bags. While going through the trash bags, Knuth found evidence identifying a woman who lived in Coffeyville.

Knuth later discovered that the woman was married to a man Knuth had twice cited for illegal possession of deer. Knuth wondered if the man was up to his old tricks.

In the ongoing investigation, Knuth received information that implicated the man and his brother-in-law, who lived next door. Through interviews and more investigation, Knuth finally had enough evidence to get a search warrant.

Two teams of officers were organized. Knuth and Montgomery County Sheriff's deputies Clarence Rose and Harry Miller would serve the search warrant to the suspect's home, while WCOs Gene McCauley, Doug Blex and Montgomery County Sheriff's deputy Don Morris interviewed the brother-in-law. In the early hours of Feb. 20, Knuth's team found meat, blood samples, guns, a spotlight and a boning knife. The other team received consent to search the brother-in-law's residence, but had found nothing until they spotted a small shed in the backyard. In the small out-building, the officers found a processing plant for deer. It contained a skinning gambrel with ropes and pulleys, a handsaw, hatchet, meat clever and bloody rags. All of the equipment and floor of the building was covered with blood, hair and meat.

After confronted with the evidence, both men confessed to killing six deer. Officers charged the two with six counts of illegal possession of deer, hunting without licenses, spotlighting and littering. Both men, sentenced to six months in the county jail, had to serve a minimum of 30 days before probation was considered. The brother-in-law was assessed fines totaling $450 and served 200 hours of public service picking up litter in the city of Coffeyville. The other man paid $650 in fines and served 100 hours of public service in Coffeyville. He also lost his hunting and fishing privileges for two years. Both men were then placed on probation for two years. *Miller*

HUNTING

1988 DEER PERMITS

Kansas deer hunters will have more deer hunting opportunities in 1988 than they have ever had. When the Department of Wildlife and Parks commissioners approved the 1988 seasons, they also allowed for multiple permits, more liberal seasons and a more versatile use of leftover firearms deer permits.

The new deer permit system is more complicated this year, and hunters are advised to read the information brochure carefully before applying. Here's a summary of the permit options open to Kansas hunters in 1988:

If you're a firearms deer hunter, the permit application process will be much the same as last year. An application form is included in the information brochure, which will be available where licenses are sold and at all Department of Wildlife and Parks offices. There are 57,955 firearms permits available, including 2,000 muzzleloader-only permits. That's an increase of 7,340 from 1987. You will still have four choices on the application form. A table listing the number of each type of permit available in each unit is included in the brochure. Refer to this table when you apply. Your application must be received at the Department's Pratt Operations office during the July 1-15 application period.

Landowners are guaranteed a deer permit this year with the allocation of an unlimited number of "hunt on your own property" permits in each management unit. A landowner's last permit choice should be Hunt No. 108. If the landowner is unsuccessful in the regular drawing, and has Hunt No. 108 marked on his application, he will automatically receive a "hunt on your own property" permit that will allow him to take any deer on his property within the specified unit.

There will not be a special muzzleloader season in 1988. Muzzleloader hunters will hunt during the regular firearms season Nov. 30-Dec. 11. There are special muzzleloader-only permits allocated in each unit. These permits allow the muzzleloader hunter to take a buck, doe or fawn of either species.

After the regular-season drawing, each applicant will be notified of his success or failure to receive a permit. Any remaining permits will be announced at this time. All hunters, those who received a firearms permit, those who didn't and even those who didn't apply, are eligible to apply for the leftover permits. An application period for the leftover permits will be announced, and all leftover permits will be sold on a first-come, first-served basis. Applications received before the designated application period will not be accepted.

Hunters who receive one of the leftover firearms permits will have several hunt options. The permit will maintain its unit designation and species requirement. For example, if a hunter receives a leftover permit in Unit 4 for an antlerless whitetail, he may take one doe or fawn whitetail in Unit 4. But he may use that permit to hunt with a bow during the legal archery season and with a legal firearm during the firearms season. He can receive a regular-season firearms permit that will allow him to hunt only during the firearms season, and he can receive one of the leftover permits that allow him to hunt with a bow during the bow season and a firearm during the firearms season. No hunter may receive more than two permits.

A bowhunter may also receive two permits. The regular archery season permits will be available over the counter from July 1-Sept. 30. The regular archery permit allows the bowhunter to hunt statewide and take one deer of either species or sex. A bowhunter who purchases a regular archery permit may also apply for a unit archery permit. The bowhunter must make application during the Sept. 6-30 application period. The archer must select a management unit (the same as the firearms management units) when applying. Units 2, 5, 7, 17 and 18 do not have unit archery permits available. There are restricted numbers of unit archery permits available in units 1, 3, 4, 8 and 16. These will be sold on a first-come, first-served basis. And there are an unlimited number of unit archery permits available in units 6, 9, 10, 11, 12, 13, 14 and 15. The unit archery permit requires the bowhunter to hunt within the specified unit and allows him to take one antlerless deer.

If an archer chooses not to apply for the unit archery permit, he may apply for one of the leftover firearms permits. The leftover firearms permit will allow the hunter to hunt with a bow during the bow season and with a firearm during the firearms season to fill the permit. A bowhunter may receive only two permits.

Miller

SEASONS SET

The Kansas Department of Wildlife and Parks set the 1988 big game, squirrel and furbearer seasons at the agency's April meeting. The seasons are as follows:

DEER

Firearms season — Nov. 30-Dec. 11
Application period — July 1-15
Archery season — Oct. 1-Nov. 29, and Dec. 12-Dec. 31
Application period — July 1-Sept. 30

ANTELOPE

Firearms season — Oct. 8-10
Application period — June 1-17
Archery season — Sept. 24 - Oct. 2
Application period — June 1-17

ELK

Season — Sept. 24-Oct. 2
Application period — Aug. 1-19

FALL TURKEY

Firearms season — Oct. 15-Oct. 23
Application period — Aug. 1-19
Archery season — Oct. 1-Nov. 15
Application period — Aug. 1-19

FURBEARER SEASONS

Trapping

Nov. 16-Jan. 31, 1989 for badger, bobcat, gray fox, red fox, swift fox, mink, muskrat, opossum, raccoon, striped skunk and weasel.

BEAVER

Eastern Zone — Nov. 23-March 7, 1989
Central Zone — Dec. 15-March 7, 1989
Western Zone — Jan. 1-Jan. 31, 1989

HUNTING

Nov. 16-Jan. 31, 1989 for badger, bobcat, gray fox, red fox, swift fox, opossum, raccoon and striped skunk.

RUNNING SEASON

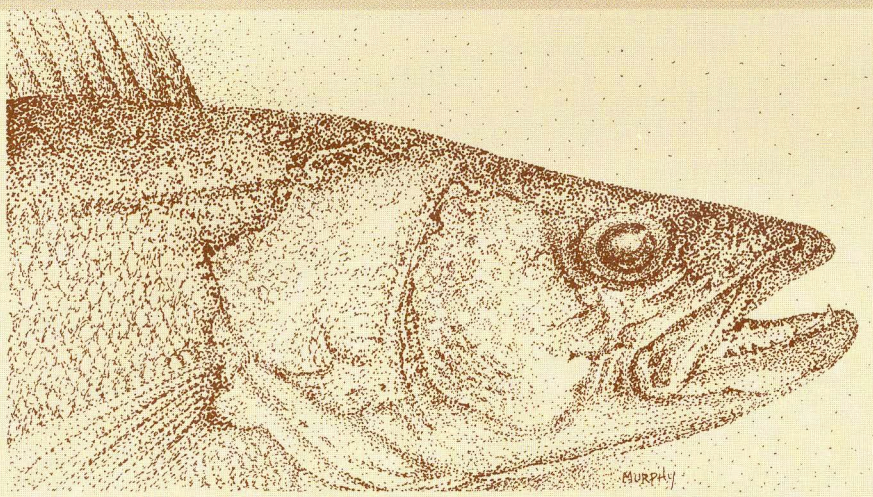
July 15-Nov. 1 and Feb. 7-March 31, 1989 for gray fox, red fox, opossum and raccoon.

*All furbearer seasons open at 12 noon and close at 12 midnight

SQUIRREL

June 1-Dec. 31

FISHING



WALLEYE SUCCESS

Fisheries biologists have completed a successful year in the walleye program. During the last few days of March and the first part of April, crews were on Kirwin, Glen Elder and Webster reservoirs collecting walleye eggs. Though wind and weather made collection difficult at times, the take in eggs totaled 51.7 million. In cooperation and trades with Michigan and Nebraska, 25.2 million eyed (already developed) eggs were received. This boosted the total of number of eggs received at the Milford Hatchery to 76. 9 million.

Hatchery officials were pleased with the excellent 62.9 percent hatching success rate, which meant that all requested walleye stockings would be filled. Fisheries biologists at Cedar Bluff, Clinton, El Dorado, Glen Elder, Hillsdale, Kirwin, Lovewell, Marion, Milford and Webster reservoirs requested and received walleye fry. Just more than 200,000 were donated to research programs, and 2 million eyed eggs were shipped to Virginia in a trade.

In a related program, the Department of Wildlife and Parks collected and spawned sauger for the first time. The smaller cousin of the walleye was collected from the Missouri River, and eggs were hatched at Milford. Another 1 million eyed eggs were received from Wisconsin. The sauger may fill a niche in reservoirs where walleye don't do well. In some of our reservoirs, walleye are prone to wash through the outlet during spring high waters. In some cases, an entire year class of walleye can be lost or killed during water fluctuation. There is evidence that the sauger and the walleye/sauger hybrid, the saugeye, are not prone to wash out.

To study the fish in Kansas, 1 million sauger fry were stocked in Melvern, a reservoir that has trouble keeping walleye. The Department will also establish a reliable source of brood fish to ensure that sauger fry are available in the future and to study hybrid possibilities. *Miller*

HATCHERY WORK

Kansas' fish culture system consists of four fish hatcheries located across the state. Two of these, Farlington and Pratt, are benefiting from the expanded Dingell-Johnson (D-J) federal aid contributions by using these monies for renovation.

The Farlington hatchery, located below Crawford State Fishing Lake in southeast Kansas, was constructed in the late 1930s by the U.S. Fish and Wildlife Service. The hatchery was donated to the Department of Wildlife and Parks in the late 1970s. Ten to 12 species of fish are reared at Farlington. Two years ago, D-J funding was used to plan and engineer a renovation project. Construction began last fall. The major components of the project include a new water intake line, a new fish holding house, a microscreen filtering system and new filtering water supply lines. This project will increase both the quantity and quality of water for rearing fish as well as provide a modern fish holding house. And this year an engineering study will assess the rejuvenation of the existing ponds.

The Pratt hatchery, built from 1903 to 1912, also rears 10-12 fish species each year. A combination of 75 years of continuous operation and changing fish culture techniques have limited current hatchery operations. The three-year renovation project began last year with an engineering study, construction will begin this fall. Reconstruction will focus on four areas of the hatchery: replacing the water intake structure, repairing the water supply line, installing a new and larger drain system and installing harvest catch basins. The purpose of these improvements is to increase production, improve harvest capabilities and allow for cost-efficient and modern extensive hatchery management.

The renovation of these two facilities will greatly enhance the capabilities of the entire fish culture system to supply fish for the state's management programs. *Chris Mammoliti, hatchery assistant*

LIGHT UP THE NIGHT

Sitting in a boat on a large reservoir at night is a peaceful experience. An owl hoots along the shoreline, waves lap at the side of the boat and an occasional fish will thrash the water somewhere in the dark. The area around the boat has and eerie glow from the submerged halogen light. And you watch as thousands of small minnows and shad blindly circle the light.

If you've chosen your fishing spot well, your peace may not last long. For not long after the baitfish arrive, sportfish will follow. Lower your jig or bait to just below the schools of light-crazed fish and wait. Nightfishing like this is always exciting — you never know what kind of fish you've got until it's in the boat. It's possible to catch walleye, striped bass and crappie. But the most commonly caught fish is white bass.

In midsummer, after the hot temperatures have slowed daytime fishing, nightfishermen often enjoy some of the best action of the year. Large schools of white bass patrol the edges of creek channels and submerged points in search of gizzard shad. By concentrating large numbers of shad around your light, you can bring white bass and other sportfish in for a feeding frenzy.

Attracting the shad is easy. Nearly anywhere on the lake is a good spot for that, but you must be more selective to catch fish. Nothing's more frustrating than to watch thousands of shad below your boat and not catch fish. The key is finding something unusual in the bottom structure of the lake. Points that reach out to the creek or river channel, submerged islands, old road beds and sharp drop-offs are good bets. You can also find likely spots by talking to local fishermen or someone at the bait shop. Often, areas where fishermen have been catching fish during the day are also good places to nightfish. *Miller*

FISH POINTS

The sun was just about to drop below the horizon as I cut the motor, letting the boat glide toward the point. The piece of land jutted out sharply and disappeared into the water. I eased the trolling motor into the water and began working a crankbait off the shallow rocks. Two casts later I was fighting a respectable bass in a part of the lake where only an hour ago pleasure boats and water skiers had buzzed by constantly.

It's common knowledge that points are good places to fish in our reservoirs. The points create an underwater ridge. Sportfish hold in the deeper water, then move up on the point's ridge to feed periodically. But points in the lower, more open part of a lake are often ignored by fishermen during the summer, because the area is usually crowded with boat travel.

I knew the point I was fishing had held fish earlier in the year. In fact, during the spring I'd caught fish there in the middle of the day. But later in the summer, I'd become frustrated fishing that part of the lake because it was too busy. I didn't catch fish, and the continuous boat wakes made fishing nearly impossible. So I usually retreated to the protected upper end of the lake to fish during the summer.

But then, after a nearly fishless day, I returned to the main-lake points at sunset. The pleasure boaters were busy at the boat ramps leaving the lake, and the water began to calm down. And the fish were still there. They, too, had waited for the busy day to subside before moving up into the shallow water to feed — and hit my lures.

Don't ignore the main-lake points on your next weekend fishing trip. Try to get to the lake before sunrise or plan on staying until after dark. Work crankbaits, spinnerbaits or black jig-and-pig combinations off the shallow ridge and into the deeper water. I'm betting the fish will be there. And they're usually quality fish, because, like me, most other fishermen have ignored them in search of quieter water. *Miller*

TAGGED CRAPPIE

Kansas anglers have already seen fantastic crappie fishing this year. In 1988 many reservoirs have provided very good numbers of big crappie. But 1988 has also seen the advent of crappie fishing for cash. Events such as Crappiethon and Crappie Masters have been held at several state reservoirs. The contest sponsors attach numbered tags to crappie and release them. Registered fishermen (who must buy a contest permit) are then eligible to cash in on a tagged crappie they catch. Some of these fish have been worth as much as $50,000.

Crappie have also been tagged at Melvern Reservoir, but for an entirely different reason. The Kansas Department of Wildlife and Parks has tagged crappie in the northeast Kansas reservoir so that fisheries biologists can better manage crappie populations. The Department tags are worth $5 to $20. Information gathered from tag returns will give biologists an estimate of the effects of fishing pressure, an estimate of crappie numbers and an understanding of seasonal distribution and fish movement.

To claim reward for a Department tag, the angler must mail the tag and questionnaire with details of the catch to the Kansas Department of Wildlife and Parks, P.O. Box 1525, Emporia, KS 66801. Questionnaires are available from Wildlife and Parks offices, Corps of Engineers office at Melvern and area bait and tackle shops. *Miller*

STREAM FISHING

The narrow riffle gurgled softly as I stalked a pool where the stream turned hard to the north. The deep eddy had largemouth bass written all over it. Being careful not to get too close, I cast an eighth-ounce Roadrunner to the edge of the overhanging grass where the bank was undercut. I'd made only two cranks on the reel handle when the line jumped. I set the hook and held on. The scrappy 14-inch bass jumped and headed downstream. I turned him just before he reached the logjam at the foot of the pool. When I finally got a thumb in his lower lip, I admired the fish for an instant before releasing him back to the stream. I wanted to do that again.

Kansas is loaded with small streams like the one I was fishing. Not all of them have good largemouth bass fishing, but many do. Those that don't harbor bass often provide good catfish and bluegill fishing, and most of the small streams receive light fishing pressure.

Most streams and creeks are on private land, so getting permission from landowners is your first order of business. But it usually isn't too difficult, especially if you're interested in catch-and-release fishing. Even if you want to catch a mess of fish for supper, a courteous request to fish is usually well-received.

For bass fishing, look for a stream that cuts through a brushy, swampy area. Shallow sandy areas usually don't hold many bass. Largemouth bass usually hang out in the deeper pools, staying close to downed trees and undercut banks. Work jigs, plastic worms or spinners right against the deep bank, or right in the structure. And be cautious in your approach. Fish in these small streams are easily spooked. Make long casts and keep a low profile on the bank.

Channel cat also prefer the deeper pools, although they'll move on to the riffles to feed at night. Worms and stink bait are the favorite enticers. Drift worms with the current as close to the deep bank as possible. If you're fishing with stink bait, drop it in the head of a deep pool, preferably near some tree roots or submerged structure. The current will carry the scent downstream.

Fishing small streams provides a fisherman with solitude and scenery. Stream banks are usually lush with vegetation, and there's rarely any competition to deal with. The variety of wildlife you'll see as you hop from pool to pool will keep even the slowest fishing interesting. And if you're like me, you'll be pleasantly surprised at the excellent fishing these streams have to offer. *Miller*

LINE TIPS

On your next fishing trip, take a few seconds to pay attention to your fishing line. It is, after all, the most important link between you and a battling fish. Taking the thin strand of monofilament for granted is a sure way to disappointment.

First, it's a good idea to change line before each fishing season. Sitting in the closet or trunk of a car causes monofilament to become weak. Old line will rarely live up to its pound-test rating. If you fish often, it's a good idea to change line every month or so. Don't take a chance of losing the fish of a lifetime because your line was old and weak.

While you're fishing, slide the first 10 feet of line between your thumb and forefinger to check for nicks and abrasions. It's a good idea to cut off about seven or eight feet of line every few hours to get rid of any nicks, especially if you're fishing in brushy or rocky water.

Take time to learn to tie a good knot, which is as important as your line. Many fishermen still use the clinch knot or improved clinch knot, and they still work well. But there are lots of other knots that will hold up under pressure. Learn to tie one quickly so that even if you're retying while the fish are hitting, you'll tie a good knot. *Miller*

ISSUES

PESTICIDE CONTROL

In 1986 the Environmental Protection Agency (EPA) was charged with failing to bring their regulatory actions under the federal Insecticide, Fungicide and Rodenticide Act into compliance with the federal Endangered Species Act. As a result, the EPA belatedly started implementing measures to ensure that use of certain pesticides within the ranges of *federally* listed threatened and endangered species do not place those species or their habitats at risk. In May 1987 the EPA notified pesticide manufacturers, formulators and registrants that labeling of certain pesticides used on rangeland, pastureland, corn, wheat, soybeans, sorghum, oats, barley, rye, or cotton must prohibit use within designated portions of the ranges for the endangered interior least tern and the threatened piping plover. As proposed, 27 insecticides, 3 herbicides, 3 rodenticides and one bird toxicant were to be prohibited from use within a two-mile-wide corridor along the Cimarron River in Clark, Comanche, and Meade counties and a similar corridor along Rattlesnake Creek east of U.S. 281 in Stafford County.

Following announcement of the pesticide restrictions, numerous farm leaders and agricultural organizations contended the proposed ban would place undue economic hardship on farm and ranch operators within the protected stream corridors. Kansas Representative Pat Roberts successfully led congressional efforts to delay implementation of the pesticide controls, originally scheduled for start-up in February 1988. Although it was widely acknowledged that the EPA had done a poor job of seeking comment from the agricultural community, conservation agencies and organizations opposed postponement of the restrictions since the EPA had already waited nine years before taking any action at all. It now appears it will be 1989 before any controls are implemented.

Since announcement of the EPA's proposed Endangered Species Protection Program, agricultural organizations in Kansas have been voicing strong complaints about the process. Some of their complaints are valid and supported by the state's conservation community. However, some very misleading and erroneous information is also being circulated — sometimes intentionally — as a means to deter protection of endangered wildlife. It's important for all concerned to base their support or opposition to the EPA's program on fact, not hysteria.

Although it is widely known that the EPA's initial effort affects only four Kansas counties, the agricultural community perceives a calculated effort to expand pesticide prohibitions to all 105 counties. Proponents of this perception are fond of waving "official" state maps showing all counties marked as containing critical habitat for endangered species. Those proponents fail to say the maps they're using were developed for use in administering the state's nongame and endangered species laws and have no bearing on the issue in question. Only federally listed species are covered by the proposed EPA program.

Of the eight federally listed species in Kansas, only two — the least tern and piping plover — are included in the current proposal. Granted, other species may eventually be added to the list for protection, but just because an animal may occasionally occur in a county does not verify the presence of critical habitat. Protection measures, to be effective, will be directed at areas where the animals are most vulnerable to pesticides.

Due to the controversy generated over the program, the EPA is revising its procedures and is gathering more public comment than usual. Both agricultural and conservation communities believe a more acceptable program will be implemented. If you want more information about the proposed program, write the State Extension Pesticide Coordinator, Waters Hall, Kansas State University, Manhattan, KS 66506; the U.S. Fish and Wildlife Service, Ackert Hall, Kansas State University, Manhattan, KS 66506; or the Environmental Services Section, Kansas Department of Wildlife and Parks, Rt. 2, Box 54A, Pratt, KS 67124. *Bob Wood, wildlife ecologist, Environmental Services Section*

ADVISORY LIFTED

The Kansas Department of Health and Environment and the Kansas Department of Wildlife and Parks have lifted the health advisory on consumption of bottom feeding fish caught in the Kansas River between Lawrence and Eudora and on the Arkansas River in Wichita. The advisories for the Little Arkansas River in Wichita and the Kansas River below the Turner Street Bridge in Kansas City are still in effect.

The health advisory was issued in June 1986 when chlordane levels in edible portions of carp exceeded the U.S. Food and Drug Administration's "action level" of .3 parts per million (ppm). Chlordane is an insecticide that was used for subterranean termite control.

Recent fish tissue analyses have shown a lowering of the chlordane concentrations in the edible portions of fish. No fish samples collected from the Kansas River between Lawrence and Eudora and from the Arkansas River at the Kellogg Avenue Bridge in Wichita during the past two years have exceeded the FDA action level. The average chlordane concentration in fish tissue from the Kansas River has been .09 ppm, and the average chlordane concentration in fish tissue collected from the Arkansas River has been .13 ppm.

No specific causes for the decrease in chlordane levels has been identified, although chlordane use has declined. Officials will continue to monitor fish from these ares because chlordane levels have been found to fluctuate. The health advisory pertained to bottom-feeding species such as carp, channel catfish, bullheads and buffalo. The advisory recommended that no more than 8 ounces of fish caught from these areas be consumed per day. *Kansas Department of Health and Environment*

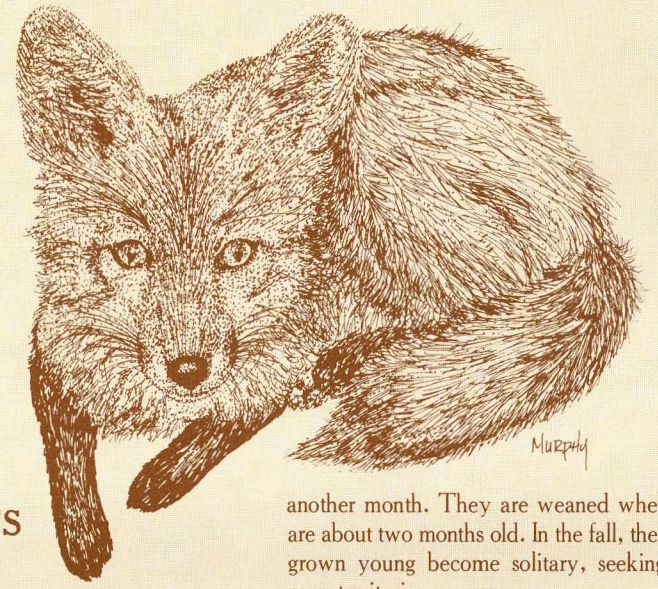
GROUNDWATER STUDY

A recent report by the U.S. Geological Survey, Department of the Interior, indicates that agricultural land use has affected the quality of water in the High Plains aquifer of southcentral Kansas.

The High Plains aquifer underlies about 174,000 square miles in parts of eight midwestern states. It is the principal source of water for the High Plains region, which is one of the nation's major agricultural areas. Application of fertilizers and pesticides to agricultural land throughout the High Plains creates a potential for adverse effects on the groundwater quality. Besides Kansas, 13 other areas within the aquifer were selected for testing by the U.S. Geological Survey's Toxic-Waste Groundwater Contamination Program.

Of the 42 possible organic compounds which were tested for, only atrazine, propazine and 2,4-D were detected in southcentral Kansas. Concentrations of sodium and alkalinity in water from beneath the irrigated cropland were significantly larger than that beneath rangeland. *United States Department of the Interior*

NATURE



FOX FACTS

Foxes are members of the family *Canidae,* which also includes dogs, wolves and coyotes. Three fox species make their home in Kansas — the red fox, the gray fox and the swift fox. Though relatively abundant as a group, these animals are seldom seen by humans, because they are secretive, nocturnal animals.

Foxes have large, triangular ears, pointed snouts and bushy tails. They eat a wide variety of food, including the meat of freshly killed prey, carrion, nuts berries and insects. Foxes are small mammals, generally less than one-third the size of a coyote.

The red fox is the only one found throughout Kansas. Though more abundant in the east, they can be seen in every region of the state. Originally red foxes were found only in the eastern third of Kansas, but they have spread westward along creeks and rivers. Coyotes are major predators of these animals and limit fox populations in some areas. This accounts for relatively dense fox populations in or near urban areas, where coyotes are not so abundant.

Though the red fox is the largest of Kansas' species, the adult seldom weighs more than 9 pounds and is generally less than 39 inches long, including the tail. Its chin and underparts are white or gray, and the backs of its ears and feet are black. Most of this fox's dense fur is yellow-red or deep red and very sleek.

Red foxes mate from mid-winter through early spring. Females prepare underground dens, where they raise litters of five to fifteen pups. The pups leave the den after about a month, but remain close to the entrance for another month. They are weaned when they are about two months old. In the fall, the nearly grown young become solitary, seeking their own territories.

Like other foxes, the red fox usually moves about at night. It lives in multi-entranced, underground dens in upland areas.

Found only in the eastern half of Kansas, the gray fox is less abundant than the red fox. It is only about two-thirds the size of the red fox. The gray fox is more cat-like than the other Kansas foxes, with a call that often sounds more feline than canine. It can climb trees quickly and may prey on birds, squirrels, mice, moles, cottontails, jackrabbits, gophers, grapes, acorns, apples and persimmons. Gray foxes may also use their climbing ability to escape predators.

The gray fox breeds in late winter, and the female bears four or five young in a shallow den she lines with grass or leaves. The pups begin to explore the area near the den when they are about 10 weeks old. In late winter, they disperse, seeking their own territories and burrows.

The gray fox's chin, throat and underparts are white or cream-colored, and its back is medium gray with white flecks. Its tail has a dark stripe down the top and a black tip.

The swift fox is Kansas' rarest and smallest, with adults weighing only slightly more than 5 pounds. This fox resembles a coyote in miniature, with a light-colored coat and black-tipped tail.

Found only in the western half of Kansas, swift foxes were once eliminated from the state. They have recently re-appeared in Kansas, but are still uncommon. It is thought that poisoned bait meats, used to reduce coyote populations, contributed greatly to the demise of swift foxes.

Swift foxes breed in December and January and bear spring litters of three to six pups. Born with eyes and ears closed, the pups remain in or near their dens until summer, and stay in family groups until August.

The swift fox eats large amounts of insects, in addition to the usual fox diet of small mammals. It may build temporary dens with one or two entrances. Permanent dens may have as many as nine entrances and several chambers connected by tunnels. *Rob Manes, wildlife education coordinator*

MUSSEL FACTS

We've all stumbled across the crumbling, sun-bleached remains of mussels, or freshwater clams. But did you know . . . ?

— Forty-one species of mussels have been documented in Kansas water.

— The richest variety of mussels can be found in the southeast part of the state. The Neosho River holds the distinction of being the only river that has yielded all 41 species.

— Mussel larvae spend from two to six months attached to a fish, frog or salamander while their internal organs develop.

— Kansas was once a major supplier of mussel shells used in the manufacture of pearl buttons. In 1912, the year before plastic buttons were introduced, more than 17,000 tons of Kansas mussel shells were shipped to button makers.

— As late as the early 1970s, Kansas mussels were the raw material for much of the cultured pearl industry. Cubes were cut from heavy-shelled mussels such as the Giant Washboard or Three-Ridged species. The cubes were then ground, polished into perfectly round pellets and placed in live oysters, which coated the implant with mother of pearl.

— Since mussels are low on the food chain, subsisting on microscopic plant and animal life that's filtered through their system, they are valuable water-quality indicators. If mussel diversity and abundance dwindles, something is wrong. *Bob Mathews, audio-visual supervisor*

WILDTRUST NOTES

Wildtrust is a donation program of the Kansas Department of Wildlife and Parks. Wildtrust coordinates and solicits contributions of land, personal property and funds for Kansas natural resource projects. The following is

a list of Wildtrust donations for 1987-1988:

The Department recently received a life estate deed to 200 acres of land in Phillips County. The Department will asume ownership of this property upon passing of the owner.

Legal procedures are under way to transfer ownership of an additional 47 acres of strip lands in Cherokee County to the Department.

The first Wildtrust Parks project was completed since the merger of the Parks and Resources Authority and Fish and Game agencies in 1987. A framed photograph of a Kansas outdoor scene was placed in the Kanopolis State Park office memorializing Dennis Rickard. Rickard was the park manager prior to his death.

The Dillon Nature Center near Hutchinson was presented Wildtrust memorial funds for the establishment of woody plantings along nature trails.

Monetary donations to Wildtrust during fiscal year 1988 have exceeded $75,000. Wildtrust account expenditures during this period were just more than $45,000.

Wildtrust funds have generated $3,638 in interest since enabling legislation took effect in July of 1987.

A Wabaunsee County rancher is bequeathing 640 acres of native prairie to the Department.

A sixth Wildtrust wildlife painting has been unveiled. Prints of the mallard scene by Jan M. McGuire are now available to the public.

Recent Wildtrust expenditures have been for native grass drills, root plows, Canada goose nesting structures, hunter safety films, conservation education brochures, native grass seed, planting of shrubs and trees, bird feeders for a retirement center and construction funds for the Milford Conservation Education Center.

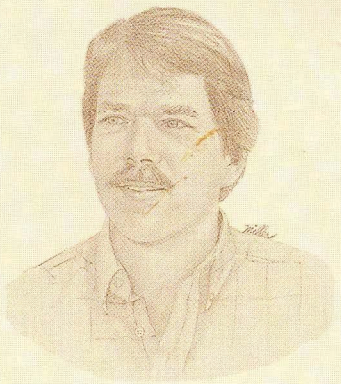
There are many more natural resource projects and programs that cannot be funded due to budget limitations. Some of those include restoration of Cheyenne Bottoms, completion of the dioramas and exhibits at the Milford Conservation Education Center, construction of a natural resource pavilion on the Kansas State Fairgrounds, purchase of specialized equipment for testing chemical and non-point source pollutants, purchase of books, films and teaching aids for our conservation education program and reintroduction of the peregrine falcon into Kansas.

You can repay the natural resources for the enjoyment they provide. A donation to Wildtrust is a good way to make a meaningful contribution to the state's natural resources. For more information contact: Bill Hanzlick, Wildtrust Coordinator at (913) 296-2281.

Miller

For What It's Worth

A Special Place



by Bob Mathews, audio-visual supervisor

There's a stretch of the Akansas River in eastern Finney County that, I'm sure, is seldom noticed by passersby. After all, the world is full of glitzier attractions. I've even seen some of them. But there isn't a place anywhere that means more to me than that modest little piece of the world I roamed as a kid.

I guess we all have one special place that carries with it a tide of memories. They are the foundation by which other places are measured for a lifetime. Among the memories are some indelible scenes that are easily and often recalled.

Among the most memorable experiences the place gave me was one late afternoon in the summer of 1964. Grandpa and I were putting up hay in a field just downstream from the Pierceville Bridge when I saw something I had never seen before in Kansas: Deer. Genuine wild whitetails! Five of them ventured cautiously out of the cottonwoods to nibble at the edge of the alfalfa field. We were hot and tired and hungry, but the sight of those sleek does and fawns was enough to make us forget all of that. I can close my eyes today and see it again . . . every detail.

A hundred yards downstream from that meadow was a place where Dad introduced me to duck hunting. I couldn't understand the appeal of exposing oneself to a raw winter morning for a look at ducks, until I saw that first flight of mallards set their wings for a slack water offshoot where we had set up. Beginning with that moment, I understood.

It was in the same location, on a later outing, that I saw my first bald eagle. I didn't know until then that my favorite hangout was also a favorite hangout for wintering eagles.

That same three-mile section of river gave me my first real taste of fishing. My cousins and I spent a good share of our summer days drifting worms into the holes for bullheads and channel cats. When we discovered the volatile combination of bowfishing for carp, we were convinced we had found the ultimate outdoor sport.

When summer's heat became so oppressive I felt nothing would survive, I headed for the river to cool my heels and regain some perspective. My last night in Kansas before heading off for two years in the Army was spent in a sleeping bag by the river, as if I could soak up enough of the place to sustain me in the months ahead.

When I returned from two years away, the river was gone — the victim of too much demand for too little water. I had seen it running low many times but never completely dry. The towering cottonwoods — the coolest shade in the world — were bare and crumbling in many places. It came as no surprise that this would happen to the Ark; the symptoms had become increasingly common for years. But I couldn't . . . and still can't . . . accept a dry riverbed.

To see it flowing again, as it has during the past year, is more than just a little heartening. It's like welcoming a friend back from the dead. But it's even more than that. There's a new generation of blue-jeaned can kickers discovering that a river . . . even a modest little river . . . gives a definition and meaning to life that can't be found anywhere else. You can't learn it in school. You can't buy it. You can't even inherit it from your parents. You have to experience it for yourself.

I guess that's why we need to do a better job of accommodating the remnants of wild country around us. Without them, we would never fully comprehend the very resources that give us life.

NOTES

OUTSTANDING GROUP

The National Wild Turkey Federation awarded the Kansas Wild Turkey Federation the L.A. Dixon Memorial Award for outstanding performance. The award is given each year to the top state chapter in each of two categories: more than 1,000 members and less than 1,000 members. Having placed third and second the last two years, the Kansas members are extremely pleased with the award.

The award was accepted by chapter president Mike Stewart at the 1988 National Wild Turkey Federation convention in Atlanta, Ga. The L.A. Dixon Award is based on membership growth, chapter activities, habitat improvement and political involvement.

The Kansas Wild Turkey Federation is a non-profit organization dedicated to the wise conservation and management of the American wild turkey. *Miller*

NATIONAL ART SHOW

The National Wildlife Art Show is looking for wildlife and outdoor themed artists to apply for jury selection to its 17th annual show. The show is scheduled for March 9-12, 1989, at the Overland Park Convention Center, Overland Park, Kan. Interested artists must apply to the National Wildlife Art Show, P.O. Box 7728, Shawnee Mission, KS 66207, or call (913) 339-6927 before Oct. 14.

The show benefits Ducks Unlimited's extensive wetland conservation projects. In recent years, the show has presented approximately 70 artists and their work to a large attendance from Kansas City and the surrounding midwest. *National Wildlife Art Show*

OUTDOOR CAMP

The Kansas Wildlife Federation and Kansas 4-H Youth Programs will sponsor an Outdoor Adventure Camp from July 31 through August 5. The camp is open to all Kansas youngsters who will be 10-12 years old this summer. Participants will learn about a variety of outdoor topics including mammals, insects, birds, fish, amphibians, geology and plants. It's a hands-on experience for youngsters to see and touch wildlife on the grounds of Camp Wa Shun Ga at the Rock Springs Ranch eight miles south of Junction City.

Other planned activities include learning the basics of "driving" a canoe as well as learning from experts how to fish and how to safely shoot rifles, shotguns, bows and pellet guns — whatever your choice.

If you're a youngster interested in the outdoors, this camp's for you. Price for the entire week is only $125. But you need to register before July 15. For more information contact: Emily B. Kling, Extension Specialist, State 4-H Office, 201 Umberger Hall, Kansas State University, Manhattan, KS 66506. *Miller*

PARK CALENDAR

Here is a listing of some of the activities planned at state parks for July and August.

LOVEWELL STATE PARK

July 4	Lovewell Booster Club Day fireworks
July 16	Lovewell Marina Catfish Tournament
July 26	Lovewell Marina Fishing Tournament
Aug. 13	Lovewell Fun Day

GLEN ELDER STATE PARK

July 4	Glen Elder State Park Fun Day — Pestinger fireworks, Coca-Cola Mud Volleyball Tournament

TUTTLE CREEK STATE PARK

July 4	Fireworks display

MILFORD STATE PARK

July 4	Sundown Salute Community Promotion

EL DORADO STATE PARK

July 4	Fireworks Display
July 28-31	Prairie Port Festival

CHENEY STATE PARK

July 9-10	Prairie Regatta
July 16-17	Mid Summer Open Sailboat Races
Aug. 20-21	Catamaran Sailing Races

KANOPOLIS STATE PARK

July 3	Fireworks Display
July 16	Open Air Dance
July 17	Mud Volleyball and Horseshoe Contest

PRAIRIE DOG STATE PARK

July 16-17	Carp Fishing Derby

FALL RIVER & TORONTO STATE PARKS

Saturday Night Ranger Programs and Films

MELVERN STATE PARK

July 8-10	Seventh Annual Bluegrass Arts and Crafts Show

POMONA STATE PARK

Aug. 19-21	Bluegrass Festival

Mike Blair photo

NEW DOCK AT TUTTLE CREEK — The merging of the Kansas Fish and Game Commission and the Park and Resources Authority has formed a strong agency that benefits all Kansans. Projects at various reservoirs, including this one at Tuttle Creek, show the cooperation in action. Here two former Parks employees construct a fishing dock from materials provided by the former Fish and Game Commission.

NATURE'S NOTEBOOK

by Joyce Harmon Depenbusch, Wildlife Education Coordinator

COLOR BY NUMBER FISH

Kansas is lucky to have more than 120 species, or kinds, of fish. They vary in size from a 5½-foot paddlefish to a 1½-inch least darter. They vary in habitat from needing undisturbed, clean streams to being tolerant of warm, polluted water. And, they vary from drab gray to brightly colored. Generally breeding males are the most brightly colored.

Below are a few of the most colorful Kansas fish. Use the color chart to color these species.

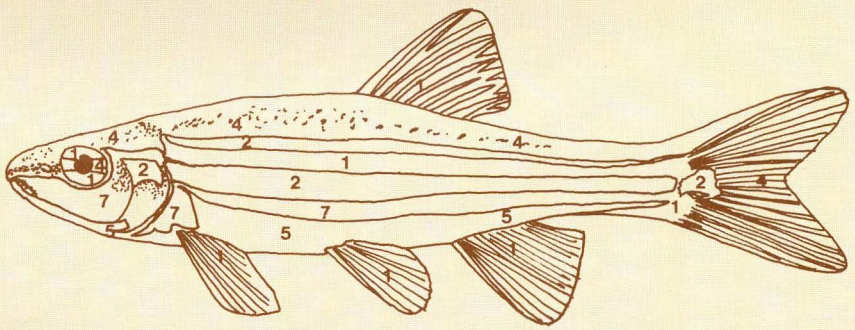
Color Chart

1 - Yellow	6 - Blue
2 - Black	7 - White
3 - Orange	8 - Green
4 - Brown	9 - Gray
5 - Red	10 - Rust

REDBELLY DACE

approximate length 2 ¾"

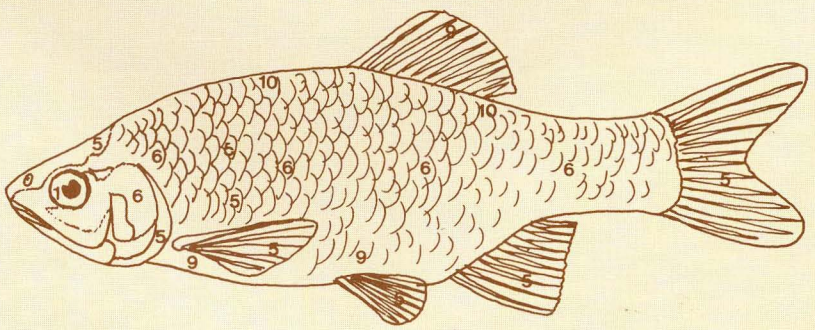
Redbelly dace have two dark stripes dividing pale areas on their sides. In spring the males have bright yellow fins with red on their bellies. Their preferred habitat is small, clear streams near springs. They eat tiny organisms, like alge.



RED SHINER

approximate length 3"

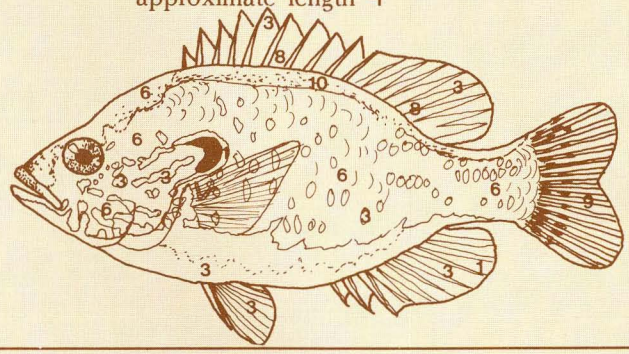
Red shiners are hardy and adapt to all kinds of waters in Kansas. They have been found in polluted streams that few other fish were living in. Breeding males have blue sides, and a red crescent behind the head. The lower fins are red, as is the top of the head. It eats small aquatic animals.



ORANGESPOTTED SUNFISH

approximate length 4"

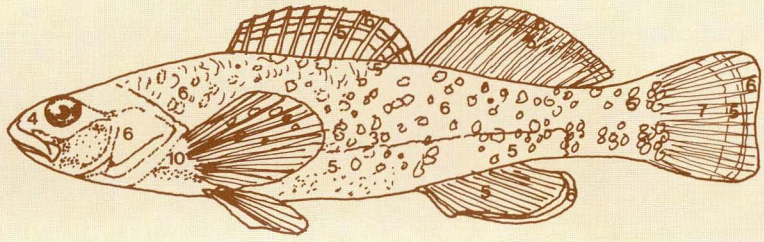
Named for its many spots, this species of sunfish lives throughout Kansas. Orange-spotted sunfish prefer shady streams, but tolerate a variety of conditions. It eats insects and is prey for larger game fish. The breeding male has blue and orange streaks on the sides of his head. His breast and fins are also orange. The "ear" flap is long with a black spot and white edge.



REDFIN DARTER

approximate length 2 ¾"

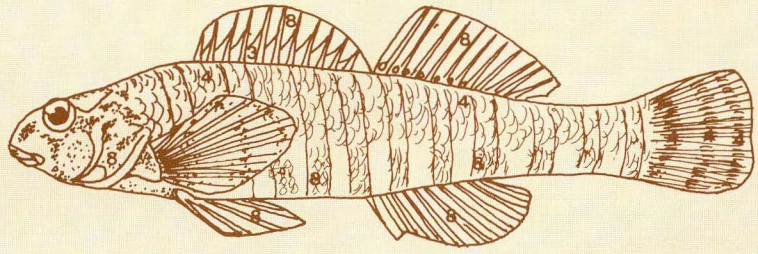
Generally a plain brown fish, the male redfin darter turns patriotic during breeding season. His fins have red, white and blue bands; his sides have red dots; and his anal fin is red with a blue border. Not abundant in Kansas, the redfin darter lives in streams with slow-moving currents and gentle riffles.



BANDED DARTER

approximate length 2¼"

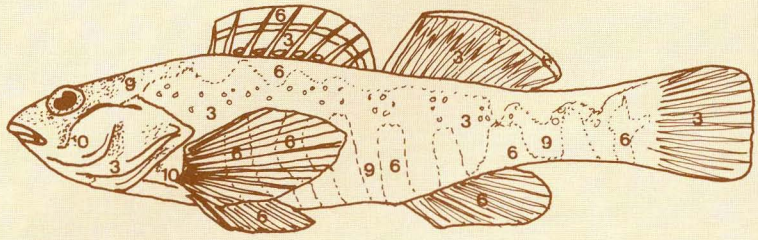
Named for the 9-12 bright green vertical bands on the male, banded darters are found in clear streams with deep riffles. The yellow-green fins of the banded darter have red spots at the base. Brown flecks cover its body. Icthyologists, people who study fish, think this darter lays its eggs on stones or plants in flowing water. It eats insect larvae.



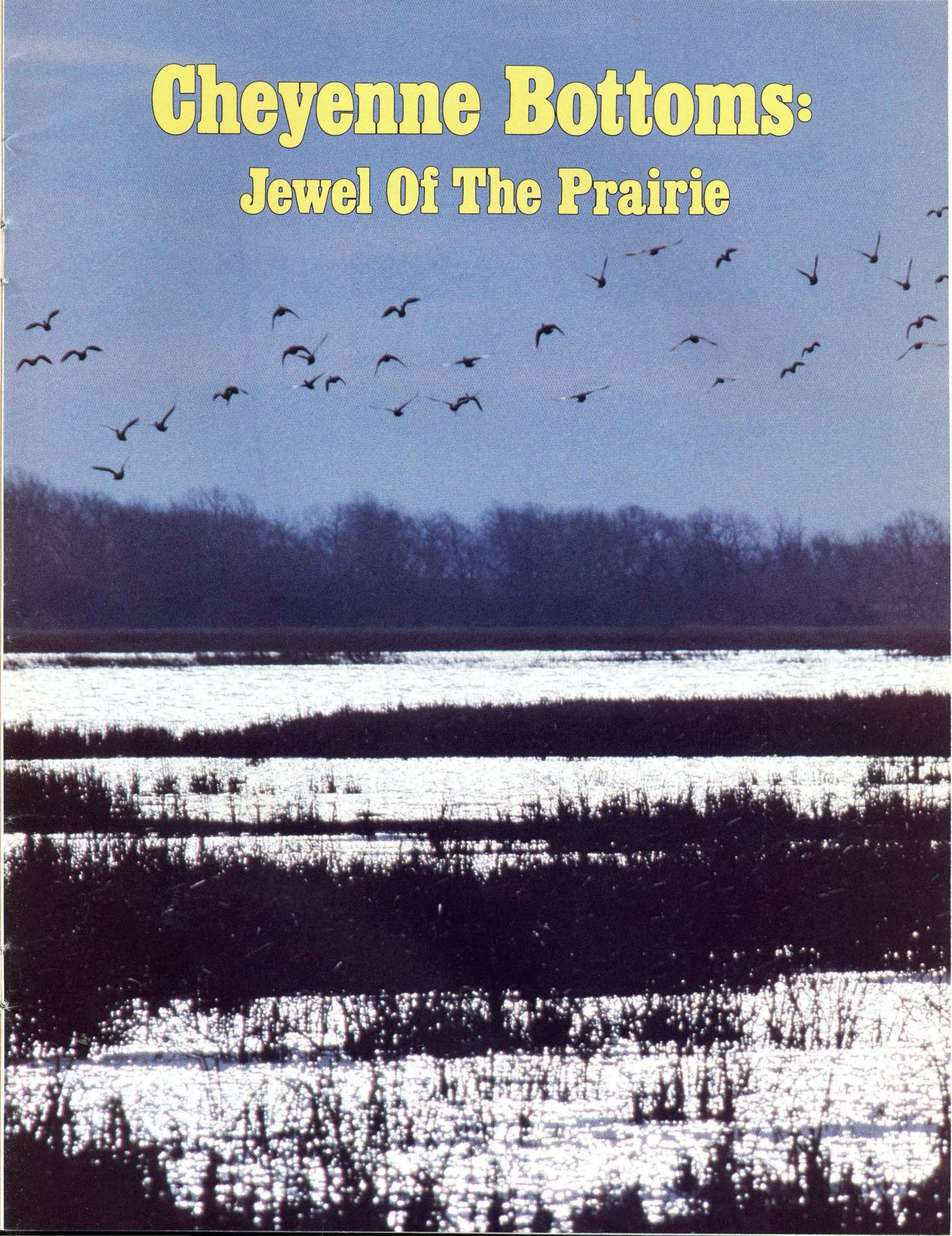
ORANGETHROAT DARTER

approximate length 2¼"

Blue and orange bands cover the orangethroat darter's body. Breeding males have blue bands on their bodies, an orange dorsal fin with blue border, an orange tail and a solid blue anal fin. Small streams with shallow riffles are preferred habitat, but this darter can adapt to certain lakes and pools. Its tolerance of warm water allows the orangethroat to be widespread in eastern and central Kansas. The orangethroat eats insect larvae, worms and fish eggs.



Cheyenne Bottoms:
Jewel Of The Prairie



An Introduction To Cheyenne Bottoms

by W. Alan Wentz
Assistant Secretary/Operations

Kansas Department of Wildlife and Parks
Pratt

What is Cheyenne Bottoms? The Bottoms has been described as Kansas' Galapagos, its Amazonia, its Serengeti all in one. It is a 41,000-acre elliptical-shaped, basinlike lowlands located six miles northeast of Great Bend in Barton County, Kansas. The Kansas Department of Wildlife and Parks operates a 19,857-acre wildlife management area that consists largely of wetlands along the southeastern edge of the sink.

More to the point, Cheyenne Bottoms is the most important ecosystem in Kansas and the most important migration point for shorebirds in North America and perhaps in this hemisphere.

The International Shorebird Survey, based at Manomet Bird Observatory, in Manomet, Mass., rated Cheyenne Bottoms as the top shorebird staging area in the 48 contiguous states during migration. Studying more than 200 known stopover sites, the survey discovered that Cheyenne Bottoms attracted almost half (45 percent) of the entire northward migrating populations of North American shorebirds.

More than 90 percent of the population of five species pass through the Bottoms:

- White-rumped sandpiper
- Baird's sandpiper
- Stilt sandpiper
- Long-billed dowitcher
- Wilson's phalarope

In addition, 74 percent of all pectoral sandpipers, 73 percent of all marbled godwits and 59 percent of all Hudsonian godwits pass through the Bottoms. One waterfowl count on the Bottoms put the number of ducks at 225,000, geese at 25,000. The Bottoms is federally designated critical habitat for the whooping crane. Other endangered species, including the least tern, peregrine falcon and bald eagle, for example, also call the Bottoms home. Because of these important wildlife values, the Department has petitioned to list Cheyenne Bottoms as the first non-federal area in North America under the "Convention on Wetlands of International Importance."

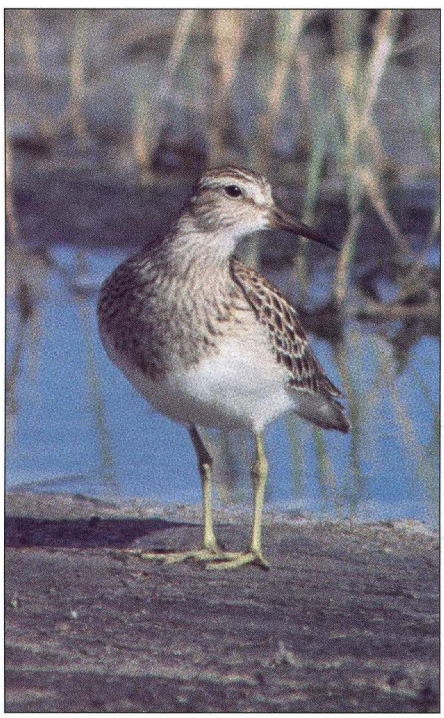
But Cheyenne Bottoms is a threatened ecosystem. It is beset by water problems, sometimes too much and often too little. Inadequate attention has been paid to the area by all agencies, including ours, over many years. But new emphasis is being directed at the Bottoms by the Kansas Legislature, private organizations, and state and federal agencies. This special report will inform you of the Bottoms' importance and what the Kansas Department of Wildlife and Parks has planned for its future.

Mike Blair photo

The Baird's sandpiper is one of five species that rely heavily on Cheyenne Bottoms during migration. More than 90 percent of this species passes through the area.

Ron Spomer photo

Wilson's phalarope (above) and the pectoral sandpiper (below) are two shorebirds that regularly use Cheyenne Bottoms Wildlife Area during migration.



Gene Brehm photo

Footing The Bill

"Sportsmen dollars have been paying for most of the work that's been done at Cheyenne Bottoms Wildlife Area. But the Department's renewed efforts at the Bottoms will take additional dollars," says Kent Montei, acting chief of the Wildlife Division. One estimate, which includes survey design, land acquisition, new and reconstructed dikes and additional riprapping, has been set at $15.5 million. The degree to which improvements can be added to Cheyenne Bottoms, however, depends largely on the funding available.

But while the Kansas Department of Wildlife and Parks is increasing its overall commitment to the Bottoms, we can't do it all alone. These projects are going to require the cooperation and financial assistance of individuals, corporations, conservation organizations and the federal government, in addition to the state of Kansas.

"Everyone's contribution is important," says W. Alan Wentz, the Department's Assistant Secretary. "That includes the schoolchildren that send us pennies, the corporations that might donate equipment and dollars, and the need for a federal government appropriation of millions of dollars to fix the water-delivery system.

"Building a small nesting island for least terns, for example, may cost about $200," Wentz says. "Improving the inlet canal is estimated to cost $2.5 million. Adding a dike to an existing marsh pool could range from $60,000 to more than $1 million. Riprapping a dike to protect it from wind and wave action will cost $384,000 per mile, and we have 20 miles of dikes in need of protection.

"Because of Cheyenne Bottoms' enormous value to endangered species and migratory birds, we hope the U.S. Fish and Wildlife Service and the U.S. Congress will help fund some of the major development needs at the Bottoms," Wentz concludes.

Ron Spomer photo

More than 90 percent of all long-billed dowitchers (above) pass through the Bottoms. The area is attractive to many species of shorebird, so it's naturally popular with birdwatchers.

Gene Brehm photo

The Way It Was

by Mike Miller
Associate Editor

Based on Marvin Schwilling's report entitled "Cheyenne Bottoms," which appeared in the December 1985 issue of **The Kansas School Naturalist.**

Take a moment to look back in time. Imagine the area we now call Kansas 150 years ago. As you traveled from east to west, you would have seen dense hardwood forests in the eastern region. Then you certainly would have been impressed by the seemingly endless horizons of prairie and, of course, by the wildlife. You would have jumped mule deer, flushed prairie chickens (perhaps a foraging grizzly bear), seen herds of antelope, and very likely paused in awe as a huge herd of buffalo passed before you. What a mecca this vast prairie must have been, but you would not have been prepared for an encounter yet to come.

As you near the center of the state, you hear a faint, high-pitched din. It grows louder, until finally you crest a hill and before you lies an immense low

area. And quickly, the source of the din is evident. Thousands, no, hundreds of thousands of birds are everywhere. The spring migration is on, and Canada and white-fronted geese, mallards, pintails, teal, wigeon, gulls, sandhill and whooping cranes, and countless wading birds fill the air and ground before you. You watch the chaos as birds, like swarms of mosquitos, fill the sky.

You have come to the area now called Cheyenne Bottoms. You begin to cross the marsh and find the ground wet and spongy. A huge wave of blue-winged teal rolls up in front of you. Snipe flit about in erratic flights, as do dowitchers, yellowlegs and sandpipers. Family groups of white-faced ibis glide by, and you watch long lines of pelicans follow thermals in roller-coaster fashion. Still more waterfowl ignore your presence and go about chattering and feeding. The water becomes deeper and the bullrushes thicker, so you begin to circle the area.

You now realize just how immense the marsh is. Elliptically shaped and totaling 41,000 acres, the marsh is bounded on the north, south and west by steep limestone, sandstone and clay bluffs, some reaching 100 feet above the marsh floor. You scale the bluffs to get a better view.

From the higher vantage point, you can see large pools of water and mudflats. The shallows are alive with foraging shorebirds including phalaropes, black-necked stilts, egrets and great blue herons. The sky above is like a busy airport with new flocks arriving and others lifting and moving to new areas. This must surely be the jewel of the prairie.

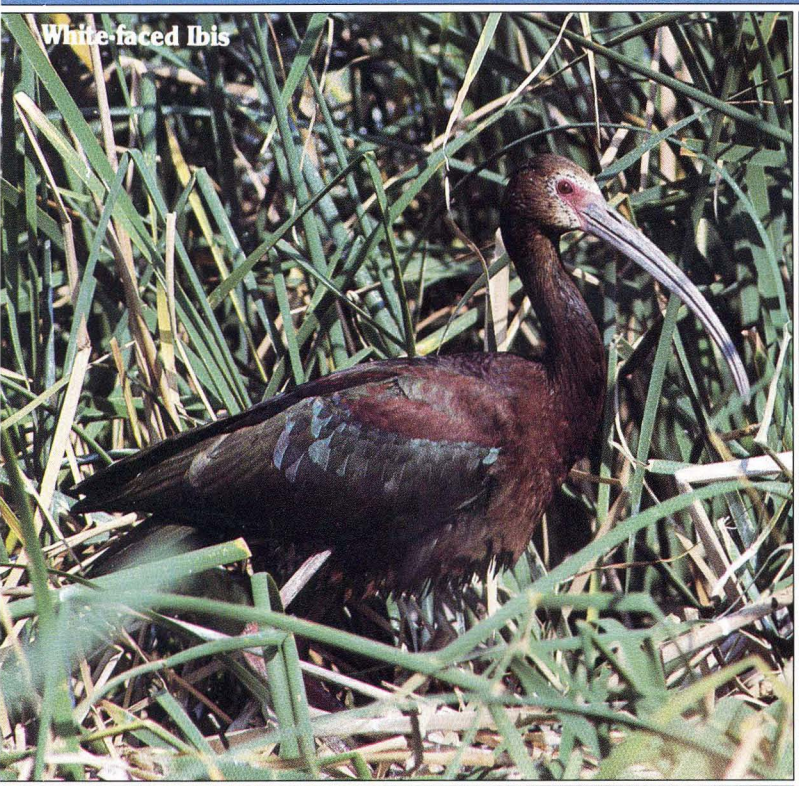
This is what early settlers and Indians must have seen when they came to Cheyenne Bottoms. And they, too, recognized the area's uniqueness and importance. The lowland is named after the Cheyenne Indians, who fought to keep the area as their hunting grounds. One such battle was said to be against the Kiowas or Pawnees; history is unclear. The particularly bloody battle took place around 1825 and one of the streams running into the Bottoms was said to have run red with blood, hence the name Blood Creek.

These early Americans must have

This expanse shows a good mix of interspersed cattails and marsh. This interspersion is desirable because it maximizes the "edge," where two or more types of vegetation meet. Edge attracts wildlife.

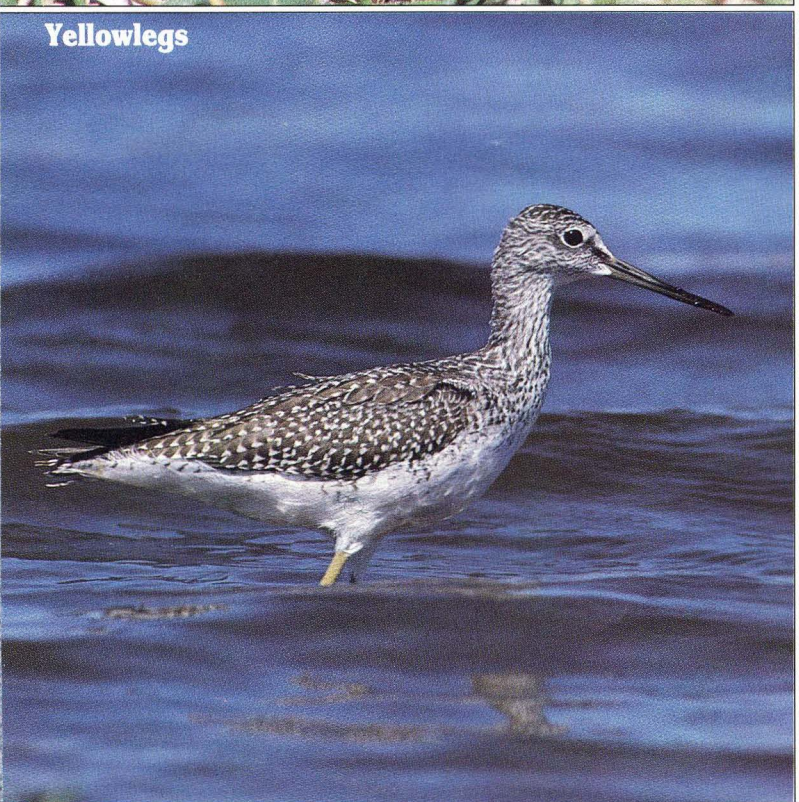
Gene Brehm photo

Pintails

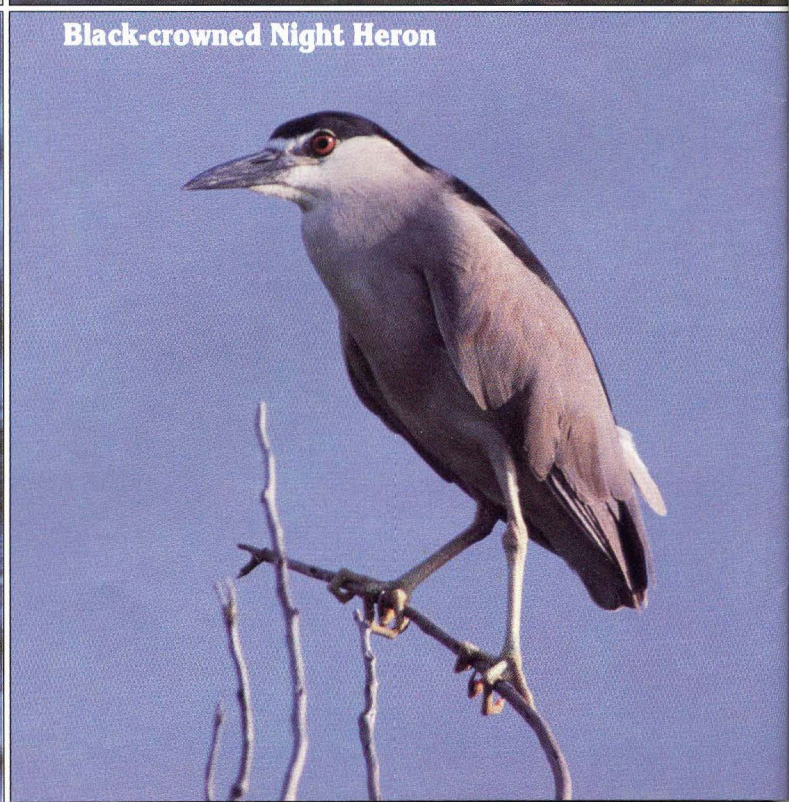


White-faced Ibis

Sanderling



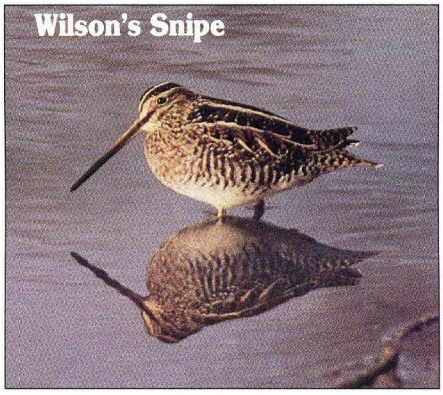
Yellowlegs



Black-crowned Night Heron

Mike Blair photo

More than 300 species of waterfowl and shorebirds have been observed at Cheyenne Bottoms Wildlife Area, an excellent place to observe spring and fall migrants. Several species regularly seen on the Bottoms are shown here and at left.



Gene Brehm photo

white-faced ibis, sanderling and black-crowned night heron photos by Gene Brehm; pintail and yellowlegs photos by Mike Blair

also felt the same frustrations we feel today. The marsh has never had a reliable water source. During dry periods, the area would be but a shadow of its former image. But flood conditions in the late 1800s and early 1900s created a huge lake. White men controlled the area by then, or tried to control it. An irrigation congress met in Great Bend in 1896, and the Grand Lake Reservoir Company was formed. The company proposed to divert water from the Arkansas River into Cheyenne Bottoms and form a great recreation and irrigation lake. The Koehn Ditch, completed in 1898, diverted water from the Arkansas River, through a canal and to the marsh. The canal worked fine, running water to the Bottoms for 100 days until flood waters washed out the diversion dam. But even then, it was evident that there wasn't enough water to maintain a large lake during dry-weather periods.

During wet-weather cycles, however, the marsh was indeed a waterfowl paradise. In the late 1800s and early 1900s, the market hunters came to the Bottoms in droves. In 1880 canvasbacks sold for $8 per dozen, redheads brought $6 per dozen, mallards $3 per dozen and other mixed ducks sold for $1.50 per dozen. One account tells of the great slaughter of ducks in 1904. Dealers would make trips to hunting camps, bringing ammunition and buying ducks. The ducks were shipped in refrigerator cars to Eastern markets.

Most men sought to maintain the Bottoms as it was during the wet years. One group proposed another canal, this one diverting water from the Smoky Hill River. But an opposing group wanted to drain the basin and farm the land.

In 1925 the Forestry, Fish and Game Commission was created, and the agency assumed the responsibility of developing the Bottoms. Then another wet-weather cycle filled the Bottoms with more than 20,000 acres of water, and interest in the area again peaked. The U.S. Fish and Wildlife Service recommended creating a national wildlife refuge. When Congress legislated $250,000 for the project in 1930, the refuge seemed a certainty. But when the actual funding was reduced to $50,000, the idea was scrapped.

During these frustrating years, conservationists made many pleas for help in saving the Bottoms. But it wasn't until the Pittman-Robertson (P-R) Act was signed in 1937 that funding was a reality. The P-R Act provided federal money to states for wildlife restoration. These federal monies allowed the Forestry, Fish and Game Commission to purchase and develop the southeast edge of the basin. Dikes, roads and hunting blinds were built, and a part of the area was opened to public hunting in 1952. In 1957 a diversion dam on the Arkansas River and an inlet canal were completed.

The waterfowl management area totaled almost 20,000 acres. Numerous management plans for the area were developed. There were five pools. Pool 1 was to be the water-supply reservoir. With that, the perimeter pools could be drawn down to permit growth of aquatic plants or the planting of millet, then refilled. But managing the marsh is much more than just water manipulation.

Throughout the years, the Bottoms has continued to frustrate managers. They fight too much water, too little water, too many cattails and siltation, not to mention the day-to-day maintenance of dikes, pumps and equipment. But during the spring and fall migrations, all the trouble is worth it. As more wetlands are drained in the name of progress, Cheyenne Bottoms becomes an even more important migration stop for waterfowl. W&P

Mike Blair photo

Area manager Karl Grover opens a gate, the primary means of water movement on the area.

Cheyenne Bottoms Today...

by Karl Grover
Area Wildlife Manager
Cheyenne Bottoms Wildlife Area
Great Bend

When Cheyenne Bottoms was new, the manager had the ability to drain any pool. With the inlet system, he was reasonably sure he'd have enough water to refill the pool when the management plan called for it. With this fairly reliable water source, the management of Cheyenne Bottoms was something that could be planned. Today, however, the area manager at Cheyenne Bottoms faces problems that were given little thought 15 or 20 years ago. These problems have made the current management strategy more of a reaction to weather as opposed to planned actions.

One of the biggest management obstacles is the decreased flows in the Arkansas River. Due to increased irrigation, damming and improved soil conservation practices that reduce surface run-off, the Arkansas River flows have dropped to the point where the inlet system can't be counted on to deliver sufficient water for filling the five area pools.

The natural aging of the marsh is another hurdle that must be cleared. Silt accumulation around the water-control gates and in the inlet system has severely hampered the movement of water used in marsh management. Silt removal, then, would allow for more efficient handling of water. Sediment buildup is a natural process that requires equipment specially designed to remove silt and dig level ditches. Equipment that can operate in mud and water hasn't been available.

Flooding is yet another variable in managing the Bottoms. The two creeks that drain into Pool 2 have no control gates. As a result, rains to the northwest of the marsh can cause significant flooding. In 1981 a lawsuit was filed against the Kansas Fish and Game Commission over flooding of private land adjacent to the Bottoms. This suit has resulted in limiting the management options for Pool 2. Drowning mowed cattails by holding water in Pool 2 is no longer an option.

Manipulating vegetation is yet another aspect of marsh management that's affected by water movement. Since the water-handling capability at Cheyenne Bottoms is hindered through silt accumulation, cattail expansion in the pools is accelerated. This leads to a deterioration of the wildlife habitat.

So why is our money and effort being devoted to preserving a swamp? The answer to this question goes far beyond economics. Here are a few quotes from some folks with close ties to the Bottoms:

* * * *

"Cheyenne Bottoms means a lot to me" says Roger Brack of Otis. "I can shoot geese on ponds out at my place, but it isn't the same. I like to hunt over decoys, but I don't have to shoot to enjoy the marsh. At Cheyenne Bottoms I've had a bald eagle swing over my decoys. That's special. Not many people get an opportunity to see birds like that."

* * * *

"I enjoy duck hunting, goose hunting, fishing and watching all kinds of wildlife and birds. I've been around Cheyenne Bottoms for 70 years, and I've seen lots of changes. You could go down to the Bottoms and see thousands of ducks and geese. When they'd rise up, they'd look like big clouds," recalls Leroy Langloss of Hoisington.

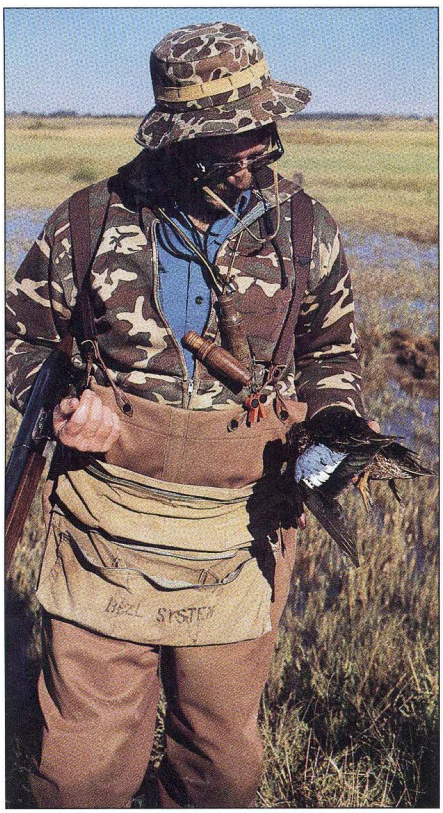
* * * *

"Motel operators in Barton County can see in their records a gradual decrease in the number of non-resident hunters" says Chris Collier, director of the Great Bend Convention and Visitors Bureau. "This decline coincides with the decrease in water (and waterfowl) available to Cheyenne Bottoms."

Mike Blair photos

Duck nesting baskets have been installed to enhance mallard production at the Bottoms.

Marshes such as Cheyenne Bottoms are priceless. Why? Because without these wetlands, the birds that depend upon them for their existence would no longer be available for photographing, hunting or simply viewing. Losses of that magnitude can't be measured. But even today, with the problems facing the Bottoms, peak duck numbers can approach 300,000, and peak goose numbers can reach 35,000. According to the International Shorebird Survey, Cheyenne Bottoms is one of the most im-



Hunters using Cheyenne Bottoms bring dollars into the Great Bend-area economy.

portant sites in the western hemisphere for migrating shorebirds. The survey estimated that 45 percent of the North American shorebird population stops at Cheyenne Bottoms during spring migration. The survey also estimated that more than 90 percent of the North American populations of white-rumped sandpiper, Baird's sandpiper, stilt sandpiper, long-billed dowitcher and Wilson's phalarope rest at the Bottoms during spring migration.

The U.S. Fish and Wildlife Service has classified the Bottoms as critical habitat for the endangered whooping crane. The area also offers wintering habitat for the endangered bald eagle. The endangered least tern has been known to nest on the area and efforts are under way to provide the species with more permanent nesting habitat. The piping plover, listed as a federally threatened species, is a migrant visitor to the area.

Twelve species of ducks, including the mallard, blue-winged teal, canvasback and the mottled duck, are known to nest at Cheyenne Bottoms. Of the 415 species of birds known in Kansas, 320 have been seen at Cheyenne Bottoms. For the birdwatcher, that means that more than 75 percent of the birds recorded in Kansas can be seen at this one location.

And it's been estimated that 15,000 visitors came to Cheyenne Bottoms in 1986 to enjoy watching or photographing the wildlife resource. Waterfowl hunters for the 1986-1987 season have been estimated at more than 12,000. Accurate estimates for the number of deer and pheasant hunters aren't avail-

The Endangered Least Tern

Habitat: Least terns spend the summer in Kansas, nesting on barren areas near water (sandbars and salt flats, for example). Least terns may occur anywhere in the state, but nesting colonies are restricted to the Cimarron River and the Stafford County salt marshes. This migrant may occasionally nest at Kirwin Reservoir in Phillips County.

The Kansas Department of Wildlife and Parks has designated the following eight counties as critical habitat for the least tern: Barton, Rice, Stafford, Reno, Phillips, Meade, Clark and Comanche.

Food: A large supply of small fish and aquatic insects must be near the least tern's nesting area.

Description: As the name indicates, least terns are the smallest members of their North American family, measuring only 8-10 inches long. Slim, silver wings carry them gracefully through the air.

Least terns return to Kansas from their winter home in Peru and Venezuela in late April. Nesting begins by late May, when two eggs are laid on bare ground. After three weeks of incubation, the spotted young hatch and leave the nest to hide in clumps of grass. Least terns leave Kansas in late August.

Key Features: In summer, least terns have a yellow bill with black tip and yellow webbed feet. These rare terns are sometimes confused with two larger terns — the Forster's tern and the common tern. Least terns have more black on their pointed wings and are only half the size of their look-alikes.

Reason For Decline: Destruction and alteration of the tern's nesting areas — spots that were limited to begin with — are the main reasons for this bird's decline. Early reduction of the bird's numbers can be attributed to commercial use of their feathers and skins for women's hats around 1900. The number of least terns nesting in Kansas today is about 55 pairs.

Mike Blair photo

Barton County, home to Cheyenne Bottoms, is one of eight Kansas counties designated as critical habitat for the endangered least tern. Area management plans call for building nesting islands for least terns. Construction cost: about $200 per island.

Recovery Plans: Management techniques consist of educating the public, protecting the terns through federal listing and maintaining nesting areas. In some areas, plants have been removed from sandbars and salt flats to restore nesting sites. W&P

able, but they are sure to exceed 1,000 individuals per year. And trappers harvest a part of the area's furbearer population.

In addition, Cheyenne Bottoms has a big economic impact on the state. A 1986 study reports that the Bottoms generates $2.5 million to local and state economies each year. The study also shows that more than 60 percent of that $2.5 million was contributed to the Barton County economy. So Cheyenne Bottoms is not only vital habitat for millions of birds and other wildlife, it's also an important resource for local and state economies.

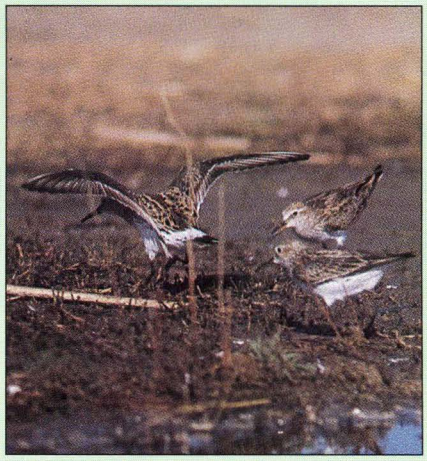
The Bottoms also serves as an outstanding site for scientific investigations. Studies, in addition to the 1985-1986 Cheyenne Bottoms Environmental Assessment, included work on duck and goose nesting and production. Currently two studies are being conducted on the area. One deals with habitat use by shorebirds, and a second is looking at ducks' food habits during the fall migration. Research projects such as these help the Department ensure that the ecosystem remains a vital part of Kansas' natural scene.

Current management practices, scientific investigations and maintenance schedules at Cheyenne Bottoms are all directed toward one goal: to provide a diverse marsh habitat for migrating waterfowl and shorebirds.

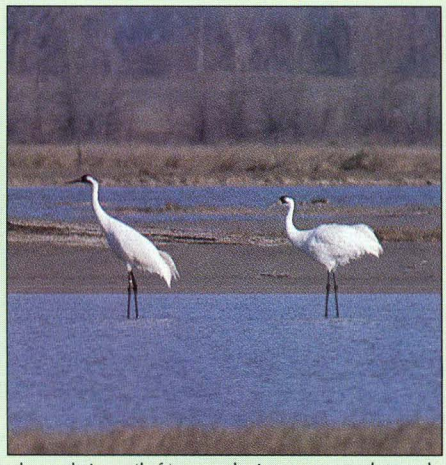
To be more specific in how the Department is achieving that goal, several objectives have been listed:

- Provide additional food sources for migrating and resident birds;
- Expand waterfowl and non-game nesting structures, and develop more areas throughout the marsh to enhance shorebird nesting;
- Provide diverse waterfowl hunting opportunity without reducing the birds' ability to feed and rest during migration;
- Provide additional opportunity for birdwatching and other non-hunting uses without posing threats to nesting birds;
- Expand area development and maintenance;
- Initiate studies to address specific management questions.

It's hard to keep all area visitors satisfied, but with this renewed commitment to maintaining and enhancing the Bottoms under way, there should be a lot to smile about. W&P

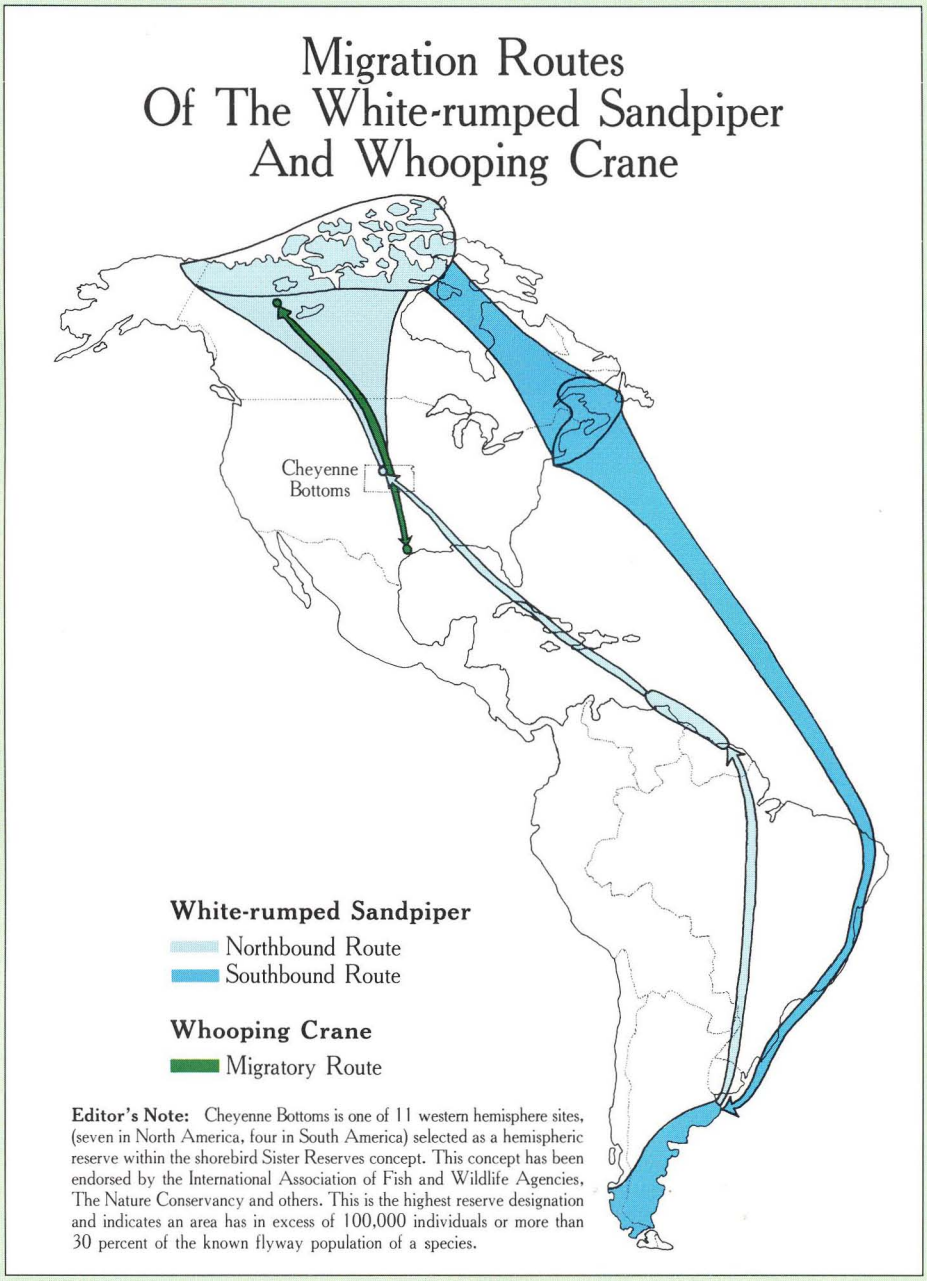


Marvin Schwilling photo



Gene Brehm photo

More than 90 percent of the world's white-rumped sandpiper (left) population passes through Cheyenne Bottoms. The Bottoms has been designated as critical habitat for the endangered whooping crane (right). The world population of whooping cranes numbers 199 birds, but only 156 are in the wild. About 134 whoopers migrate through Kansas.



Editor's Note: Cheyenne Bottoms is one of 11 western hemisphere sites, (seven in North America, four in South America) selected as a hemispheric reserve within the shorebird Sister Reserves concept. This concept has been endorsed by the International Association of Fish and Wildlife Agencies, The Nature Conservancy and others. This is the highest reserve designation and indicates an area has in excess of 100,000 individuals or more than 30 percent of the known flyway population of a species.

Patti Murphy/University of Kansas Museum of Natural History map

WATER:
The Life Blood Of Cheyenne Bottoms

by Bill Layher
Supervisor-Environmental Services
Pratt
and
Larry Zuckerman
Aquatic Ecologist
Pratt

A marsh is not a marsh without water. So Cheyenne Bottoms Wildlife Area near Great Bend is not unique from that perspective. Without life-giving water, the array of bird life and other animals that depend on the Bottoms would disappear.

But some folks realize the Bottoms used to be dry — at least two or three years out of every five. So what's the problem? Wetlands have diminished across Kansas as well as throughout North America. Historical records suggest there once may have been as many as 12 great marsh complexes in Kansas, but only three of those remain today (Cheyenne Bottoms, Jamestown and Quivira). Small wetlands still exist, but we've lost nearly 50 percent of what remained in 1950. And we lose more of these precious acres every day. As wetlands diminish, the Bottoms becomes even more critical to passing hordes of shorebirds and waterfowl. There is no other wetland in the interior United States large enough for so many birds to stop and build energy reserves on the long migratory trek.

So water was obtained artificially for the basin, and the system has been maintained over the years, at least when water was available. In 1948 the Kansas Fish and Game Commission (forerunner of the Kansas Department of Wildlife and Parks) obtained legal rights to most or all of the water flows from Wet Walnut Creek and diverted a relatively stable water supply to Cheyenne Bottoms. This senior appropriation was granted for 20,000 acre-feet of water with a peak flow of 500 cubic feet per second (cfs). An acre-foot of water is the amount of water it would take to flood an acre of land 1 foot deep. Over the years the Department has secured this right through constant use. This "senior right" has priority over all other users in the Wet Walnut drainage.

The Soil Conservation Service (SCS) developed an environmental impact statement for the Wet Walnut Watershed Plan in the late 1970s (please see the map on Page 41). So far 23 watershed dams have been built in that basin. Early on, the Department questioned the impacts of widespread dam building on downstream flows that impact Cheyenne Bottoms Wildlife Area. SCS claimed that some 73 miles of then-intermittent streams would become permanently flowing streams from increased groundwater recharge when all 48 dams were built. But that's not happened. The Department has suggested that remaining dams be built as "dry dams," which would not impact streamflows as much since they only hold water during flooding. Dry dams would still control the floods that may occur every 10 or 20 years and also allow water flows to the Bottoms. Some agencies have been unwilling to change their plans, even in the face of potentially serious impacts on the Bottoms. The Department and conservationists may be forced to take more aggressive action to protect Cheyenne Bottoms' water rights if some adjustments aren't made in construction plans.

At the time of the original watershed development, no one was unduly concerned about water rights on the Wet Walnut. But things have changed in the last 10-20 years. River flows in the Arkansas River, the other main water source for the Bottoms, have declined. Large reservoirs in Colorado impound water that used to recharge the groundwater along the Arkansas River. Irrigation wells and center pivots along the Arkansas River in both Colorado and Kansas further drain the life from the rivers. Since December 1985, Kansas has been in federal court with Colorado over the lack of Arkansas River water.

Even when water flows from Colorado, the large irrigation ditches at Garden City greatly reduce the chances of downstream water delivery. In recent years the Division of Water Resources in the State Board of Agriculture has held the ditches to their allocated amounts, and at certain times water flows past the diversions. But it still has a long way to go to get to the Department's Dundee Diversion on the Arkansas River. And all along the way, the water is being used for additional irrigation. So the Arkansas River is reduced from a raging torrent as it passes through the Royal Gorge in Colorado to a stream with a 1 cfs minimum streamflow at Great Bend. And even that streamflow isn't met consistently.

The very existence of Cheyenne Bottoms lies in peril. Future management plans for this unique wetland are meaningless without sufficient water. The fight for this water is truly the fight for Cheyenne Bottoms. W&P

Water Flow To Cheyenne Bottoms

Patti Murphy map

. . . And Into The Future

by Joe Kramer
Regional Wildlife Supervisor
Dodge City

Mike Blair photo

Blue-winged teal are the most common nesting duck on Cheyenne Bottoms.

Cheyenne Bottoms, the 100,000-year-old natural basin that forms an immense marsh from 64 square miles of Barton County, Kansas, remains the subject of great interest. Local, state and national support is stronger now than it's ever been in the history of the Department's involvement with the area.

This support, this new emphasis, is fueled by recent study findings. One of the most recent was the January 1987 report titled "Cheyenne Bottoms: An Environmental Assessment," which was authorized by the Kansas Legislature and completed by the Kansas Biological and Geological surveys under contract with the Kansas Fish and Game Commission. The report contained information on the area's geology, water budget, land use, wildlife, vegetation, economic impacts and management options, to name a few of several headings.

In June of 1987, the Kansas Department of Wildlife and Parks convened a group of 20 to review this major study and provide management recommendations. This group was made up of marsh managers, wetland biologists, wetland field supervisors, federal-aid coordinators, wetland engineers and Wildlife and Parks staffers. The technical group provided the Department with a priority ranking of management actions based on need and feasibility, but without regard to cost.

W. Alan Wentz, the Department's assistant secretary, has said: "The Department of Wildlife and Parks accepts the environmental assessment and the resulting management recommendations as the guideposts we intend to follow with the future of Cheyenne Bottoms."

These recommendations include:

- Maintaining the current structure and management capabilities with additional equipment, manpower, operational funds and related actions;
- Acquiring easements or fee title to adjoining lands. This would improve management and prevent the threat of litigation over flooding;
- Completing hydrological studies on the Bottoms as the first step in making a series of design changes (dikes, reservoir storage and water-movement structures, for example);
- Initiating design changes that prove feasible;
- Improving the water-delivery system from the Arkansas River to the Bottoms by conversion or reconstruction of the current open-canal system to a tube or closed system;
- Listing Cheyenne Bottoms under the "Convention on Wetlands of International Importance";
- Reviewing other recommendations in the environmental assessment, but placing these in a lower priority.

Says Wentz: "Wildlife and Parks will direct more of its attention to the critical needs of the Bottoms, shift new and existing departmental resources to the area, enhance funding and increase cooperation with other interested organizations.

How to work toward these goals? Three major areas have been identified:

INCREASED RECOGNITION

The Department has filed a petition to list the area under the "Convention on Wetlands of International Importance." An additional petition has been prepared to designate Cheyenne Bottoms as a site of international importance for shorebirds. Also, the Department will initiate a campaign to focus media attention on the Bottoms. This should increase tourism and economic development in the Barton County area. Additional signs, brochures and other items will be used on

site to educate visitors at Cheyenne Bottoms. The Department's Information-Education staff will enhance the public's knowledge of and appreciation for the Bottoms through a media awareness program.

SHIFTING OF RESOURCES & FUNDING

The Department's operation and maintenance (O&M) budget at Cheyenne Bottoms will be used in addition to other O&M dollars, which will be shifted as necessary.

The Department already has made major equipment purchases. Last December the Department bought a much-needed dump truck with duck stamp dollars earmarked for Cheyenne Bottoms. A total of $50,000 contributed by Ducks Unlimited will be matched by $50,000 of Chickadee Checkoff (nongame) money along with additional funds from Ducks Unlimited. This money will be used to buy key pieces of equipment such as an amphibious backhoe, a wide-tracked dozer, a four-wheel-drive loader and a Strauss cattail clipper. All pieces of new equipment will be identified by contributing organizations.

The Department's on-going reorganization process will also result in more manpower and equipment on the Bottoms. In addition, the Department has requested funding for more equipment and enhancements in the fiscal 1990 budget, which starts July 1, 1989.

The funding request will reach the federal government. The Department, through its cooperative agreement with the U.S. Fish and Wildlife Service, has applied for funding under Section 6 of the Endangered Species Act. Wildlife & Parks also has applied for additional monies under the Emergency Wetlands Resource Act of 1986. If these funds are granted, the money would be earmarked for management and for purchasing additional wetlands.

The Department has initiated major campaigns to raise additional funds for the Bottoms. A permanent wetland trust fund also is a possibility for Cheyenne Bottoms.

INCREASED COOPERATION

The Department will work with key groups such as Ducks Unlimited, The Nature Conservancy, National Wildlife Federation and National Audubon Society at the national and state levels to raise funds for the Bottoms. In addition, the governor and Kansas Legislature will be asked for additional funding, and interested groups and organizations will be informed of the progress.

Now that we've discussed the Department's efforts at improving Cheyenne Bottoms, what physical changes can you expect to see?

Some of the initial changes will include the removing of silt from 54 miles of canals and channels and 57 water-control gates on the area. This will allow for quick drawdown of water, the key to waterfowl management.

Level-ditching, a system of water removal, will occur in a radial fanlike fashion out from the water-control structures connected to each pool. While this level-ditching is occurring, "hunter-blind" islands and nesting islands will be constructed. The level-ditching also completes the quick drawdown capabilities. Hunters and birdwatchers will have greater access to the marsh as a result of this ditching system. Level-ditching, along with nesting and blind island construction, will also occur in the perimeter areas of the four outside pools.

Shorebird, goose and duck nesting sites are now being constructed and planned for Pool 5. The actual site — the pool's old goose pen area — can be built to accommodate birdwatchers and photographers.

What makes the old goose pen area so attractive as nesting sites is that its original design was used for pen-raised nesting Canada geese. Now the area can be used for wild nesting Canada geese, ducks and open-gravel nesting birds such as avocets, terns, plovers and sandpipers. The old goose pen area is surrounded by dikes, so water can be fluctuated independent of the surrounding Pool 5.

Other physical changes will be to provide additional food sources for migrating and upland birds. These foods will include water-manipulated moist-soil plants and micro-life food in addition to seeded grains.

Controlling the cattails and salt cedars is an immediate need. This control, however, will improve with the better drawdown capabilities once the silt removal and level-ditching occurs.

These physical changes can and will occur without additional studies or design work. Why? Because most of this work can be accomplished through more efficient use of the original marsh management plan.

After the hydrological studies have been evaluated, those design changes that are proven feasible can occur. They include:

- Deep-water storage;
- Improved water-dispersal structures;
- Pump stations (both stationary and mobile);
- Reduction in pool size;
- Floodways on dikes for flood-water dispersal;
- Redesign of water-delivery system from Arkansas River to the Bottoms;
- Improved water-diversion systems on the Arkansas River, Dry Walnut and Wet Walnut creeks in addition to other features that will allow for more efficient water usage.

The future of Cheyenne Bottoms is very real and very promising. Protecting and managing the Bottoms is essential for a healthy environment, both today and tomorrow. And Kansans are concerned about what happens to their wild places. Assistant Secretary W. Alan Wentz may have summed it up best:

"We want to recognize the hard work that many people, including the Cheyenne Bottoms Task Force, numerous organizations, the Kansas Legislature, the governor and our staff have put into protecting and enhancing Cheyenne Bottoms. Without the efforts of so many, the Bottoms might not exist. We hope these individuals will continue and increase their efforts to help us implement the variety of management actions necessary over the coming years." W&P

Riffel Photography photo

Ann C. Dohoney of Shawnee, Kan., poses with her winning entry. Kansas Ducks Unlimited has pledged 20 percent of the proceeds from each limited-edition print directly to restoration work on Cheyenne Bottoms. For every print sold, $7.50 is earmarked for the Bottoms. The cooperation between the Department and DU has helped both agencies preserve and restore wetlands in Kansas.

Cheyenne Bottoms And The Kansas Waterfowl Stamp

Ann C. Dohoney of Shawnee, Kan., painted this pair of Canada geese to win the competition for the 1988 Kansas Waterfowl Habitat Stamp. A commercial artist, Dohoney is no stranger to waterfowl stamp contests. She recently won the 1989-1990 Indiana waterfowl stamp contest and placed third in the 1980 federal duck stamp competition.

In 1987 Kansas became the 39th state to require waterfowl hunters to buy a habitat stamp. The $3 stamp is required of all resident Kansas waterfowlers (unless exempt from having a hunting license). All non-resident waterfowlers who hunt in Kansas must buy the stamp.

Funds from the sale of the stamps are earmarked for waterfowl habitat improvement, development or acquisition by the Kansas Department of Wildlife and Parks. The Department is expected to receive about $135,000 in revenues from the Guy Coheleach's 1987 "First of State" green-winged teal stamp.

These funds will be used to match monies set aside for the Department by Ducks Unlimited, Inc., (DU) under its MARSH program. Through MARSH, which stands for Matching Aid to Restore States Habitat, DU has made more than $288,000 available to the Department since 1985.

Kansas Ducks Unlimited and Petersen Prints of Los Angeles, publisher of the stamp program, provide the stamps to the Department at no cost. Kansas DU receives the proceeds from the sale of limited-edition prints and designates 20 percent of those proceeds to restoration efforts at Cheyenne Bottoms Wildlife Area.

The art print edition of the 1987 stamp closed out at 13,465 units. Total monies available for Cheyenne Bottoms from the 1987 habitat stamp print will exceed $95,000. The remaining monies will be used to develop a Kansas Donor Project in Saskatchewan. The project goal: to increase waterfowl nesting habitat there—*Lee Queal, DU*

HIGH GROUND

by Kurt E. Reed

A Day In The (State) Park

The outdoors, a little planning and common sense go a long way. To illustrate how a potentially enjoyable outdoor experience can become a frustrating one, let's observe a fictitious family on an outing.

Clyde, the father, his wife, two children and their dog, Manfred, decide to go camping at the state park. It's Friday, the first of July. They've been fishing at the lake before but have never camped there. Enthusiastically, they throw the sleeping bags, fishing poles and cooler into the station wagon. Clyde hooks up the boat, and off they go for their camping adventure.

Now Clyde is an organized person at work and at home, so he usually plans ahead. But he mistakenly thinks that to get away from it all you have to drop everything and go. He doesn't stop to consider that there are 25,000 others already at the state park who *have* planned ahead. It's 8 p.m. The sun is getting low, and they run out of gas on the way. Finally, they arrive at the park office for permits and licenses.

Clyde asks: "Where are the campsites away from everyone?"

"Most of them are already taken," replies the park attendant. Luckily, Clyde finds an open campsite. That night Manfred finds a skunk, the campfire rages, and a thunderstorm blows the campground in disarray.

The weekend, obviously, isn't going as Clyde had hoped. The next morning, Clyde launches the boat. While pulling away from the ramp, he feels water at his feet. THE DRAIN PLUG! By lunch time, Clyde's daughter has numerous bug bites, and his son is upset about a cut finger. Having no first-aid kit, Clyde finds a park ranger and discovers Manfred, who wreaks of skunk, has been roaming the campground.

From my experiences and from talking with other park managers and rangers, these types of misfortunes occur often. If Clyde had checked the weather report, he would have known thunderstorms were possible. He could have let a friend know where the family would be, just in case of an emergency. Manfred would be safer on a leash; that's also a state-park regulation. Clyde would have known the regulation if he'd picked up a copy while at the office. A first-aid kit and insect repellent would have helped. Using a grill would have prevented the fire and left the campsite nicer for the next person. After all, *you* are the next person. Leaving nothing but footprints and taking nothing but pictures and memories keeps the park the way you found it. Checking the condition of your equipment assures it will perform for you. And as Clyde learned, check the drain plug. While you're at it, check the fire extinguisher. Safety should be your first consideration.

Gary Davison cartoon

During the summer you can participate in or observe any number of outdoor activities at Kansas' 24 state parks. Contact the state park office you plan to visit to stay abreast of upcoming activities, most of which are open to the general public. Some of the opportunities include trail rides, endurance competitions, organization meetings, dances, ski shows, outdoor awareness programs, fishing tournaments, clinics, camping, club meetings, mud volleyball, horseshoes, fly-ins, hiking, even weddings. Special-event permits are free and are required in advance for designated activities. Shelter reservations are available for group outings, and state park offices can assist with any questions you may have.

As for Clyde, I must admit some of his problems were a bit exaggerated. But if he'd used his head, his family would have enjoyed their camping trip much more than they did. There is so much we can learn and enjoy outdoors. A little planning will reward you with an enjoyable experience. W&P

Kurt Reed is the park manager at Kanopolis State Park.