

# KANSAS WILDLIFE

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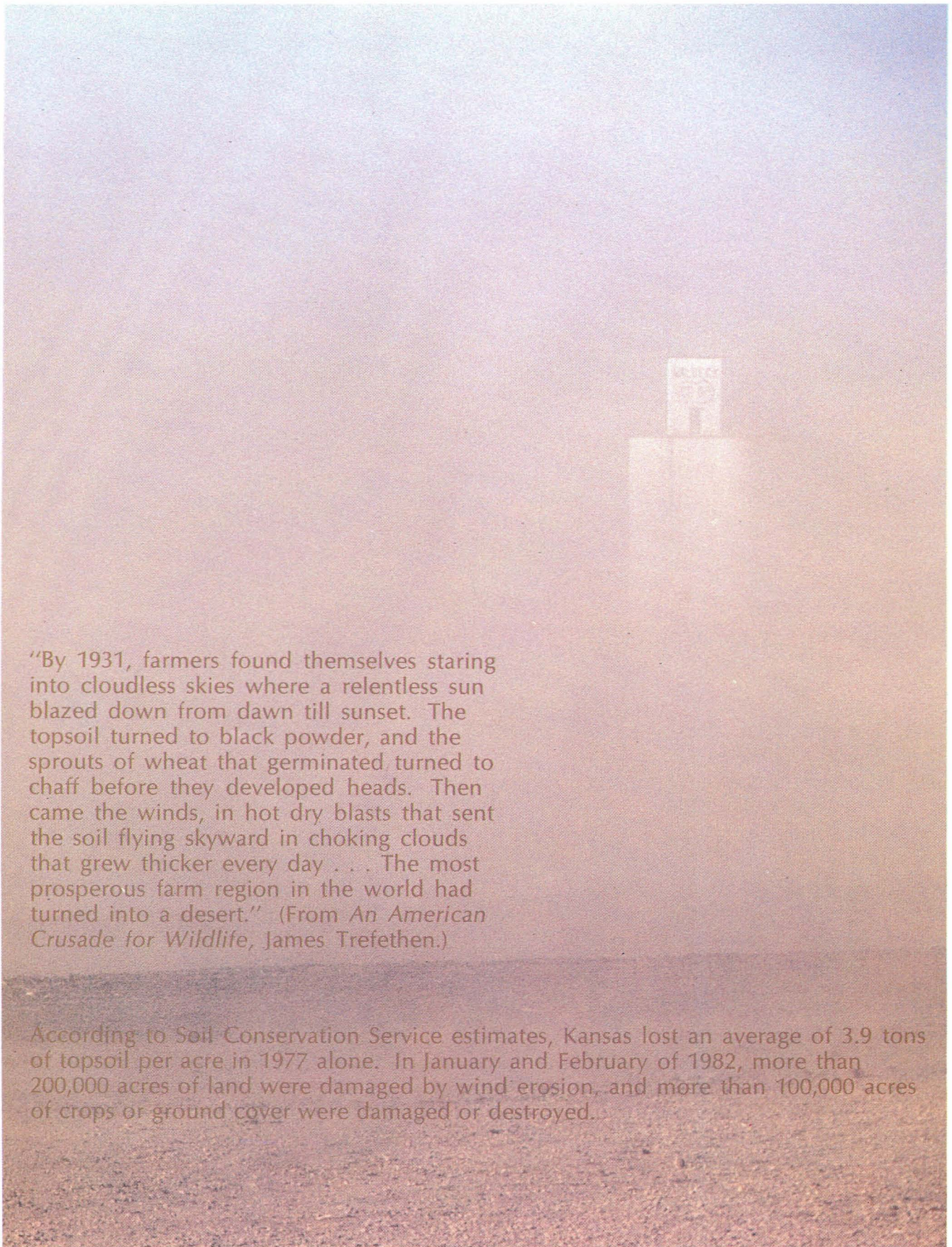
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"By 1931, farmers found themselves staring into cloudless skies where a relentless sun blazed down from dawn till sunset. The topsoil turned to black powder, and the sprouts of wheat that germinated turned to chaff before they developed heads. Then came the winds, in hot dry blasts that sent the soil flying skyward in choking clouds that grew thicker every day . . . The most prosperous farm region in the world had turned into a desert." (From *An American Crusade for Wildlife*, James Trefethen.)

According to Soil Conservation Service estimates, Kansas lost an average of 3.9 tons of topsoil per acre in 1977 alone. In January and February of 1982, more than 200,000 acres of land were damaged by wind erosion, and more than 100,000 acres of crops or ground cover were damaged or destroyed.





*Where  
highway rights-  
of-way are left unmowed,  
they support a surprising  
variety and abundance of wildlife.*

## **Roadsides Gone Wild**

*Chris Madson*

**W**hen it comes to building roads, engineers don't like scenery. Scenery is expensive. A pretty view always takes in some rough country, and that means construction headaches—road cuts, culverts, bridges, railings. In some parts of the country, an engineer has no choice but to build scenic drives, but in the Midwest, he can generally plan his highways around the scenery. As a result, there are all too many stretches of Midwestern slab that run string straight from one featureless horizon to the other, bending just enough to slip by the badlands, prairie hills, and creek bluffs that might otherwise lend a flicker of in-

terest to a long trip. About all most of our highways have in the way of scenic appeal is a strip of overgrown ditch. It's not much, but if a traveler keeps his eyes peeled, he's likely to find that the goings on in that strip are enough to ease his boredom. Acre for acre, it's one of the most productive kinds of wildlife cover we have.

The appeal of a roadside is due mainly to the way it's laid out, a long edge of cover next to fields and other habitats on private land. "Edge" is a magic word in wildlife management. The boundary between two plant communities is generally richer than either habitat by itself.

Food is more abundant and diverse; cover is more varied. In some situations, plants along the edge have better access to light, and they may find some protection from fire and weather. They may even take advantage of nutrients released by the vegetation across the boundary.

Most of the common plants along highways are aliens that thrive on disturbed ground, but there are corners where the natives still hang on. Some of the best surviving tall-grass prairie can be found in the medians between older U.S. highways and railroad rights-of-way. These strips of grass and forbs begin blossoming in April through most of

Kansas and keep up the show almost without pause until the first heavy frost. Once snow flies, the native grasses stand up to weather better than brome grass or fescue, providing a border of precious winter cover in a frozen landscape. In addition, some of the native forbs like sunflower and Illinois bundleflower can make significant contributions to the late season larders of many animals.

Given a choice, most wildlife species will gravitate toward native cover because of the combination of food and high quality cover it provides, but in a pinch, a good stand of brome grass will serve, especially if there is corn or wheat stubble

*A rare sight east of the Great Plains, the scissor-tailed flycatcher is a common bird along roadsides as far north as Nebraska. The spectacular tail plumes may give the scissortail more maneuverability in the air; they certainly make him one of the eyecatchers on Kansas telephone lines. (Photo by Sylvia and Lloyd Brockus.)*



nearby. Some of the small mammals—the voles, deer mice, jumping mice, kangaroo rats, moles, and gophers—probably never wander more than a few yards from such roadside mansions. Except for their sign, you'd probably never know they were there if you didn't see them with great regularity in the grip of a pair of hunting talons.

If an engineer set out to design a piece of hawk habitat, he couldn't do much better than laying out an interstate with directions to leave the ditches unmowed. The grass supports an abundant prey base, and utility poles, telephone wires, and signs make perfect perches. There is hardly a species of raptor that won't be drawn occasionally to a roadside. Among the *buteos*, the Swainson's, rough-legged, red-tailed, and even the rare ferruginous hawk work the ditches regularly, sometimes soaring, more often stone still on a high vantage point, watching the grass. Marsh hawks are common along the highway, floating low over the grass, studying it for a sign of movement, and at dusk, great horned owls often move out of the woods to hunting perches at the edge of the pavement. Probably the most spectacular of the roadside raptors is the prairie falcon, a stream-lined bird bigger than a pigeon that moves down from the broken country along the Colorado and Wyoming Rockies to hunt the plains during the winter.

Of all the hawks that frequent roadsides, my favorite is the kestrel. While the larger prairie and peregrine falcons have fallen on hard times in the last fifty years, the kestrel has prospered in large part because of his ability to exploit roadside habitats and the settled country around them. He's the smallest of the falcons, but what he lacks in size he more than makes up in brilliant plumage and dash. A peregrine falcon stooping on a flock of teal is a thunderbolt, an awesome killing machine. The kestrel is more modest, a spark of electricity hovering over the median strip. While the other common roadside hawk, the

redtail, sits motionless on his telephone pole, shoulders hunched like a dyspeptic old man, the kestrel is out hustling up his meals. He spends much of his time on the wing, and his flying skill is considerable.

A number of years ago, I was loitering along a Wisconsin back road in an old pickup when I caught a flurry of motion overhead. A male kestrel was courting a pretty lady. The two of them had gone through an impressive display of aerobatics, and the female was just settling down on a telephone pole, leaving the male with the mistaken impression that he had bested her. What followed was one of the finest flying shows I've ever seen. The male never rose more than forty feet over the female's head, but he pulled out all the stops, looping, barrel rolling, helicoptering, then side-slipping down in a series of falling leaves. After two or three minutes of aerial fireworks, he dropped in one last flurry to the top of the post where he consummated his display without ever touching down. Then the two of them streaked across the road and disappeared into the woods on the far ridge. House hunting, I suppose. A highway would be a boring place indeed without a few kestrels.

Hordes of other nongame birds also show up along roads. Some, like the red-winged blackbird, meadowlark, dickcissel, bobolink, and grasshopper sparrow, commonly nest in roadside cover. Others prefer more private nurseries but show up along the ditch to feed, pick gravel, and dust bathe. Scissortail flycatchers, roadrunners, red-headed woodpeckers, flickers, eastern and western bluebirds, loggerhead shrikes, upland sandpipers, killdeer, and three or four kinds of sparrows are all common warm-weather roadside species. In winter, longspurs and horned larks mob the snow-free surfaces of gravel back roads. There are cold-blooded residents of the road ditch that may also catch a traveler's eye—the collared lizard, a couple of species of box turtle, a variety of

snakes, and an occasional tarantula.

The elements of roadside habitat that attract all this nongame aren't lost on game animals. A wildlife biologist in southern Illinois found that nearly nine percent of all the quail nests on his study area were along roads. Most of the quail on the area nested in abandoned fields since they were a fairly common cover type, but when he calculated the density of nests, he found that there were 184 nests per acre of roadside habitat, only forty-seven nests per acre of abandoned field.

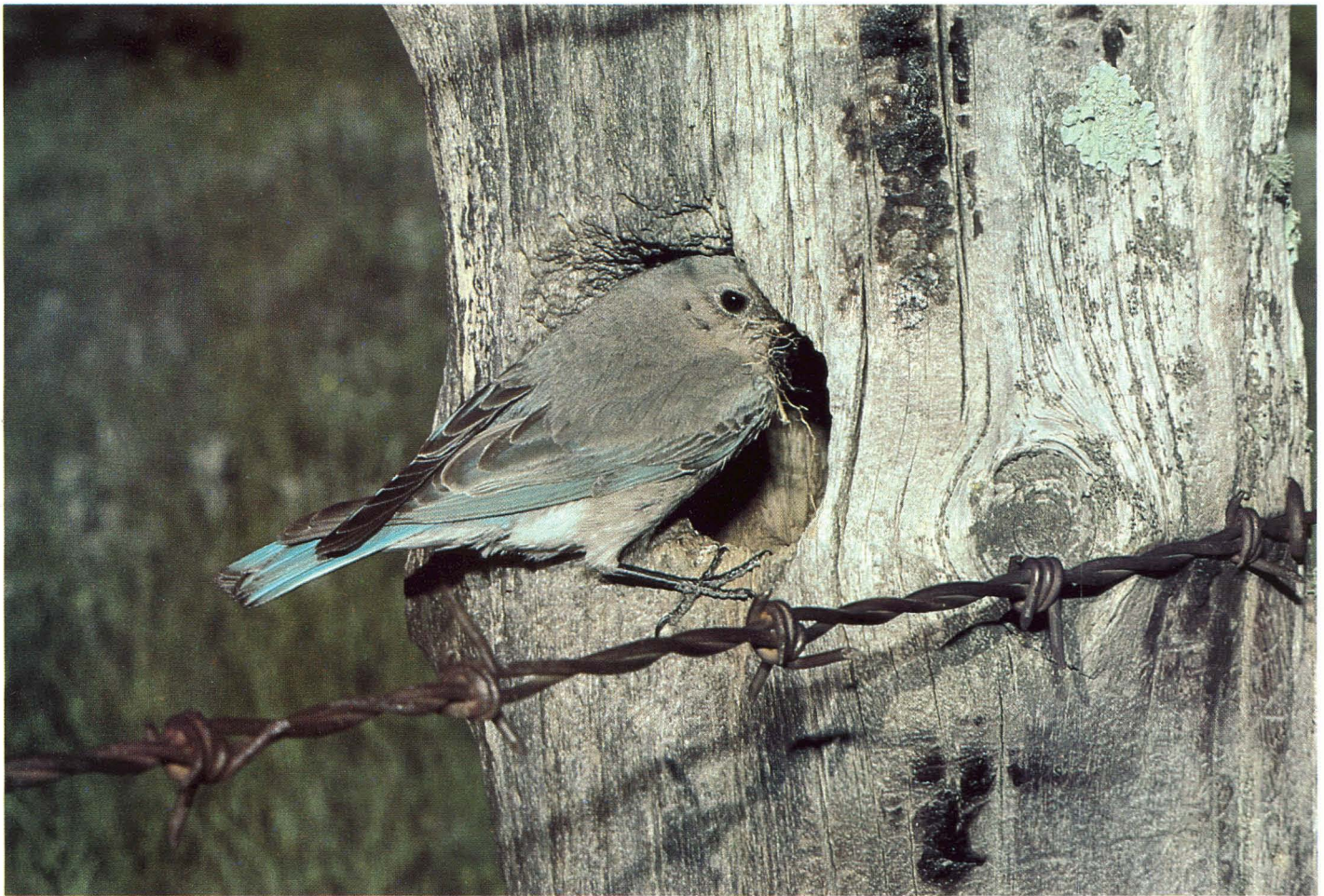
Biologists in southcentral Nebraska estimate that as much as one quarter of their pheasant production comes from roadsides, and a South Dakota researcher following radio-marked pheasants discovered that his birds preferred roadsides and drainage ditches to every other cover type on his study area except alfalfa. The pheasants seemed especially fond of the ditches for overnight roosting cover. In central Illinois where pheasant nesting cover is particularly hard to find, the Department of Conservation launched an experimental roadside seeding program to see whether they could lure nesting hens away from hay fields. They counted more nests in their roadside plots than in any of seven other cover types they searched.

Wildlife managers haven't lost much time in translating these research results into larger scale habitat development programs. Illinois has expanded its pilot effort into a ten-county area. When they began the program in 1974, they sold it door-to-door, but since 1976, they've barely been able to keep up with unsolicited requests from landowners. So far, the program has accounted for 5,500 acres of new brome grass-alfalfa cover which participating farmers have agreed to leave unmowed.

The Nebraska Fish, Wildlife, and Parks Commission has also built an impressive roadside program using funds from its state habitat stamp to defray the cost of native grass and



*More roadside residents. The eastern kingbird (right) is one of Kansas' most common fence-sitters. The mountain bluebird (below and opposite page) doesn't turn up as often but is worth waiting for. (Photos by Ron Spomer.)*







forb seed for any county that wants to re-establish cover along secondary roads. Occasionally, the department furnishes the seed; more often, it furnishes the money along with a list of recommended plant species and seed sources. To date, participating counties have reseeded 8,900 acres. Nebraska has attacked roadside habitat development from another angle as well. When Interstate 80 was being built, the department urged contractors to take the dirt they needed for construction from selected locations. These later filled with water, creating a chain of lakes that has provided some fine fishing along with more diverse habitat for terrestrial wildlife.

The disadvantage of active roadside seeding efforts is obvious—they're expensive. The Nebraska program has cost nearly \$250,000; Illinois estimates that their reseeded runs about \$90 an acre. While some of these funds can be recovered through the Pittman-Robertson program, there is still the problem of finding the money in the first place. And, as researchers in Minnesota are discovering, there may not be too much difference between the quality of a carefully planned habitat plot and a ditch that is left unmowed. Minnesota biologists have compared county roads whose ditches are frequently mowed with similar roads where mowing is suspended until August 1 and state highways where ditches are mowed on a four-year rotation. The unmowed state roadsides support three times as many bird nests as the mowed county ditches.

Roadside management in Kansas has combined elements of the active seeding approach and mowing control. Without the financial support of a habitat stamp, the Fish and Game Commission hasn't been able to fund a Nebraska-style planting program, but biologists from the Commission and Soil Conservation Service *have* convinced the Department of Transportation to plant native grass along new rights-of-way or in spots where the road ditch has been

disturbed by construction. In the early 1960's, Fish and Game biologists also began surveying road ditches with D.O.T. personnel, hoping to find stretches of road ditch that could be left unmowed. A few of the plots that were set aside in the early phases of that effort haven't been mowed to this day and are slowly growing up into stands of

woody vegetation that will be of even greater value to wildlife than the original grassy ditch. The Commission currently manages two lakes that were created by road construction, the Saline State Fishing Lake which was originally a borrow pit and Wilson State Fishing Lake which was formed as part of the construction of State Highway 75.

In Kansas as in most other states, the 1973 Arab oil embargo and the overwhelming fuel prices that followed have probably done more to establish cover on roadsides than all the research and management state wildlife agencies have ever undertaken. Most states cut back drastically on their right-of-way mowing in the mid-1970's. Kansas interstates

*Ferruginous hawk alighting (Ron Spomer)*

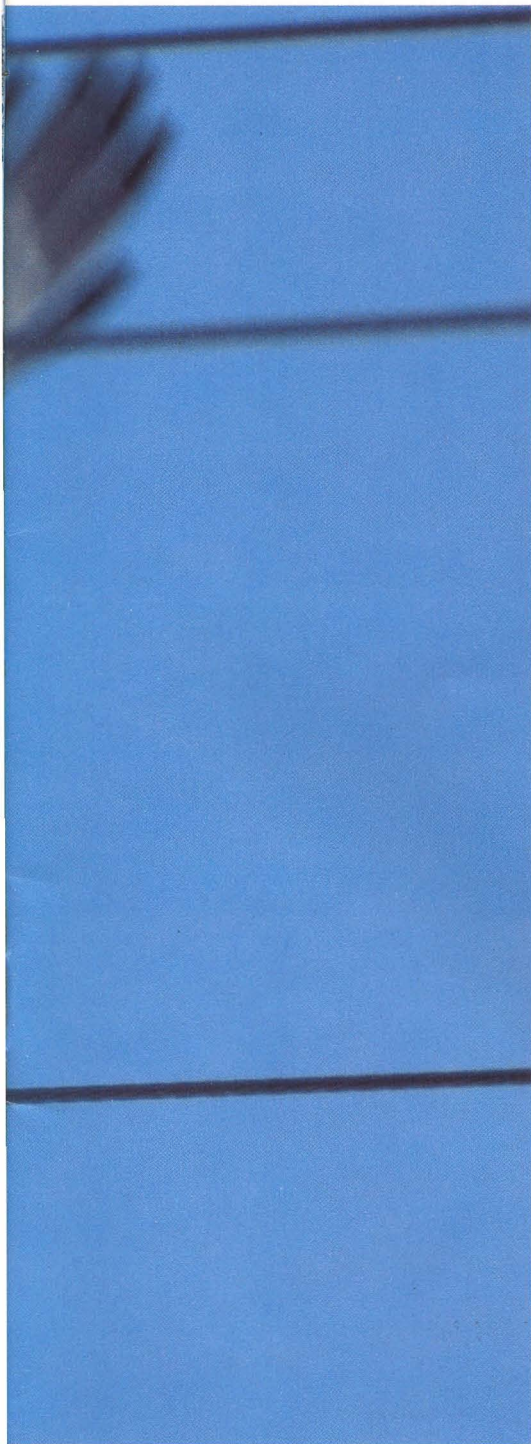


have about seventy-five feet of ditch on each side; primary roads average about fifty feet of ditch on each side. Before mowing was curtailed, these tracts were mowed from fenceline to fenceline. Today, highway workers cut the first fifteen to twenty feet of grass and leave the rest. On primary roads and interstates alone, this may amount to nearly 100,000 acres.

Of course, roadside habitat isn't without its problems. D.O.T. safety officials are understandably interested in making sure that culverts and abutments aren't screened by vegetation and that drivers have enough room along the slab to pull off to change a flat. In the right location, weather-resistant cover like native grass or thick brush can cause

snowdrifts that will close a road. Nebraska has recently kicked off a program that could turn this liability into an asset. Wildlife officials note that a strip of vegetation on private land can act as a living snowfence and catch the snow before it drifts over the road. Habitat stamp money is being used to help landowners buy the nursery stock they need to

*Collared lizard (Sylvia and Lloyd Brockus)*



establish such breaks, and at least one state biologist expects interest in the living snowfence program to skyrocket this spring. "After the winter we've had," he says, "a lot of farmers will be ready for some new ideas on snow removal."

Roadside cover can cause trouble for wildlife, too. Ditches are often sprayed with pesticides in weed and

insect control efforts, and many of the chemicals used are rough on non-target animals and plants. On some heavily traveled highways, lead salts from exhaust can build up to dangerous levels. In South Dakota where roadside hay is commonly used for forage, the Extension Service warns stockmen to use feed from a variety of sources to avoid the

possibility of lead poisoning in their cattle. Research in Illinois has shown that lead concentrations along secondary roads are negligible, but on interstates, the potential exists for mild lead poisoning in wildlife. Whether unleaded gasoline will reduce this risk is yet to be seen.

Probably the greatest risk to wildlife and driver alike is the possibility

*Yellow-billed cuckoo (Ron Spomer)*



of collision. Even a pheasant hitting the windshield at the wrong angle can cause a lot of trouble in a hurry; a deer-car collision is far more dangerous and expensive. The deer problem along highways has become so severe in many western states that major research work has been done to find ways to keep deer off the slab. Deer gravitate to high-

ways for a number of reasons. The browse at the road's edge is often richer and easier to reach than in nearby woods, and California biologists working on the problem suspect that deer may be drawn by the salt used in snow removal. A few years ago, California highway crews went as far as to try calcium chloride as a substitute for regular salt, but

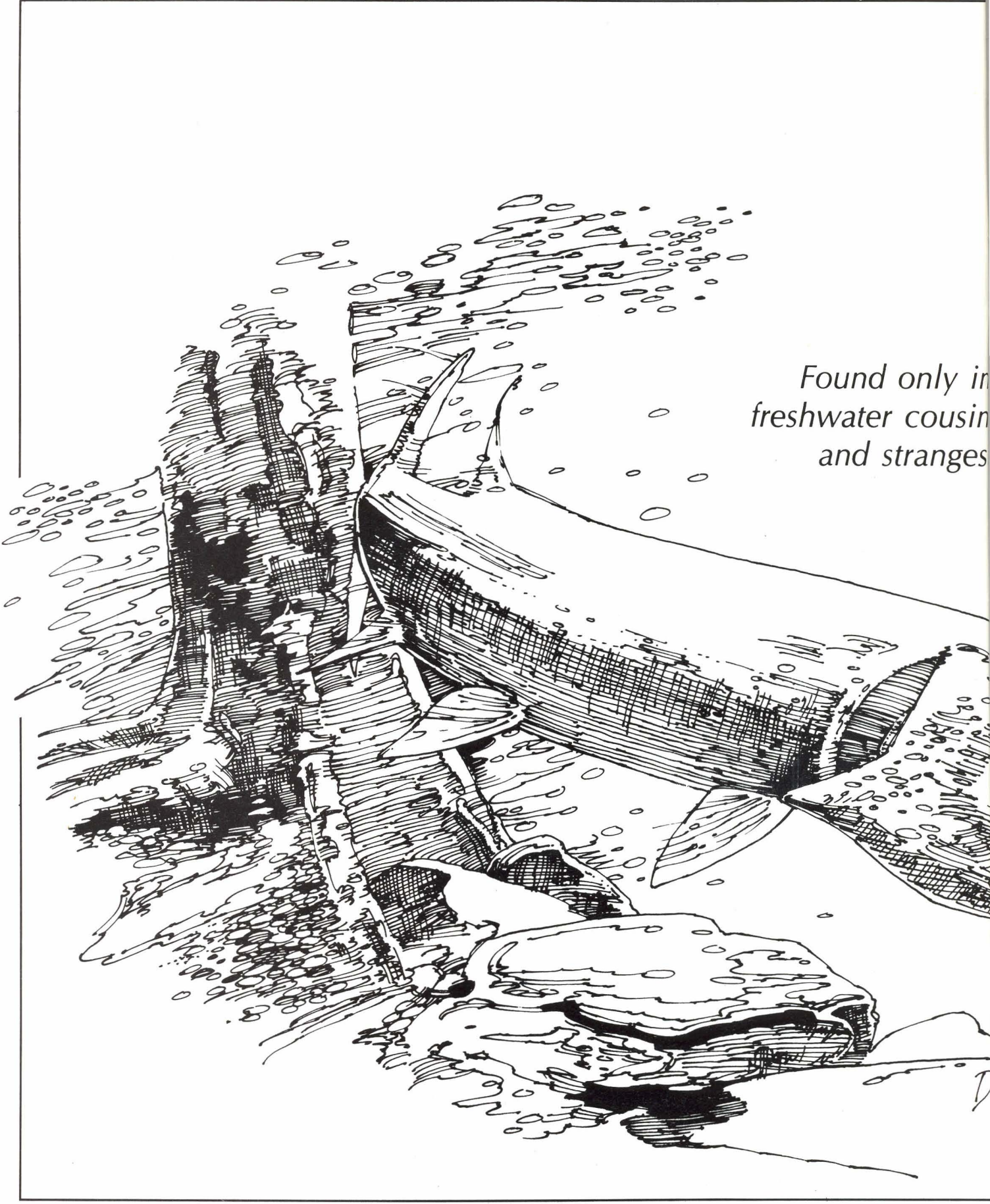
the effect of the change was hard to evaluate. Other western states have experimented with deer-proof fences along their primary roads, overpasses and underpasses, and even a special reflector that directs the confusing glare of oncoming headlights into a deer's eyes before he steps onto the highway.

As it turns out, the fifty-five-mile-an-hour speed limit may be the most effective thing we've done to reduce deer-car accidents or accidents involving any wildlife for that matter. The difference between a car approaching at seventy miles an hour and fifty-five is only a step or a flap of the wings for most animals, but it's often all they need. Once they've had a close call or two, they've probably learned enough about crossing roads to avoid tangling with a vehicle in the future.

For all its drawbacks, roadside cover is taking on more value as land use intensifies. In some parts of the Midwest, it's the only permanent cover left. A nesting pheasant or meadowlark may run the risk of being run over or poisoned, but with last year's corn stubble already plowed under and the winter wheat less than an inch high, her only other option is to give up. And there are other benefits of roadside habitat that transcend its usefulness as homeplace for a few wild things. Highways are the only places most people ever really notice wildlife. Their meeting may occasionally be beak to bumper, but in the long run, the public relations benefits for wild populations probably outweigh the loss of a few animals. A shaggy roadside running through a landscape of high-yield cropland is a lesson in wildlife management anyone can understand. Whether your interest is in game or dickeybirds, the message is clear: habitat means wildlife. It's as simple as that. □

*Sylvia and Lloyd Brockus III (collared lizard and scissortailed flycatcher) are freelance photographers working out of Alva, Oklahoma.*





*Found only in  
freshwater cousin  
and stranges*

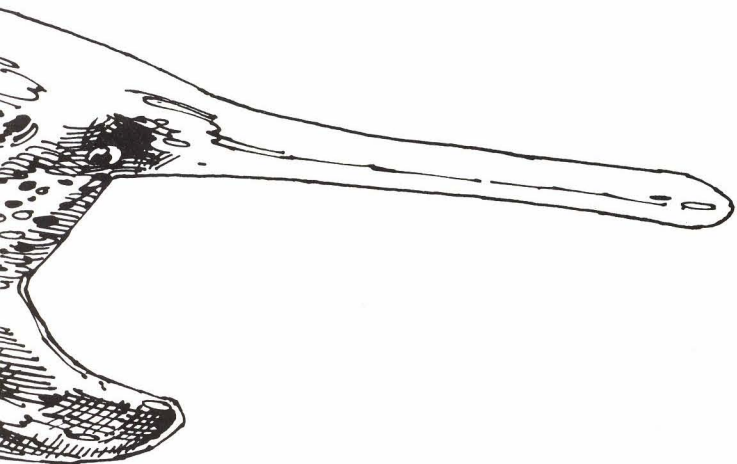
**F**rom conspicuous snout to shark-like tail, the paddlefish is a living relic among fishes. Along with the sharks and sturgeon, it is one of a handful of modern representatives of its ancient family.

This primitive fish has a skeleton of cartilage. The nose, or paddle, once thought to be used to root bottom sediments, is actually a sensing, stabilizing organ for swimming and feeding. The paddlefish uses its huge mouth as a vacuum cleaner to filter microscopic organisms from the water. Food is trapped on the gill rakers as the fish swims with mouth open. Due to these

*the Mississippi drainage, this  
of the shark is the largest—  
—fish that swims in Kansas.*

# The Paddlefish

*Bruce Taggart*



feeding habits, paddlefish are not caught on lures or baited hooks, but snagged during their spawning run. Specimens measuring six feet and weighing 150 pounds have been taken, but the current Kansas record is seventy-four pounds, ten ounces.

Paddlefish take five to seven years to reach sexual maturity and may reach thirty years of age. Adult fish migrate upstream in the spring and spawn on gravel bars covered by rising water. When water temperatures reach sixty degrees, spawning activity peaks. A seventy-pound female carries about twenty pounds of eggs which, when fertilized, become adhesive and stick to the first object they touch. Eggs hatch in about seven days at sixty-five degrees, and the young swim erratically and drift into large pools to feed and grow. When conditions are not right, spawning success is poor, and the effect on abundance of each year class is pronounced.

Paddlefish are found in the Yangtze River in China and the Mississippi River basin in the United States, including the lower mainstream of the Neosho, Marais des Cygnes, Kansas, Arkansas, and Verdigris rivers in Kansas. The most significant populations in the state occur where low water dams impede upstream migration at Chetopa on the Neosho River and Osawatomie on the Marais des Cygnes River.

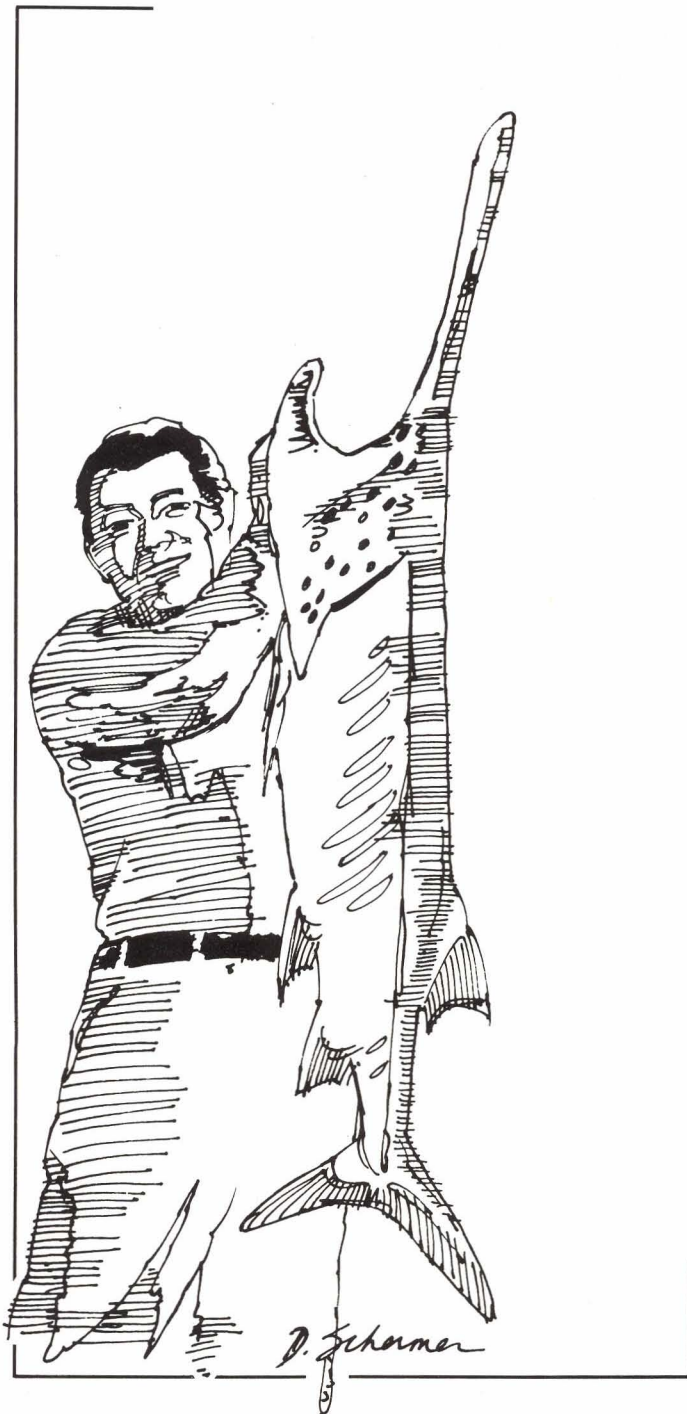
A significant fishery once existed at the Osceola low water dam in Missouri on the Osage River; construction of the Harry S. Truman Dam has changed the picture, however. The Truman Dam restricts movement of paddlefish up the Osage River from the Lake of the Ozarks and floods and destroys old spawning grounds. The old Osceola Dam has been removed to allow upstream movement for spawning. As a result, the low water dam at Osawatomie, the next obstacle, on the Osage, may have a significant paddlefish fishery in the future. Up until now, only a few paddlefish have been taken there, but, in the future, large numbers should congregate as they move upstream.

The other significant Kansas fishery exists at the Chetopa low water dam. Fish move upstream from Grand Lake in Oklahoma and concentrate at the low water dam at Miami, Oklahoma. Fish move on up to the dam at Chetopa only if water temperatures are right and water levels rise high enough. A snagging season was first opened there in 1972, and harvest has been sporadic since then. The best year was in 1978 when conditions were just right and slightly more than 1,000 fish were taken. Conditions are generally best in late March or early April.

When water conditions are right and the area is open by posted notice, there is pandemonium along the banks as snaggers line up shoulder to shoulder to cast. Heavy duty rods and reels with forty- to hundred-pound test line are standard equipment. Large hooks and two- to four-ounce weights make up the terminal

tackle. Treble hooks of any size are legal in Kansas, but most snaggers rig on one or two large single shank hooks. This rig is cast into the river and retrieved with a fast, jerking motion that can be quite exhausting after an hour or two. All this unusual behavior and equipment generally pays off; a fish is hooked, and the combatants brace for a long fight. If the line doesn't break and the fisherman lasts, he may land a trophy.

Paddlefish are excellent eating when prepared properly. Fish should be kept fresh and processed in a clean area. All reddish or fatty meat should be discarded. The fish can be filleted like most game fish and the eggs are a delicacy which bring a good price.



Paddlefish stocking programs have been made possible by development of artificial spawning techniques. This involves capturing adult male and female paddlefish in nets and placing them in large holding tanks. The fish are given a hormone injection to bring them into breeding condition. The eggs are then checked periodically, for readiness. At the right state of egg development, the female fish are removed from their tanks and their eggs removed by applying gentle pressure to the abdomen. At the same time, a male fish is removed; sperm are removed by the same procedure and the eggs are fertilized. The fertilized eggs are then transferred to plastic jars where water flows over the eggs until hatching occurs. After hatching, the young fish are released into rearing ponds until they are large enough to stock in the wild. The adult brood fish are returned to the tanks and later released to the wild again.

The Missouri Conservation Department has stocked fingerlings in Harry S. Truman Reservoir to insure that a population develops there. John Redmond Reservoir was stocked with 600 fish in October of 1981 to initiate a program to establish a population in the upper Neosho River. Paddlefish studies by the Kansas Fish and Game Commission have generated knowledge of paddlefish populations in the Neosho River. Fish have been captured, weighed, measured, aged and tagged to gain information on this important resource. Background information is essential to determine current and future population status.

Information already obtained from our studies has led to some changes in fishing regulations for paddlefish. Without sound regulations, the greed of human nature can take over. High-grading (the release of snagged fish in order to catch a larger one), has been made illegal. All fish snagged and landed must be kept to count in the daily creel. Studies have shown that about fifty percent of snagged paddlefish released perish anyway. Waste was once a problem. Hopefully, current harvest regulations have eliminated most of it. Kansas currently has a daily creel limit of two.


Spawning areas are critical to the future of natural paddlefish populations and will be watched and protected from degradation. Reservoir construction has flooded numerous spawning areas and channelization projects always loom as a potential threat. But through the concerns of fishermen and conservation agencies, this part of the past will remain for future generations to appreciate. □

*Bruce Taggart is regional fisheries supervisor in the Fish and Game Commission's southeastern region.*

*Artist Doug Schermer of Peoria, Illinois has done a number of illustrations for KANSAS WILDLIFE. His work is based on underwater observation and photography in most cases, since he feels that the best way to accurately depict wildlife is to study it in its own habitat.*



# the YELLOW Pages



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## LETTERS to the editor

### FISH STORY

Upon his request, I am writing this 'fish story' for a friend, Leonard Hammond, whom I accompanied fishing one warm summer evening at Lake Wabaunsee near Eskridge.

The water was calm, and the sunset was at our backs. I had settled down with a book. Suddenly, there was an amusing and entertaining sight. A rod and reel which had been laying unattended, but baited with a worm, began moving into the deep water. Chasing it was Leonard. A very disappointed sportsman returned empty-handed but clad in water-soaked clothing, complete with wrist watch and fishing hat.

Together we laughed about the fish who stole his fishing gear. It reminded us that earlier this year he had had all of his fishing equipment and tackle box stolen from his car in Topeka. Amid the joking remarks that followed, another line was prepared with bass lure and cast across the area where the rod and reel was lost. After a few casts, a tug on the line indicated another fish. It was not possible to reel the line into the shore, so help was summoned from a passing ski boat. The young man in the boat landed the two-and-one-half pound bass, but the line was not freed. Both men went into the boat to attempt to untangle the taut line. To my amazement, they

returned with the lost rod and reel, minus the fish that carried it away. The men had tried to pull the fish in but the line wasn't strong enough and eventually broke.

One more bass of equal size was caught before darkness closed in. This enjoyable fishing experience will long be remembered by those who witnessed it.

Viola Beadleston  
Alma

### KEEP IT CLEAN

I'm a native Kansan recently moved to Oklahoma. We saw your magazine at the Kansas State Fair last fall and decided to subscribe.

We love the outdoors and are campers. I hope everyone doesn't judge all campers the same, as we try to leave our campsite clean when we leave. It is a shame the way people tear up, clutter, and destroy what beautiful nature was created for us to enjoy.

Mrs. Roy Key, Jr.  
Oklahoma City, OK

### SOLD ON SCOTT

Enclosed is payment for a three-year subscription. We enjoy *Kansas Wildlife* very much. Also enjoying living near Scott County Lake and think it deserves more recognition than it gets. We have all kinds of wildlife here that they have anywhere in the state. But you read very little about it.

We also have a herd of buffalo

and elk which are enjoyed by lots of people. If you can write an item now and then mentioning a few things we have here I am sure many people would appreciate it. It would probably help people to appreciate more of the things in western Kansas.

I know they sell lots of permits here and keep this park in beautiful condition. I worked there three different years so please give us a little pat on the back now and then. I am sure it will never be regretted on either side.

Jean E. Smith  
Scott County Lake

### SHORT NOTE

*Kansas Wildlife* is still the best magazine you can buy in any state, and the pictures are beautiful. The first page I turn to is 'It's the Law.' One of these days we are going to drop in on you folks. Thanks for a great magazine.

Cecil B. Rankin  
Wichita

### SOMETHING MISSING

I was just sitting in my office sneaking a few minutes to look over your magazine. Our family moved to Grand Lake, Colorado last September. This is one of the most beautiful places in the country and there is plenty to do in the way of outdoor sports. However, it has just dawned on me that the things I miss most about Kansas are the excellent quail and pheasant trips I used to make. Your magazine brings

back many fond memories of many excellent times in the field. In fact, I am going back to Kansas this year only for the purpose of hunting with my friends. Keep up the good work.

Roger L. Barrington  
Grand Lake, CO

**RE: LONG SEASONS**

We would like to express our opinion as to the pheasant hunting season extending into January and February. We are opposed to it and here is the reason: A lot of hunters are not sportsmen. When the snow covered the ground for a couple of weeks in our area, the birds and rabbits were like 'sitting ducks' and we had hunters coming down our road, shooting them from their cars. They could slaughter them with no effort. In the meantime, we had taken grain out and scattered it for the birds as they had no other means of survival for food.

The hunting season on pheasants is entirely too long. We try to tolerate the hunting during the fall. Even then we have had destruction done by hunters, but to have it extended during January and February when cover and food are sometimes scarce is not being fair.

Leonard Schadel  
Healy

**HARE-SCARCE**

As I was driving home late one night, I happened across several jack rabbits on the roads. It would be interesting for me to see an article done on the populations of these large rabbits. I can recall back in the '60s when they were as numerous as the cottontails in the fields here in southcentral Kansas. What is the reason for the apparent struggle to repopulate? Perhaps you have done such an article in the past which I've missed. I've been receiving your magazine for two

years, and read them from cover to cover. Would enjoy hearing about this matter.

J. Kaufman  
Moundridge

*Periodic fluctuations are common in jack rabbit populations. Disease can decimate a high population in just a few weeks. The reduction of native prairie has much to do with the longer-term decline; jack rabbits do not adapt well to intense grain crop tillage.*

**SUPPORT THE SHINER**

Kansas does not have a state fish, although many states do. We believe our state should. The fish we would like to see become our state fish is the Topeka Shiner. This fish is named after our capital and can only be found in streams around Topeka. These reasons are why it's unique to Kansas.

We have been writing letters to our representatives and senators of the state for two years in support of the Topeka Shiner. We would like your help. Write your state representatives and senators to support the Topeka Shiner for the state fish of Kansas.

Marla Black and  
Jolene Ehlers  
(Sixth Grade Students)  
Caldwell

**COMPLIMENTS**

Thanks for a read good, clean magazine. Enjoy every copy. The photos are super. Sorry there are so many who choose to be greedy and destroy other people's property. Each state has its own beauty, and that beauty is only in the eyes of the beholder.

Just received my January-February issue and was so pleased again with the good articles. Again, the photos are great. We live in town. Our yard is visited by the young cottontails, turtles

and many different species of birds. We have friends who have a pheasant visit their bird feeder nearly every day. Thanks again for a great magazine.

Mrs. E. F. Hughes  
Great Bend

**LIKES LONG SEASON**

I have received *Kansas Wildlife* ever since it came out and it has been read by many of my barber shop customers.

There was a letter in the last issue about quail season by R. J. Ritter of Prairie Village. I can see his point about January and February hunting. Your comment about the number of hunters in these months is correct.

I had surgery Nov. 10, 1981 and wasn't able to hunt until the end of the season. My son and I went out to hunt and work my three dogs. We saw no hunters but we did see lots of quail and pheasant. Didn't shoot any because of the bad winter we had.

I have had very little complaint from farmers about the long hunting season. I live on a rural route north of Leavenworth and none of them have said anything as far as I know. I would like to see long hunting seasons and maybe the limit could be cut after the New Year.

Martin E. Wendel  
Leavenworth

**TEXAS-STYLE**

Here I am, watching the K-State Wildcats play basketball on TV and browsing through *Kansas Wildlife*. Homesickness sets in. A letter to the editor (January-February issue) headed 'Sincerely, Anonymous' catches my eye. After reading the letter, I find myself searching for typewriter, paper and the 'right words.'

Mr. Anonymous, I do wish that

your actions were not necessary; however, I can not blame you in any way for those actions. Perhaps a few warnings such as those you are compelled to give may reverse a sad trend.

My husband and I now reside in Texas (not out of choice, I might add). We have lived here for nine years and have been fortunate to have made many friends. I must admire these hardy people descended from a mighty tough, stubborn group of pioneers who settled these parts only 100 years ago. Every piece of land in this part of Texas is fenced and posted. That means absolutely no trespassing...under any circumstances...ever. Should someone be foolish enough to ignore these signs, he may be lucky and escape undamaged, but it is more likely that he will be apprehended by the landowner and charges pressed. There is a saying down here: If you catch somebody trespassing, shoot to kill; don't leave them alive to prosecute. (I don't *think* I believe it.)

We had lived here for at least five years before my husband found friends who invited him to hunt on their land. He has, in return, been able to bring them to Kansas on hunting and fishing trips. They are amazed to find so much unposted land. Of course, the men always request permission to hunt and even get a few tips on where the last covey was sighted. The only uncooperative factor has been the weather.

Mr. Anonymous's slob hunters are probably not interested enough in wildlife management to read this publication, so they probably missed his letter and the frustration expressed. I only wish they could experience a Texas-style trespasser's welcome. During hunting season, the Texas landowner patrols his borders regularly, and takes appropriate action as necessary. It should be noted that most of this posted land is leased for hunting, and fees are sometimes quite healthy. If you think the landowner is irritated about tres-

passing, just consider the guy who has shelled out thousands of dollars for hunting rights. That trespasser is regarded as a thief, and treated as such.

Oh, ye foolish, trespassing hunter. You will not realize what you jeopardize until it is lost forever. Ask yourself why more Kansas farm land is posted every year. The farmer does not owe you the right to hunt. He does not spend his time and money preparing the land for you. He is earning a living on that land and a hunter's interference costs the farmer.

May I suggest that the next time you are given permission to hunt, obtain the farmer's name and address. When you return home, take the time to jot him a note of thanks and, if you can afford it, include the price of dinner out for him and his family. Every hunter is an ambassador.

Judy Willingham  
Abilene, TX

### THE GOOD GUYS

Enclosed is my check for a subscription to your magazine. I have seen copies of it for several years now and I think it is a very well done piece of work.

Here in Wilson County, I meet (game protectors) Don Clarke and Dennis Knuth on occasion. They are very well received here as representatives of your organization.

Bud Handsby  
Fredonia

### OBSERVATIONS

I was born and raised eight miles southwest of Dorrance. I now live in Salina.

I have asked for, and obtained the permission of the landowner to hunt in almost all cases. Some don't allow hunting or say they have a hunter coming the next day or so. That person probably

wouldn't let hunters hunt if they asked him.

I agree there are a lot of people that have guns that do like the writer of 'Sincerely, Anonymous' in your last issue wrote about. Also there are several landowners just like the writer of that letter.

By the way, coyote season has been closed the last couple of years during deer season. Sounds like he has never broken a law.

Ronald Rasette  
Salina

### THREE-BEAM BUCK

I shot this Pope and Young 171 7/8 nontypical whitetail Nov. 27, 1981. Note the oddity of the two racks on one side--a once-in-a-lifetime buck.

Ron Peters  
Lebo



### MISTAKEN IDENTITY

First, let me say that I was a Kansan for fourteen years before moving to North Carolina in 1972. I enjoyed *Kansas Wildlife* immensely while living there and have maintained a close watch of it via my subscription. Your magazine illustrates quality in its photography and articles.

I recently received the January-February issue and noticed what I believe to be a mistake. There is a picture in this issue, on pages 22 and 23, of deer on the open prairie. This picture is

titled 'Mule Deer.' I believe closer inspection of the deer will render a retitling of 'Whitetail Deer.' Please correct me if I am wrong.

I did find one other interesting thing about this picture. I would imagine that few people noticed that there are eight deer in the picture, not seven.

John A. Williams  
Charlotte, NC

*You believe correctly, John. We noticed it, too, but only after several hundred copies of the magazine had already gone through the press. Apparently, you got one of those early copies. Thanks for your comments.*

#### ON HOSPITALITY

I would like to concur with what Mr. Jerry Herbert of Sidney, Ohio wrote concerning the outstanding hospitality of Kansas people. I have been returning to Kansas each year since my military days in 1971 to hunt pheasants and enjoy your fine state. In the process, my brother and two good friends have joined in and now I wouldn't dare go without them.

We look forward to these trips so that we can experience some of the finest hunting anywhere and renew friendships gained over the years. Keep up the fine work on your magazine and let's have another super fine season in 1982.

Tom Fuchs  
Plano, IL

#### BACK HOME

I am delighted by your magazine, which has stimulated an interest in returning to my home state for a prairie chicken hunt, and perhaps a try for other upland birds. As a retiree, I spend almost all of my time with bird dogs, from August 1 through March 31, when Washington law closes dog work for the nesting season.

I go to my hometown of Holton each Memorial Day weekend to attend my high school alumni banquet and could readily take a side trip to prairie chicken country to make arrangements for November. I have had some great hunting and fishing in many places but I am somehow always drawn back to Kansas. As I now tramp around my old haunts near Holton, the area in some respects no longer seems to measure up to the land of my boyhood memories. But there are many compensations and I am sure most people would agree that Kansas outdoors has improved enormously in the last fifty years. For example, in my day we had no deer, no beaver, few raccoons, few bobcats, and very little fishing water, compared with today.

Keep up the great work on your fine magazine.

Robert F. Wallace  
Pullman, WA

#### ANIMAL HOUSE

My family and I are nature lovers from way back. Born and raised in Kansas, I have developed a great admiration for the state, its wildlife, and your magazine. Not only is it read from cover to cover, we also use the fantastic photography for our woodwork and decoupage.

I have to admit, though, I am not very satisfied with the rules and regulations of this state. Due to the lack of wildlife in southwest Kansas, for various reasons we like to bring a little home with us. Growing up, I have adopted coyote pups, rabbits, turtles, snakes and various birds. After being away for a few years I was shocked to hear that the magpie (known throughout Kansas as a pest and menace) is a protected species. These birds make great pets, but in order to stay within the law, we settled on a crow. They also make great pets. This bird was raised in our home and loved by us and our neighbors. It was

kept in the house by its own choice and was released outside every morning to come and go as he saw fit, never to return if so please. We were notified by our local game protector that the bird had to go. Even though he was not in total captivity and anyone could buy a hunting license and kill all they wanted (no bag limit), we were forced to turn over our beloved pet. We would like to know why we can't love and care for a wild bird and protect it from gun-crazed hunters and farmers when the rich movie stars and millionaires can keep in captivity leopards, lynx, cougars, and various other jungle cats and wild birds like cockatoos, parrots, and others. Is it because we have to work for a living and they are filthy rich? This has really inspired me to move out of Kansas. As the saying goes (America: Love it or leave it). Believe me, I am debating.

Kenneth Cox  
Lakin

*Since 1972, crows, magpies, and ravens have been protected by federal law and international treaty and possession of these animals requires a permit from the U. S. Fish and Wildlife Service. A Fish and Wildlife Service spokesman said it is their policy to not issue those permits to private individuals for either live or mounted migratory non-game birds. For more information, contact: Special Agent In Charge, U. S. Fish and Wildlife Service, P. O. Box 25486 DFC, Denver, Colo. 80225.*

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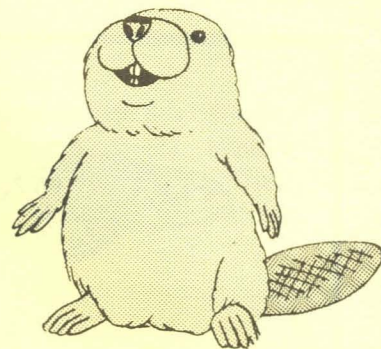
We welcome letters to the editor, and ask only that they be kept as short as possible. We reserve the right to edit for clarity and brevity, when necessary. Please address all correspondence to: Editor, Kansas Wildlife, Rt. 2 Box 54A, Pratt, Kansas 67124.

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# Nature's Notebook

## by Joyce Harmon

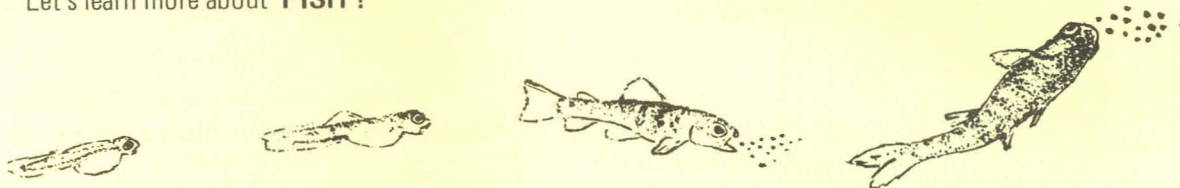
Wildlife Education Coordinator  
Kansas Fish & Game Commission



Spring can be an exciting time for outdoor study. Take the opportunity to get outside and enjoy Kansas while you learn more about the environment.

## From Fry to Fins

As spring arrives you may find your group's attention has wandered. Here are some ideas to keep everyone interested. Kansas prides itself with an excellent fish population. Let's learn more about **FISH!**



Set up a small aquarium. Have the children observe the fish for the following:

- How do they breathe?
- Why does the fish open its mouth so often?
- Do they have eyelids?
- How do they swim?
- Do they have ears?

Fish breathe with gills; people use lungs. Water goes into the fish's mouth and is forced over the gills. The gills take oxygen out of the water.

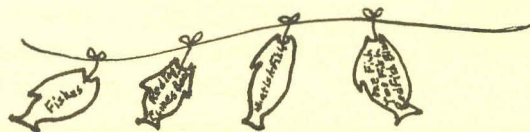
Fish don't have eyelids. We have eyelids to keep our eyes moist. Fish are always in water, so they don't need eyelids to keep their eyes wet.

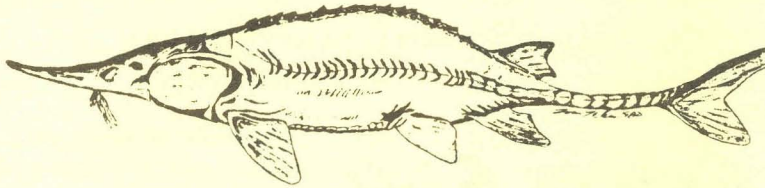
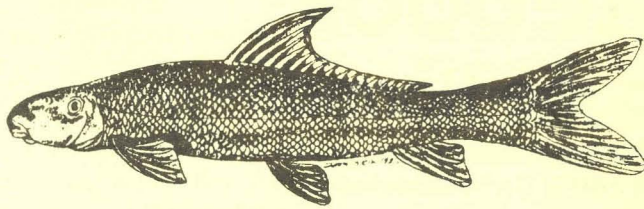
Fish have several fins to help guide them through the water. The shape of the fish's body and the scales on its body make it easier for the fish to glide through water.



Set up a fishing reading corner in your classroom. Place a rubber raft, old boat, or small children's swimming pool in the corner of your room and label it with a sign like "Gone Fishin'" or "Fish Go to School," etc. Fill the boat with books on fish. Depending on the reading level, here are some suggestions. One Fish Two Fish Red Fish Blue Fish by Dr. Seuss, Fishes in Kansas by Frank Cross and J. T. Collins, Fish Do the Strangest Things by Lenora and Arthur Hornblow, What is a Fish? by Gene Darby, and Red Tag Comes Back by Fred Phlager.

For a reading incentive, have the students put the name of each book they finish on a construction paper fish and the fish gathered on a yarn stringer.

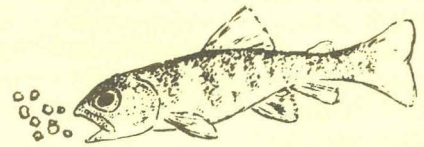




Research the status of fish in Kansas. We have several game species that are described in a publication, "Kansas Sport Fish" available from Fish & Game. There are also some threatened and endangered species of fish in Kansas such as the Topeka Shiner, Neosho Madtom, Pallid Sturgeon, Arkansas Darter, Sicklefim Chub, and Blue Sucker. What can be done for these fish?



Have students research what fish eat. Take a water sample to observe under a microscope in order to see the really small plants and animals.



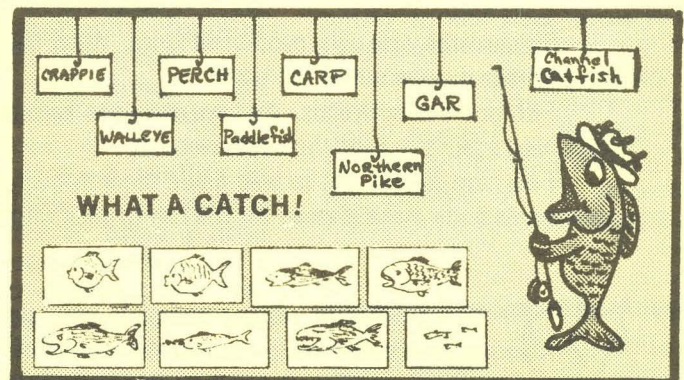
A fish art project might include making fish mosaics and mobiles from tissue and construction paper; or a messier alternative is:

Make a fish print by gently washing and drying a whole fish. Bluegill or crappie work well. Spray one side of the fish with hair spray. Paint one side of the entire fish including fins with acrylic paint. Wipe paint off of the eye. With the fish painted side up on a newspaper, press a sheet of paper on the fish. Gently but firmly make sure the paper touches the head, body, tail and fins without the paper slipping. Too much paint will be a blur and too little will be faint. Paper towels work well for trial runs. The finished projects can be done on cloth or soft paper.

*(Adapted from Multidisciplinary Wildlife Teaching Activities by Bill Hernbrode.)*



To accent your study of fish, gather pictures of common Kansas fish and put your students to work matching the fish to a name. (A good source of pictures is the publication, "Kansas Sport Fish.") Hang the fish names on string with bent paper clips for hooks. Use an old fishing pole or make a pole from cardboard and attach a hookless lure.



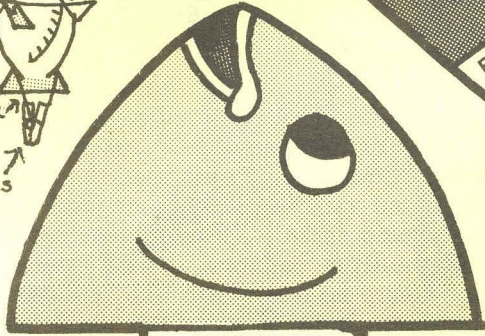
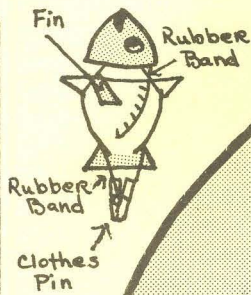
Add some fishy words to your vocabulary or spelling list:

- |        |          |          |             |             |
|--------|----------|----------|-------------|-------------|
| scale  | fry      | spawn    | fingerlings | school      |
| fin    | oxygen   | gills    | anadromous  | catadromous |
| school | stocking | hatchery | minnow      | seine       |

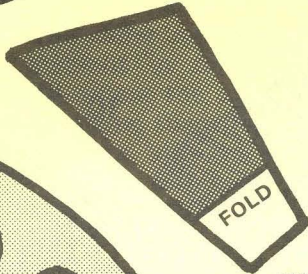
# KIDS PAGE



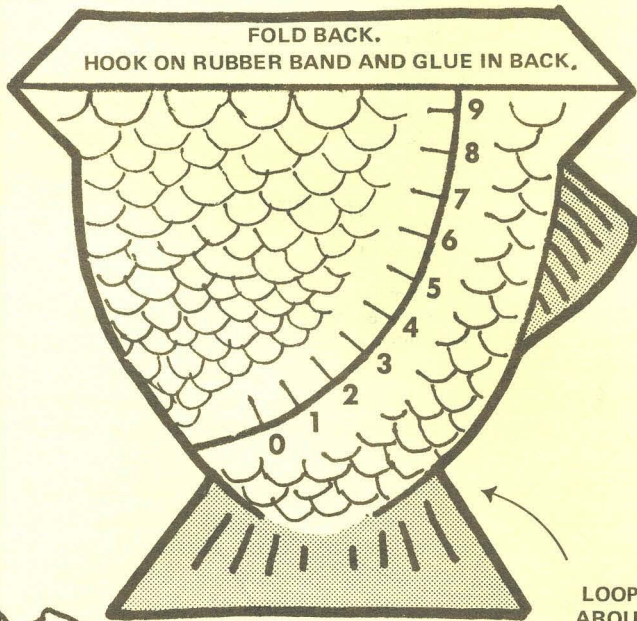
Measure the length of objects with this fish ruler. First, cut it out and glue it onto cardboard. Measure things in your house and at school to practice. Then go outside and measure leaves, fish and other things you find.



FOLD BACK.  
HOOK ON RUBBER BAND.  
GLUE IN BACK.



HOOK ON RUBBER BAND.  
GLUE IN BACK.



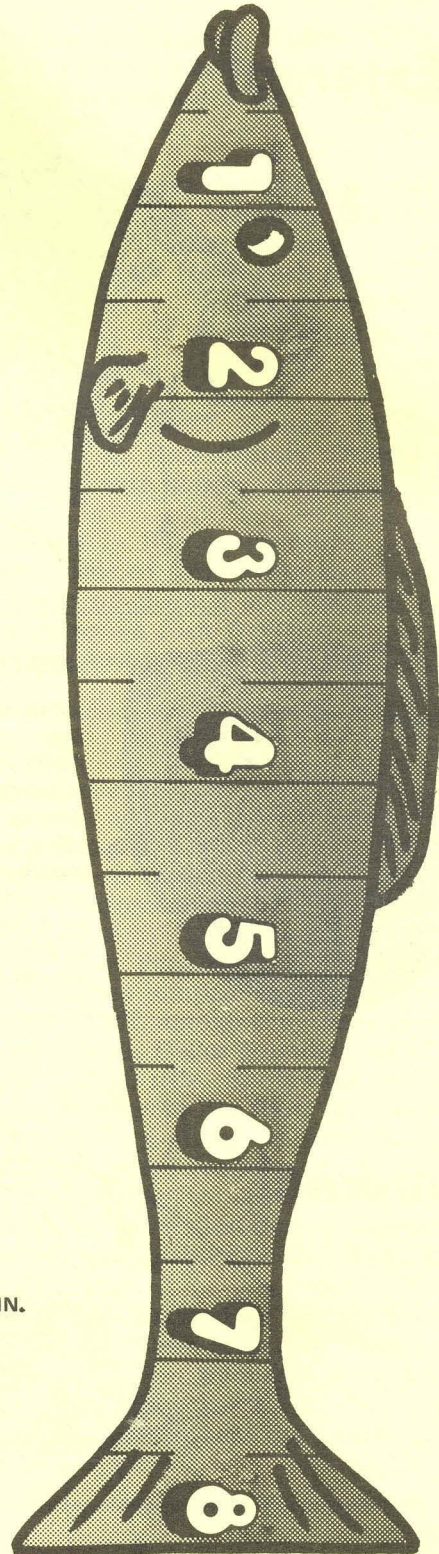
FOLD BACK.  
HOOK ON RUBBER BAND AND GLUE IN BACK.

LOOP RUBBER BAND AROUND TAIL HERE.  
ATTACH CLOTHES PIN.

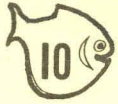


Measure the difference in weight of objects with this fish scale. Glue the pieces onto thin cardboard. Attach a rubber band to the head and glue in place. The fin goes on the same rubber band and hangs in front of the body. Put a second rubber band around the tail and add a clothespin onto the end of the rubberband. Go ahead and compare weights of small objects.

(Adapted from SCIENCELAND magazine)

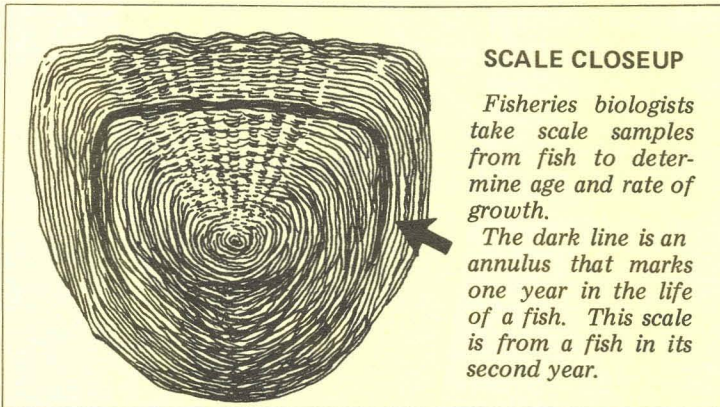
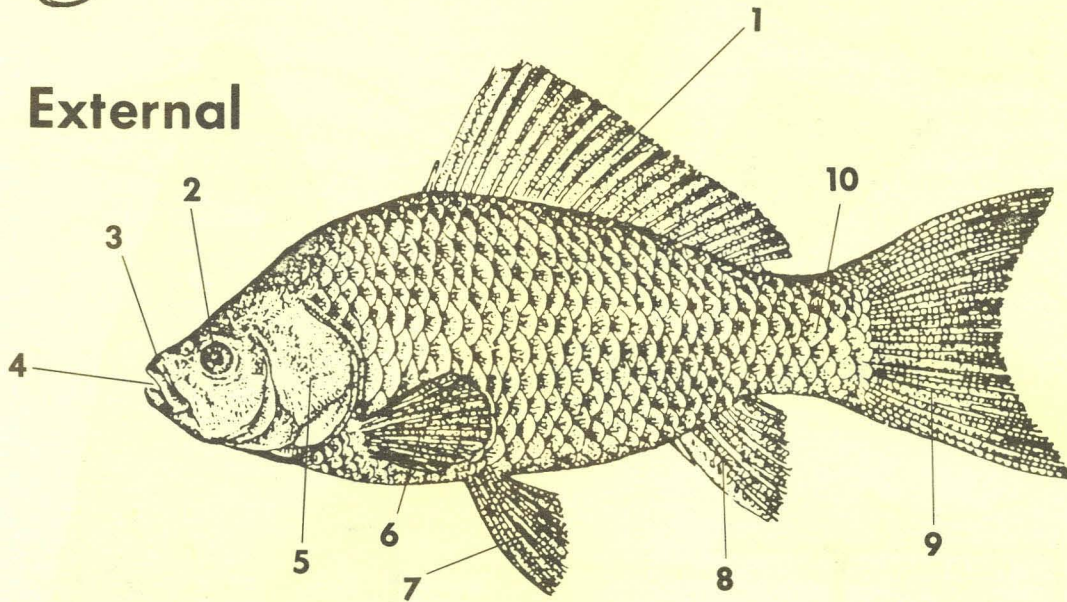


# ANATOMY OF A FISH



Study the body parts below then cover up the answer key and quiz yourself.

## External



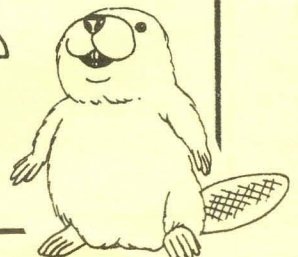
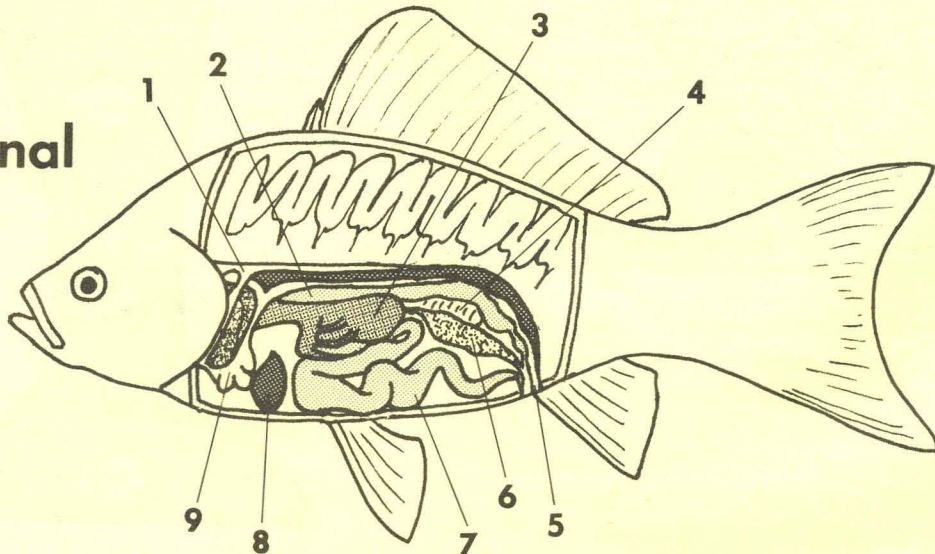
### FISH – EXTERNAL

- |                           |                      |
|---------------------------|----------------------|
| 1. Dorsal Fin             | 6. Pectoral Fin      |
| 2. Eye                    | 7. Ventral Fin       |
| 3. Nostril                | 8. Anal Fin          |
| 4. Mouth                  | 9. Caudal (Tail) Fin |
| 5. Operculum (Gill Cover) | 10. Scale            |

### FISH – INTERNAL

- |                 |              |
|-----------------|--------------|
| 1. Dorsal Aorta | 6. Ovary     |
| 2. Kidney       | 7. Intestine |
| 3. Stomach      | 8. Liver     |
| 4. Swim Bladder | 9. Heart     |
| 5. Anus         |              |

## Internal





# It's The Law



Game Protector Mike Smyth received a phone call one Sunday morning. The caller reported a possible turkey poaching incident in northern Clark County and told Smyth where the alleged violators lived. Smyth found more than he expected, however, when he paid a visit to the suspects' farmhouse.

After introducing himself, Smyth was invited in by the two residents of the house, Larry Flugge and John Fenske. Once inside, Smyth saw several completely dressed birds that appeared to be turkeys. Both men admitted they had killed four turkeys the previous day. After placing the pair under arrest, Smyth searched further and found several rabbits, one duck, several quail, one pheasant, and three packages of what appeared to be deer meat.

Both men were taken to the Clark County sheriff's office. Further investigation revealed that a 1976 Cadillac parked at the farmhouse was stolen from Iowa. Iowa law enforcement officials informed Smyth that Fenske was a fugitive from their state.

Smyth and Deputy W. J. Steele returned to the farmstead to continue their search of the premises. They seized another turkey, two packages of deer meat, one package of duck meat, and five firearms.

Flugge was charged with hunting wild turkeys during closed season, possessing wild turkeys without a valid permit, and possessing deer during closed season. He was fined a total of \$810 and received a six-month suspended jail sentence.

Fenske was charged with hunting wild turkey during closed season, possessing a wild turkey without a permit, and hunting without a license. He was fined a total of \$610 and sentenced to 90 days in jail. In addition, theft charges from the state of Iowa were pending against Fenske.

Elsewhere:

—Larry G. Wood, Park City, paid \$425 in fines and court costs on a charge of illegally taking a deer. Wood's arrest was the result of a tip from an eyewitness.

—Charles M. Mitchell, Warren, Okla., was fined \$325 in Chautauqua County District Court on a charge of possessing a wild turkey during closed season.

—Three St. Marys men paid a total of \$400 in fines and costs for exceeding bag limits on ducks during the 1981 waterfowl season. Larry D. Denton and Floyd E. Holtz each paid \$100. The men were arrested by U. S. Fish and Wildlife Service agent Case Vendel while hunting along the Kansas River.

—Bushton resident Michael D. Damman was fined \$250 in Rice County District Court. He was charged with hunting deer illegally.

—Thomas L. Burns, Lawrence, paid a \$150 fine for illegal sale of fish. Burns was cited after selling \$25 worth of channel and flathead catfish to the wrong person—a Fish & Game employee who was posing as a customer.

Claude Lafayette Dallas, Jr. has been captured. Dallas had been the subject of an intensive manhunt since January of 1981, when two Idaho Fish and Game enforcement officers were murdered.

Law enforcement officials, acting on an anonymous tip, were moving in on the trailer home near Paradise Hill, Nevada April 18 when Dallas jumped in his pickup truck and bounced off across the desert. When the truck stalled, Dallas bounded out of the truck with a 30-30 rifle. Shots were exchanged and Dallas was hit in the foot. He crawled about 50 yards to a clump of sage brush, and surrendered when officers began moving in.

Officials plan to extradite Dallas to Idaho, where he faces first-degree murder charges, according to Idaho Fish and Game spokesman Hugh Wilson.

Dallas is charged in connection with the deaths of officers Wilson C. Elms and William H. Pogue. They were shot while investigating reports of a poacher killing deer and bobcats in a remote area near the Idaho-Nevada state line.

# ACROSS KANSAS

## SHORT TAKES FROM AROUND THE STATE

Allen Riggs, Hill City, has been named Kansas Bowhunter of the Year by the Kansas Bowhunters Association. Riggs is a Master Hunter Safety Instructor, having received a merit award and the buffalo award from Kansas Fish & Game for outstanding service in the state's hunter training program.

\*\*\*

The Flint Hills Sportsman Club of Council Grove is one of only 21 community conservation organizations selected by the National Wildlife Federation to receive NWF's President's Award for outstanding service. Winners were chosen from among 6,000 eligible clubs in the 50 states, Guam, Puerto Rico, and the Virgin Islands.

\*\*\*

Fish & Game employee Larry Kerr, Garden City, has reached a couple of important milestones recently. Kerr recently completed his 25th year of service with Fish & Game. He also has been awarded the Silver Beaver award from the Boy Scouts of America. The Silver Beaver is the second highest award a scout leader can attain.

\*\*\*

A shortage of adult volunteers has ended the Jaycee-sponsored Shooting Education Program in Norton, according to the *Norton Daily Telegram*. The annual six-week shooting education program produced some excellent marksmen in its 17 years of existence. The Norton BB Gun Team won the International Shootoff three times and was always among the top entries in competition.

## COLOR PRINTS FOR WILDLIFE LOVERS

Over the years, we have had numerous requests for prints of photos which have appeared in *Kansas Wildlife*. Now, Fish & Game's WILDTRUST program offers interested readers an opportunity to obtain 11- by 14-inch color prints of any staff-produced photograph published in our pages. (The credit line adjacent to the photo will tell you who took the photograph; staff members are listed on the

inside front cover of every issue.)

To obtain the print, complete the application and submit it with a \$20 donation (check or money order payable to WILDTRUST) for each print ordered. Mail your order to: Kansas Fish & Game, Information-Education, Rt. 2 Box 54A, Pratt, Ks. 67124. Please allow six weeks for delivery.

Prints of photographs by persons not on our staff may be available through those individuals; contact us to find out where to write them.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_  
\_\_\_\_\_

PHOTO SUBJECT \_\_\_\_\_

ISSUE AND PAGE \_\_\_\_\_

## Amphibians and Reptiles in Kansas

By Joseph T. Collins

Second (Revised) Edition

To be issued in early spring 1982, this softbound volume is a thorough update of the 1974 edition, with new sections on alien species, introductions to the main groups, endangered species, an extensive and fully illustrated technical key, and an updated bibliography to the Kansas herpetofauna. In addition, the range maps have been enhanced by the addition of over 525 new county records obtained since 1974, and most of the 150 black and white photographs are new.

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# ART ON LOAN

Kansas City artist Tom Beard is the current artist featured in Fish & Game's "Art On Loan" program. Tom spent his early years in Geary and Riley counties in Kansas. The impressions gained on his grandfather's farm during those years shows in the drawings, paintings, and sculptures he produces today as a full-time fine artist.

Tom uses an expressive and

realistic approach to his subject matter--wildlife, nature, history, and the Old West. His formal art training took place at the Kansas City College of Commerce and the Kansas City Art Institute.

His paintings have appeared in galleries in numerous states. His work also is included in private and commercial collections in the U. S., Canada, and Europe.

Tom is active in other art-related activities, including lecturing and demonstrating art techniques, judging group art exhibits, and serving as art editor of *The Ozark Sierran*.

Persons interested in purchasing originals and prints can contact: Jan Royston, Kansas Fish & Game, Rt. 2 Box 54A, Pratt, KS 67124.



*"The Mountain Man" (bronze sculpture)*



*"Mountain Lion--They're Coming Back" (pencil)*



*"Streeters Mill--Milford, Kansas" (acrylic)*

# — SHORT — STUFF

**SNEAK ATTACK**--The National Wildlife Federation has characterized the Reagan administration's proposed wilderness legislation as a 'sneak attack' on America's remaining federal wilderness areas. The legislation was first announced by Interior Secretary James Watt, and was then introduced in the U. S. House of Representatives. "The legislation pretends to bar drilling in wilderness areas in the name of protecting federal lands, but in reality it would open this country's public lands to outright exploitation and development," said Dr. Jay D. Hair, executive vice president of the NWF. By giving the President the right to open designated wilderness areas to development, Hair noted, the proposed legislation would virtually strip Congress of its role in setting policy for the country's wilderness areas.

**ON THE RISE**--Ten years after the official ban on the use of DDT, the news from the wild is good: bald eagles, brown pelicans, and other bird species once decimated by the pesticide are repopulating former habitats as chemical residues fade. The pesticide was banned in 1972 in the face of scientific evidence that it was causing serious environmental problems, including reproductive failure in susceptible bird species. For the past decade, human efforts have combined with natural forces to restore species that experienced sudden, sharp declines in the 1950s and 1960s.

**QUAIL U**--They've done it for ducks, wild turkey, ruffed grouse, and striped bass. Now, quail are the

object of a new conservation program. Quail Unlimited, Inc. has issued the first quail stamp for hunters and art collectors interested in contributing to quail management projects. The 1982 quail stamp and prints are on sale now. In addition, QU plans to raise additional funds for quail research and enhancement through a system of Ducks Unlimited-style fund raising banquets. For more information on stamps, prints, or membership, write to: Quail Unlimited National Headquarters, P. O. Box 10041, Augusta, Georgia 30903.

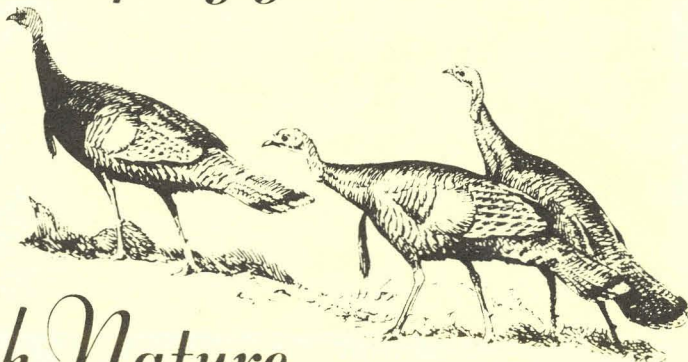
**ADDITIONS**--Indiana, New York and Iowa have become the 15th, 16th and 17th states to enact legislation establishing a state income tax checkoff to accept donations for nongame wildlife management. The programs involve a checkoff box on state income tax forms whereby taxpayers getting a refund may donate various amounts to the wildlife agency. Five other states have checkoff legislation pending: Georgia, Maryland, Michigan, Ohio and Wisconsin.

**PENNZOIL DONATES**--The Pennzoil Company of Houston, Texas has donated 100,000 acres of the fabulous Vermejo Ranch in northern New Mexico to the U. S. Forest Service, according to the Wildlife Management Institute. The acreage will become part of the adjacent Carson National Forest.

**HABITAT STAMPS**--The Iowa Conservation Commission reports that receipts from its duck and habitat stamps are invaluable to the state during this period of extreme budget cutbacks. Since July 1, 1979, the Commission has exercised options on acres of land to be managed for wildlife at a total cost of \$3.5 million. Iowa uses receipts from the stamps to match federal Pittman-Robertson funds which come from manufacturers' excise taxes on sporting arms and ammunition.

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A large crappie fish is the central focus, shown from a side profile. It has a silvery, scaly body with a prominent dorsal fin and a slightly open mouth. To the left of the fish, a yellow and white fishing bobber is attached to a fishing line. The background is a dark, textured surface, possibly a rock or a piece of fabric, which makes the fish stand out.

# Small Water Crappie

*Tom Mosher*

**Y**ou're liable to find a crappie almost anywhere, but finding a keeper-sized crappie is a different matter. Members of the sunfish family, crappie inhabit most water types in Kansas. They are extremely popular among fishermen, especially those who frequent the large reservoirs where many one- to three-pound crappie are caught. Anglers fishing the smaller lakes are usually less generous in their praise of the species—a sentiment that is the result of catching too many runts.

Indeed, crappie growth can be so poor in smaller lakes that fisheries biologists have for years advised against stocking crappie in lakes smaller than 500 acres. In the past, biologists have done their best to eliminate crappie from these smaller impoundments, only to meet the wrath of local crappie anglers for

destroying their favorite fishing holes. "If the big lakes can support crappie, why can't the small ones?" they'll ask, or "How come such-an-such lake or so-and-so's pond has had big crappie in it for years?"

Recently, biologists have been investigating crappie food habitats, prey and predator populations, habitat diversity, and natural and angler mortality in an attempt to better manage crappie in these smaller impoundments.

Food is a basic for crappie or any other animal. Without it, crappie populations cannot be expected to do well. The total food supply available in a lake depends upon its fertility. Larger lakes and reservoirs usually have large, diverse drainages with many acres of cropland in the watershed. As a result, many nutrients, including fertilizer, are washed into these lakes with runoff. Smaller lakes have smaller, less diverse drainages. Many of these may have only grassland within the watershed. The result is usually a relatively infertile lake.

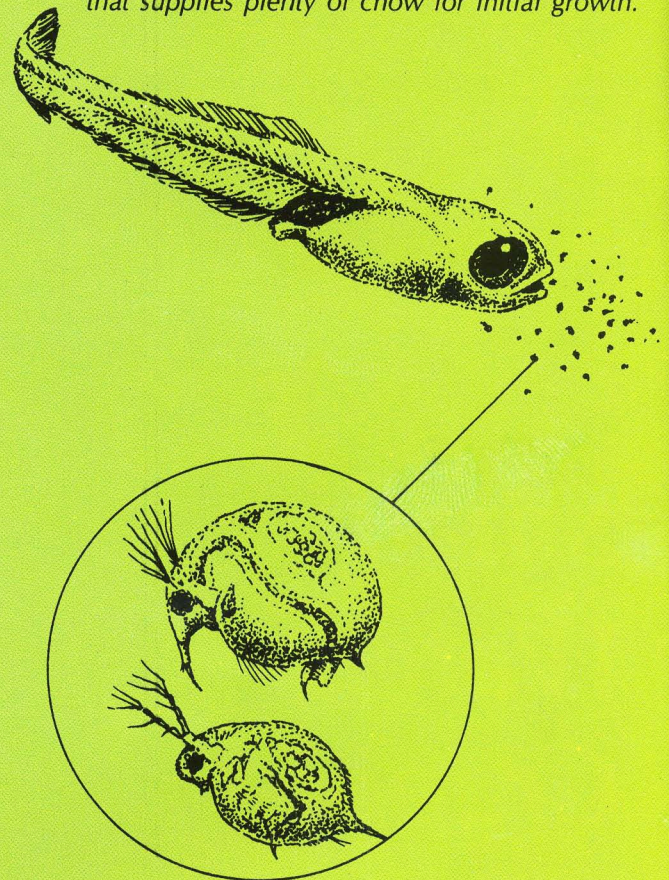
Fertility affects crappie from the time they hatch. After absorbing the yolk-sac, crappie begin feeding on microscopic zooplankton. As the young fish grow, their ability to efficiently capture zooplankton decreases; eventually they reach a size where the energy gained from eating this microscopic fare is less than the energy used trying to capture it. At this length, usually between five and seven inches, crappie must change their feeding habits to intermediate-sized food to maintain good growth. Aquatic insects, large crustaceans, and small fish become increasingly important. Since small fish are not always available throughout the year, larger aquatic insects are especially important. Large insects such as mayflies, especially *Hexagenia*, and fish flies have been found to be abundant in lakes where crappie growth is good.

This transition phase is the most crucial time for crappie growth. If lake fertility is relatively high, and there is an abundant supply of intermediate-sized prey, crappie will grow well as they change their diet. If fertility is low and intermediate-sized food items are scarce, crappie will be forced to depend on a diet of lesser quality items. More energy will be spent maintaining the diet, and less energy will be available for growth. Slow growth restricts the diet, forcing older fish to compete with younger ones that are dependent on the same food base. As a result, the growth problem of one age class is passed on to the age classes behind it. This slow early growth will also affect the final size of the fish. Growth is also age dependent. Lakes supplying abundant food and fast growth for small and intermediate-sized young crappie are more likely to have large crappie (eleven to fourteen inches). If, however, it takes crappie three to four years to grow through the intermediate size, they will no longer have the capacity to reach larger sizes, no matter how much food is available.

The kinds of prey fish available in small lakes also affect the survival and growth of crappie. Gizzard shad are particularly important to crappie. A recent survey in Kansas state fishing lakes revealed that only one-

## Food makes the fish . . .

*A really thriving crappie population needs plenty of food in a variety of sizes. Newly hatched fry depend on zooplankton in their first few months. The young fish strain the microscopic animals out of the water with their gill rakers, a relatively efficient feeding method that supplies plenty of chow for initial growth.*

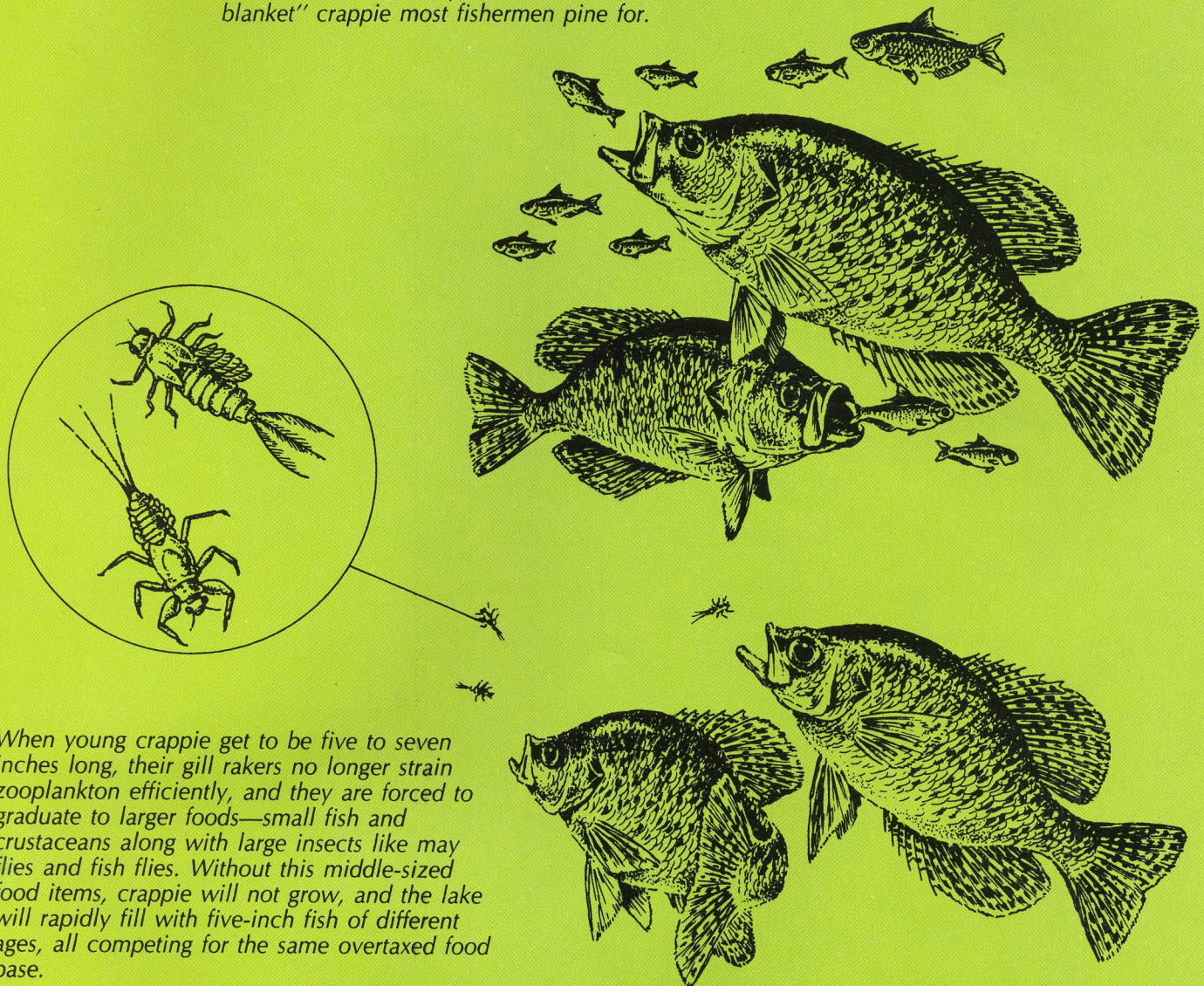


third of the lakes contained crappie that were age five and older, and larger than twelve inches. Seventy-five percent of these lakes also contained gizzard shad.

In reservoirs, gizzard shad spawn several times during the summer growing season, thus providing a diversity of size groups upon which crappie can prey. In smaller, more static lakes, gizzard shad may spawn only once or twice in late spring and early summer. These early spawned shad grow quickly and are usually too large for small and intermediate-size crappie to feed on by mid-summer.

In recent years, fisheries workers throughout the

Eleven- to twelve-inch crappie prey almost totally on small fish like gizzard and threadfin shad. As a result, shad management in small lakes is critical to the production of the "saddle blanket" crappie most fishermen pine for.



When young crappie get to be five to seven inches long, their gill rakers no longer strain zooplankton efficiently, and they are forced to graduate to larger foods—small fish and crustaceans along with large insects like may flies and fish flies. Without this middle-sized food items, crappie will not grow, and the lake will rapidly fill with five-inch fish of different ages, all competing for the same overtaxed food base.

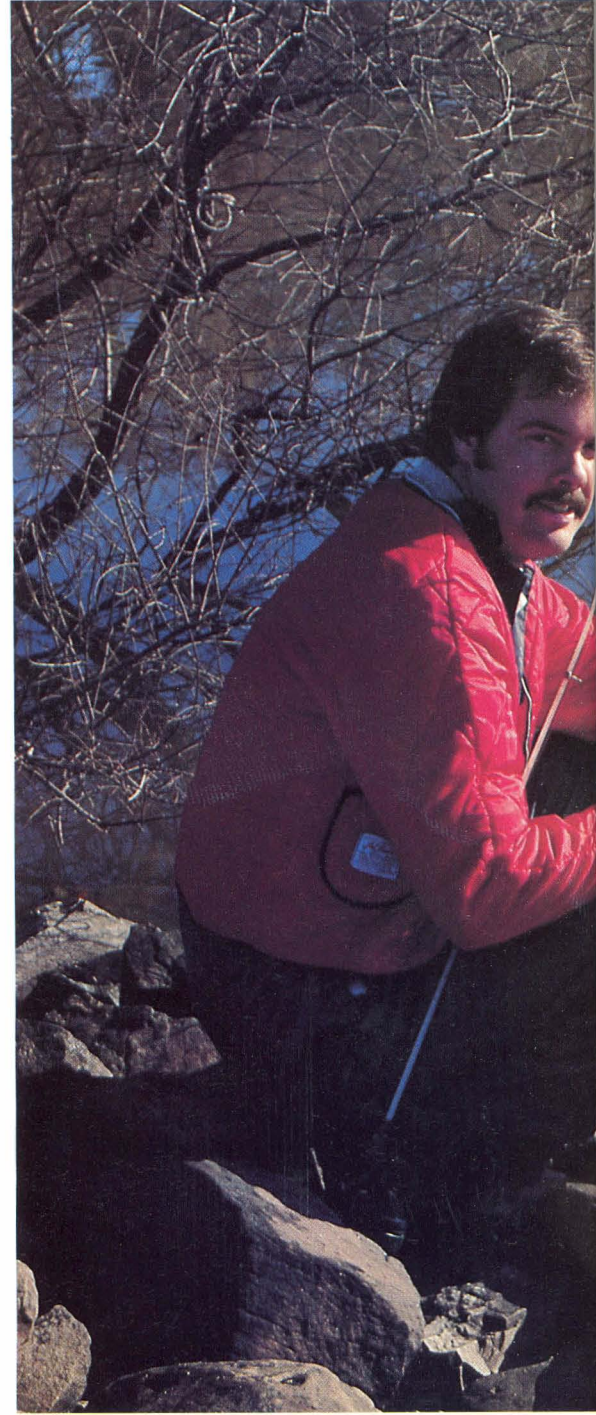
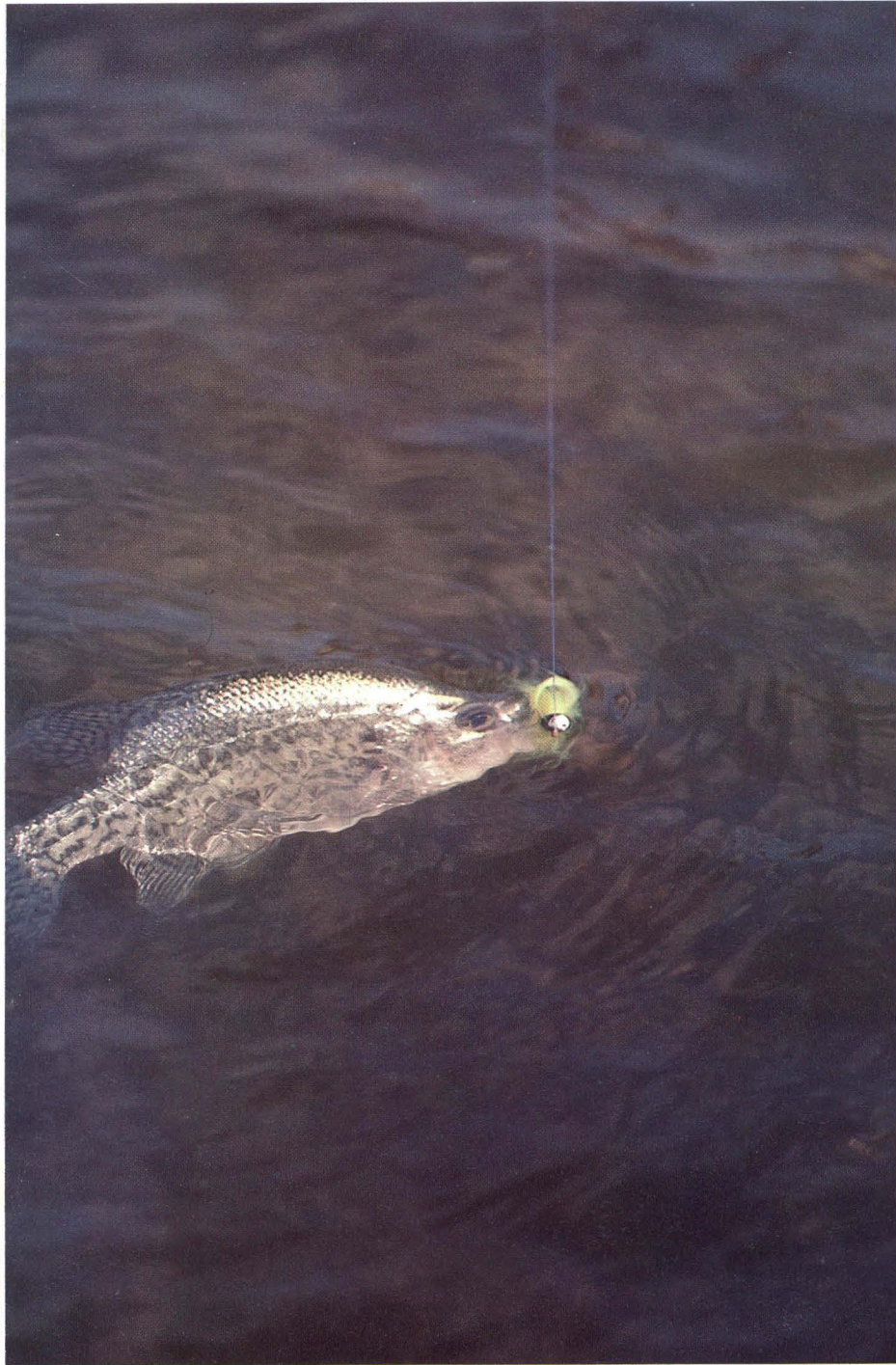
Midwest have been complementing gizzard shad populations by stocking threadfin shad in small lakes. Unlike gizzard shad, threadfins do not grow large enough to escape predation by intermediate-sized crappie, and even in small lakes, the threadfins spawn several times during the summer. Experiments with threadfin shad in Kansas have resulted in increased growth of both black and white crappie and walleye.

Unlike gizzard shad, threadfins will not survive Kansas winters and must be restocked each spring. This may be a benefit since states in the Southwest have found threadfin shad to be detrimental competi-

tors with young bluegill and largemouth bass. By stocking threadfin after bass have spawned each year, we hope to prevent this competition.

Habitat is less diverse in small lakes than in large reservoirs. This may be a factor restricting crappie populations and the organisms they feed on. Open, shallow lakes may not provide the deeper water preferred by crappie in the summer and winter months. Conversely, extremely deep lakes will not provide the insect base required by intermediate-sized crappie.

Predator populations, such as walleye and largemouth bass, also influence the quality of crappie pop-

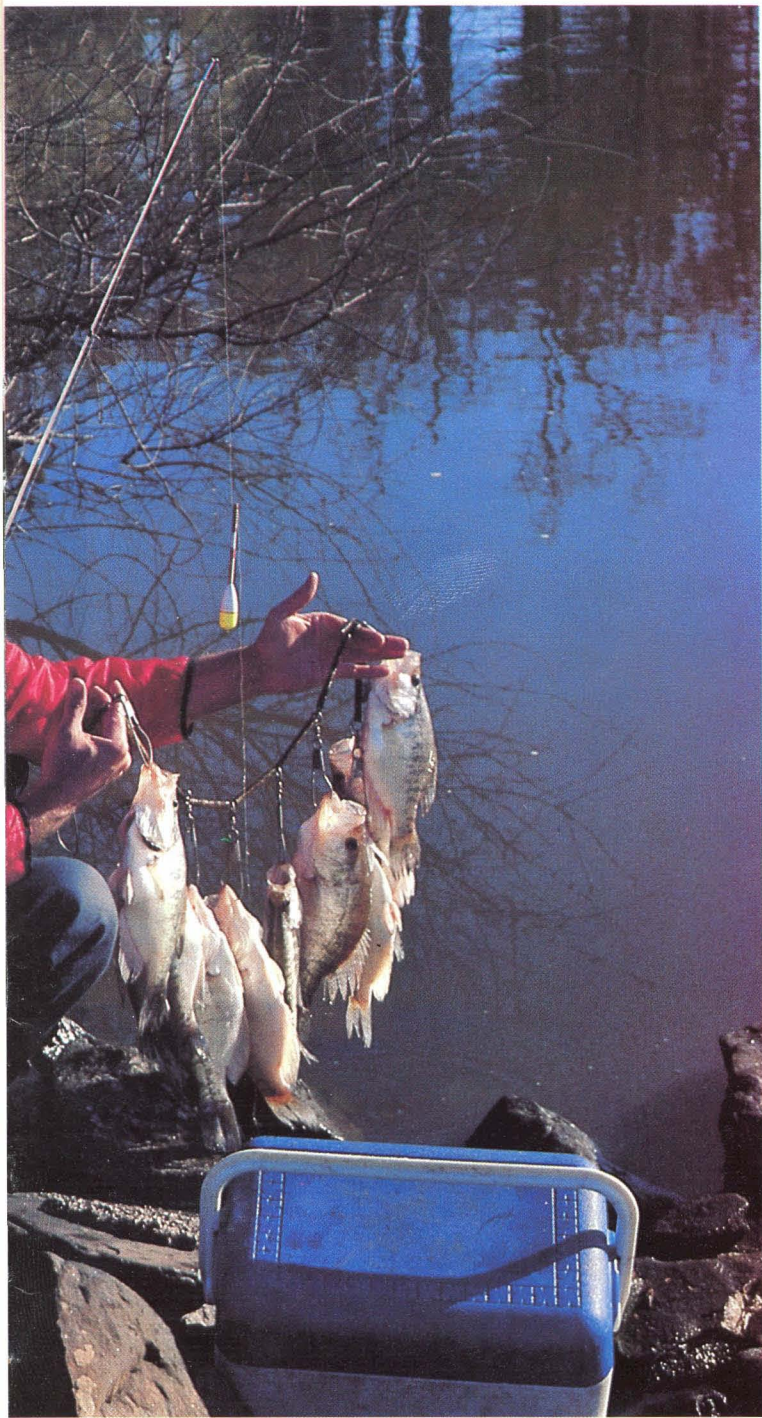


ulations. Crappie are extremely productive fish. Females may carry over 500,000 eggs, and lakes with few predators can quickly become overpopulated with small, slow-growing crappie. Studies of small lakes and ponds in the Midwest have shown this is less likely to happen when populations of largemouth bass are high. Several Kansas farm ponds studied during the past year have also been found to have extremely good crappie populations in the presence of clear water and large numbers of largemouth bass, especially those ponds with large numbers of bass less than fifteen inches long.

At Lyon State Fishing Lake we have documented control of white crappie populations with walleye. Walleye appear to be ideal predators on white crappie, since the two fish inhabit similar habitats during the summer growing season. However, we have had difficulty establishing walleye in small lakes with extremely high crappie populations. If shad are abundant, walleye appear to favor these over crappie, and thus no longer control crappie.

Attempts to use other predators, such as northern pike, to control crappie have not fared well in Kansas. Although pike grow rapidly, they do not survive long





enough or in numbers great enough to adequately control crappie populations.

For years, biologists felt that crappie populations are too productive to be harmed by fishing pressure. As a result anglers have been encouraged to keep all the crappie they catch. More recent information reveals that overfishing can be detrimental to crappie, especially in smaller lakes. If the food base is plentiful and diverse enough to allow good growth, a small lake may develop a reputation for its crappie fishery. During the spring, when crappie are easy to locate and catch, anglers may harvest thousands of them from a small

lake. Although this harvest eliminates much competition among crappie, it can be so great that it also eliminates the greater portion of the fishable population. As a result, there will be few larger fish and the lake's crappie population will have the same concentration of small fish that is typical of a lake with a crowded population. Outwardly it would seem logical to correct this problem by placing a harvest restriction upon the anglers.

However, the solution may not be that simple. Is the good fishing and high harvest of good sized fish the result of abundant food and fast growth? Or, is there an abundance of food and fast growth because of the high harvest and reduction of competition for food? In small lakes, these factors are so closely related that it is often best to allow the fishery to reach a natural balance between numbers and harvest without regulation of the fishery.

Although there are several lakes in Kansas that approach the overharvest problem, none has reached the point where regulations will aid the populations. However, the Missouri Conservation Department has implemented a daily creel of ten crappie per angler at two of its lakes—Lake Wappapello and the James River arm of Table Rock Lake. The department documented overharvest of crappie on each of these areas that resulted in unsuitable fishery populations. Although the limit was successful in increasing survival of three- to four-year-old crappie at Lake Wappapello, natural mortality of four-year-old fish prevented a substantial increase in the size of harvested fish.

Natural mortality (old age, disease, etc.) is, therefore, another factor that must be taken into account in managing lakes. A 1980 survey of white crappie in state fishing lakes of Kansas revealed that although survival from age one to age three was approximately fifty-one percent, only nine percent survived to age four, and only two percent survived to age five and beyond. Of the twelve lakes surveyed, only four contained crappie that reached age five and had crappie greater than twelve inches long. Although much of this mortality takes place after they reach preferable catching size, natural mortality also increases beyond age three. Under these circumstances, it appears that regulating the harvest would have few benefits to the angler in most Kansas lakes and would probably result in a decrease of the total number of fish available for harvest.

As fisheries biologists learn more about the management of crappie populations, anglers can expect better crappie fishing in small lakes. However, at this time it is recommended that crappie be stocked only in small lakes and private ponds that have clear water and large numbers of small bass or other suitable predators to control their numbers. □

*Headquartered in Emporia, Tom Mosher is in charge of lake fisheries research in Kansas.*



*Salina's  
Raptor  
Rehabilitation  
Program heals hurt hawks  
and gives them . . .*

# *Back to the Sky*

*Ron Spomer  
Photos by the author*

The broken pillar of the wings jags from the clotted shoulder.

The wing trails like a banner in defeat,  
No more to use the sky forever but live with famine  
And pain a few days: cat nor coyote  
Will shorten the week of waiting for death, there is game  
without talons.

from "Hurt Hawks" by Robinson Jeffers

**P**oet Robinson Jeffers did what most of us would have done. After six weeks of caring for an injured red-tailed hawk he'd found, he realized it would never fly again. And a hawk that cannot soar wild and free is not a hawk. Jeffers killed his red-tail, or, as he wrote it, "I gave him the lead gift in the twilight." Such is the fate of most wounded hawks. But not all. Not if the Smoky Hills Audubon Society can help it.

Dennis Zehr, with his full beard, backyard bird feeders and gas stingy four-cylinder car, looks the



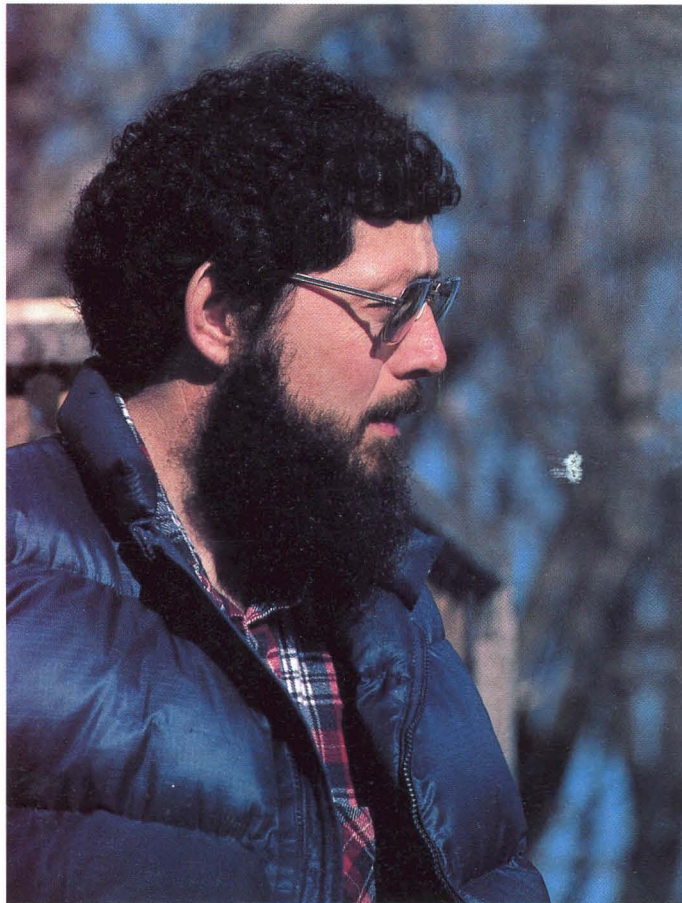
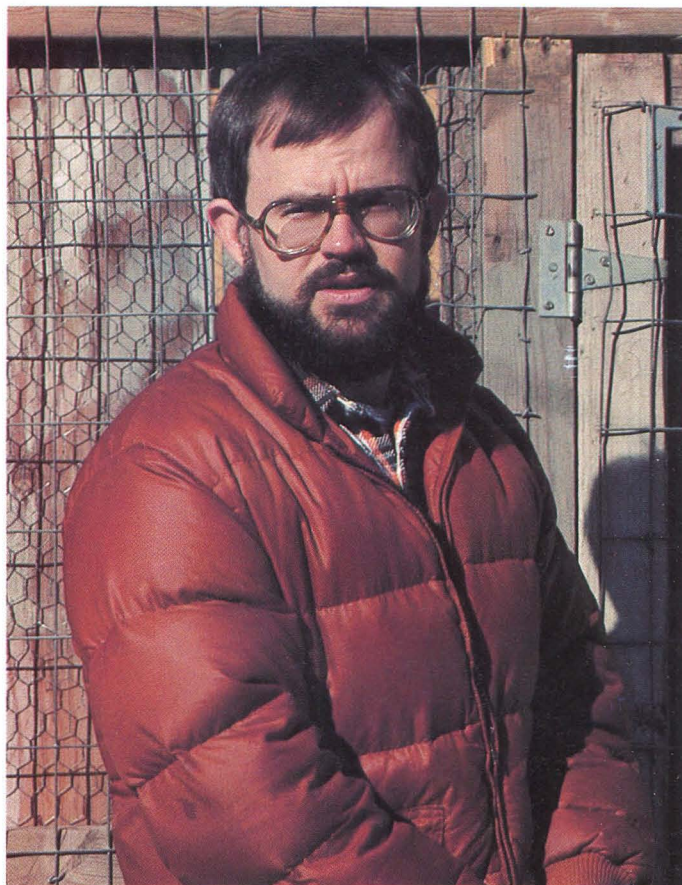
stereotypical nature lover. It's not surprising to find convalescing birds caged in his backyard. Patient and soft spoken, Zehr seems the kind of person who would devote countless unpaid hours feeding and caring for hurt hawks. A rough-legged hawk with a newly repaired wing. A barn owl with a healing broken leg. A red-tailed hawk blinded in one eye. Each requires daily feeding, cleaning and inspection.

As special education instructor at a Salina high school, Dennis never planned to play Florence Night- engale to a waiting room full of sick birds. But compassion and fellow Audubon member Maure Weigel, a Salina insurance agent, lured him into it a year ago. As for Weigel, he started the entire affair with his "clandestine great-horned owl caper of 1979."

"I was breaking the law, plain and simple," Weigel confessed as he related the events that led him and the Smoky Hills Audubon Society into its Raptor Rehabilitation Program. "I was in the woods that March burying my dog that had just died. On the way out I found a young horned owl on the ground and completely soaked. I knew it was against the law to possess an owl, but in its condition, there was no way it was going to survive. I snuck it home, dried it and fed it for a few days until it regained its strength. Then I took it back where I'd found it and turned it loose."

One would suspect Weigel of that brand of lawlessness. He too wears a beard, feeds birds and drives a compact car. The law he broke was the Migratory Bird Treaty Act of 1918—a statute not as paradoxical as it may first seem. The 1918 act was passed to protect game birds, plume birds (herons and egrets) and songbirds that were becoming more common on restaurant menus and ladies' hats than in field and woods. Prohibiting the killing of those birds or the sale, trade, barter, purchase and possession of any part of them proved their salvation. In 1972, when it was determined that too many raptors were being killed for crimes they hadn't committed, they too were added to the Migratory Bird Treaty protection list. The only way to assure their protection was to make it illegal for anyone to possess any part of them for any purpose—even humanitarian ones like Maure Weigel's. That may seem counterproductive at first reading, but poachers, nest robbers and other bird pirates would all claim compassion for wounded birds as excuse for taking them from the wild. And if it were legal for people to keep feathers or skins from birds they'd found dead, thousands of "accidental" deaths would be arranged to supply the illegal taxidermy markets. With this law, more live birds are spared death than crippled birds are lost. Yet, for the Maure Weigels of the world, it is

*After KSU veterinarians patch up injured raptors, Maure Weigel (above) and Dennis Zehr (right) take up the real work of raptor rehabilitation — nursing the birds back to health. The two scour local highways for fresh roadkills to feed to their charges. Without the roughage provided by fur and bone, raptors can't stay healthy. (Photos by Ron Spomer).*







*“Swany”, the Swainson’s hawk, frequently accompanies Weigel to his hawk lectures. Imprinted on humans when he hatched, Swany can’t be returned to the wild; however, Maure has the scars to prove that the hawk is far from being tame. (Photos by Ron Spomer).*

difficult to withhold aid to a suffering creature, even if it means breaking the law.

Fortunately, and wisely, Weigel discussed his horned owl violation with his local Audubon chapter. Why didn’t they sponsor a legal “bird rescue center?” The answers were varied and predictable. Too expensive. Too time consuming. Too many government requirements to be met. But that wasn’t excuse enough for Weigel. He quickly donated the time and some of the cash. The club agreed to dip into its rather meager budget for more money. Other members, like Salina dentist Vernon Osborn agreed to help when they could. The proper Federal Department of Interior officials were consulted, permits and rules collected, and with limited resources and unlimited enthusiasm, Smoky Hills Audubon began what has become Kansas’

best and only birds-of-prey health care center.

The Smoky Hills Audubon Raptor Rehabilitation Program, now concluding its third year of operations, is one of the most unusual animal rescue programs in the country. It cares for birds in three distinct phases at three widely separated locations.

Severely injured birds are first treated at the Kansas State University Veterinary Hospital in Manhattan. Here, in a unique symbiotic relationship, instructors and students pin broken legs and wings, administer medication and stitch torn flesh in return for practical experience in veterinary medicine. After initial treatment, the feathered patients are gently confined, fed and monitored until judged healthy enough for phase two of their recovery, Dennis Zehr’s backyard.

“This is the intermediate stage of the rehabilitation,” Zehr explained as he peered through a cage at a feisty rough-legged hawk. “This hawk had a broken wing. After they pinned it at K-State, they shipped it back down here.” Shipping. A big drain on the program budget, which is limited to private donations, Smoky



Hills Audubon contributions and, just recently, a \$2200 check from the Kansas Fish and Game nongame checkoff fund. Injured birds given to Smoky Hills Audubon must be taken sixty miles to the Manhattan facilities. When their hospital stay is ended, it's a sixty-mile ride back to Salina for outpatient care. No hawk health insurance pays for it, and hawk shippers get no discounts on gas. Zehr is looking for a way to shorten the miles or stretch the petroleum, but until he finds it, transportation expenses loom ever larger. "We're lucky in that initial costs of getting birds here are usually borne by the people who find them and bring them to us," Dennis said. "Fish and Game people have been good about relaying birds, too. The important thing is that we manage, in one way or another. And hawks like this have a chance of flying again."

"I'll keep this rough-leg and feed it while it puts on weight, gets used to the outside climate again and builds a little strength," Dennis continued. "I keep records of its condition and eating habits. They tell us

whether it's doing better or regressing."

Eating. That's another big expense, perhaps the biggest. One does not simply plop a bowl of oatmeal in front of a raptor and expect it to partake. These birds with the killing talons demand, need and get meat. Fortunately, there are some discounts available.

Road killed deer are almost a staple, according to Zehr. "The Fish and Game people have been great at getting carcasses for us," he said. "We supplement them with calcium, phosphorous and vitamin D-3. And just about any other critters we can scrape off the roads." Possums, crows, rabbits. Almost no dead meat is overlooked by Zehr and Weigel during their travels. 'Have plastic bag, will stop' is their motto. And their wives know better than to peek into strange packages in their freezers.

When a hawk or owl regains its health at Zehr's, it takes a ride with Maure to his country home for phase three—flight and hunt training. "The flight pen is down here," Maure pointed out as he walked toward the large post and wire structure. "It's forty feet long,



*After hawks recover from their injuries, Weigel and Zehr transfer them to a large flight pen where they can get back into shape before they are released. At right, Weigel releases a prairie falcon into the pen where it takes immediate advantage of the opportunity to stretch its wings.*

six feet high and twelve feet wide. We're going to build another one with some of the nongame checkoff money we got. We'll need it for the summer rush when lots of immature birds are brought in. The idea is to give a bird enough room to develop its flying skills. When it's maneuvering well enough, we throw in live prey so it can practice hunting."

Mice are the favorite and logical live prey because they and their cousins, the voles, are staples in most wild raptors' diets. Mice are also easily raised in health labs and science labs around the country. But not in Weigel's or Zehr's lab. "We tried raising them. We read all the instructions and went according to the books, but the females ate the young as fast as they produced them. We just couldn't make it work." So they buy locally at a bargain basement twenty cents per mouse

when there is a supply. When there isn't, they try universities. Nebraska has come through often. By the end of an operating year, they'll have spent \$200 on training-mice.

"When a bird is flying strongly in the cage and catching mice, the time has come to return it to the wild," instructed Weigel. "That's the ultimate for us. We aren't in this to make pets out of hawks and owls. Our job is to place a raptor back into its niche in the environment."

Whether or not that job succeeds depends in large part on how well Maure and Dennis *don't* make pets out of their patients. A bird that is too accepting of man has a greatly reduced chance of surviving in the wild. To eat, it must learn to depend only on itself, not a two-legged supermarket. And it should realize that, in spite of the law, some humans will greet it with open hostility rather than open hearts. There are still plenty of chicken hawk myths floating around this country.

As Weigel approached the end of the flight pen, a nervous little prairie falcon winged swiftly to the far





corner and stared warily. It had been in rehabilitation for three months, recovering from a broken wing. The injury might have been from a foolish shotgun blast, a collision with a highline wire or a run-in with an automobile. Since more than eighty percent of the damaged raptors in the Smoky Hills rescue program owe their misfortune to man and his handiworks, it's a safe bet the falcon didn't hurt itself wrist wrestling a golden eagle.

"This guy is ready to be released," Maure beamed, as he opened the cage door. "He tasted freedom a month ago, but he only flew about a hundred yards before landing on the ground in a wheat field. When we approached him, he ran off instead of flying. Wasn't strong enough. He should be now, though."

Not all of the owls, hawks and eagles entering the rehabilitation program grow strong enough to be released. A Swainson's hawk in a smaller cage north of the flight pen was a graphic example. Already with the program four months, its right wing protruded unnaturally from its side. A concerned farmer had brought it

in, but too late. He'd seen it sitting in the same field for three weeks, but by the time he'd figured out something was amiss, the wing had grown a tough, cartilaginous tissue at the break. The bones could not be set straight. Weigel and Zehr now had to decide whether to pay the costs of keeping the bird alive as an educational tool or destroying it. A hawk that cannot soar . . .

But the spunky prairie falcon, close cousin to the endangered peregrine falcon, was healthy again and ready to join the elite fifty percent of birds that fly away from the rehabilitation program. Maure is justifiably proud of this high success rate. Nationally, only forty-one percent of raptors entering such rehabilitation programs leave under their own power. Still, even with their better-than-average track record, neither Maure nor Dennis has delusions that his work is saving the world's—or even Kansas'—birds of prey.

"There's no way our little program, or even a state-wide program, will alter the raptor population," Maure admits. "We can't begin to do what nature does or



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