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Editorial

You've noticed it already—the new logo. And when you turn to our center section you'll find it a different color. These aren't big changes, but they are consistent with our continued efforts to improve KANSAS WILDLIFE in any way we can.

We've been busy lately soliciting new material from knowledgeable biologists, sportsmen, and conservationists. I'm certain you'll be pleased with the articles we have slated for the rest of 1984. Should you have comments or questions you'd like to share with us, please write. We'd like to hear from you.

And that brings up something else: You may have wondered about the origin of articles you see in KANSAS WILDLIFE. How are the authors and their topics selected? Can anyone submit a manuscript? And do we ever use photos from readers?

I'm glad you asked.

KANSAS WILDLIFE is a publication with many responsibilities. It must carry the message of natural resource conservation, keep abreast of and report on political developments that affect our environment, relay policy and management decisions of the state Fish and Game Commission, offer how-to-do-it, where-to-find-it, and what-to-bag-it-with articles for sportsmen, and, perhaps most importantly, apprise Kansans of the tremendous wildlife wealth in the Sunflower State. That, as they say, is a tall order.

Professional biologists write many of the articles in KANSAS WILDLIFE. Their first-hand experience is one of our most valued assets. Instead of relying on freelance writers to interview wildlife managers and report second-hand information (as do many outdoor publications), KANSAS WILDLIFE has a direct line to the field. The biologist who writes for us has his work edited for publication, surely, but it's *his* manuscript bearing *his* insight backed by *his* experience.

Other material in this magazine comes from our staff writers, most of whom are graduates in the natural resource field. Generally, each tackles subjects of particular interest to him. Few are written without extensive research.

Then there are articles from you, the public. Yes, we consider every manuscript submitted to KANSAS WILDLIFE. If we feel it contains material that would be interesting to our readers, we'll edit and publish it. We do not pay for manuscripts.

The same holds true for photographs. While we have an extensive photo file here, we're occasionally left scrambling for "just the right shot" of a scene or subject. Photos from our readers are welcome, and all are given consideration. Again, we do not pay for their use.

"How should I go about preparing a manuscript for submission?" you ask. "And how should I send it? What about photos?"

Good questions.

First, unless you feel like writing an article for fun, it's best to contact me either by phone or letter and let me know what you have in mind. You may save yourself a lot of effort. If I think your proposal has merit I'll let you know, and you can complete the article on speculation. *My acceptance of the proposal does not guarantee acceptance of the manuscript*; many good ideas are poorly executed. Of course, we reserve the right to edit all copy. Manuscripts needn't be any given length, but

eight to ten double-spaced typed pages is a good target. Always keep a copy of your manuscript, and include a self-addressed stamped envelope if you want your submission returned.

The photographs used in KANSAS WILDLIFE are always the best we can obtain. Consequently, we're not interested in publishing photos of mediocre quality. If you wish to submit color photographs, be sure they're transparencies, 35mm or larger. We can't use color prints. Send the original, not a duplicate. Black and white images must be submitted as 8x10 glossy prints. We use little black and white in the magazine; but again, we'll consider any good photograph.

I've taken this space to sketch our editorial policies for three reasons: First, I trust that many of you are interested in how KANSAS WILDLIFE takes shape. Secondly, we've recently received several articles and photos from readers, indicating to me that perhaps more of you wish to contribute to this magazine. Finally, as an editor I'm always searching for ways to improve KANSAS WILDLIFE. Though logo changes and other mechanical alterations must be done in-house, and while some of our material will continue to be authored by wildlife professionals, there's no reason you can't help. Your experience in Kansas' outdoors, your knowledge of its wildlife may be of value to others. Why not share it?



when little fish are keepers

Bill Bork

This may be a hobby you've never considered—and a study you'll find as fascinating as fishing!

Looking for an exciting new hobby? Then join the growing number of folks who are collecting and studying little native fish, the kind that swarm in our streams and pasture pools.

There's really nothing new about keeping fish as pets. The Sumerians originated this entertaining pastime around 2000 B.C. It was one of the milder forms of amusement enjoyed by the Romans. The hobby, imported from England, took root in this country during the 1850's and has been thriving ever since. Only the idea of stocking home aquariums with the natives is new.

Hobbyists have traditionally looked to far-away places like jungle streams or warm sea coral reefs for their aquarium stock, unaware of the charming little creatures abundantly available here, many of them rivaling the "tropicals" in color and

Gene Brehm photo

form. When this abundance is discovered—usually by accident—an aquarist can be as surprised as the old cowboy who stared in amazement at a display of the many different types of barbed wire used to fence the pioneer prairies. “I’ll be damned!” he muttered. “I’ve built a thousand miles of fence in my day, but I never knew there was more than one kind of barbed wire!”

There are about 750 species of freshwater fish in North America, 123 in Kansas. Some are scarce or limited to a localized area, perhaps a single stream. A few may not adapt well to captivity, or are on the threatened or endangered list and off limits to the home aquarist; but availability of interesting species is no problem, regardless of where you may live. Fortunately, some of the most colorful or interesting fish are also the most common.

The red shiner, for example, is one of the most abundant—and colorful—species in the state. Its pearly white body is set off by a red tail and lower fins; two bright patches of blue adorn either side of the body behind the gills. The ensemble is completed by a red patch on the forepart of the head. Its beauty is only one of its charms. One of nature’s attempts at perpetual motion, red shiners are possessed of a boisterous, exuberant energy much like that of small boys, making their antics in the tank a delight to watch. They school about the aquarium, wheeling and weaving, almost in the cadence of a square dance.

Equally abundant state-wide is the fathead minnow, a species renowned for its hardiness. A favorite of anglers for this reason, it is often commercially reared in ponds and sold through bait shops under the name of “toughies.” The males are quite handsome during the long spring and summer breeding season, black bands alternating with brown about their bodies. Horny knobs or tubercles adorn their heads, and a thick pad develops on the back. The pad is used to tend

the eggs laid on the underside of stones. Males stake out specific territories in the tank, defending their claims with fierce butting and headlong rushes.

Sunfish are ideally suited to the home aquarium. Two species, the longear and the orange spotted, are gorgeously colored and hold the coloration well in captivity. Unlike the rollicking red shiners, they are dignified fish—no silly, rambunctious romping about the tank. Old-timers may develop an affection for their keeper, often approaching the submerged hand to be fondled or petted.

The glamour fish to all collectors is the darter. Some are so colorful as to appear literally living rainbows. Others are quite plain; but all rank among the most unusual of fish. Lacking swim bladders, or with these greatly reduced, they cannot float or glide gracefully like other species. Bottom dwellers, they zip about jerkily in the manner of little lizards. Vertical mobility is gained only by a frantic flapping of the pectoral fins. They perch on stones in a seal-like pose, propped on their fins. One of the few fish that is able to turn its head independently of its body, the darter can look from side to side, or up and down, cocking its head quizzically. It is a small fish, the adults averaging two to three inches. A few species, among them the log perch, may reach five or six inches. Kansas has 17 species of darters. Many are rare, or limited to a narrow range in the state. But one of the most attractive—the orange throat—is quite abundant.

At the opposite end of the scale are the ugly ducklings—fish drab in color or grotesque in form, but which make novel and interesting pets. One such is the madtom. A member of the catfish family, the madtom resembles a bullhead that has been put through a wringer to

emerge half catfish, half eel. It has all the catfish equipment, including the sharp horns and whiskers. Bashful little creatures, madtoms appreciate hiding places; a flat stone will do nicely. The size of the stone seems not to matter. Some aquarists swear a trio of four-inch adults can hide under a rock the size of a playing card. That’s exaggerating a bit, but it illustrates the madtom penchant for crowding into confined space. Whatever its hang-ups may be, claustrophobia is not one of them.

Small gar in the four- to six-inch range are intriguing fish and quite easy to find in rivers and large creeks. Though their beady eyes and long bills give them a sinister appearance, they are handsome in a devilish way; and their purposeful, stately maneuvering in the water is ballet in slow motion.

Another fine addition to the home aquarium is the shovel-nose sturgeon. The young are extremely hard to come by, although adults are not uncommon in several of the state’s rivers. Like the gar, the sturgeon is a carryover from prehistoric times. Foreign imports of these two, almost carbon copies of our natives, are occasionally stocked in pet shops.

The list goes on and on. The point is, beauty is only skin deep in the eye of the naturalist. Sportsmen pursue but a handful of the many fish species available in Kansas, scorning the rest. To the collector of natives, there is no such thing as a “trash” fish.

A wealth of information is available to those who wish to study and identify native fish. An indispensable reference is *Fishes in Kansas*, by Cross and Collins, Museum of Natural History, University of Kansas. Two others helpful in identification are *How to Know the Freshwater Fishes*, by



Ken Brunson photo

An incredible variety of little fish inhabit Kansas streams. Many can be legally taken by anyone with a fishing license; others require a collector's permit. Photos this page, from top: blackstripe topminnow, gravel chub, mosquitofish. Opposite, from top: redfin shiner, greenside darter, orangethroat darter, duskystripe shiner.

Eddy and Underhill, W.C. Brown Co., Dubuque, IA; and *The Atlas of North American Fishes*, compiled by the North Carolina State Museum of Natural History, Raleigh, NC. The Kansas Fish and Game Commission offers helpful material, as do like groups in other states. The North American Native Fishes Association publishes an interesting newsletter. Check also with your local library.

When it comes to housing his pets, the budding ichthyologist may write his own ticket as far as cost is concerned. Aquariums may be simple and utilitarian, or fancied up to fit the decor of any room. Bargains in equipment may be found at garage sales or through ads in the local paper. The project may begin in a quiet corner of the living room and expand into the basement. The latter is an ideal location, by the way. The cooler, more constant temperature is an advantage, and nearby floor drains facilitate water handling. The absence of natural light is no problem, as fish, like plants, thrive under fluorescent lighting. The beauty of this hobby is that one may start small and inexpensively, and go as far as his interest and inclination will take him.

The aquarium should be set up and operating a week or so before the fish are brought in from the wild. A basic unit consists of tank, air pump, filter system, and light (preferably fluorescent)—and a two-inch layer of coarse sand or gravel. The tank may be decorated with plants, living or plastic, and ornamental stones placed about for

privacy. Ordinary tap water will serve nicely, but it must be dechlorinated. The chlorine will dissipate within 24 hours if the water is drawn and left standing in an open container, or it can be removed instantly with a chemical available at all pet shops.

If you're with me this far, you're probably ready to raid the local stream for fish. Fine. But before heading to the creek, carefully study the fishing regulations of your state, and secure permission of landlord or tenant if your chosen catch site is on private property.

Seining is the most common capture method used and is best accomplished with the aid of one or more partners. A three-man team is ideal—two to man the seine, and the other to serve as "beater." There are two general methods of seining. One is simply to drag the net through the water. This works well if the stream bottom is free of snags and other obstructions. The most productive habitat, unfortunately, is often choked with water plants, fallen tree limbs, and similar debris. Riffles are virtually impossible to seine because of sharp rocks. In this case, the seine is held stationary while the beater moves toward it, poking under logs and overhanging banks, and overturning rocks, herding the fish into the net.

If help is not available, small brooks and pools may be seined solo by using a four-foot seine. Regulation minnow traps baited with pet food work well for some species, but require two trips to the site, one to set and another to check the catch.

Once you haul the catch ashore, work fast. Select the keepers as quickly as possible and return the rest to the stream. Timing at this point is critical, especially in hot weather. Fish gasping and flopping in the net under a boiling sun will become stressed, weakened, and susceptible to disease—if they survive the trip home. The container, filled with water from the collecting site, should be close at hand, not parked on a sandbar a quarter mile downstream. A five-gallon plastic bucket with a ventilated lid will suffice if the weather is reasonably cool.



Gene Brehm photo

Otherwise, the fish should be transferred to a roomy insulated picnic cooler for transport.

Back home, compare the temperature of the water in the aquarium with that in the container. An advantage of the natives over tropical fish is that they are tolerant of a wide range of temperatures, but the change should not be too abrupt—not more than 10 degrees Fahrenheit.



Gene Brehm photo

heit. Leave the aquarium lights off, and do not feed the fish for a couple of days. Let them become accustomed to their new surroundings. This interval will vary with species. Some are notably shy and retiring, but it is amazing how quickly most will adapt. Small, silvery river carp-suckers may be seen browsing over the gravel bottom searching for tidbits within an hour after their arrival.

The key to aquarium care is proper filtration of the water. A fairly recent development—the undergravel filter—has greatly simplified the problem. This device



Ken Branson photo



Gene Brehm photo



Gene Brehm photo

operates on the same principle as that used in city water systems. The pump draws waste matter down through a bed of gravel where it is consumed by beneficial bacteria, leaving the water sparkling clear and free of impurities. Its efficiency, however, may be reduced by overstocking or overfeeding. In either case, the load of waste becomes too heavy for the filter to handle and the system breaks down. The result is cloudy water and a fouled aquarium. Remember two old rules of thumb—one inch of fish to a gallon of water, and feed only what the fish will clean up in five minutes. Any buildup of debris should be siphoned out. Frequent and complete water changes are unnecessary; but a recommended practice is to change about 20 percent of the water every week or so. Water quality may also be enhanced by installation of a small airstone which gently agitates the water, helping to eliminate carbon dioxide and other harmful gases.

As much research and development has been devoted to fish feeding as to other areas of pet nutrition, and a variety of commercial foods are available to the aquarist. Frozen brine shrimp and dry flake food are to fish what oats and hay are to horses. Dried tubifex worms are accepted eagerly by most species. An old standby is raw beef heart minced or ground to appropriate size. In season, the home garden will yield fish food in abundance: earth worms, aphids, and myriad forms of creeping, crawling larvae. Be sure these are not tainted by insecticides.



Ken Branson photo

Like all pets, fish may fall prey to disease and illness. The only comfort is that these will not bring whopping bills from the veterinarian. Most outbreaks occur in summer as the water heats up, spurring the development of parasites and disease-causing organisms. Carefully check any stock collected during the hot summer months for evidence of infection, and maintain a cool water temperature in the aquarium—good advice anytime in handling native fish. Many specific remedies are on the market, but remember that these are subject to the same amount of puffery and hype as the patent medicines for human ills. Non-iodized salt at the rate of a teaspoon per ten gallons of water is a useful home remedy, especially for fungus diseases.

What size fish to collect? This is a matter of personal preference. I like them as small as possible, yet large enough to exhibit the major adult characteristics and coloration. Bear in mind that the larger the fish grows, the more it eats and the more space it requires. Size is a factor to be considered in setting up the community tank. Placing a large fish with a reputation for aggressive behavior among smaller individuals is a sure recipe for disaster.

Well, did you follow through? Great! Now draw up a comfortable chair in front of that teeming aquarium and lean back to enjoy the bit of outdoors you've brought into your home. Your new hobby is a many-faceted one that will enrich your life with a greater understanding of the miracle we call Nature. Little fish can, indeed, bring big rewards.

*Rodents aren't all you'll see
when you spend a day in*



Dogtown.

Bruce Kintner photo

Steve Schmidt

From my blind I scanned the horizon with binoculars. The prairie hummed with activity. Before me sprawled a sixty-acre prairie dog town, the dogs all busy feeding on the succulent green vegetation of late spring. One to my left suddenly stood up on its hind legs, threw back its head, and shouted, “Wee Ooh!”, as if to say, “It’s a great day and all is well in my world!” The other dogs scarcely noticed the exclamation, continuing to move on all fours slowly through the grass, foraging like tiny bears. On one of the mounds of dirt I could see a mother and her five small pups. The pups played fiercely. Their favorite game seemed to be leaping over their siblings.

It was a peaceful setting, plenty of green grass, warm sun, and . . . thud! I looked quickly to my right to see a prairie falcon flying low out of the town, carrying a small pup in its talons.

There had been no alarm bark. This predator had entered the community much too quickly. Even the more alert dogs had failed to spot the intruder. Too late, the mother now barked a danger signal, flicking her black-tipped tail with each bark. Nearby dogs instantly rose to their hind feet. The warning system now fully operational, hundreds of pairs of eyes looked in all directions for signs of danger. There were none, only a mother who could not account for one of her pups—and even she soon stopped barking. Another dog in the distance sounded the all clear “Wee Ooh”, and suddenly little fur balls were popping up and down repeating the call, indicating a return to the status quo throughout the town.

As if nothing had happened, the dogs returned to their grazing. Pups reemerged from their burrows to begin a new round of roughhousing. Daylight was wasting, the business of grazing and play not yet finished. There was no time for remorse.

It is unfortunate that many out-of-staters view western Kansas as a bleak, barren, treeless desert where little life exists. Then again, these folks usually make their judgments from windshield surveys on interstate 70. We can forgive their ignorance.

It is disappointing, however, to hear native Kansans—even western Kansans—describe their third of the state similarly. One common misconception is that the absence of trees means an absence of wildlife. This is far from true. Western Kansas is alive with wild creatures; many species make these wide open prairies their home. But wildlife isn’t scattered haphazardly over the landscape. Prairie dog towns are hubs of activity on the plains.

If I were to show western Kansas to a friend who had never been there before and wished to intrigue him with the diversity of wildlife this side of the state has to offer, I’d take him to a dog town. We might easily spend a day there, hiding on its periphery, watching the drama of life and death unfold before us. We would see many species of birds and mammals making their living here.

My friend and I would quickly observe that life in a prairie dog town is never dull. For the dogs it must seem like one life-threatening situation after another. If it’s not a coyote or badger disrupting the town, it’s a prairie falcon, hawk, or golden eagle swooping down from above. Prairie dog towns provide food for many other predators, too, including red and swift foxes, rattlesnakes, and the rare and endangered black-footed ferret.

In the summer months we would probably see burrowing owls occupying old prairie dog homes. In borrowed burrows the owls live and

raise their young. These long-legged raptors can be seen hunting insects during the early dawn or twilight hours. When approached or agitated at burrow entrances, they bob up and down, a sure sign they don’t want to be disturbed. It has been reported that burrowing owls can make a noise in the nest similar to the rattle of a rattlesnake. This would certainly keep most visitors from peering down the opening of a burrow! To identify an owl’s burrow, I would show my friend the white droppings and pellets with insect pieces in them around the opening of the hole.

A good place to find prairie rattlesnakes is inside a prairie dog burrow. The burrows provide a cool refuge for the snakes during the heat of summer afternoons. But my friend and I would be quite content to watch them basking in the sun atop the burrow mound.

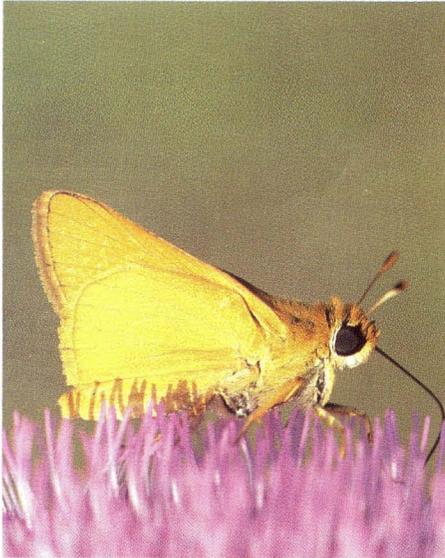
Neither rattlesnakes nor burrowing owls pose much of a threat to prairie dogs, though pups are occasionally eaten by the snakes. There is no reason to harm the rattlesnakes; they almost always try to escape down the burrows when approached by humans.

The badger is probably the most successful predator here in dog



Bruce Kintner photo

Prairie dogs are fossorial creatures; that is, they live in underground burrows. Large dirt mounds mark the entrances.



Randy Winter photo

town. He simply digs for his supper, and he does that well. My friend and I won't see him in the daytime, but we will find evidence of his nocturnal visits. A prairie dog hole which has been dug out by a badger appears enlarged. Dirt has been removed in quantity and thrown in a wide pattern to one side of the burrow entrance. I am always a bit intimidated by the badger's awesome destructive powers.

The last verified sighting of a black-footed ferret in Kansas was in 1957 near Studley. This endangered weasel-like creature is possibly the rarest mammal in North America. Where they still exist, black-footed ferrets hunt prairie dogs and live in used burrows. The prairie dogs loathe this killer, often sealing the burrow where the ferret is sleeping during the day. This nocturnal predator has probably disappeared as a result of prairie dog poisoning efforts. For many years the dogs have been poisoned with strychnine-laced baits. This poison not only kills prairie dogs but anything that eats the dead dogs.

I have watched coyotes hunt

prairie dogs. Once I was sneaking down a ravine through a town and saw a coyote carefully edging over the lip of the ravine, stalking some grazing prairie dogs. I was only a short distance from the coyote when it turned and saw me. Suddenly recognizing me, the animal wheeled and sprinted through the town, loping gracefully out of sight around a grass knob.

In antelope country, my friend and I might even see some pronghorns loafing in our prairie dog community. Antelope seem to choose grazing in dog towns because of the variety of forbs present on the disturbed soil. We wonder what it must have been like to see thousands of bison and pronghorns moving on these fertile plains.

Jackrabbits seem to like dog towns as well. At night, they come out to feed on the tender vegetation that sprouts in the wake of grazing by the prairie dogs. If my friend were a curious fellow, he might want to find out what other rodents live and work in the dog town. We might put out some live traps and, if we were lucky, catch a grasshopper mouse. This rodent is unique in that it actively hunts and eats other mice—most commonly deer mice. It also likes grasshoppers and gobbles them down like candy. At night the grasshopper mouse produces a very high-pitched scream.



Ron Spomer photo

Prairies are not flat wastelands, as some people believe, but teem with life. Dog towns are often focal points of activity and home for other prairie creatures. Counterclockwise from top: beard-grass skipper on thistle, burrowing owl, red-tailed hawk, American pronghorn.



Gene Brehm photo



Randy Winter photo

“Uncle!” *Prairie dogs are gregarious animals, and playful. Below, a scratch right there—no just a little higher—sure feels good! At bottom a pair of rodents reenact the changing of the guard. . . .*

Of special interest to me are the avian visitors to the dog towns. Many folks do not realize that the raptors inhabiting western Kansas change with the seasons. Prairie falcons are common in winter months, but few remain in the spring to nest. Golden eagles, rough-legged hawks, and ferruginous hawks also use western Kansas as a wintering ground. In the summer months, Swainson’s hawks are common. Marsh hawks and red-tailed hawks also frequent the plains.

Just watching prairie dogs is fun. And it can be a year-round activity, as the black-tailed dogs of western Kansas do not hibernate. June is a good month to watch the pups playing. This is the time of year when each town seems especially active. Prairie dogs are often depicted in photographs kissing each other. Actually the dogs identify each other by smelling glands in their mouths. Still, they appear quite affectionate during the spring and summer months, often grooming each other on top of their mounds.

It is apparent that many wildlife species use prairie dog towns in varying degrees to make their living. Some use the dogs as a ready food supply. Others hunt the insects or rodents common in prairie dog towns. Some simply come to graze the rich vegetation not found in surrounding rangeland. My friend and I wonder to what degree these animals require prairie dog towns to ensure their survival.

In 1903 D. E. Lantz, in a Kansas State Agricultural College Experimental Station Bulletin, estimated that black-tailed prairie dogs inhabited two to two and a half million acres in Kansas. In 1977, however, Marvin Schwilling, non-game biologist for Kansas Fish and Game, maintained that dogs occupied only



Bruce Kintner photo



Bruce Kintner photo



Bruce Kintner photo

57,432 acres, most of which were west of highway 81 in Kansas. Today nearly all the big towns are gone. Smaller towns exist, mostly in forgotten places.

Such a drastic decline in prairie dog populations did not occur naturally. Many said that prairie dogs competed unfavorably with cattle for forage, and some ranges were determined to be in poor condition because of the dogs. So the towns were poisoned—most commonly with strychnine-laced oats. Non-target species as well as prairie dogs were killed.

Today the need for large-scale poisoning is in question. Prairie dogs thrive in areas where cattle congregate and overgraze, such as on roads or around watering facilities. This is important, as it means the dogs aren't necessarily denuding the land of vegetation, but are choosing their town sights where vegetation is *already* cropped close. In fact, the cattle may also prefer to graze the towns because of the greater palatability of forage there. Dog foraging, like that of cattle, can be beneficial to range grasses if not overdone.

When prairie dog control is, in fact, necessary, the non-selective strychnine baits of yesteryear need not be used. New compounds are available which limit secondary poisoning of non-target species (the chain-killing syndrome). Yet problems still exist. Some landowners fail to use registered poisons correctly and either get no control at all or threaten non-target species as well. Of particular concern are the poisonous gas cartridges that, once thrown down a burrow, kill everything in the burrow. After failing to get control with registered toxicants because of misuse, a few landowners have resorted to using just about anything they can squirt, pump, or throw down the hole, including gasoline and ammonia.

Should we blame the landowner for the demise of the black-tailed prairie dog in western Kansas? No. First, try as they might, those at war

with prairie dogs will probably never exterminate their enemy. The little rodents usually bounce back from reduction efforts quickly if a breeding nucleus survives.

Secondly, we must question our own attitudes and actions as well. Perhaps we have all played a part in the decline of prairie dog populations in our state. Today's farm or ranch is expected to be progressive, operating more efficiently each year. To some people, that means no room for weeds in the cropfields—or for prairie dogs on the rangeland.

Our mistake has been to encourage the landowner to anticipate production with no losses. In reality, of course, this will never be possible. A good farmer or rancher realizes that part of the natural cycle of any rangeland involves temporary loss—of forage, water, even productivity. But nature is generous when she replenishes the land, ensuring a healthy future for all its inhabitants. The wise rancher accepts short-term losses for long-term gain.

Nonetheless, we must recognize that the decline in numbers of prairie dogs in Kansas is largely the result of extensive control programs. During the peak of extermination efforts, dog towns as big as 300 acres were simply there one day and gone the next. Large-scale control programs are still being implemented today in several counties of western Kansas. Surprisingly enough, landowner participation in these control programs is mandatory.

Usually it works like this: The county notifies the landowner by letter that he or she has 15 days in which to begin poisoning efforts on the stated property. If no action is taken by the date specified, the county prairie dog control supervisor then has the authority to enter the land and implement control. The landowner is billed for labor and materials. If he or she fails to pay that amount within 30 days, the bill is assessed against the property of the landowner and entered on the tax rolls.

In some areas there is a need for some type of prairie dog control. But increasing numbers of landowners are willing to tolerate a stable population of dogs on their property or do not wish to use poisons to control the rodents. Should the landowner be forced to kill his prairie dogs? Equally important, should tax dollars be used to support such a program?

A variety of wildlife species use prairie dog towns every day. Can we say in fact that county-wide control programs do not affect non-target species? What happens to those animals associated with prairie dogs when the dogs are all poisoned?



Bruce Kintner photo

What happens to the resident raptors when suddenly the town disappears? Where do the burrowing owls go when there are no more burrows? Who will account for these species? Are our tax dollars supporting programs that eradicate protected wildlife? Are we licensing counties to kill burrowing owls and swift foxes?

As I sit watching the prairie dog town, I am thankful for the variety of wildlife western Kansas has to offer. There is more wealth out here than I once thought possible. If my friend beside me were a prairie dog control officer, perhaps he would understand what is at stake.



on a red hills ranch . . .

Catherine Matthews
and Jean Umholtz

Prairie dogs are among the most sociable wild animals in North America. Active only in the daylight hours, they are plant eaters and rely upon the juice of green plants and the moisture in the roots of perennial grasses for their water supply. The average litter of four is born in early spring and appears above ground at about six weeks of age. Travelers have written about prairie dogs since the first European explorers crossed the Great American Desert. In 1873 Isabella Bird was entertained by these rodents. "We passed numbers of villages, which are composed of raised circular orifices, about eighteen inches in diameter, with sloping passages leading downwards for five or six feet. Hundreds of these burrows are placed together. On nearly every rim a small furry reddish-buff beast sat on its hind legs, looking, so far as head went, much like a young seal. These creatures were active as sentinels, and sunning themselves. As we passed, each gave a warning yelp, shook its tail, and, with a ludicrous flourish of its hind legs, dived into its hole." (from *A Lady's Life in the Rocky Mountains*, p. 26.)

Bob Larson is not a traveler; he is a resident rancher, whose Gypsum

Hills spread pastures not only cattle, but prairie dogs. He's hoping to keep the rodent population in check. It takes about 15 acres to feed one cow in Barber County now, and prairie dogs can be as dense as 200 per acre. Control is obviously necessary in some areas. Traditionally, control has meant poison.

But poisoning doesn't work, says Larson, and he ought to know. He's tried it. Now Larson uses knowledge of prairie dog biology and ecology to manage his rodents. By keeping his cows out of prairie dog towns in July and August, the expansion of the towns is kept in check. Without grazing activity, the taller prairie grasses recover and grow faster than the prairie dogs can chomp them down. Overgrazed land causes prairie dog populations to spread out. By removing the cattle for just a couple of months ranchers can help slow town development.

Bob and Charlene Larson have had their fill of dogs. But when Bob Larson says he wouldn't mind a show dog town with one sterile male prairie dog, we know he is only kidding. The Gypsum Hills ranch has been in the Larson family for just over a hundred years; the prairie dogs have been there for several thousand. As long as the Larsons can make a living off the land, the prairie dogs too can have a small piece.

The Gyp Hills are red sandstone and resemble Arizona or New Mexico more than Kansas. The only trees to speak of—eastern red cedar—are unwelcome invaders, first in line to herald the forests and thus the loss of grazing land. The land is blanketed with a mixture of short and tall grasses. Big bluestem is evident, but grama and buffalo grass are dominant. Hunks of gypsum, ranging in shades from pure white to almost translucent, stand out from the deep red of these plateau-like hills. Oil and gas wells and gypsum caves dot the Gyp Hills countryside, sparsely populated by even the cattle which outnumber the human population many times over.

Bob Larson welcomes those who would learn from him and his land the real story of these red hills. He chuckles when he tells about a biology student who suggested he keep buffalo rather than cattle. Larson says you can't herd buffalo and the meat is too tough for American palates.

Like many of his contemporaries, Larson is more than a cattleman. He is a manager, cultivating the productivity of Kansas rangeland for the benefit of both humans and wildlife. For him, there is an alternative to the quick-fix dog-poisoning programs hawked by others. He senses the importance of a natural balance of life on his range. He appreciates the creatures with whom he shares it. And, though his Gypsum Hills ranch must be productive, he realizes it need not be at the expense of native wildlife.

Fish, like mammals, need proper habitat to survive. Why not . . .

Give a Bass a Home

Tommie Berger

How many black bass have you caught recently in open water or along barren banks? Very few, if any, right? That big, green monster we all chase plainly prefers to have some kind of cover—the thing we call habitat or structure.

Some people will say that bass can live without cover. Most farm ponds don't have a single log, let alone standing timber or any type of cover other than aquatic vegetation. Yet they can provide outstanding fishing. But where are most bass caught in this type of situation? Most come from the edges of the weeds or along the steeper banks and drop-offs; in other words, near habitat or structure.

Good bass fishing is brought about by adequate amounts of "stuff" in the water. Do Kansas bass waters have the right "stuff"? If not, how can we, the bass anglers, provide proper habitat for our quarry? A brief look at the past may give us some clues.

Beginning in the late 1930's, federal agencies, such as the Army Corps of Engineers and the Bureau of Reclamation, began building reservoirs. But these big bodies of water were not designed for the Kansas angler. They were built to control flooding on many of our major rivers and to provide water supplies for cities, towns, irrigation, and other commercial interests.

To most Kansans, this water also meant increased recreational opportunities. Fishermen, hunters, boaters, swimmers, campers, and picnickers all flocked to the reser-

voirs during their leisure time. Recreation became big business. Though flood control and water supply were the primary functions of reservoirs, federal and state agencies began to see a future in managing these areas for recreation.

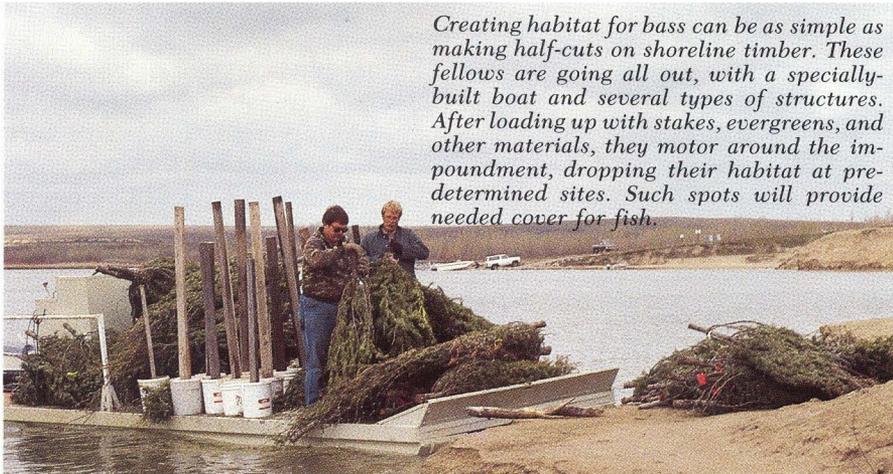
In the 1940's and 1950's the Fish and Game Commission realized the need for additional recreational sites and began constructing more state lakes. These were specifically designed for public fishing. Still, during these times it was common and accepted practice to scour the basins of lakes and reservoirs during construction. Many of our reservoirs and state lakes started out with very little in the way of habitat. Some timber was left in creeks and rivers and a few coves, but most habitat—timber, bridge abutments, rock-piles, foundations, etc.—was destroyed with the idea of making a scenic, hazard-free lake for people other than fishermen. But recently bass clubs, sportsmen's organizations, interested anglers, and the Fish and Game Commission have begun to persuade the Corps of Engineers and other agencies building lakes and reservoirs to leave more habitat during initial construction phases.

A new wave of enthusiasm began to emerge when Melvern Reservoir was in the planning phase. The Fish and Game Commission and many vocal sportsmen put up a gallant fight for a reduced clearing plan—and almost won. Although everything requested was not approved, the fishermen finally got part of what they wanted. Several coves

were left with the original habitat, and much of the timber that was cut was pushed into brushpiles and cabled down in strategic locations along creek channels and around underwater islands. The angler's voice was beginning to be heard.

Then came Clinton Reservoir, the 7,000-acre impoundment near Lawrence. Clinton was the first of a new breed of reservoirs in Kansas; the difference between Clinton and others is obvious at a glance. Standing timber graces virtually all shorelines, coves, and both main arms of the reservoir. Approximately 70 percent of the native vegetation has been left intact in the lake basin, amounting to about 1,500 acres of standing timber or 21 percent of the surface area of the lake. Of the trees that were removed, most were piled, cabled, and anchored to provide additional fish habitat.

Although there is still room for improvement in making new reservoirs and lakes better for fishing, we bass anglers have much to be thankful for. Several newer reservoirs are looking good as lunker puddles. Big Hill Reservoir, near Cherryvale in southeast Kansas, was impounded early in 1981 and will cover 1,240 acres when full. Lots of timber was left, many brushpiles built. The area looks like a bassin' man's paradise. Hillsdale, near Paola, a 4,580-acre reservoir built in the fall of 1981, is another impoundment with a great deal of natural habitat. El Dorado Reservoir, east of Wichita, will cover about 8,000 acres when full in 1985. It



Creating habitat for bass can be as simple as making half-cuts on shoreline timber. These fellows are going all out, with a specially-built boat and several types of structures. After loading up with stakes, evergreens, and other materials, they motor around the impoundment, dropping their habitat at pre-determined sites. Such spots will provide needed cover for fish.

Gene Brehm photo

does not have the timber of the other new reservoirs because of its Flint Hills location, so several other things have been done to increase habitat and structure in this lake. It will cover two previously-impounded lakes, and much of the rolling hill topography has been left intact, along with underwater roads and railroad beds.

Yes, we've made great strides in improving fish habitat in new reservoirs; but we are still left with old reservoirs and old state lakes. No new state lakes are currently being built; and most of the smaller impoundments under construction are watershed lakes or local community lakes with the primary use being water supply. The Kansas Department of Health and Environment is against leaving trees and other forms of habitat in these basins because of tastes, odors, and nutrients that may be added to the water by this type of structure. So many of these new lakes, like the old ones, just don't contain much cover for bass.

Increasing emphasis has recently been placed on habitat improvement through the use of artificial fish habitat structures. The effectiveness of such structures has been well documented in many of our old reservoirs and state lakes. This type of habitat improvement concentrates fish for easier harvest by an-



Gene Brehm photo



Gene Brehm photo

glers and provides spawning areas, shelter, and protection for prey species as well as for bass.

Habitat can be built from any number of materials—tires, cedar trees, Christmas trees, deciduous timber, even junk cars, rocks, or concrete blocks. Construction of habitat is hard work, time-consuming, and may take more than one person; but the rewards can be great. A little effort can mean heav-

ier stringers or maybe even a tournament championship.

The Fish and Game Commission has found that Christmas trees do not work well in reservoirs because they break up with extreme water movement and fluctuation. But red cedars are great for reservoirs and they last a long time. Another good reservoir habitat tree is hedge (osage orange), which also seems to last forever. Some of the dead trees around the edges, most of which are oaks and elms, get very hard when they have dried out and work well as habitat when cut off and tied down to the stumps.

In state lakes, we have found that Christmas trees provide good habitat, as do cedars or hedges. I have some Christmas trees in one of my state lakes that have been there since 1974, and they are still providing good habitat. Half-cuts of oaks, elms, or other deciduous trees work very well when they are felled with the trunks left partially attached to the stumps or on the bank.

In 1975, a special study was conducted on Pottawatomie State Fishing Lake #2 on the comparative value of several habitat structures. Comparable-sized units of stakebeds, tires, cedar trees, and deciduous trees were constructed and placed in the lake at depths of six and twelve feet. Visual observations were made during the summer (using scuba gear) to evaluate use by all species of fish. Brushpiles

were the best all-around structure type for attracting fish, with the cedar trees appearing just slightly better than the deciduous brush. Tires were better than stakebeds, which were found to be the least effective fish attractor. It is interesting to note that the tires attracted as many large fish as did the brushpiles, but not as many smaller fish.

Some conclusions were also made for individual species of fish. Bluegill were by far the most numerous and frequently-observed. Largemouth bass were widely distributed but appeared more common in the shallows. The deciduous brush seemed more favored by bass. Immediately following the spawning season, many largemouth bass fry were found at the deciduous piles, both deep and shallow, but not around any other type of structure. It was obvious to me that a pair of bass had used the deciduous piles as a spawning site. Crappie were found at all structure types, but were most often observed around the cedar tree piles. They seemed to show a slight preference for the deeper piles, as would be expected in the heat of summer. One walleye was observed among the branches of the cedars, and a few catfish, both channels and flatheads, were seen around all the structures. I noted flatheads as big as 25 pounds lying directly on top of some of the brushpiles during the heat of the afternoon.

There is no reason why bass clubs, individual fishermen, and other interested organizations cannot embark on an aggressive habitat program in Kansas reservoirs and even on state lakes. If you're a bass angler you may have already done a little habitat work on your own, and if you checked with your local fisheries biologist, you've probably found him more than willing to cooperate with you.

If you'd like to do habitat work on reservoirs, be sure to contact your

local Corps or Bureau office or work through your state biologist in this regard. They like to know what's going on at their lake and may lend some assistance. You must get permission from these agencies before you cut any live trees around the reservoir. Approach agency representatives with patience and courtesy, and explain exactly what you'd like to do.

It's going to be up to you, the fisherman, to promote habitat projects in Kansas. Remember, fisheries biologists have many things to do other than habitat work, and each biologist may have three, four, or more lakes and reservoirs in his area. He may not have the time to get everything done himself, but if you and your group are ambitious and well organized, with a little cooperation from the local authorities, you can do much on your own.

If actually putting in habitat is not within your capabilities, an alternative idea is raising money or donating funds for things like chain saws, pontoon boats, motors, winches, etc. In western Kansas we bass anglers don't have too many reservoirs, and what we have are quite barren. Habitat is needed. By scouting around, we found an old pontoon boat and talked someone into donating it to us. We had a used motor repaired with donated funds, scrounged an army surplus winch, welded up an old A-frame, and proceeded to put together a habitat boat. An old mobile home frame served as a trailer. . . .

Perhaps you or your friends could complete a similar project. Maybe your club could build its own boat and loan it out to other clubs. Do some trading, some dickering, and you might be surprised what you come up with.

Many organizations are interested in conservation work. Groups like 4-H clubs will get involved in habitat conservation projects, and Boy Scout groups are always willing to assist. Sportsmen's clubs, lake associations, and marina operators are all sources for free labor. If you can get a number of groups organized in

your area, you'll make a tough job easy.

From my experiences with Christmas trees and half-cuts in state lakes, I feel these structure types are the best bet for do-it-yourself habitat projects. And I've fished several artificial structure types with great success. The Christmas trees consistently produce spring and fall crappie and small bass year around, even through the ice. Bluegill are present 365 days a year. Half-cuts of trees along the shoreline yield many large and small bass and even some catfish and walleyes. Let me assure you, the fish are there! When we collect bass for tagging and scale samples, we utilize the electrofishing rig (shocker) and really turn the bass out of those trees. It is quite an experience!

Some fishermen still berate biologists for putting all those "snags" in the lake. In one such incident, an older fellow proceeded to tell me how many hooks and sinkers he had lost because of my Christmas trees. So I asked him why he didn't throw off to the side of the pile, which I had clearly marked. His comment was, "I don't get any bites if I throw very far away from those snags." My last remark was, "Do you think the brush might have something to do with the fish being there?" After a slight pause he said kind of quietly, "I never thought of that." As I turned to walk up the bank, he hollered over his shoulder, "Hey! You got any more brushpiles in here besides this one?"

To conclude, habitat is a key to production and concentration of fish. Fish need cover, food, and protection just like quail or pheasants or rabbits. If the habitat is not left in the water upon construction of lakes and reservoirs, then it has to be provided by manmade structures. Sure, such projects are time-consuming and hard work, but they can pay big dividends! So . . . if you want to do one thing to help fishing in general and bass specifically, build a brushpile, get others to build a brushpile, and give a bass a home!

the center section

Edited by Rob Manes

READERS WRITE

YOUNG LIVES

Editor:

Would you wonder why a 59-year-old widow is interested in this type of magazine? I married into a family of outdoor sportsmen. I didn't participate in the field, but I was the one to see the clothes, gear, food, and other necessities were ready. I took on extra chores and responsibilities during hunting season. I listened to all the hunting and fishing stories, and our activities were planned around fishing and hunting activities; but I loved every minute of it. I feel that the time our son spent in the field with his father was a good investment in our son's life. As my husband spent time in the field with his father and my son spent time with his father, now my son takes his four-year-old for walks in the timber, along streams . . . and fishing, so I can see the bond of communication forming in this young life also.

Lela K. Eccles
Parsons, KS

Editor:

I received my first copy of KANSAS WILDLIFE today. It is a beautiful magazine, and I am so glad I subscribed. I am subscribing for my grandson.

Mrs. L.G. Davis
Emporia, KS

PLEASE EXPLAIN

Editor:

First may I say how much I enjoy KANSAS WILDLIFE. In the May/June 1984 issue I read with great interest your article entitled "Tradin' Turkey." I was informed that your trap and release

program had certain priorities and that there really was not enough of these wild birds (for) everyone (in Kansas) who wished to stock their areas. I would say that it is a questionable practice . . . to be trading wild turkeys to other states for elk, otters, etc., when the local landowners and taxpayers are begging for wild birds to be stocked in the state of Kansas. The particular hard fact is that landowners cannot buy wild birds to use in their own stocking programs.

Warren H. Woody
Barnard, KS

Dear Mr. Woody:

The fact that turkeys were not released on your land when you requested them does not preclude future stockings where you have suitable habitat. A major consideration in selecting turkey release sites is the quality of drainage, or bottomland, habitat in the area. Based upon these evaluations, biologists for the Fish and Game Commission develop a prioritized list of stocking sites. As trapping operations provide birds, they are released on each site, beginning with the highest priority area.

The Kansas Fish and Game Commission places high emphasis on the establishment of turkey flocks in areas with suitable habitat in the state; but the agency is obliged to manage all the wildlife of Kansas, including otter, elk, and others. In some cases, such as in the recent otter exchanges, utilizing species which are readily available in Kansas can facilitate the particular management or reintroduction project. While turkeys may not yet be established in every potential location in the state, they are an available commodity, which can be obtained fairly easily and with little expense. Such an exchange does not cancel turkey stocking efforts in Kansas, it merely postpones them in order that management efforts involving other species may take place.

BOOBOOS

Gentlemen:

In general you publish an interesting magazine. I especially enjoy those articles that give information of practical value to Kansas people, but some funny things seem to creep into your more serious articles.

In the February 1984 issue of your magazine, on page 88, you headlined an article, "Sportsman's Guide To El Dorado Lake . . . Sedgwick County." Butler County people probably don't consider *that* funny. I doubt if they appreciate having their county's lake credited to Sedgwick County. Somebody booboosed bad!

Over on page 94 I read where the State Fish and Game Commission released some "rough" grouse in the northeast corner of the state. Things may be "rough" all over, but whoever has charge of publishing your magazine ought to brush up on the various species of grouse. This can hardly be classified as a typographical error.

E.L. Haring
Bushton, KS

Dear Mr. Haring:

Thank you for your concern over journalistic accuracy. You are correct in both of your assertions—El Dorado Lake is in Butler County, and the proper term is "ruffed" grouse. You are also correct that "somebody booboosed bad." This time it was you.

The magazine to which you refer is FINS AND FEATHERS, a nationwide outdoor magazine published in Minnesota. The Kansas Fish and Game Commission publishes KANSAS WILDLIFE magazine, a bi-monthly publication which focuses on topics of interest to Kansans. We hope you will make it a point to read our magazine.

Thank you for taking the time to write.

Manes

Manes

THE LAW

RETURNED TO THE SCENE

It was early in April when a Doniphan County landowner heard rifle shots in the woods not far from his house. He headed in the direction of the shots and arrived on the scene just in time to see the culprits speed away. They not only left their deer behind; they left the landowner with a clear description of their pickup truck and several digits from their Missouri license plates.

The landowner then phoned the county sheriff with the particulars on the truck. Figuring the suspects were running for cover across the nearby state line, the sheriff went to block a Missouri River bridge, which he felt was the most likely escape route. Meanwhile, game protectors Jay LeBeau and Dave Hoffman were apprised of the situation.

The sheriff soon found he guessed right about the escape route, but the suspects didn't try to cross the bridge. They turned around just before crossing and headed back toward the scene of the crime. The sheriff radioed LeBeau and Hoffman to tell them the alleged poachers were coming.

The game protectors figured the suspects would come through the town

of Wathena on their way back to retrieve the deer, so they waited in town, hiding their vehicles on side streets. Shortly, the pickup came through, and the G.P.s followed at a distance in order to determine if the suspects were going back to get the deer. It appeared they were.

Hoffman and LeBeau knew there were two roads leading to the scene, and they sped around the other way, arriving just in time. They heard the pickup coming, and Hoffman ducked out of sight in the road ditch while LeBeau hid their vehicle. The suspects stopped directly in front of Hoffman. He watched through the grass as they loaded the illegal deer into the pickup just a few feet away. As soon as they closed the tail gate he stepped out and arrested the two men.

LeBeau and Hoffman escorted the suspects to the county jail, where they each paid a \$750 bond for their release.

Judge Virgil Begesse found one man guilty of taking deer during closed season and hunting without a valid license. For those offenses the culprit paid \$350 and spent three weekends of a 30-day sentence in jail. The other man was fined \$300 for illegal possession of a deer and spent an equal time behind bars.

Manes

DUCK DEATH TRAPS

The sight of ducks dying at the edge of an oil field sludge pit is enough to make most waterfowl hunters boil with anger. Game Protector Dave Gentry wasn't favorably impressed by the sight either.

While investigating an oil spill on a creek in southwest Lyon County, Gentry discovered some dead teal around two sludge pits. The birds were covered with thick, black liquid, and the pits were not outfitted with any devices to prevent waterfowl from landing in them.

After further inspection, G.P. Gentry also found some coots and young killdeer dead or dying around the pits.

An Emporia man was identified as the operator of the pits, and Assistant U.S. Attorney Kurt J. Shernuk charged him with three counts (teal, coots, and killdeer) of taking migratory birds illegally. A federal court judge ordered the pit operator to pay \$200 for each offense.

Manes

PROTECTING A RESOURCE

Game protectors for the Kansas Fish and Game Commission spent an entire week in late March receiving some of the most intensive training in the agency's history. Law enforcement specialists from the U.S. Fish and Wildlife Service instructed the game protectors in matters of current wildlife laws, search and seizure, interviewing witnesses and suspects, and handling potential problem situations.

Another aspect of the training involved the use of specialized self-defense tactics. John Damian, a renowned master of Japanese martial arts, instructed the officers in proper methods for handling violent subjects as well as methods for controlling arrest resisters.

Several of the officers were left with strained muscles, cuts, and bruises; but all agreed it was worth every bit of it. As one game protector summarized, "I hope I never have to use it, but I feel better knowing I can protect myself."

Manes



FAMILY TIES

A Chase County farmer phoned Game Protector Dave Gentry one evening to say a deer "just dropped dead" in his field. The farmer didn't know what caused the deer's death, "maybe a heart attack," he suggested.

It was dark by the time Gentry arrived with the county undersheriff. Two vehicles were there; in one was the farmer. In the other was an unidentified man — just sitting there. A flashlight search revealed a path in the deep snow, where the deer had been dragged away. About half way to the edge of the field, Gentry found the deer, and a set of human footprints leading away from the carcass into the darkness. Gentry followed the trail until his light beam fell upon a 16-year-old boy hiding face down in the snow. He was wet and cold.

"I thought you'd never find me," the young man said as they climbed into Gentry's pickup, "I was about to freeze to death."

The boy refused to tell Gentry who his accomplices were, saying that the evidence against him was only "circumstantial." Gentry advised him that it was very strong circumstantial evidence and that deer poaching was a serious offense. That prompted the boy to ask to speak to his uncle — the man in the other pickup. The uncle told him to divulge the entire story; and the boy agreed, especially since the alternative was taking the deer poaching rap by himself.

As it turned out, the boy's father had shot the deer and returned home for assistance in retrieving it. The uncle and the boy were helping him drag the deer to the road, when Game Protector Gentry showed up.

The boy's father ran into the darkness and eventually made it home to safety, and the uncle just sat in his pickup and watched, but the boy wasn't so lucky.

After getting the story, Gentry took the whole party back to the sheriff's office, where he obtained a written account of the entire incident.

Next Gentry phoned the boy's father and told him he needed to come get his son and "clear up a few things." The man flatly refused to come to the sheriff's office.

"You won't even come get your own son?" Gentry said.

"Don't you get macho with me," retorted the father, remaining immune to Gentry's attempt at shaming him.

Finally, when it became apparent that the man had no intention of com-

ing to get his son and facing possible charges, the sheriff took the boy to another uncle's house.

Eventually the long arm of the law reached the father, and Judge William Dick ordered him to pay \$850 for taking a deer during closed season.

Manes

FRIDAY THE 13TH

If they weren't superstitious before their Oklahoma turkey hunting trip, two southcentral Kansas men might be now. Friday, April 13th turned out to be a day of misfortune, and it cost them a small fortune.

Oklahoma Game Ranger Frank Hubert was patrolling in an area where he was planning to hunt turkeys later in the season. He was watching a bunch of turkeys as they moved through a draw where he had seen them several times before. A short distance away two hunters caught his attention, and Hubert went to check them. He found they were hunting legally, so he returned to the head of the draw where he had seen the turkeys; but the birds were mysteriously gone. A slight movement a distance down the draw caught Hubert's eye. It was another pair of hunters.

Watching through his powerful spotting scope, Hubert saw the hunters nervously fussing over something. Then they saw him and hurried up the draw in his direction. Hubert's lawman instinct told him they were hiding something and trying to draw his attention away from it.

Hubert met the pair and asked for their licenses. Neither had one. They were also without turkey tags. He arrested them on charges for these offenses and then went to investigate the area where he had first spotted them. Behind a tree Hubert found they had stashed a hen and a tom turkey. Laying out in the open was another hen, which Hubert estimated they didn't have time to hide. Each of the suspects received an additional ticket for illegal possession of the hens.

Assistant District Attorney Roy Powell, who is not known for acquiescing to generous plea bargains from defense attorneys, told the two that the bottom line for their offenses would be an \$800 fine for each of them and forfeiture of their guns. "No," they pleaded, "Isn't there some way we can keep our guns?"

Powell suggested that a judge might accept higher fines instead, and Harper County Associate Judge Alan Gottsch did—\$1,000 for one culprit and \$1,200 for the other, plus \$141 each in

court costs. Judge Gottsch also tacked on 10-day jail sentences, but he gave them a break, suspending the time behind bars.

Manes

TELL-TAIL FEATHERS

One problem faced by many concerned citizens who would like to report violations of wildlife laws is that they frequently don't have any evidence to support their allegations. That wasn't the case for a young Hutchinson man. In fact, the evidence flew into his back yard.

The young man believed that a neighbor had shot a red-tailed hawk and taken the wounded bird to his home, but he had no way to prove it . . . until the hawk escaped from its captor and landed in his back yard.

With the bird as evidence, the young man called Hutchinson Game Protector Jeff Gayer, who came to investigate the situation. When Gayer got there he was presented with the hawk. The young man also told Gayer of some interesting feathers in the suspect's trash can. Gayer recognized the feathers as those of a wild turkey. His next step was to call Fish and Game headquarters and ascertain whether or not the suspect had a turkey permit. The records indicated that he did not.

Dedicated to seeing the case through, the young man gave G.P. Gayer a written statement, which outlined what he had witnessed. Gayer took the statement to the Reno County courthouse and obtained a warrant to search the suspect's house.

The search yielded 40 pounds of deer meat, a dressed turkey, and two bags containing dressed pheasants. The suspect admitted he shot the turkey from inside a vehicle, and that he purchased the deer meat from someone else. So, Gayer wrote him four tickets: one for hunting from a motor vehicle; one for unlawful possession of game (it is illegal to buy or sell game); one for hunting wild turkey illegally; and one for unlawful possession of a migratory bird (the red-tailed hawk).

When the suspect's day in court finally came, he was found guilty of unlawful possession of game and unlawful possession of a migratory bird. For these offenses he was fined \$200 and sentenced to two 10-day jail terms. He was given a year's probation in lieu of serving the jail time, but he lost his Kansas hunting privileges for one year.

Manes

ISSUES

IT CAN HAPPEN IN KANSAS

When approached with the topic of the anti-hunting movement, many rural midwesterners gesture toward the east or west and shrug, saying the real threat is only in the highly urbanized seaboard states; but it would seem the time has come to abandon that dangerous attitude.

The Friends of Animals (FoA) has been the driving force behind the New Jersey anti-hunting movement. To get a better impression of the FoA's leadership, we phoned Susan Russell, vice president of the New Jersey chapter and national education director. The conversation was markedly less than pleasant. Russell seethes with hatred for sportsmen, wildlife managers, and certain conservation groups.

"Listen, we're mortal enemies and we'll be mortal enemies until the day we die," Russell fumed when asked if she would answer a few questions.

When asked why there exists so much anti-hunting sentiment in New Jersey, Russell flatly stated, "It's just a natural phenomenon. It's a public groundswell," she said. "It's just common sense that the things that happen, happen on the east and west coasts first."

Yeah, like urban sprawl and air pollution.

Was she trying to say that the funds and manpower dedicated to anti-hunting and anti-trap drives and to the re-election campaign of Senate President Carmen Orechio have nothing to do with the "public groundswell?" Natural phenomena aside, she did concede that Friends of Animals has considerable membership in the state, which may explain the anti-hunting activity there.

How about hunting? Is the anti-trap crusade really a foot-in-the-door tactic to mold public sentiment against other outdoors sports?

"We're not forced to answer these questions," Russell reminded. "Animals deserve more than exploitation, and hunting is just another form of exploitation. We're definitely anti-hunting, no doubt about it. But, trapping is the worst of these things."

Wait a minute, Susan, did you say "trapping" or just the leghold trap, as

the FoA's campaigns would have us to believe?

"Trapping stinks," Russell said, albeit not very delicately. "Conibears (killer-style traps) stink. Box traps stink. Leg snares stink. All trapping is inhumane and we're opposed to all trapping and hunting."

As odorous as Russell finds trapping and hunting, her hatred for the hunters and trappers themselves, as well as for the New Jersey Division of Fish, Game, and Wildlife, may run a close second.

When asked what's on the program for the coming months, she replied, "Friends of Animals is not the kind of group that lets up. We'll get into the enforcement of this thing (the recently adopted anti-trap bill).

"Trappers are scofflaws," she said, conveniently overlooking her own organization's hunter harassment campaign, which preaches civil disobedience. "The Division's enforcement capability is pathetic."

How will Friends of Animals enforce this law? Send goon squads of vigilantes into the field?

"We haven't decided yet. We may send people out in the field or we may police the actions of the Division in its attempts at enforcement," she said.

What else, Susan? What else will Friends of Animals be up to in the months to come?

"I don't think I want to talk with you anymore." Click.

So much for the idea of opening the lines of communication with the anti-hunters. It's a nice thought, but believe us, you really can't learn anything you don't already know. *Wildlife Legislative Fund*

CONSERVATION TAX CREDIT

The Senate has passed legislation which would allow landowners a 20 percent investment tax credit for implementing conservation practices. The credit would be allowable on all expenditures up to \$25,000 per year, and on 85 percent of expenditures over that amount.

The tax provision would allow

credits for such things as conservation tillage systems, contour farming, installing grass waterways, fencing to protect or establish conservation cover, field windbreaks, tree planting for erosion control or conservation cover, or any other improvements specified under regulations that would be developed by the U.S. Department of Agriculture.

The tax provision, offered by Senator Charles Grassley of Iowa, was attached as an amendment to a miscellaneous revenue bill (S. 2163) which had already been passed by the House and sent to the Senate, where it was given a Senate number. Staff on Capitol Hill report that the House Ways and Means Committee and the Senate Finance Committee will confer about the bill as soon as a few problems are worked out.

The program, if enacted, would be a strong incentive for landowners to install and maintain vegetation that benefits soils, waters, and wildlife. *Wildlife Management Institute*

ANOTHER CRIME VICTIM COMPENSATION BILL?

A new proposal for a crime victim compensation program has been sent to Congress by the Reagan Administration. This one is markedly different from the bill introduced by New Jersey Congressman Peter Rodino, which would siphon \$30 million annually from state wildlife restoration and hunter education programs. The new proposal has been introduced in the House as H.R. 5124 by New York Congressman Hamilton Fish and in the Senate as S. 2423 by Strom Thurmond of South Carolina.

The Reagan Administration proposal would create a victim's compensation fund, but the money would not come from the Federal Aid in Wildlife Restoration Program, commonly called the Pittman-Robertson Program, as it would under Rodino's H.R. 3498. Funds for the Pittman-Robertson Program come from a 10 percent manufacturers excise tax on firearms.

Nature's Notebook

by Joyce Harmon

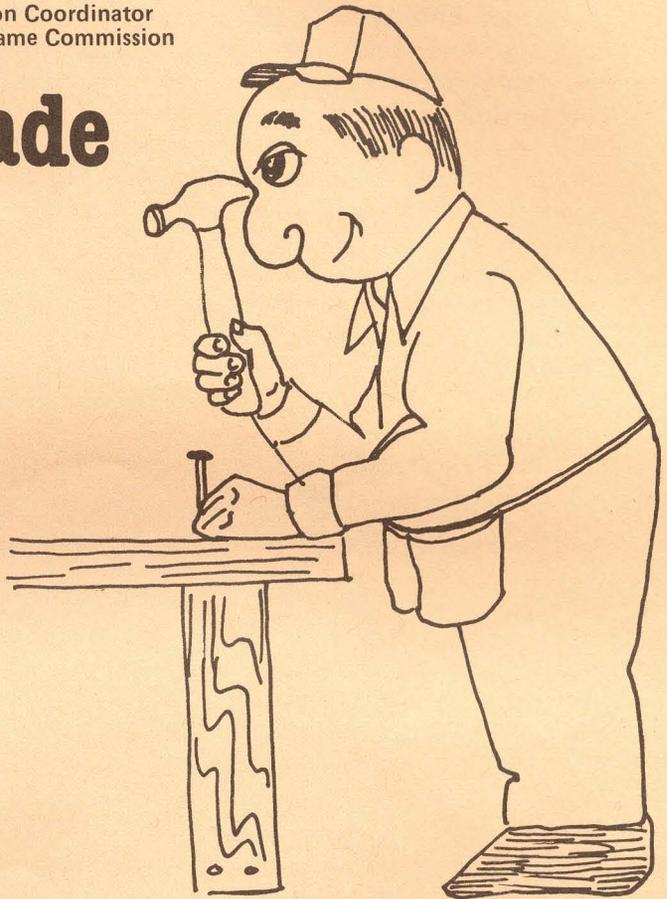
Wildlife Education Coordinator
Kansas Fish and Game Commission

Tools of the Trade

Carpenters use hammers, saws, and nails to help complete their projects. Teachers use books, films, and chalk to get ideas across to their students. Dentists use drills, special chairs, and x-rays to help their patients.

All professionals have unique tools that help them accomplish their tasks. Wildlife biologists also have tools that help them manage wildlife and the plants that make up wildlife habitat. Some of the tools, such as shovels, are very common. Other tools are in the form of work plans, which are used on wildlife management areas.

People who have careers in wildlife conservation may work in one of several areas. Jobs in the wildlife profession may deal with law enforcement, research, management, information and education, planning, or administration. Each of these areas is very important. They all work together toward the conservation goals.



The job descriptions below give an idea of some of the work involved in conservation and the tools required to do a good job. A close look shows that some special skills are needed to do the work involved in wildlife conservation.

Communication skills are essential for any kind of wildlife work. The ability to speak and write clearly is very important, as is an understanding and respect for wildlife. Wildlife professionals need to be able to inform the public about what should be done to effectively manage wildlife. Without public support, wildlife professionals can not achieve their management goals. Getting along with people is very important in any career.

Wildlife law enforcement officers are called game protectors in Kansas. Their job is to conserve wildlife through education and law enforcement. State laws and regulations dealing with hunting, fishing, and boating are enforced across the state by game protectors. These professionals get to know the people in their areas, and they are called upon to speak to students, sportsmen groups, and the general public. They also help with projects from other Fish and Game programs, such as collecting data for surveys, assisting with habitat restoration projects, and helping with the wildlife education program.

Law Enforcement officers try to prevent laws from being broken by helping people understand the reasons for laws and regulations. Laws are important to protect wildlife resources for everyone. They also help to assure that people enjoy outdoor activities safely.

Game protectors are required to attend the Law Enforcement Training Center in Hutchinson. They also receive training from an experienced game protector who teaches them the Fish and Game Commission's policies. Game protectors must attend periodic training sessions to keep their knowledge and skills up-to-date. Law enforcement personnel need to have knowledge of wildlife and the laws that pertain to natural resources. Law enforcement is an important part of wildlife conservation. Talk to your local game protector to find out more about the job.

Wildlife biologists are responsible for research and management activities. These scientists perform such a variety of tasks that it's impossible to list all of them. They conduct wildlife surveys so that changes in size or make-up of populations can be monitored. Another part of their job is to work with landowners to develop wildlife habitat on private land.

Habitat improvement projects are very important. Biologists may plant wildlife food and cover plots to improve habitat in an area. Game biologists sometimes use fire to clear an area, so that desirable plants grow.

Fisheries biologists use large nets to sample fish populations. Sampling gives them information used in management. They also stock certain species of fish in order to maintain balanced populations of predators and prey.

Biologists take samples, and conduct tests to gain information about the quality of water and soil. These tests can show the nutrients in the water and soil.

Not all of the biologist's work is done outside. Making plans for future projects and keeping reports up-to-date requires much of the biologist's time. Reports are important tools for keeping records about the condition of wildlife populations and wildlife habitat.



Biologists earn college degrees in fish or wildlife biology. They receive training in wildlife management techniques, ecology, research, and conservation. After they have gained experience, some biologists become supervisors who are responsible for the work of the biologists in their region of the state.

With such a variety of projects, it's easy to see how important and interesting the job of a wildlife biologist can be. Learn more about a career from the biologist who works in your area.

Some careers in wildlife conservation deal with information and education. These professionals work with television, radio, newspapers, school materials, and many other tools to teach people about wildlife. Wildlife information representatives may help to write and take pictures for the KANSAS WILDLIFE magazine. They also give public talks and answer questions about wildlife.

Planners for Kansas Fish and Game help to prepare for the future of wildlife management in the state. They work with biologists to assure that future generations will have plenty of wildlife to enjoy.



Administrators are people with a great deal of experience in wildlife biology, who coordinate and supervise the biologists, game protectors, and other field personnel.

The Kansas Fish and Game Commission also employs engineers, accountants, and computer operators. With such a variety of jobs to do, wildlife management is a very exciting field to work in. You can learn more about careers in wildlife management from your local Fish and Game personnel.

Answer the following questions after reading the paragraphs about wildlife careers.

1. List three skills that all wildlife professionals need.
2. Why do you think having public support is important?
3. If you were interested in a wildlife career, how would you prepare for it?
4. What is another name for law enforcement officer?
5. List some of the duties of game protectors and wildlife biologists.
6. Why are wildlife laws and regulations important?
7. Paper work may not be as much fun as being outside, but why is it important?
8. Why are some species of fish stocked?
9. What is a wildlife survey, and why are they done?
10. People who make a career out of wildlife conservation often work long hours and earn moderate salaries. Why do you think they like this kind of work so much? Remember that the feeling of a job well done can be a valuable reward.

HUNTING

BOWHUNTERS DID WELL

With arrows and skills finely honed, 13,694 archery deer hunters went afield during Kansas' 1983 season, yielding a harvest of 3,916 deer. The success of Kansas bowhunters is higher than in most states. In fact, Kansas' 28.6 percent success rate is near the highest of all states. Last year, 12,975 bowhunters harvested 3,441 deer for a success rate of 26.5 percent; and the number of big racks being taken in Kansas is definitely bragging material.

The average bowhunter spent just over 17 days in the field during the 1983 season, and a Kansas Fish and Game Commission report estimates the amount of recreation provided by the archery deer season to be 233,872 man-days. One interesting point brought out by the 1983 deer season report was that more than half of the Kansas archery deer hunters had hunted three years or less with a bow, and nearly one-fourth of them were first-year bowmen.

Hunters in northwest Kansas were most successful, with nearly half of the archers in that area taking a deer. The highest concentration of hunters was in southcentral Kansas, where Reno County had 480 archers during the course of the 81-day season. State owned and operated hunting areas make up less than one-half of one percent of the land in Kansas, but more than six percent of the 1983 archery deer harvest occurred on public lands.

Manes

MORE BIG GAME PERMITS

The Kansas Fish and Game Commission voted to adopt a 32 percent increase in the number of firearms deer permits available. The addition provides 7,472 more permits than in 1983, bringing the total number of firearms deer permits for 1984 to 30,632. About 55 percent of those will be for antlerless deer only.

Deer Specialist Keith Sexson ex-

plains, "Because deer in Kansas are subject to very little stress from weather and lack of food, they are able to bear many young. A whitetail doe fawn born in June is likely to breed in the following November and give birth the next spring. During the second fawning season a doe often will give birth to twins, and triplets are not uncommon. Kansas deer remain reproductive for several years. So, we are increasing the harvest of does in order to slow the growth of the deer population. It will benefit both hunters and landowners."

The total number of available firearms permits includes 1,810 "any deer, muzzleloader" permits; 6,110 "whitetail only" permits; and 22,712 "either species" permits. Experts from the Fish and Game Commission estimate that these permit allotments will result in a harvest of about 19,400 deer. More than half of the deer harvested will be antlerless.

While all areas of the state will be allotted more permits than in the past, units in northwest, northcentral, and southeast Kansas received the largest increases.

Fish and Game officials expect about a five percent increase in the number of Kansas archery deer hunters for 1984, which will bring the total to around 18,000 bowmen. "Archers are expected to harvest approximately 4,700 deer," Sexson says, "Usually about 40 percent of the deer harvested by bowhunters are antlerless."

The Fish and Game Commission set the 1984 archery deer season to run from October 1 through November 30 and from December 10 through December 31. The firearms season will run from December 1 through December 9.

The application period for firearms permits is July 1 through July 21. For archery permits, the application period is July 1 through September 30.

In setting the 1984 archery antelope season, the Commission added one week to the beginning of the hunt, making the season run from September 8 through September 23. One hundred and fifty permits will be issued to bowhunters, and a total of 420 firearms antelope permits will be granted, reflecting the addition of 30 permits to the drawing. For firearms hunters, there will be 200 "any antelope" permits and 220 "doe/fawn" permits. The firearms sea-

son will run from September 29 through October 1. The application period for archery and firearms antelope permits was June 1 through 23.

The 1984 fall archery turkey season was set to begin on October 1 and end October 31, with an unlimited number of permits in Unit 1, which extends across most of the southern one-third of Kansas. Sixty permits are allotted for Unit 2, which is in northwest Kansas.

The fall firearms turkey season will run from October 27 through November 4. The 1,000 available firearms permits are for Unit 1 only. The application period for fall turkey permits, both firearms and archery, is August 1 through August 20.

In order to make it easier for sportsmen to get their applications in on time, the Fish and Game Commission has adopted standardized application periods (listed below) for big game. Season dates will vary from year to year.

1984 KANSAS BIG GAME SEASONS AND APPLICATION PERIODS

Deer (firearms)
season: Dec. 1—Dec. 9, 1984
application period: July 1—July 21

Deer (archery)
season: Oct. 1—Nov. 30 and Dec. 10—31, 1984
application period: July 1—Sept. 30

Antelope (firearms)
season: Sept. 29—Oct. 1, 1984
application period: June 1—June 23

Antelope (archery)
season: Sept. 8—Sept. 23, 1984
application period: June 1—June 23

Fall Turkey (firearms)
season: Oct. 27—Nov. 4, 1984
application period: Aug. 1—Aug. 20

Fall Turkey (archery)
season: Oct. 1—Oct. 31, 1984
application period: Aug. 1—Aug. 20

Manes

FISHING

A PLACE IN HISTORY

Many of the most important aspects of American history have come out of the District of Columbia—landmark legislation, declarations of war, and Watergate, to name a few. Something else, which may be of equal importance to some people, also comes from the District of Columbia—the world all-tackle carp record. The old record of 55 pounds, 5 ounces had been untouched for more than 30 years, until David Nikolow topped the mark with a carp that weighed 57 pounds, 13 ounces. He took the fish from the famous Potomac River—another piece of American history.

Manes

LINING UP

There are few experiences so unnerving as when you whip a hard cast toward the spot where a big fish just swirled, and half of the line comes off your reel in a tangled blob. You stare in disbelief at the mess. It looks much like the doilies your grandma used to make.

The next step is to select an untangling method. You can spend a great deal of time carefully tugging at each of the countless loops that form the mass, or you can rid yourself of the problem with a quick slice of a pocket knife, but you would lose important yards of line.

The cause of this unpleasant phenomenon is usually an improper technique for transferring line from the bulk spool to the reel. One effective method for putting line on an open-face reel is to lay the bulk spool flat in a shallow pan of water, thread the line through the rod guides, and attach it to the reel spool with a good clinch knot. Then turn the reel handle a few times. If you see the line beginning to twist, simply flip the bulk spool over in the water. This allows the line to come off the spool in the opposite direction from which it was put on at the factory, while the water prevents the spool from free-wheeling and causing tangles.

It is a good idea to hold the line between the thumb and forefinger of your free hand, applying moderate tension as the line is wound onto the reel spool. Line which is wound too loosely

will come off in tangled loops when you try to cast.

Another common mistake is putting too little or too much line on a reel. Too much will cause loops to be thrown off during a cast, and too little will create friction between the line and the reel spool lip, causing the line to be weakened. It is usually best to fill the spool to within a quarter or an eighth of an inch from the edge of the spool lip.

To fill a bait-casting reel, place a pencil through the hole in the bulk spool and have someone hold the pencil so that it acts as an axle, allowing the line to come straight off over the top of the spool, as it is wound onto the reel. The person holding the pencil should apply light resistance to the spool so that it does not spin freely and some tension is kept in the line. This method will allow the line to be transferred without twists or loops.

No amount of care in loading a reel with new line will prevent the problems caused by using the wrong combination of rod, line, reel, and lure. For best fishing success, all components of your fishing rig must match in weight and action.

Manes

STOCKING REPORT

During 1983, the Fisheries Division of the Kansas Fish and Game Commission released about 40 million sport fish into public fishing waters of the state. That total consisted of almost 300,000 catfish, more than 100,000 black bass, 37 million walleye, over 175,000 striped bass, more than 1 million wipers (striped bass-white bass hybrids), nearly 150,000 bluegill and other sunfish, and many thousand other forage and miscellaneous fish.

Manes

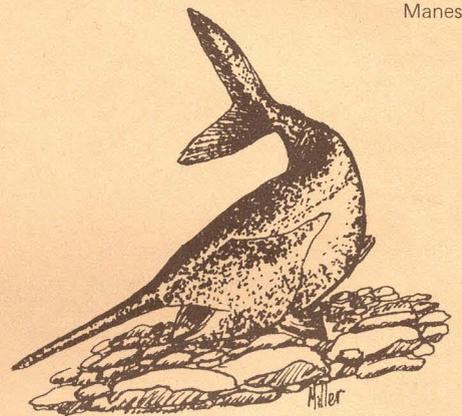
THE ONE-HUNDRED-POUNDER

Imagine, if you can, trying to land 100 pounds of powerful, thrashing fish, while standing on a river bank lined shoulder-to-shoulder with other anglers—all on 40-pound line. Dean Owens of Peabody, Kansas did just that, and it

earned him the Oklahoma state paddlefish record at an even 100 pounds.

Owens was fishing on the Neosho River in Miami, Oklahoma's Riverview Park. Dozens of other anglers were also there to take advantage of the spring paddlefish spawning run. Like the other fishermen, Owens was outfitted with extremely heavy tackle used to snag the huge plankton-eating spoonbills. The fish he hooked was one-half inch short of six feet in length, and it broke the old state record by 17 pounds.

Manes



500,000 FISH LOST IN 1983

Nearly half a million fish were lost from Kansas waters during 1983 as a result of chemical spills, feedlot runoff, water depletion, and other factors, including natural causes. Estimates from the Kansas Fish and Game Commission put the value of the dead fish at about \$160,000, a figure which experts say is conservative. The fish kills involved 67 different streams, ponds, and lakes, with the majority of the 1983 losses occurring as a result of water depletion in western Kansas streams.

When a fish kill occurs, it is usually first investigated by a district fisheries biologist from the Kansas Fish and Game Commission. It then becomes the responsibility of the Kansas Department of Health and Environment to determine who is at fault. Follow-up probes may involve cooperation between the Kansas Department of Health and Environment and the Fish and Game Commission. The objective of the investigation is to determine the cause of the kill, prevent further losses, and seek restitution when appropriate.

Manes

NATURE

A. I. FOR EAGLES

Bald eagle production through artificial insemination (AI) is being looked upon as an important means of shoring up the problem-beset captive breeding effort. The primary bald eagle captive breeding program is at the U.S. Fish and Wildlife Service's Patuxent Wildlife Research Laboratory in Maryland. There, a number of unreleasable eagles have mated and have been breeding eagles for release. The mating process has proven to be unpredictable. A variety of problems sharply reduced Patuxent productivity in 1983. Captive breeding efforts have been successful at a number of zoos, but the production has been small and sporadic. Other attempts to breed bald eagles have been frustrated by the failure of unreleasable birds to mate and the fact that wingless males cannot be used.

As a result, release programs have been relying on chicks taken from nests where eagles are plentiful, in Alaska, Canada, and, in future years, Florida.

In spite of the success of release programs, continued captive breeding is necessary to ensure against the disastrous effects of severe weather, epidemic, or environmental catastrophe striking at the major eagle roost and breeding areas.

With the proven success of AI, breeding programs will no longer be limited by the need for compatible pairs. In addition, wing-damaged males can now be used. Dr. James Carpenter, director of the Patuxent captive breeding program, plans to begin AI this year. *Eagle Rare Bourbon Straight Notes*

FACTS OF LIFE

The cottontail rabbit is a perfect example of the natural principle which says prey species must reproduce abundantly. Cottontails are food for just about every meateating species in North America. To compensate for such heavy

predation, the female, or doe, may bear as many as six litters a year, with up to five young in each litter. The young rabbits are born blind and naked. Jack rabbits and other hares are furred at birth.

The doe digs a shallow depression in the ground and lines it with grass and fur. The young mature quickly and are on their own at two weeks. Female cottontails are capable of producing a litter before they are one year old.

These impressive reproductive capabilities allow cottontails and other prey species to provide food for many different predators, maintaining the balance of nature.

Manes

ALOHA PINTAILS

Pintail ducks are great travelers, some migrating across the open Pacific to Hawaii. In 1942, a flock of pintails turned up on Palmyra Island, more than a thousand miles south of Hawaii. One bird had been banded 82 days earlier in Utah. *U.S.F.W.S.*

RUFFED GROUSE LOCATED

Wildlife biologists for the Kansas Fish and Game Commission have located four of the 60 ruffed grouse released last fall in northeast Kansas. To some people, locating only four of the grouse may seem insignificant, but biologists Roger Wells and Randy Rodgers view the finding as cause for optimism. In fact, they were pleased with finding even four birds, as it is difficult to locate them when they are so sparsely distributed as they are in a new flock.

In locating the birds, Wells and Rodgers relied on the drumming noise made by male ruffed grouse. Drumming is a mating season ritual in which males perch upon large, fallen logs and beat their wings against their bodies. When drumming activity was low, the biologists used a box to beat on, simulating the grouse's drumming sound and causing the males to resume drumming activity.

Ruffed grouse require heavy un-

dergrowth in oak-hickory forests for their survival. These conditions existed in much of northeast Kansas until the late 1800s, when heavy grazing, brought on by the establishment of many small farms with dairy herds, destroyed much of the undergrowth vegetation, such as dogwood, hazelnut, and various berry-producing plants. Unregulated harvest may also have contributed to the decline of ruffed grouse in the state.

Changes in land-use practices have allowed re-establishment of ruffed grouse habitat in northeast Kansas; and the Kansas City Chapter of the Safari Club International provided funds to reintroduce the birds to their former range in that portion of the state. The grouse were trapped in Wisconsin and released in Kansas where prime habitat is available. The success of this first reintroduction effort makes the future appear promising for ruffed grouse in Kansas.

Manes

BAD STUFF

A single drop of Australian tiger snake venom contains enough poison to kill 25 people. Fortunately, this medium-sized snake normally uses its toxin only to kill small frogs. *National Wildlife Federation*

FLYING EYES

The great horned owl, though it weighs only three pounds, has eye balls as large as a human's, and can sight objects with only about five percent of the illumination required by human eyes. *National Wildlife Federation*

WISDOM

"God never did make a more calm, quiet, innocent recreation than angling . . ."

—Izaak Walton

WILD DESIGNS

CRAIN'S GIFT: A MEMORIAL

"A God-given gift," that is what Tom Crain's wife calls his ability to capture nature's beauty on canvas-and so it is. Crain, who operates a studio and shop just north of Springfield, Missouri, has won or placed near the top in several shows, including some state duck stamp competitions; and his paintings have appeared on the covers of Cabela's outdoor product catalogs for three years in a row. He has gained wide ac-

claim for the flawless detail that characterizes his paintings.

Recently, Crain donated one of his finest works to the Kansas Fish and Game Commission's "Wildtrust" program. The painting, titled "Walking Through Blades of Gold," portrays wild turkeys in their natural habitat. The generous donation was made in cooperation with the family of Clement W. Gillespie, a Fish and Game employee who supervised Kansas' first wild turkey reintroduction projects.

Gillespie started to work for the agency in 1946 and worked as a law en-

forcement supervisor in southcentral Kansas until a stroke forced his retirement in 1972. Clem Gillespie died in January of 1983.

Prints of Crain's memorial painting will be given to persons who donate \$100 or more to the Wildtrust program. The money will be used in important wildlife management projects across the state, or donors may specify a particular program to receive their contributions. For more information, contact Wildtrust coordinator, Kansas Fish and Game Commission, Rt. 2, Box 54A, Pratt, KS 67124, (316) 672-5911.

Manes

SPECIAL NOTES

KANSAS WILDLIFE ABROAD

There are KANSAS WILDLIFE subscribers in every state in the U.S., except Hawaii. People in Canada, Japan, England, Australia, France, and many other foreign countries also learn about the state's wild resources by reading KANSAS WILDLIFE.

Manes

WILD SHIRTS

Buying a t-shirt can benefit the wildlife of Kansas. The Kansas Fish and Game Commission is using money collected from sale of the shirts to purchase wildlife education materials for the agency's free-loan library. Professionals in the field know education is the key to effective wildlife management. Films, books, and other materials in the Wildlife Reference Center, located in Pratt, are used in Kansas schools and in many other places to teach children about wildlife.

Each cotton-polyester shirt bears a striking color illustration of a prairie chicken set against a stylistic Kansas sunset. The phrase "It's Wild in Kansas," stands out on the tan shirt, typify-

ing Kansas' rich wildlife resources.

The shirts are available in children's sizes extra small, small, medium, and large for \$5.50; and in adult sizes small, medium, and large for \$6.50. A one-dollar fee for postage and handling is required for each t-shirt ordered. "It's Wild in Kansas" t-shirts are available from the Kansas Fish and Game Commission at Route 2, Box 54A, Pratt, Kansas 67124, and at the agency's six regional offices. Checks should be made payable to "Wildtrust."

Manes

It's WILD in Kansas!



CONSERVATION AWARDS

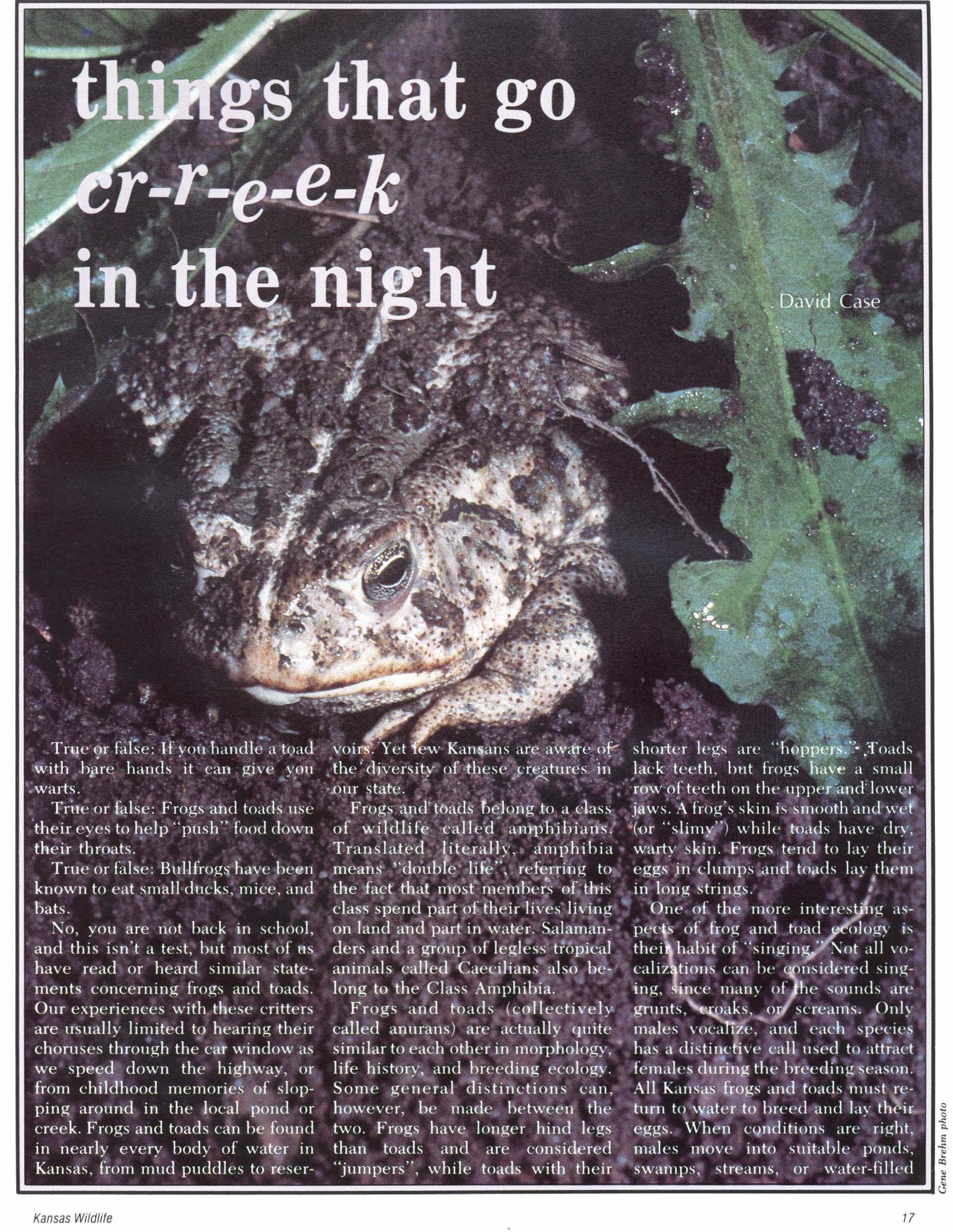
The Kansas Wildlife Federation is seeking nominations of groups or individuals for the 1984 Conservation Awards Program. Nominees must be Kansas residents, either laymen or professionals, who have done outstanding work in the conservation of Kansas' natural resources. Eleven award categories include recognition for work in conservation education; forest, water, air, and wildlife conservation; legislative efforts; and other conservation-related work. For more information, contact Gerald Prosser, 220 Polk, Great Bend, KS 67530, (316) 792-2060. The nomination deadline is August 15, 1984.

Manes

HELP WANTED

The Kansas Fish and Game Commission is in the process of expanding and improving displays in the agency's Exhibit Hall, located in Pratt. Anyone who has mounts, skins, skulls, or any other wildlife collections they wish to donate is encouraged to contact the museum curator, Kansas Fish and Game Commission, Rt. 2, Box 54A, Pratt, KS 67124, (316) 672-5911.

Manes



things that go *cr-r-e-e-k* in the night

David Case

True or false: If you handle a toad with bare hands it can give you warts.

True or false: Frogs and toads use their eyes to help “push” food down their throats.

True or false: Bullfrogs have been known to eat small ducks, mice, and bats.

No, you are not back in school, and this isn’t a test, but most of us have read or heard similar statements concerning frogs and toads. Our experiences with these critters are usually limited to hearing their choruses through the car window as we speed down the highway, or from childhood memories of slopping around in the local pond or creek. Frogs and toads can be found in nearly every body of water in Kansas, from mud puddles to reser-

voirs. Yet few Kansans are aware of the diversity of these creatures in our state.

Frogs and toads belong to a class of wildlife called amphibians. Translated literally, amphibia means “double life”, referring to the fact that most members of this class spend part of their lives living on land and part in water. Salamanders and a group of legless tropical animals called Caecilians also belong to the Class Amphibia.

Frogs and toads (collectively called anurans) are actually quite similar to each other in morphology, life history, and breeding ecology. Some general distinctions can, however, be made between the two. Frogs have longer hind legs than toads and are considered “jumpers”, while toads with their

shorter legs are “hoppers.” Toads lack teeth, but frogs have a small row of teeth on the upper and lower jaws. A frog’s skin is smooth and wet (or “slimy”) while toads have dry, warty skin. Frogs tend to lay their eggs in clumps and toads lay them in long strings.

One of the more interesting aspects of frog and toad ecology is their habit of “singing.” Not all vocalizations can be considered singing, since many of the sounds are grunts, croaks, or screams. Only males vocalize, and each species has a distinctive call used to attract females during the breeding season. All Kansas frogs and toads must return to water to breed and lay their eggs. When conditions are right, males move into suitable ponds, swamps, streams, or water-filled

depressions and vocalize to attract females to the area.

Frogs and toads also make sounds to claim their territory, when they are seized by an enemy, or as warning chirps. Roger Conant, in his *Field Guide to Reptiles and Amphibians of Eastern and Central North America*, described these warning chirps as "release calls of males that reveal their sex when, during the excitement of mating time, one male may inadvertently grasp another."

Male frogs and toads make their vocalizations by rapidly forcing air back and forth over the vocal cords. Air is pushed from the lungs to the mouth cavity and back. Since this is done with the mouth and nostrils closed, they can vocalize under water. The sounds are amplified by the use of what is called a vocal sac. In some species, like the gray treefrog or Woodhouse's toad, the sac is under the chin and expands when the male calls. In other species, the sac may be located internally or as paired external sacs over the shoulders.

Breeding periods vary from as early as February for the small spring peeper to July for the bullfrog. Many of the Kansas frogs and toads that occur in the more arid regions are opportunistic breeders and mate whenever enough rain falls to create suitable habitat. Even for species that have a set breeding season, activity will, to a large degree, be governed by temperature, rainfall, and humidity.

All Kansas frogs and toads practice external fertilization. The male (usually smaller in size) mounts the female and grasps her around the mid-section in an embrace herpetologists refer to as amplexus. As the female deposits the eggs the male will fertilize them with milt. The male maintains a tenacious hold on the female until all of the eggs are deposited. While collecting toads for a research project in northern Wisconsin, I used to pick up embraced "couples" and put them in a burlap bag. Even after spending the

night being hauled around the marsh, the males would have to be picked off the females the next morning.

Some frogs lay their eggs singularly or in small clumps and attach them to underwater objects, while others deposit large masses of eggs that float on the water. Toads deposit their eggs in a string; a single female may lay over 25,000 eggs. J. T. Collins, Vertebrate Zoologist for the Museum of Natural History at the University of Kansas, says the length of time before the eggs hatch into tadpoles or polywogs is closely linked to weather conditions. If the water temperature is over 70 degrees Fahrenheit, the eggs may hatch in less than 10 days. Bad weather in the form of extreme cold can result in high egg mortality. In the tadpole (or larval) stage, the different frog and toad species are difficult to distinguish from each other.

The transformation of the tadpole to an adult frog or toad is called

metamorphosis. This process is adults have limbs but no tail. Probably the most striking difference in the two stages is in the way each obtains oxygen. Tadpoles have gills, covered by a flap of skin, somewhat like fish. Adults, on the other hand, get air through lungs, like a mammal, or by absorption through the skin. The tadpole stage may be as brief as two weeks or last as long as two years.

Considering their small size and soft bodies, it's not surprising that frogs and toads have a variety of enemies—fish, turtles, hawks, crows, snakes, skunks, and raccoons to name a few. Toads secrete a toxic or bad-tasting substance from poison glands (warts) when they are grabbed by a predator. As a result, predators are not too fond of eating toads. It is believed that toad eggs and tadpoles are also toxic. Frog secretions are generally not as strong as the toads', but the pickerel frog produces secretions that are toxic to other amphibians and to reptiles.



J. T. Collins photo

The Woodhouse's is the most common of Kansas toads. It can attain a length of over four inches and may consume two-thirds of its body weight in insects each day!

metamorphosis. This process is amazing when one considers the radical differences in the tadpole and adult animals. Tadpoles, for instance, are plant eaters and have a small round mouth with file-like teeth they use to scrape algae off rocks and vegetation. The adults have moveable jaws and feed almost exclusively on insects. Tadpoles have a tail and lack limbs, while

These substances are not considered harmful to humans, but care should be taken not to get the toxins in your eyes, as they can cause pain and burning. After handling these critters be sure to wash your hands carefully.

Anurans are cold-blooded animals whose body temperature cannot be internally adjusted. Hence, frogs and toads cannot tolerate cold tem-

peratures and become inactive during the winter, burying themselves under the forest leaf litter or in the mud at the bottom of a pond.

Of the 2,770 frogs and toads in the world, 20 are known to occur within Kansas. These 20 species and subspecies fall into five families.

When most of us think of a toad,

The American toad is similar in appearance to the Woodhouse's toad but is restricted to the eastern one-quarter of the state. The two species have been known to interbreed where they are forced, by lack of water, to mate in the same ponds or marshes. The American toad, also a voracious insect-eater, tends to be more closely associated with woodlands than does the Woodhouse's. The voice of the American toad is a high, melodic trill lasting up to 30 seconds.

into the ground. The Kansas representative is the plains spadefoot. Although it is found throughout most of the state (except the southeast quarter) it seems most abundant in the western half. Don't expect to see these toads hopping around during the daytime because they usually will be underground, venturing from their burrows only at night to feed.

The narrowmouth toad family (Microhylidae) is represented by two species in Kansas. A pointed snout and a fold of skin over the back of the head are identifying features. These small toads are odd-looking, flat-bodied creatures that feed almost exclusively on ants. They spend most of their time hidden under rocks or other debris where they ambush their prey. The eastern narrowmouth, which is a distinctive reddish color, is found in the extreme southeast portion of Kansas. The tan or olive-colored plains narrowmouth is found throughout the eastern two-thirds of the state and on occasion in the western high plains.

The treefrog family (Hylidae) has seven members in Kansas. All are quite diverse in appearance, size, and habitat preference. Among them are the chorus frogs, three of which are found in Kansas. These frogs have short limbs and spend most of their time close to the ground in low-lying vegetation and not in trees, despite belonging to the treefrog family. The inch-long chorus frogs are the first anurans to begin breeding in the spring. As their name suggests, chorus frogs tend to congregate in large groups during the breeding season. During most other times of the year they are quite secretive, and information on their ecology is limited. For those Kansans out and about on warm mid-March evenings, chorus frog serenades are a welcome harbinger of spring.

The Strecker's chorus frog is usually the first frog or toad to begin spring breeding activities. But most Kansans aren't able to take in this



J. T. Collins photo

The plains narrowmouth toad is widespread in Kansas. It spends much of its time hiding under rocks, where it ambushes its favorite prey: ants.

we envision a member of the "true" toad family (Bufonidae). This family is characterized by thick, dry skin that is covered by glandular warts. The five true toads found in Kansas are terrestrial and rarely go near water, except in the spring of the year to breed. Their diet consists of insects such as crickets, beetles, grasshoppers, and ants.

The largest and most widespread toad in Kansas is the Woodhouse's toad. Specimens of this plump toad often measure over four and a half inches long. Like most toads, the Woodhouse's hides in the daytime and feeds on insects during evening hours. Herpetologists estimate this toad may gobble up two-thirds of its own weight in insects each day. Obviously, this critter benefits farmers and gardeners. The voice of the Woodhouse's toad is a harsh trill—almost a scream.

Similar in appearance to the American and Woodhouse's toads, the Great Plains toad is an inhabitant of upland mixed-grass and short-grass prairies, primarily in the western three-quarters of the state. Singing males can be easily identified by their elongated vocal sac.

The western green and red-spotted toads are small members of this family and have extremely limited ranges in Kansas. The western green has been found in only a few locations in the western part of the state. The red-spotted toad inhabits rocky areas in the southern high plains and red hills regions of Kansas.

The spadefoot toad family (Pelobatidae) is so named because of the hard "spade" on the hind foot that is used for digging. Members of this family inhabit areas of loose-textured soil where they can dig easily

opening act, since the range of the Strecker's chorus frog is limited. The only place in Kansas this species has been found is in Harper County in the southcentral part of the state. In Oklahoma, where the Strecker's is more common, breeding males have been heard singing as early as January.

The western chorus frog is the most widespread chorus frog and is found throughout the eastern two-thirds of Kansas. The regularly repeated "creeek" or "preep" of the western chorus frog can be heard coming from ditches, ponds, and streams of urban as well as rural areas of Kansas. Some say this familiar song can be imitated by running a finger over the teeth of a comb. Similar to the western chorus frog in appearance, but with spots instead of stripes, the spotted chorus frog is found mainly in the southcentral region of the state where it inhabits open prairie grasslands and woodland edges.

Blanchard's cricket frog is found along the muddy edges of small, shallow streams and ponds throughout most of the state. Unlike

other members of the treefrog family, Blanchard's frog may be active in the daytime during the warm summer months. This small frog also is unique in that it has warts.

The northern spring peeper, common in states to the east of Kansas, is found only in a few locations on the extreme eastern border of the state. This species is closely associated with woodland areas near small ponds or swamps.

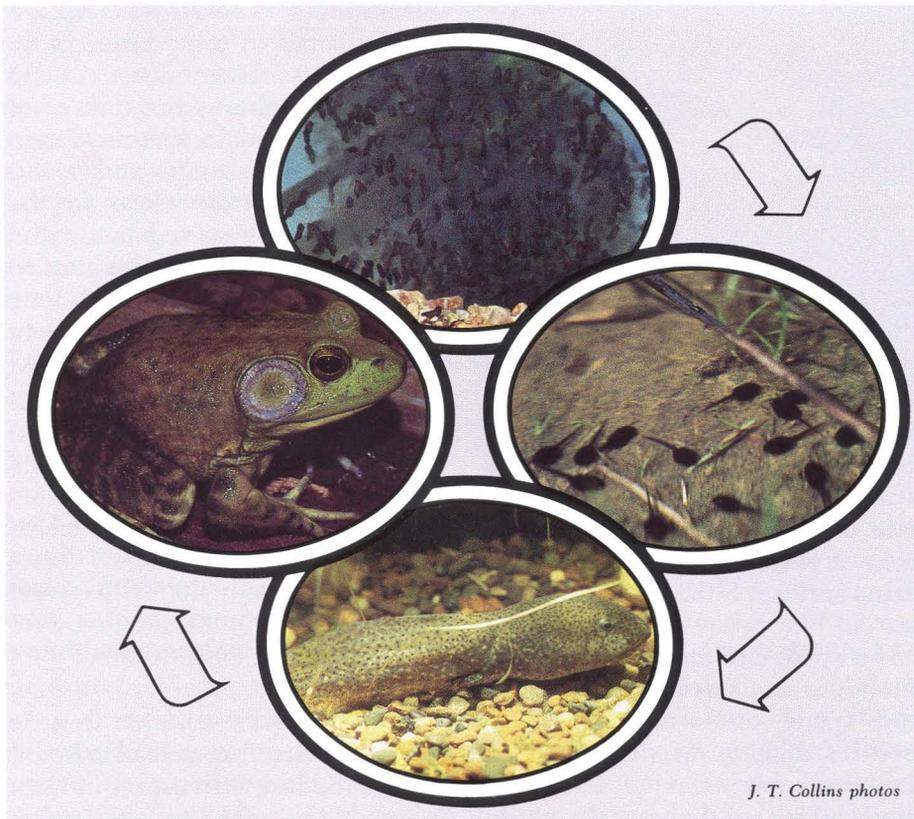
True to its name, the gray treefrog spends most of its time in trees or shrubs. Enlarged pads or "suction cups" on its toes makes it well adapted for clinging to tree limbs and the smooth surface of leaves. This inch-and-a-half-long frog is found in woodlands and woodland edges in Kansas east of the Flint Hills. The gray treefrog is the only amphibian in Kansas that can actually change the color of its skin to match its background. The colors range from bright green to tan or light gray. Trying to locate one of the singing males, even when you are close to it, will make you a believer in this amphibian's camouflage!

Members of the true frog family (Ranidae) are what most of us picture when we think of a frog. True frogs are large and characterized by smooth skin, webbed feet, and long legs. They feed actively in the daytime, but confine breeding activities to the hours of darkness. This is no doubt an adaptation to avoid predators at a time when the breeding frogs may be less than alert for danger.

The plains leopard frog is the most common of the true frogs in Kansas. This frog inhabits all types of water areas, from roadside ditches to large reservoirs. Plains leopard frogs are frequently found at considerable distances from water. J. T. Collins, in his book *Reptiles and Amphibians in Kansas*, described how, after warm summer rains "adults and young engage in a mass exodus from breeding sites, traveling great distances in every direction."

In contrast to the plains leopard frog, the secretive northern crayfish frog is anything but common. The crayfish frog occurs in the southeastern corner of the state and is the only frog or toad formally listed on the Kansas Threatened Wildlife List. This means that the continued existence of this species in Kansas is in jeopardy. Like most threatened or endangered wildlife, the northern crayfish frog is in trouble because of changes in its habitat. These animals depend on crayfish burrows and other underground cavities near moist lowland meadows, pastures, or floodplains. Changing agricultural practices and water table fluctuations caused by the construction of dams, dikes, and levees have impacted these areas.

Similar in appearance to the plains leopard frog, the southern



J. T. Collins photos

Clockwise, a bullfrog originates from an egg (this clutch is nearly ready to hatch). The young tadpoles are tiny limbless creatures that feed on plant life. Their gills will soon be replaced by lungs, tails lost and legs acquired during the metamorphosis into an adult frog.

J. T. Collins photo



The plains leopard frog is very common in Kansas and, though usually found near water, may also be encountered in dry habitat.

The gray treefrog is the only Kansas amphibian that can change its color at will. "Suction cups" on its toes enable it to climb with alacrity.



J. T. Collins photo

leopard frog is limited to the southeast portion of Kansas. In areas where both the plains and southern leopard frogs occur in close proximity to each other, they have been known to hybridize.

The green and pickerel frogs have limited ranges in Kansas. The green frog is found only along the southern border of Kansas and Missouri, while the pickerel frog inhabits the extreme southeast corner of the state. Both species are more common in adjacent Missouri and Oklahoma.

Mark Twain readers probably remember the bullfrog as the celebrated character in Twain's story "The Notorious Jumping Frog of Calaveras County." The bullfrog is the largest frog in Kansas and reaches lengths over seven inches. This species inhabits permanent water sources such as ponds, lakes, or streams. You are not likely to see bullfrogs in small ditches or in open fields as you might the plains leopard frog. Although the bullfrog is found throughout the state, it seems to be more common in the eastern half.

Bullfrogs breed later in the year than most of the other frogs and toads in Kansas. Their familiar "jug-o-rum" chorus is heard from late April through July, depending on weather conditions. Male bullfrogs are territorial during the breeding

season and will kick or bite other bullfrogs that venture into their territory. Female bullfrogs lay up to 40,000 eggs in a mass that covers a couple square feet of the water surface. Bullfrog tadpoles spend three to 14 months in the water before changing into adults.

When it comes to fine eating, frog legs can't be beat. The frog legs served in North American restaurants come from bullfrogs. They are the only frog or toad listed as a game species in Kansas. In order to hunt bullfrogs in Kansas you must have a valid fishing license and can legally take the creatures only by dip net, hook and line, or with your hands. The season extends from July 1 through October 31. Eight frogs can be taken each day.

Frogs and toads are an integral part of the Kansas environment. They are predators that feed on in-

sects and in turn are eaten by a wide variety of larger animals. These amphibians also provide Kansans with enjoyment in the form of nature study, food, and aesthetic pleasure. Whether you are an armchair naturalist or a rugged backwoodsman, "frogwatching" can be an interesting hobby. With the help of a field guide and a little practice you can learn to identify many of the anuran vocalizations without leaving your car or front porch. And prowling around marshes and ponds at night can turn up an amazing variety of frogs and toads.

Oh, by the way— False, True, True. Toads *cannot* give you warts. Frogs and toads *do* use their eyes to help them swallow food. And bullfrogs *are* aggressive predators that have been known to eat small ducks, mice, bats, and snakes.

Now you know.

the littlest

HAWK

A graceful flier and efficient predator, the kestrel is one of Kansas' most striking raptors.

Rob Manes

The unborn male American kestrel lies curled in his small, cream-colored egg. Light penetrates the translucent shell and inner membrane, and the soft, yellow illumination is broken only by the silhouettes of tiny dark dots concentrated at one end of the inch-and-a-quarter-long egg.

Three other eggs occupy the nest—though it is not really a nest by most standards. No grass or feathers pad the dark cavity in the dead elm tree. Only a few chips of dry-rotted wood prevent the eggs from rolling about freely. A three-inch opening just above the nest floor allows entrance.

Suddenly the nest cavity grows darker. A familiar call, “killy, killy”, identifies the intruder as the adult female kestrel. She’s been gone for almost half an hour, hunting the rolling grasslands. She sits momentarily in the nest entrance and then begins to fuss over her clutch, systematically rolling the eggs.

The soon-to-be-born male becomes increasingly restless in the cramped quarters of his rigid womb. He begins to struggle—kicking, pecking, and pushing on the shell. After several hours, a small fissure forms near the center of the capsule, and the struggle halts briefly while the chick rests inside. He’s been a captive for about a month, and his fight for freedom could last for some time yet. Special muscles in his neck will eventually allow him to break free.

In a final flurry of jerks and struggles the awkward chick kicks the wide end of the shell loose. It rolls to one side of the cluttered nest floor. Out of control, he spastically rocks backward on the other half of the shell. After a few futile kicks in the air, he places his short, curved beak on the floor and, pushing with his outstretched neck, rights himself.

Finally he shakes free of the remaining shell. His wet body is not comely, as it is only sparsely covered with thin, white down on the crown, wings, back, and rump; and

Gene Brehm photo

pink skin shows through nearly everywhere.

During the next five days the other eggs hatch, and three females join the first-born male. A constant chorus of high-pitched cries reminds the adults of a perpetual appetite that characterizes all young birds. For the first few days of their lives the chicks open their wrinkled, pink eyelids only for short moments when a grasshopper or part of a mouse is presented at feeding time.

Two weeks after hatching, the down-covered male kestrel is able to walk around in the dark nest hollow, and his female siblings begin to stumble about as well.

At one month, the male is easily distinguished from the females, both in markings and behavior. The male seems more subdued and is less likely to jump to the center of the nest to receive food. His color patterns begin to reflect those of an adult male, with blue-gray shoulders and wings showing through his down. Even at this young age, his back and upper tail show hints of the deep rust-red that will characterize him in adulthood. When he's mature, his head will be capped with a small circle of the same rusty color as his back. Around the cap will be a ring of soft blue-gray. Fingers of black will extend down the sides of his head and over his eyes, forming a distinct dark mask against his white face. On his tail a white tip will be set off by a broad, black band.

As the weather warms up, the young kestrels spend countless hours sitting at the nest opening, cautiously lifting their wings and extending them above their backs. The adults no longer tear meat loose for the brood. Instead they leave insects, lizards, small snakes, and mice for the youngsters to tear apart with their own sharp talons and beaks.

Then, one summer day, the young male poises himself at the nest entrance. Every feather on his body plays the sun's rays, scattering tiny flecks of bright color. He stretches his wings out above his back and lets them drop slowly back in place. Then he leans forward, pushing his head outward and down, and he nearly topples. His yellow-orange feet react to the near fall by driving his sharp talons into the soft, rotten wood of the nest tree. He leans forward again, and, as though he is certain, he lets go and springs into his first attempt at flight.

Fluttering and gliding toward the ground, he fights to remain airborne and gains some control over his course. His landing is clumsy. He cranes his neck to view the strange surroundings. Looking back, he sees the old tree trunk through the prairie vegetation. Its dark form is almost devoid of bark and branches. He sees green trees in the distance; a view from the ground provides new perspective.

His composure regained, he

makes a second take-off attempt. This time the rapid beating of his wings places him in the branches of a plum bush only a few yards away. He rests there, three feet above the ground.

After about 20 minutes of turning his head, blinking his eyes, and straightening his plumage, he leaps from the plum branch into a flight which drops him within inches of the grass tops and then brings him up into a nearby elm tree. There he sits for more than an hour, twitching his tail in the warm, gentle breeze, preening his feathers, blinking his eyes, and turning his head from side to side.

For the next several days he remains in the area near the nest tree, developing his piloting skills and receiving food from his parents. He discovers that he can see the grasshoppers from high in the air, and he

Preparing for take-off. A true falcon, the kestrel sports pointed wings and a tail that narrows at the tip. Its flight is choppy, yet powerful.



Gene Brehm photo

makes his first predatory attempts, but success is some time in coming.

After several tries, he catches and eats a grasshopper. Leaping from his perch into a blurring dive, he drops his open talons and drives one of the sharp spikes through the hopper's soft abdomen. Closing his foot on the skewered prey, he flies to a nearby roost to eat. Even with the refined hunting skills of an adult, only one in every eight or ten such hunts will be successful.

His feathers are painted with the colors of adult plumage now, and a pattern of black checks has formed on his white breast and belly. Distinct black horizontal bars lend texture to the brick red of his back and tail base. His cap now matches his back and tail perfectly, and dark, round marks have formed in the center of tawny patches near the rear of each side of his head.

Soon he moves to other hunting grounds in an open pasture near a wooded stream. One bank of the stream is a high limestone bluff, which plunges directly into the clear water. It is along this meandering creek that he learns to take other food, such as frogs and salamanders.

He spends nearly every waking hour hunting, his discerning eyes scanning the ground below. He usually hunts from tree branches or other high perches that line the open grasslands. Swaying in the late summer breeze, he sees every movement below.

Some hunts are aerial endeavors. By adjusting the angle of his tail and beating wings, he can remain aloft over one spot until movement signals food. His passing shadow sends small animals scurrying for cover.

It was during one of these flights that he discovered a new source of prey—other birds. It was a tree sparrow that made the potentially fatal mistake, fluttering from the ground to the branches of a large sunflower. The hovering kestrel folded his wings and fell upon the hapless sparrow, but his target evaded him with a surprising burst of speed.



Gene Brehm photo

As the days grow shorter in late September, the young falcon shows signs of change. His once-brilliant attire is now faded and tattered. The immaculate condition of his plumage has deteriorated. He is beginning to molt. Gradually his former plumage is replaced by a less attractive one; but the new feathers are tight and untattered. His back turns a soft cinnamon color, his wings a powdery gray, and the ornate black bars and checks that once marked him so vividly fade almost to indistinction. He is dressed for winter.

As cold weather approaches, he moves to new hunting grounds—this time near a farmstead, where power lines make a convenient vantage point from which to spot mice crossing a dirt road. This traffic-way becomes a fatal crossing for many small animals. The onset of winter means grasshoppers, the kestrel's favored food, are not to be found, so he sharpens his skills at taking other winged creatures. Sparrows and siskins that inhabit the weeds in the road ditch are often main courses in his meals.

His first successful bird hunt came one windy day while he roosted in the shelter of the tree belt around the barn and the farm house. Snow covered the ground, aiding his already keen vision. A nuthatch, hanging upside down in the low branches of the shelterbelt, captured his attention. The small bird clamored about, swinging beneath the branches with acrobatic ease in search of food. The kestrel watched, his breast gently rising and falling as he waited. He turned his head slowly as the nuthatch hopped to a bush 40 feet below and directly in front of him. When his prey was least alert, the falcon fell into a dive and was quickly upon his unsuspecting target. One of his rear talons drove into the nuthatch's skull. The other foot clutched the small bird's body, and an explosion of gray feathers filled the crisp air and settled on the snow.

The nuthatch made his dying struggles as the falcon flew to the

broad flat top of a nearby fence-post, where he sat briefly before eating. His sharp, down-curved beak easily tore the steaming flesh of his prey. Even while he ate, his dark eyes watched for movement which might signal future meals. Food is harder to come by in winter, and each hunt requires more energy, so a predator must not miss an opportunity.

At last the final snow melts, and again the kestrel looks for new territory. This time he finds a secluded pasture, where a small hardwood forest on one side is watered by an intermittent creek. In a corner of the pasture is a long-forgotten homestead. As the pasture greens and flowers begin to appear, the kestrel, too, changes.

A hormonal signal saturates his plumage with rich hues that give him the look of royalty. His wings are almost bright blue, and red appears on his crown, back, and tail. His breast takes on a soft peach tint, and his black markings gain new sharpness and definition. He is ready to mate.

The female kestrel he courts is similar in appearance, although her

wings lack the striking blue feathers. They are instead the same rust color as her back and tail. She wears a mask like his, but it is not so definite. The two birds are about the same size, a little more than eight inches long, with a wing span of about 20 inches.

The pair spends much time in the highest elm branches. Repeatedly the male leaves, flies a wide circle around the perch, and then returns to his mate's side. Some of his short flights take him high into the air straight above the female. He may hover there briefly, calling his sharp "killy, killy", and then fall directly onto his mate's back, where he remains, fluttering his wings and calling wildly. Often they fly together in a long course which takes them to a tree near the abandoned house.

In the house, the female finds a sheltered hollow where some rocks have fallen from the chimney near the ceiling. She lays five eggs. Only four hatch, and the other is pushed out of the nest.

The adults now find a new source of food: young, flightless robins, which are plentiful in the surround-

ing trees. They are easy to catch, but difficult to carry to the nest. Still, it is worth the effort because one young robin will feed the chicks for quite some time. After catching a baby robin for himself, the male kestrel sits defiantly and devours it, while the adult robins scream a useless alarm.

Next, the adult kestrels discover swallows nesting in one room of the old house. Again the hatchlings are easy prey. With one foot the falcon hangs from the edge of the swallow's mud nest. With the other he reaches into the nest and extracts a tender meal. As their own nestlings mature, the kestrels find that patiently waiting above a mouse hole can also yield culinary dividends.

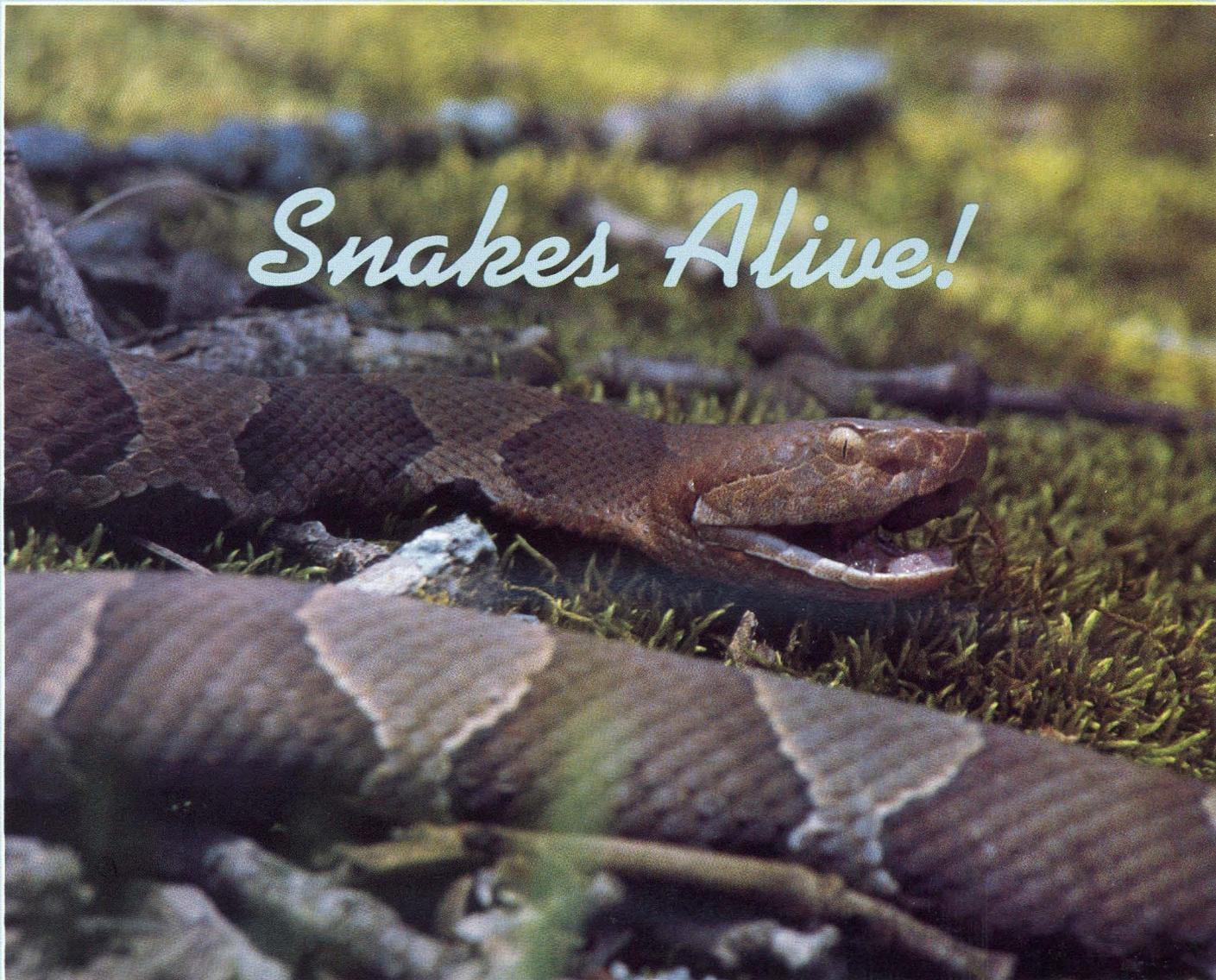
By mid-summer, the pastures are alive with grasshoppers and other insects, and living is easy—for a while. The days are long and the nights warm. Winter will return, and hunting will be hard. But spring, too, will come again, bringing with it new hatches from which the weak will perish and the strong join the endless cycle of hunting, mating, and dying.



On the hunt. Kestrels can "stoop" or fall on their prey in a power dive, like larger falcons.

Gene Brehm, photo

Snakes Alive!



Gene Brehm photo

Though fatal bee stings outnumber snakebite deaths in the U.S., many people still believe the most outlandish folktales about snakes.

Mary Kay Spanbauer

They have been called the foulest and most loathesome of creatures. But they also have been described as beautiful and graceful. When the conversation turns to snakes, opinions are sharply divided. There isn't much middle

ground on the matter. You love snakes or you leave them completely alone. Dangle a live snake in front of anybody and they will immediately offer their sentiments about these creatures. A more merciful approach might be wiser; but however you introduce the creature, human reaction to a snake is one of fascination.

For some people, a snake is simply *too* fascinating. Millions of peo-

ple suffer from ophidophobia—fear of snakes—to such an extent that it inhibits their daily routines. They can't look at snake photographs or watch snakes on television. Their enjoyment of outdoor activities is constantly tempered by the possibility they might stumble across a snake. To occupy the same room with any variety of snake is, to them, unthinkable.

It's not hard to understand the

source of all this consternation. Authors Ramona and Desmond Morris summarized the long history of mankind's love-hate relationship with snakes this way:

"The snake with its many unique and somewhat contradictory attributes has been worshipped, feared, puzzled over, hated, loved, exploited, exterminated, studied, and even petted. It has been used in magic, witchcraft, religion, medicine, war, torture, sport, science, commerce, and entertainment. On one hand, it has been a symbol of procreation, health, longevity, immortality, wisdom; on the other, it has represented death, disease, sin, lechery, duplicity, and temptation. It is a paradox. It is both sides of the coin, and mankind has seldom ignored it."

Pliny the Elder, the ancient Greek scholar, believed the snake was the most spiritual of creatures. Many cultures have elevated the snake to supernatural, sometimes even exalted, status. Some North American Indians who came upon rattlesnakes would address the creatures in reverent terms such as "grandfather" or "mother's mother." Snakes have often been associated with life and the art of healing. The snake's ability to shed its skin has often been linked with resurrection and rebirth. Snake skins were sometimes used as an aid in childbirth; ancient cultures wrapped a snake skin around the woman in labor to ease the pain and hasten delivery. Others believed that a pregnant woman needed only to ingest powdered rattlesnake to bring on parturition; the unborn child was supposedly able to hear the snake's rattle and make a hasty exit. Kentucky folklore prescribes this cure for epilepsy: Wear snake bones around your neck.

Snake oil salesmen aren't entirely the product of Hollywood westerns; snake oil actually was considered a healing commodity in 19th-century America. It was used as a liniment for sore muscles and rheumatism and sold as a "cure" for baldness.

Snake oil salesmen ascribed any number of curative qualities to their product. The American consumer apparently was willing to trust snake oil's medicinal qualities until a more legitimate replacement came along, as the following story by Lawrence Klauber, a renowned authority on rattlesnakes, illustrates:

"A customer entered a store in Atchison, Kansas in the early 1860's and asked for a half pint of rattlesnake oil. After the satisfied buyer had left with his purchase, the druggist remarked that prescriptions for rattlesnake oil, bear oil, and lard were all filled from the same barrel, so all customers' requirements were easily satisfied."

The copperhead is responsible for more poisonous snakebites in Kansas than any other reptile—though its venom rarely causes death. Copperheads are not aggressive snakes, but are so well camouflaged that people often threaten them unknowingly. Snakebites are nearly always a result of defensive action by the serpent.

The snake often appears on symbols of peace. The caduceus, an ancient emblem depicting a rod with two entwined snakes, is the symbol for the American Medical Association. At one time, the caduceus was carried into battle as a peace offering, similar to the white flag of truce. The Romans once sent the enemy a messenger who carried both a caduceus and a javelin, asking them to choose between peace and war. An American Indian way of surrendering was to lay down arrows wrapped in snake skin.

There were occasions, too, when the snake was utilized as a tool of warfare. There are numerous tales



Gene Brehm photo

of snakes, both poisonous and non-poisonous, being carried into battle and dispatched into the enemy's camp. One story relates how an army released swarms of snakes into Roman ships, thereby turning the regimented Romans into a frenzy. The Pennsylvania Gazette suggested in a 1751 edition that the colonies ship rattlesnakes to Britain if the mother country did not stop sending convicts to the colonies. Both the Union Jack and the Gadsen flag depicted a rattler with the famous slogan "Don't Tread On Me." The snake appeared in the World Wars as the official insignia for some military units.

Many superstitions have arisen about snakes. In India some cultures believe that two snakes witnessed in struggle presage a death unless the observer immediately casts off his clothing and bathes. The Cherokees believed that it was an omen of death to see a snake at the beginning of a journey.

Perhaps it is simply the engrossing physical peculiarities of a snake that stimulate such haunting images and superstitions. It's a limbless reptile. It slithers along in undulating waves that propel the body forward. It has no ears. It has baleful, unblinking eyes. A forked tongue flickers incessantly from its mouth. It lives in holes, caves, tangles of brush, rocky ledges, and swamps. It makes no noise, except a sinister hiss and, perhaps, a buzzing rattle at the end of the tail. Any one of these attributes is not particularly threatening by itself. To combine them all in one creature, however, produces a singularly intimidating animal.

But the truth is that most snakes will not bother man unless provoked, antagonized, or cornered. Even a child can easily outrun the fastest Kansas snake. A black racer can crawl only a little over three miles per hour—impressive for a creature with no limbs but hardly a threatening display of speed.

One tale suggests that snakes are not only aggressive, but devious. While walking down a road one day,

a young man hears a noise behind him. He looks back and sees a snake on the road. The snake immediately grabs its tail in its mouth, forming a hoop. The snake rights itself on the roadway and begins rolling like a runaway wheel toward the lad. The snake picks up momentum and gains on the youth. Just as the snake is about to catch up, the intended victim scoots behind a tree. The snake, unable to veer, smashes into the tree and imbeds its stinger in it. The tree dies.

The villain in this tale may be the mud snake. This snake often is found in a coil and has a terminal scale that has been modified into a nonpoisonous spine. But even the most determined snake would have trouble propelling itself as a spokeless bicycle tire.

In many parts of the U.S. there are tales of milk snakes which drink cows dry.

Another folk tale centers on the Great Plains. Cowboys who found themselves sleeping under the stars on a midsummer night would often surround themselves with a horsehair rope. This rope with its bristles was supposed to deter rattlesnakes from the reclining cowboy. Perhaps the cowboys believed that snakes would not cross any rough material. One needs only to recall the rough terrain a snake must cross in the wild to realize this is untrue. Snakes will, indeed, cross a horsehair or other bristly rope.

The fact that this tale persisted is probably due as much to a snake's shy nature as to the real protection afforded by the rope encircling the bedroll. A rattler will generally bite for only two reasons: to catch prey and to defend itself. Since a sleeping cowboy is neither manageable prey nor an immediate threat to a snake, there really is no reason for a snake to attack him. The encircling rope, although not a legitimate rattlesnake barrier, probably did at least afford the cowboy some peace of mind and a better night's rest than he might have had without the 'protection.'

Another popular tale concerns the vengeful mate of a rattler. A party crossing Kansas by covered wagon in 1853 killed a rattler early one morning. The snake was tied to the back of the wagon and dragged the fifty miles traveled that day. The next morning, the travelers found one of their children dead in his bedroll, an apparent victim of a rattlesnake bite. It was believed that the mate of the slain snake followed the wagon to wreak its revenge.

This same theme occurs in North American Indian folklore. Most Indians would not harm a rattlesnake on the presumption that its mate would seek revenge. If one was inadvertently killed, the Indian begged forgiveness and sought to appease the mate.

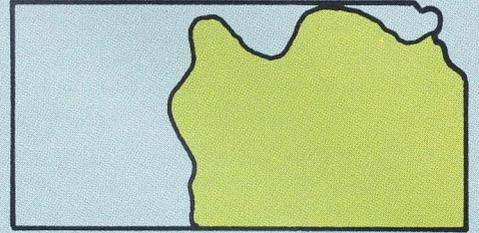
There are numerous inaccurate assumptions about the physical characteristics of snakes. Lacking the familiar fuzziness of mammals and the brilliance of birds, the snake has often been maligned. One of the most common and persistent misconceptions about snakes is that they are cold and slimy. Snakes, like all reptiles, are covered with scales made of material similar to your fingernails and are dry and leathery to the touch.

Snakes do not really have cold blood; they are poikilotherms, with no internal mechanism to regulate their body temperature. This makes them dependent on their environment for body heat. A snake in a cool or shaded area will feel cool to the warmth of a human hand.

The belief that snakes sting with their tongues is a widespread misconception. Although the forked tongue has devious connotations, in a snake it is actually nothing more than an accessory to the senses of taste and smell. It serves to transfer chemical stimuli from the external environment to organs on the roof of the mouth which decipher the message.

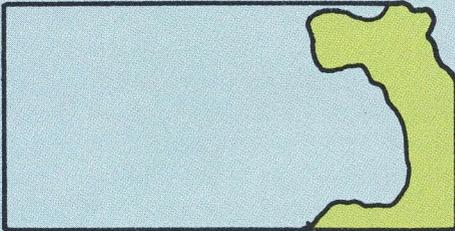


Three species of rattlesnakes are found in Kansas. All are ovoviviparous; that is, they give birth to live young. The Massasauga is the smallest of the three. Despite the myths that have arisen about rattlers, only two human deaths have ever been attributed to the widespread Massasauga!



Gene Brehm photo

The timber rattler is normally a retiring creature, but is large enough to cause harm if provoked. Like other rattlesnakes, it is a "pit viper", so named for the heat-sensing pre-orbital pits on its nose. The broad, flat head of this and other pit vipers is a good field identification characteristic.



Ron Spomer photo



The prairie rattler has a relatively aggressive disposition and a large venom supply. Like other North American pit vipers, it has retractable fangs that "fold" into the roof of its mouth until it is ready to strike. Despite its formidable appearance, however, this snake is rarely a menace to man.



J. T. Collins photo

A snake is totally deaf to airborne sounds. It "hears" by means of vibrations its body senses, not through the air, but through the ground.

There is another tale of a snake which, when touched, shatters into many pieces, each segment then metamorphosing into individual snakes. There is no snake that fits the description. However, there is a snake-like legless lizard—the glass lizard—which can discard its tail if caught in a precarious situation, then grow a new one. There is no evidence of the discarded tail sprouting a new body.

Many believe that rattlesnakes will always rattle before striking. Don't count on it.

It has also been assumed that you can tell the age of a rattlesnake by the number of segments contained in its rattle. Not true. Rattles can break off. Further, a new segment is added each time the skin is shed, which may be several times a year.

There are many folk tales concerning the potency and persistence of snake venom. One involved a man who suffered a snakebite while plowing his field. The fang had penetrated the boot and pierced his skin. The stricken plowman died. Years later his son found the boots on the porch and put them on. The fang had never been removed and the son fell victim to the same fang and venom that killed his father.

Klauber related another tall tale concerning the mystical powers of snake venom:

"In the tragic tale of Peg-Leg Ike, bitten in his wooden leg, despite the frantic efforts of his friends armed with axes to chop away the swelling timber, he was choked to death by its growth. The sorrowing survivors got enough kindling to last all winter."

There are also stories of snake-bitten trees, that, when swollen, yielded enough wood to shingle many roofs. However, the swelling is reversed when the venom is washed out.

Just how dangerous are snakes? While it is true that snake bites cause a few fatalities (usually less than 10) in the U.S. each year, it is interesting to note that more lives are lost to aspirins, bee and wasp stings, and bicycle accidents than to snake bites. Most of the snakes in Kansas are nonpoisonous and dangerous only in the imagination. Snakes are a beneficial part of the ecosystem and should not be exterminated. Understandably, most apprehension focuses on poisonous snakes.

Kansas is home to four species of poisonous snakes: copperheads, massasauga rattlesnakes, timber rattlesnakes, and prairie rattlesnakes. Two other poisonous species, the western diamond-backed rattlesnake and the cottonmouth, are extremely rare in the state—if they occur at all. By familiarizing yourself with the habitats of these species you can minimize the chance of an encounter. Here are some additional tips to keep in mind during an outdoor excursion into snake country:

- Wear comfortable hiking boots at least ankle high.
- Wear pants that are baggy below the knee.
- Watch where you walk while in brushy or rocky areas. Step *on* logs, not *blindly* over them.
- Avoid putting your feet or hands into hidden nooks and crannies. These are places snakes love to curl up and hide.

If you should encounter a snake, **DON'T PANIC.** Do not make any sudden movements, as snakes are more likely to strike at moving objects. Klauber offers this advice:

"When a rattler sounds off, don't move until you know where the sound came from. You may step on a rattler or into his range instead of away from it. A rattler seen in time is not a dangerous snake provided you and the other members of your party, including your dog, avoid it."

A related question invariably arises: What is a snake's striking distance? Most experts agree that it

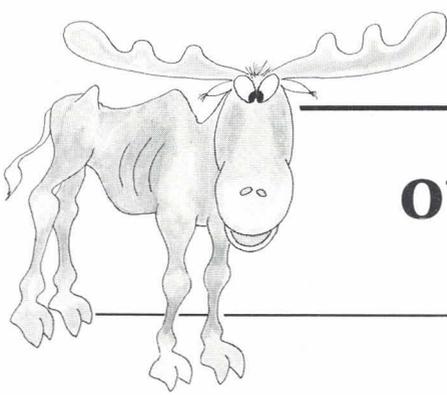
is usually half, and no more than three-fourths, of the snake's body length. That may be a useful piece of information, but calculations of length and distance are probably among the last considerations on the mind of a person confronted with a snake.

Even though precautions are taken, accidents happen. Most snake bites occur incidentally rather than as a premeditated act of aggression by the snake. In the event you are bitten by a poisonous snake, **KEEP CALM.** Restrict your movement as much as possible, and get to a doctor quickly. Poisonous snake bites today can be treated successfully with antivenin.

Much of the ill will humans feel toward snakes is due to ignorance and false assumptions about the creatures and their habits. Today, we've sorted out most of the fact and fiction, so why do people still fear snakes? Children possess no inborn or instinctive fear of snakes. They *learn* to fear them. A little fear or apprehension is wise, especially for those who are unable to distinguish poisonous and nonpoisonous species. However, to instill and reinforce hatred and fear of snakes is a mistake. It's even dangerous.

"The cultivated fear of snakes has had quite the opposite results than those desired," says Klauber. "It causes people to become so paralyzed upon encountering a rattler in the field that they cannot take the most elementary safety precautions."

We humans often fear those things we do not understand. But in recent years, new light has been shed on the snake. We view it less as a malevolent creature and more as an animal that simply likes to keep to itself. You may never learn to like them. But since snakes and humans share the same land, we must learn to coexist with them. Armed with the truth, people will better understand the real value of these fascinating animals. The snake need not always be the creature we love to hate.



off trail

... with Stub Snagbark®

The problem with outdoor fun today is that we have too many choices to make. Take fishing. Once I was content to dangle a worm from a bamboo pole. Now worms are obsolete. No longer is the biggest decision of the day whether to use two little worms or one big worm on the hook. No; the sliding trays in my tacklebox now hold a myriad of artificial lures, each of different color, shape, or size than the one next to it. It can take a long time to decide which will catch a fish.

My selection of rods and reels used to be very impressive, too. But I spent more time loading and unloading my gear than I spent fishing. So now I carry just six rods and reels when I go out, not counting spare reels and fly tackle. It simplifies things.

Choosing the right equipment is but one of many decisions an angler must make. Probably the most important is where to fish. The number of possibilities can be mind-boggling. Selecting a lake is the easy part. A boat can fit just about anywhere on the lake, and in a number of different positions in each spot. Where is that big fish going to be? Should you troll or stay in one place? Ought you to cast from the bow or stern? To port or starboard?

All these decisions can be frustrating. It helps if both you and your partner think alike. That is, it's OK if you're both decisive. And things will probably go smoothly if you're both indecisive. But it's not a good idea for a decisive angler to fish with an indecisive angler. If the two

of you are indecisive, your partner can motor about looking for a place to fish while you're selecting your lure. You'll both be ready to dunk lines about the same time—dusk. If you're both decisive characters, your partner will probably race willy-nilly out to someplace on the lake that is really no place in particular, cut the engine, and grab his rod. That will be all right with you, though, because you're already trailing a worm in the wake of the outboard.

Fishermen aren't the only folks faced with decisions. Every outdoorsman, for example, must decide whether he or she is in fact an outdoorsperson. That's a problem our forebears didn't address. It was either too difficult a decision for them or they simply chose to ignore the problem. Some have even suggested that they didn't recognize it—kind of like the kid with the cane pole who doesn't know he shouldn't be carrying a bigger stringer of fish than the guy in the bass boat with boron rods and the depth finder.

Once you've decided what you're going to call yourself, you have to decide what fun thing you'd like to do. Yes, I said fun thing. Most people call fun things sports. But boxing is a sport and it doesn't look fun to me. I like to have a good time.

It used to be that if you wanted to hunt you bought a gun and a hunting license and went hunting. You had to choose between a shotgun and a rifle, but that was about it. Now things are different. There are bow seasons, black-powder seasons, handgun seasons, and rifle seasons for big game. You must not only

choose a state in which to hunt, but a management unit as well. If you buy an out-of-state tag for a remote unit, your mailbox will at once be filled to overflowing with guide brochures. For a price these outfitters will do everything but shoot the animal for you, and a few will do that. What they don't do is tell you which of them offers the best deal. In his brochure, each tells you his camps, packstring, guides, food, and area are the best. All but one, of course, are lying. There is only one best.

You local quail hunters are decision makers, too. Before each outing you must decide between the 20-bore and the 12, 7½'s and 8's, the old Sickenshaler homestead and Smith's south forty. When the covey gets up you have a big decision to make. Which bird is most likely to fly into your pattern? If you're like me you guess wrong most of the time.

I'm thinking of starting up a service for sportsmen. I may call it Dial-a-Decision. When you have a particularly vexing problem you just call a toll-free number, describe your dilemma, and let a computer make your decision for you. You'd have to provide your Mastercard number, of course. The computer would charge according to the complexity of your problem.

For example, if you couldn't decide between a Mongolian sheep hunt and an African safari for your honeymoon, the computer would charge more money than if it simply had to choose between a gray dun and a royal coachman for Saturday morning. Urgency would also figure into the cost. If you were bearing down on a trophy buck and couldn't decide whether to set your variable scope on four or six power, the computer would operate extra fast to render a decision. That would give you more time to sprint from the phone booth back to the buck.

I think Dial-a-Decision has great potential. I just can't decide whether to set it up with Ma Bell or AT&T. . . .

American kestrel by Gene Brehm.

