

KANSAS WILDLIFE

March/April 1983, Single copy \$1.50



MAGAZINE STAFF

Information Education Supervisor

Mike Cox

Editor

Chris Madson

Assistant Editor

Ron Spomer

Staff Writers

Bob Mathews

Joyce Harmon

Rob Manes

Mary Kay Spanbauer

Photographer

Gene Brehm

Illustrator

Alan Baccarella

Editorial Assistant

Bev Aldrich

Consultant

J. T. Collins, Herpetology

COMMISSIONERS

Ronald Hopkins, Chairman
Wichita

Richard Hanger
Topeka

John Ostmeyer
Colby

Roland Spriggs
Oswego

Joseph Rishel
Kendall

ADMINISTRATION

Director

Bill Hanzlick

Assistant Director

Kent Jackson

Administrative Assistant

Fred Warders

DIVISIONS

Chief of Administrative Services

George Axline

Chief of Fisheries

Mike Theurer

Chief of Game

Darrell Monte

Chief of Law Enforcement

Contents

a distant drummer The ruffed grouse makes its return to Kansas . . .	4
wildlife in your backyard You don't have to own a section of land to establish wildlife habitat	9
roll on, you rivers Support for stream preservation is growing slowly on the plains	25

KANSAS WILDLIFE (ISSN 0279-9030) is the official bimonthly publication of the Kansas Fish & Game Commission, Rural Route 2, Box 54A, Pratt, Kansas 67124 (316) 672-5911. Subscription rates: one year (6 issues) \$5.00; two years (12 issues) \$9.00; and three years (18 issues) \$12.50. Single copies are available at \$1.50 per copy.

Articles in the magazine may be reprinted with permission provided proper credit is given. Second class postage paid at Wichita, Kansas, and additional mailing offices. POSTMASTER: Send address changes to Kansas Fish & Game, Rural Route 2, Box 54A, Pratt, KS 67124.

Postal I.D. Number: ISSN 0279-9030

Covers: Fledgling eastern kingbirds by Gene Brehm.

looking down

For twenty years or better now, I've made an annual April morel mission, always with the same optimism and usually with the same scant results. I've never struck the motherlode. Dad has struck it—I can recall his triumphant return from a day on the DesMoines River bottoms with two peck baskets of mushrooms. Friends of mine have struck it, turning up after a morning's stroll with jackets tied at the corners heaped with mushrooms. The best I can claim is a little patch I discovered under a dead elm at the edge of an abandoned road, a spot that yielded thirty or forty, barely enough to whet a morel eater's appetite for the main course which should rightfully be about 200 more morels.

If I sound bitter about my lot as a mushroom hunter, I don't mean to. I don't have a masochistic streak—if morels were the main reason for my morel hunts, I'd have given up a couple of decades ago. A mushroom hunt is that rare April opportunity to drop the spring cleaning and get out of town. It requires no equipment, no license, no advance preparation, and actually goes best with a couple of kids along. If I'm pressed for an explanation of the morel's lure, any one of these justifications will serve. However, none of them gets to the heart of my

mushroom fixation. I like hunting morels because they make me stop and take a careful look at the ground I'm about to step on.

A lot goes on at the morel level of a woodlot, but very little of it screams for attention. Few people besides mushroom hunters ever bother to stake out a square yard of forest floor and really look it over. As a result, few people ever run into a ladies' slipper, a showy orchis, or a shrew hunting through last year's leaves. As a matter of fact, the fringe benefits of a morel hunt nearly always overshadow the mushroom take itself. Later in the year, a mushroom hunter may pass his favorite woodlot on more pressing business, but as he goes by, he's likely to be dogged by the faint awareness of what he's missing in his hurry.

The same can be said of most wild places. I've invented a number of excuses to justify a slow wander over particularly interesting scraps of ground. On limestone bluffs, I keep an eye peeled for trilobites and perfect crinoids. My luck with fossils isn't much better than it is with mushrooms, but the hunt usually takes me past a small cave or up over an untrammled goat prairie perched on the bluff edge. In the chalk beds of western Kansas, I'm after shark's teeth and mussels, but I'll settle for

jumping a big mule deer or paying my uneasy respects to a prairie rattler. In a freshly plowed bottomland field farther east, the prize is an arrowhead or a pottery sherd from some prehistoric midden; the added attractions may range from finding a fox den to sighting a Boone-and-Crockett groundhog.

I have an idea that this nose-to-the-ground sort of recreation is my own version of jet lag. We've worked hard to shrink our image of our world, and, in the last decades, we've done a pretty good job of it. Lightning communications and transportation have given us a high-altitude perspective; we soar over the planet, taking in oceans and mountain ranges with a single glance, haunted by an even loftier, more indifferent view of our home, the Apollo images of a perfect sapphire swathed in cloud falling through the infinite stygian night.

With impressions like these crowding your mind, it's easy to jump to the conclusion that you've seen just about everything worth seeing. That's when it's a good idea to give up the headlong rush for a little while, stick your hands in your pockets, and contemplate the ground just in front of your toes. Chances are there's a jewel waiting to be discovered. Or maybe even a morel.

Chris Madson



*Safari Club
helps a native
home to roost.*

a distant drummer

Randy Rodgers

I remember when the thought first came to me. I was a graduate student at the University of Wisconsin at Madison and was headed home to Kansas for Christmas. Having passed through the heart of the corn belt with thoughts of the Kansas prairie and home occupying my mind, it wasn't likely that the sight of a wooded northeastern Kansas hillside would stimulate that kind of idea.



I guess I had spent enough time tramping through the woods of southwestern Wisconsin conducting my graduate research to develop a subconscious sense for habitat—the sense that all field biologists get after working long enough with a particular critter. Evidently the right ingredients were there because that Kansas hillside elicited a clear conscious response. No doubt about it, those woods looked like

they could support ruffed grouse.

What a ridiculous thought! Kansas—land of wheat and herefords—couldn't possibly hold habitat suitable for a woodland bird like the ruffed grouse . . . or could it? For some reason, in the remaining two years I spent studying ruffed grouse in Wisconsin, I never checked to see if they had been historically present in Kansas. That was quickly remedied when I took a position

with the Kansas Fish and Game in early 1979.

Indeed, the midwestern subspecies of ruffed grouse was, at one time, present in Kansas. In a 1963 paper published in the *Journal of Wildlife Management*, John Aldrich showed the former distribution of this bird extending into nine counties in northeastern Kansas. Arthur C. Bent, in his famous life history series, indicated that these birds

were once found as far west along the Kansas River as Manhattan. The Kansas distribution was apparently part of a peninsula of woodland along parts of the Missouri River drainage that jutted northwest from the main body of grouse range into country that was largely dominated by tall grass prairie. It was a small part of the broad historic range of ruffed grouse which extended from northern Georgia to Newfoundland, all across the upper Midwest and Canada, and westward to the northern Rockies, Pacific Northwest, and interior Alaska. Most of this range is still occupied today. Unfortunately, the former Kansas range isn't.

Spring and fall, the timber of ruffed grouse country is seldom quiet. Drumming males produce the thudding sound of their display with wing beats so rapid that they can barely be captured on film. Like most other game bird young, ruffed grouse chicks (opposite) are out of their nests foraging after insects within a day of hatching. (male grouse by Ron Spomer, chick by Leonard Lee Rue III).

The ruffed grouse is a member of the family Tetraonidae which includes such open-country species as the prairie chickens, sharp-tailed, sage grouse, and ptarmigans as well as the spruce and blue grouse which are associated with forests. It is more distantly related to the pheasants and quail and is roughly halfway between the ringneck and bobwhite in size.

While the ruffed grouse is found in forests which include pines, spruces, and other conifers, it is most closely associated with hardwoods. A wide variety of hardwood forest types may be ruff habitat, so long as they provide the leafy matter, berries, seeds, buds, and catkins that grouse relish. Ruffed grouse use aspen woodlands extensively and are quite dependent on the buds of this tree for winter food in some parts of their range. This dependency, unfortunately, has probably been over-generalized and has led to the common misconception

that aspen must be present if a ruffed grouse population is to exist. The simple fact that ruffed grouse were once present in Kansas, where no aspen exists, shows that the bird's tastes aren't so limited.

In its early stages, cutting and clearing of Kansas' timber may have actually benefited grouse by creating openings and setting back forest succession. The young brushy growth that develops after cutting is particularly important as ruffed grouse brood habitat. Of course, too much of a good thing almost inevitably causes problems and there is little doubt that extensive clearing eventually restricted Kansas' ruffed grouse habitat.

Habitat decline was serious, but certain aspects of the grouse's behavior probably brought about its final downfall in Kansas. It was too susceptible to hunting! Where contact with man had been limited, ruffs could be easily shot at close range by the most unskilled hunter. In the more remote parts of its range, it is still referred to as the "fool hen" because of its reluctance to flush. There was plenty of incentive for taking advantage of this characteristic, since ruffs probably make the finest table fare of any North American game bird. The spring and fall display of the males probably made them all the more susceptible to the "partridge" hunter of the 1800's.

That display, which is referred to as "drumming", is one of the most unique audible performances in the world of birds. It is, in effect, a "call" which serves to attract hens and to warn other males not to intrude into the resident bird's territory. Once a male establishes a territory, he can generally be found near it for the remainder of his life. The core or "activity center" of the territory is one or more logs which the male ruff uses as stages from which to drum.

Unlike most birds' calls, drumming involves no vocalization. It is produced by staccato wing-beats which start slowly and rapidly in-



crease over the next seven or eight seconds. Near the end of the drum, the bird's wings are little more than a blur. I have often seen leaves literally blown away in front of a drumming grouse.

For years, it was believed that the drumming sound was the result of the grouse actually beating on the log. People suspected that certain types of trees made better drumming logs because the wood had a deeper resonance when thumped. Since the bird's wings were barely visible, I suppose this was as good an explanation as any. Others believed that ruffed grouse clapped their wings together, either in front or in back to produce the drum. Slow motion films and sensitive microphones ultimately solved this mystery. After the bird brings its wings close together in front, the wings are snapped back so rapidly that a vacuum is created. The sound results from air collapsing into the vacuum. In other words, a small implosion occurs similar to the popping of a light bulb.

As you might imagine, the sound resembles low-pitched distant drumming. It has also been likened to distant thunder, but I always thought it resembled the sound of a 1948 John Deere starting up in the distance on a frosty morning. I find it interesting that the drum almost always seems distant even when you're close.

The drum carries up to a half-mile through the woods and I have little doubt that "partridge" hunters once used it to lead them to their quarry. Through 1860, ruffed grouse received no legal protection in Kansas and the drumming seasons probably provided "easy pickens". Even when the first state game laws were passed in 1861, the season lasted 211 days and included much of the spring drumming season and all of the early fall period when a resurgence of drumming occurs.

It must have been evident that "partridge" were on the decline by 1868, because the season was shortened sixty-one days. It was cut again



in 1876. I guess no one really knows when the last grouse drummed in Kansas. The season was closed in 1877. The failure to even mention partridge in the 1903 game laws served as silent acknowledgment that the ruffed grouse was gone.

What the cause or combination of causes was for the disappearance of this bird from Kansas is now something of a moot point. The real questions are whether or not we can restore ruffed grouse to Kansas and, if so, whether they will sustain themselves and expand where their predecessors could not. I believe the answer to both questions is a clear "YES."

Kansas will probably never again hold large numbers of this bird, since clearing of our forests has continued. However, those woodlands that remain are primarily on steep slopes along drainages where further clearing is less likely to occur. This pattern is almost identical to the clearing in ruffed grouse

areas I was familiar with in southwestern Wisconsin, though our woodlands are less extensive.

Another similarity exists between northeast Kansas and southwestern Wisconsin. I know a few people who might cringe at the thought, but many areas in northeast Kansas are gradually changing from tallgrass prairie to woodland via the process of ecological succession. The absence of fire is effectively creating new grouse habitat where it probably never existed historically.

Woodlot grazing is also much less common than it once was which has permitted regrowth of that critical brushy understory.

It's basically an educated guess, but I think I can safely say that Kansas' remaining woodlands could eventually support a fall population of at least ten thousand ruffs.

Not only do I believe our woodlands can support ruffed grouse, I also feel that limited hunting might be possible, in time. The fact that

we now possess the knowledge to formulate sound game regulations and have some teeth to back them up helps insure that hunting will never again contribute to the extirpation of any species in Kansas. On top of that, the midwestern ruffed grouse quite literally "ain't what it used to be". Coexistence with man for well over a century has transformed this subspecies into a wary bird that uses every trick in the book to befuddle the hunter.

When I first went to Wisconsin, I was amused by a grouse hunting story a fellow student told. The story suggested that another of the students in our department, who considered himself a better-than-average shotgunner, failed to bag a single ruffed grouse in southwestern Wisconsin in his first three seasons. The ice was finally broken in his fourth season as a result of his inadvertently shooting a dead tree which fell and miraculously knocked a flushing ruff out of the air.

Now I can't vouch for the complete validity of this story and I'd rather not mention names for fear of embarrassment. However, the fact that you've read it means that the current editor of *Kansas Wildlife* knows the story contains some truth. That these birds can provide a fine hunting challenge is well illustrated by this story and (I hesitate to admit this) the fact that I also failed to bag a ruff until my fourth season. Of course, I didn't resort to shooting trees . . .

The success of Missouri's ruffed grouse reintroductions and the fact that they are considering a hunting season in the near future is the best evidence that Kansas can also support ruffs. Missouri has been restocking these birds, off and on, since 1959 and has intensified its efforts since 1978. Some of these most recent releases have been directly across the Missouri River from Kansas.

The present ruffed grouse project was formally accepted by the Commission in August of 1980 and

began as an evaluation in 1981. Even in its infancy, a shortage of funds threatened its existence along with that of its sister project for reintroducing sharp-tailed grouse into northwest Kansas. But, the evaluation went on and the results have been encouraging.

It was when we actually proposed obtaining ruffed grouse stock that things looked a bit shaky. The traditional method of obtaining stock for reintroductions has been trading. For instance, Kansas recently participated in a three-way trade in which we sent Rio Grande turkeys to Idaho in return for North Dakota sharp-tails. Idaho and North Dakota worked out a separate agreement. The problem with obtaining ruffed grouse was that no mutually beneficial trades were apparent.

As a result, running our own trapping operation was considered as a possible means of obtaining stock. However, capturing wild game can be expensive and ruffed grouse trapping is no exception. The problem was to find funds for such a project when the agency's budget was already tight. Lack of funds had forced consideration of the possibility that the project would have to be dropped. Fortunately, the Kansas City Chapter of Safari Club, International became aware of the potential plight of the project and decided to help rescue it. Beginning in 1983, they will raise funds to finance the entire trapping operation, excepting standard administrative costs, for a period of four years.

The trapping operation will employ traps that take advantage of two bits of knowledge of ruffed grouse behavior. The trap set consists of a long poultry wire lead with a lily-pod-shaped funnel trap at each end. It operates on the premise that a ruffed grouse would rather walk around an obstacle than fly over it. When a bird encounters the lead, it generally moves toward one of the funnel traps despite the fact that the lead is only two feet high. The trap need not be baited since a smaller lead helps guide the bird into the

funnel entrance. Once inside, the trap shape and funnel design prevent escape.

The best trapping will occur in late September after the broods break up and the young go through a natural dispersal period. The increased movement in the population results in more birds encountering the leads and, of course, more captures. Even so, trapping ruffs is no piece of cake. It will probably take two or three months of hard work to get a hundred birds. I can't help but recall the many discouraging days early in my Wisconsin research when I had worked long hours and caught nothing. It may be that my mood after such days was responsible for one of my friends dubbing me the "ruffed grouch".

Once the trapping is done, the difficult part will be over. Since ruffed grouse generally stay near the release site, the only critical factors in the release are that the birds are in good condition and that suitable habitat has been selected. It's simple compared to the elaborate procedure recently used to release sharp-tailed grouse in northwest Kansas.

In the spring following the releases, the ruff's drumming behavior will provide an easy means of monitoring the spread and growth of the populations.

Right now, the closest imitation we have of a ruff's drum is that "tractor in the distance". We are separate both in time and space from the real thing. But if all goes as planned, the ruffed grouse will return to Kansas sometime this fall. I find it very satisfying to know that, for the first time in about a century, the ruff's drumming will only *sound* distant. □

Biologist Randy Rodgers rides herd on the Kansas pheasant population as well as arranging reintroductions of ruffed and sharptailed grouse. Rodgers is a hunter of some resourcefulness; it is rumored that he killed his first legal ruffed grouse by installing a sheet of plate glass behind a drumming log and flushing the bird into it, breaking its neck.

wildlife in your backyard

a guide
to urban
habitat
development

Ron Spomer

City Life is tough. I have an urban friend who has to sidestep two dozen feeding goldfinches in his driveway every morning before he can motor to work. Some winter days he has to scare off three fox squirrels to get a better view of the pine siskins stuffing themselves on thistle seed outside his patio window. Another poor devil I know has to mow around the prickly pear cactus blossoms, stately yucca flower spikes and violet penstemon flowers just to cut down his bothersome blue grass. Then there's

this other city dude who has frogs and turtles and sunfish in a backyard pond—the same one doves and thrashers and robins bathe in. Hmm. Maybe urban living isn't so bad after all. At least not in backyards that have been designed for wildlife.

A backyard, whether it is four square feet or 40,000 attracts wild critters in direct proportion to the amount of good habitat it grows. The wilder and more diversified the better.

Today tangled lawns and luxuriant backyards do not necessarily point an accusing branch at slovenly homeowners. Instead they wave as banners, proclaiming the presence of concerned, active wildlife enthusiasts doing their part to help butterflies, squirrels, chickadees, catbirds, garter snakes, cottontails, cardinals and even deer. And loving every minute of it. The biggest status symbol on the block is no longer the swimming pool.

It's the wildlife watering pool, complete with turtles, frogs, fish and salamanders. It's the thicket of berry bushes ripe with fruit and hungry birds. Keeping up with the Joneses now means planting buffalo grass and walnuts and sunflowers. Why move to the country when you can bring the country to you?

Of course, these days, bringing the country into the backyard is as important down on the farm as it is over in the city. Modern agribusiness often leaves farmsteads isolated in a sea of wheat or corn, hardly prime living space for wildlife. But a good backyard habitat can provide housing for dozens of species that can forage in the adjoining fields.

Wildlife is no longer something to take for granted. It's become extraordinary in most of man's settings. And the extraordinary in our society becomes popular. Here's how to get yours.



produced in part with support from the Chickadee Check-off,
a voluntary contribution program funded by Kansas taxpayers.

Photo by Gene Brehm

planting for wildlife

The most responsible and dependable way for anyone to take care of his backyard wildlife is by creating a natural system that will enable the critters to take care of themselves. It's not unlike the old proverb "Give a man a fish and you feed him for a day; teach him how to fish and you feed him for life."

Feed a bird in your backyard and you'll help keep it alive. Plant seed- and fruit-bearing shrubs, vines, annuals and trees and you'll not only keep a bird alive, you'll help produce hundreds more. They'll find places in your yard to nest, feed, roost and escape predators. They'll glean insects from your lawn, trees and garden, all the while entertaining you with their antics, color and song. Beyond your initial landscaping, about all you'll have to do is sit back and enjoy the show, year after year. And all those trees and bushes will increase the value of your property.

Variety, density and "edge" are three things you need to consider when planning your backyard habitat. The more varieties of plants you include in your yard, the greater variety of animals you'll attract. Tall, mature trees will be home to northern orioles, eastern and western kingbirds, scarlet tanagers, red-eyed vireos, squirrels, screech owls and many other arboreal (tree-dwelling) animals. Shrubs and shorter trees will provide nesting sites for robins, cardinals, chickadees, grosbeaks and other colorful songbirds. Bushes and vines will appeal to house wrens, song sparrows, towhees, catbirds and yellow warblers. Rock walls or rubble piles will house chipmunks, lizards and rodent-eating snakes. Tall grasses will serve as nurseries for cottontails and shelter for quail.

Food variety is just as important as shelter variety. A good mix of vegetation will provide insects for all kinds of birds. A flower garden can entice butterflies and hummingbirds to visit. Squirrels, jays and other nut eaters will dine in oaks, hickories, etc. Purple finches relish the winged seeds of maples. Soft fruits like cherries, blackberries and mulberries sell like penny candy to summering birds.

Dense cover is essential when winter winds howl across your doorstep. The deciduous shrubs that looked so impenetrable last June are an awfully cold space in January, but the coniferous plants are as cozy as ever. A thicket of them makes a snug roost for everything from cardinals to whitetail deer. In fact, cedars may be the perfect wildlife trees for Kansas. Dozens of bird species nest in them,

The sunflower tribe produces some of the finest all-round wildlife food available. Wild or domestic, these annuals bear many large seeds which are rich in oils, fats, and protein, and most are drought resistant, thriving in the typical Kansas climate with little care. (Butterfly by Ron Spomer, goldfinch by Gene Brehm.)



dozens more hide in them, and most of these eat the nutritious blue berries. A cluster of cedars in the corner of the yard is a good investment.

For the best view of your wildlife habitat, arrange specimens with the tallest in the back—perhaps at the edge of your property—descending to the shortest in front. Mix and space them to create the "edge effect" that attracts the greatest number of animals possible. If you have clumps or "islands" of dense shrubbery surrounded by open lawn or grass, brush-loving species such as brown thrashers will venture into the open to sunbathe or dustbathe. The open-ground species such as robins will dart into the nearby thickets for protection. You can also create edge by alternating strips of bushes with strips of native grass or open lawn. Plant flowers along the inside edge of your bushes nearest the house to attract butterflies and hummingbirds. Leave a block of corn, sunflowers or



other grain standing as “ready-to-eat animal snacks.”

If your yard already has a few mature trees, design additional plantings around them. Shrubs grow quickly and provide excellent summer habitat. Don't trim the lower branches, for these are what ground nesting birds, mammals and reptiles need for protection. If your older trees have dead or damaged branches, don't automatically remove them. If they don't threaten to fall on your garage or head, allow them to weather naturally to provide homes for cavity nesting species from chickadees to raccoons. A dead tree is worth as much to wildlife as a live one. If it becomes necessary to remove a dead tree, consider leaving a stump. Anything from one to twenty feet tall will provide food and housing for a surprising number of animals, especially birds.

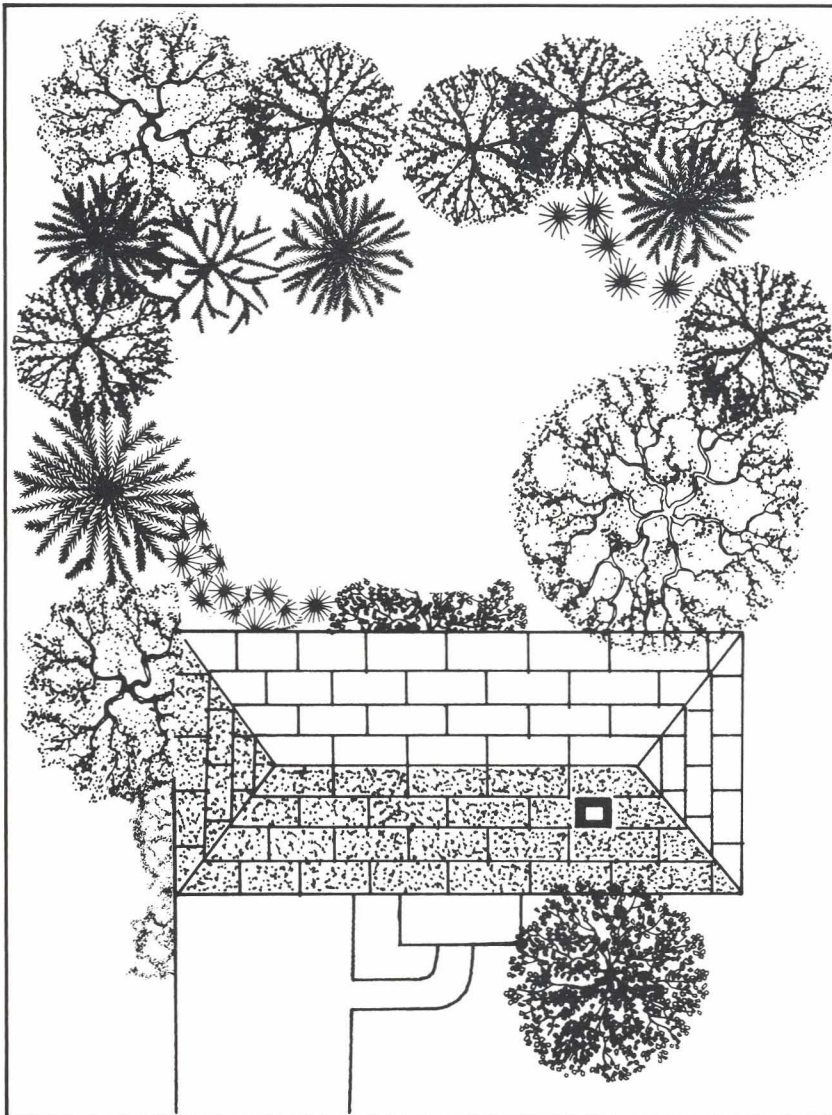
Grass is seldom thought of as good wildlife cover,

and the manicured, fertilized and heavily-watered bluegrass lawns most Americans pay for and struggle to maintain aren't. But native grasses can provide food, cover and nest sites for everything from kangaroo rats to buffalo (don't expect a bison to graze past your kitchen window). A strip of little bluestem, big bluestem, Indian grass or switchgrass makes a colorful border or centerpiece. You might like them so much you'll dedicate a chunk of your back lawn to prairie restoration, complete with wildflowers. To maintain shortgrass lawn with a minimum of labor and expensive materials, plant buffalo grass. It is drought tolerant, naturally short (you only need mow it once or twice a year) and hardy without infusions of fertilizer.

Consider all of these points—variety, density (cover), edge—while planning your backyard habitat. The accompanying lists will help you assess the values of various plants.

planting for wildlife



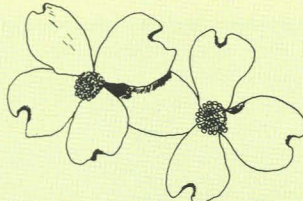
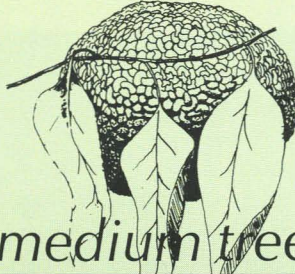
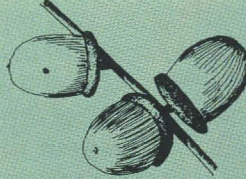
Variety, the spice of life: Wildlife needs food, water, refuge from weather and predators, and a place to breed. Simple enough. Until you try to provide all these elements to a changing array of wildlife through four seasons. The combinations are almost endless, and the best way to cover most possibilities is to build variety into the habitat you plant. Variety in species—many different kinds of plants offer a continuous, dependable food supply which is not likely to be devastated by disease. Variety in height—many bird species parcel out habitat among themselves according to the height each prefers; the more levels you offer, the more species you're likely to see. Variety in layout—even in fairly small acreages, the amount of edge between major kinds of vegetation is important. Points and islands of woody vegetation mixed with grass and forbs create more edge and are more attractive to wildlife than simple blocks.

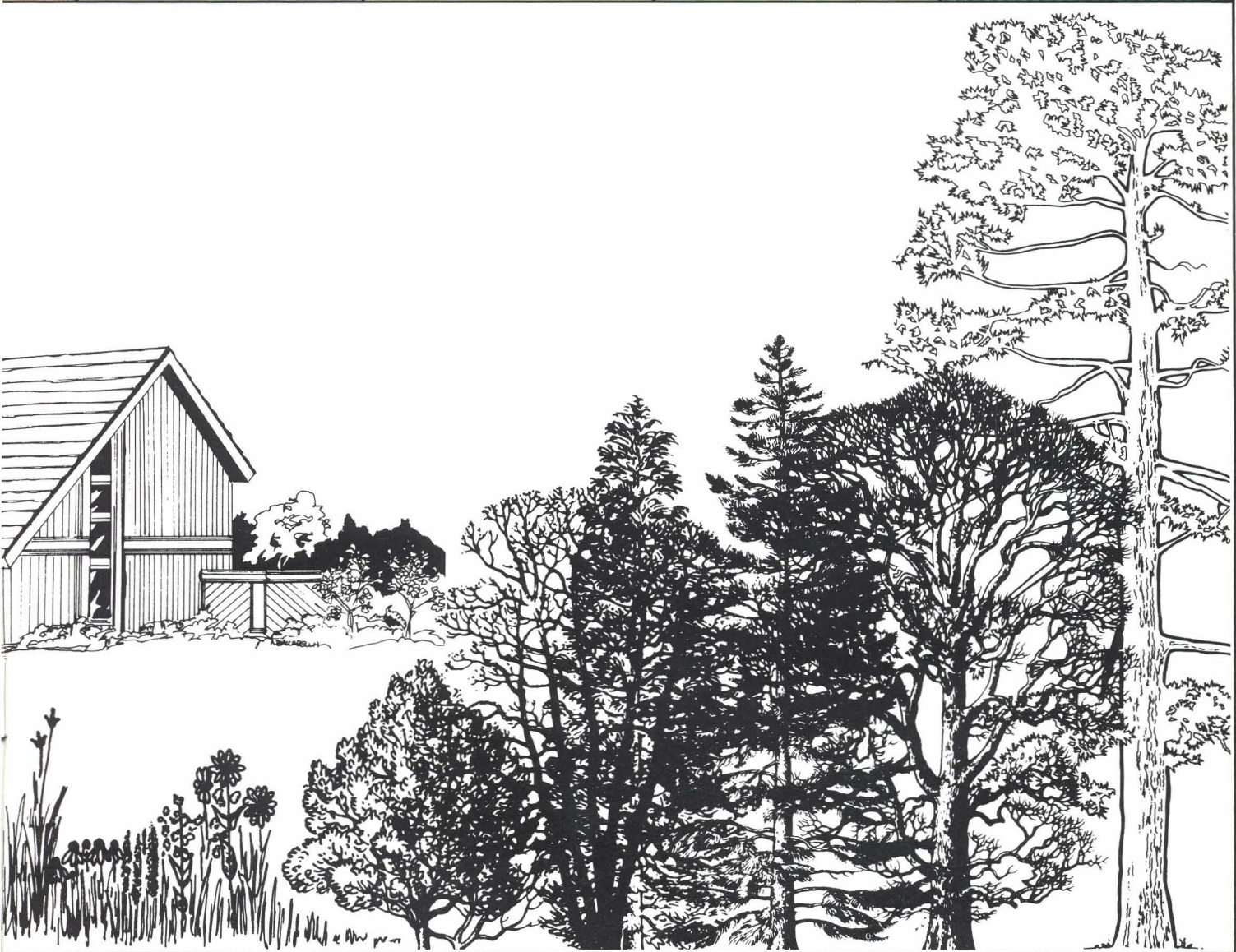


Illustrations adapted from the National Wildlife Federation's book *Gardening with Wildlife*.

 <p><i>domestics</i></p>	 <p><i>vines</i></p>	
<p>alfalfa sweetclovers domestic sunflower corn milo</p>	<p>Proso millet salvia daisies columbine yarrow</p>	<p>bittersweet Virginia creeper any wild grape trumpet vine</p>



	 <p><i>forbs and native grasses</i></p>	 <p><i>shrubs</i></p>	 <p><i>medium trees</i></p>	 <p><i>large trees</i></p>
	<p>Indian grass big bluestem little bluestem switchgrass buffalo grass butterfly milkweed other milkweeds all wild sunflowers purple coneflower</p> <p>wild indigo compassplant goldenrods larkspur penstemons gayfeathers Illinois bunfleflower</p>	<p>highbush cranberry gooseberry golden currant cotoneaster holly firethorn wahoo sumac wild rose</p> <p>hazelnut dogwoods honeysuckle autumn olive elderberry sand plum blackberry raspberry</p>	<p>mulberry crab apple catalpa red haw hawthorn osage orange Russian olive black cherry choke cherry</p> <p>pawpaw persimmon red bud red cedar Scotch pine Norway pine</p>	<p>white oak burr oak northern red oak pin oak hackberry ash black walnut pecan butternut</p> <p>hickories sugar maple silver maple honey locust basswood sycamore cottonwood ponderosa pine</p>



feeding through the winter

The fastest way to attract wild critters to your backyard is to invite them to dinner. Put out some suet and a few seeds and the soup line will begin forming.

Birds will be your first customers simply because of their abundance and mobility. It's surprising how quickly they'll fly in to a new food supply. If you live near good habitat such as woods or brushy fields, you could lure a few diners the first day you spread the table. Older communities with large shade trees harbor an impressive quantity of songbirds. New housing developments, where the only trees are dead ones holding up utility lines, may not attract birds for years unless there is some type of permanent, brushy cover nearby.

The numbers and kinds of mammals you entertain at your backdoor smorgasbord will depend even more on the proximity of good habitat. If you own any mature trees, you might soon find a squirrel rummaging through your bird feeder. Cottontails will set up housekeeping in weeds, bushes or even a heap of debris. At night they'll hop over to sample the table scraps spilled by the birds. If your property abuts a woods or other extensive natural area, you can expect visits from hungry raccoons, opossums, skunks and even deer.

You can increase your odds of successfully wooing a particular species by offering its favorite meal, and the way you offer it can also affect your success. For example, birds that feed on the ground—sparrows, towhees, mourning doves, etc.—won't get too excited about picking sunflowers from a plastic cylinder hanging from a branch. They'd rather scratch and pick through the soil and duff. If you want them around, scatter seed on a bare spot in your lawn. Once they begin foraging regularly, you can build a platform with raised edges to hold the seed. Set this on a brick or short post a few inches off the ground. The birds will soon find it, and your seed will stay out of the mud. Eventually you can erect a high roof over the platform to further protect the feed.

Most birds that pick seeds and insects from trees can be enticed to the ground for a good meal, but they prefer their kitchen up in the air. Swinging feeders are fine for the more energetic members of these groups, but most species prefer a stable plate. A big, automatic hopper feeder—one that stores several gallons of seed and dispenses it as needed—should be mounted on a post or sturdy branch. It will become the focal point of your feeding operations.

Bird feeders don't have to be complicated to be effective. Many of the sparrows and finches prefer their food on the ground. Insect-eaters like the nuthatches and woodpeckers flock to a simple grapefruit bag filled with beef suet (opposite). Cardinal and red-breasted nuthatch by Ron Spomer.



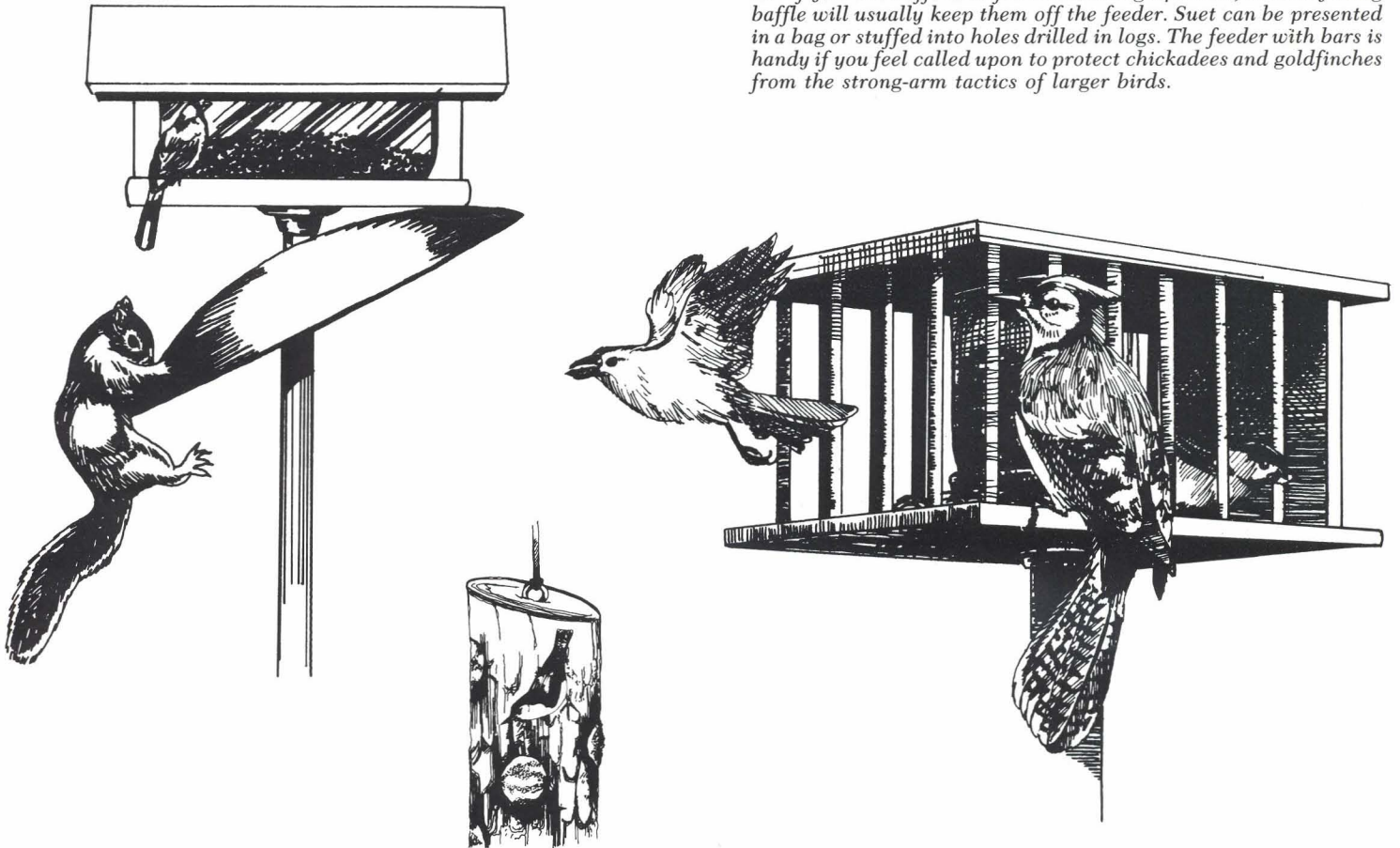
Squirrels won't waste any time in discovering—and eating—your seed supply. If you can't afford to buy their daily bread, "squirrel-proof" your feeder by locating it at least ten feet from any tree or other perch and almost that high off the ground. (Squirrels are Olympic class long and high jumpers.) A five-foot mounting pole may be tall enough if you place a squirrel baffle around it. Make a metal disc (or use a garbage can lid) and cut a hole in its center larger than the diameter of the mounting pole. Place this over the pole a few inches beneath the feeder so that it balances loosely on a clamp or other stop. Now when The Great Squirrely goes into his acrobatic routine and leaps onto the baffle, it will tilt and dump him off. Appease the poor character's hunger and pride by offering him ear corn speared onto a long nail driven into a post or tree trunk.

The best and one of the cheaper bird seeds is sunflower seed, especially the small oil-seed type commonly grown by grain farmers. Most common backyard birds relish these packets of protein. As an added bonus, starlings almost never take them, and house sparrows (European weaver finches) aren't crazy about them either. Native sparrows and finches really like millet, another inexpensive grain. Buy it and sunflower in bulk (fifty pounds or more)



feeding through the winter

Feeders are almost as varied as the feathered creatures to which they cater. Large-capacity feeders that meter out seed as it's needed are more than convenient; they also insure a continuous food supply, an absolute requirement if you're feeding during the winter. If you can't afford to feed marauding squirrels, a loosely hung baffle will usually keep them off the feeder. Suet can be presented in a bag or stuffed into holes drilled in logs. The feeder with bars is handy if you feel called upon to protect chickadees and goldfinches from the strong-arm tactics of larger birds.



at grain elevators. Don't bother with most of the commercial "wild bird seed mixes" available from supermarkets and hardware stores. These usually contain a high percentage of oats and other unpalatable seeds.

Suet (animal fat) rounds out a feeding operation by providing stick-to-the-ribs-food for numerous insectivorous species. You can render (melt down) the fat or provide it raw. Get beef suet free or for a few cents per pound from your local meat cutter. Hang it in mesh bags, pour it into holes bored into a log or place it in a wood cage.

If you want to get exotic, you can dish out raisins, apples, bananas and other fruit chunks. In winter they may fill the belly of a robin, bluebird or other straggler. In summer they aren't necessary for any species' welfare, but they can lure fruiteaters out of the tree tops for a closer view.

The most unusual bird feeder doesn't hold seeds, fruit or suet—just sugar water. And it attracts hummingbirds. Hummingbirds get no real benefits from man-made feeders, but man sure does. What a fascinating bird! Enjoy it at your feeder, but also plant flowers such as trumpet vine nearby.

Hummers take insects under natural conditions, and a steady diet of sugar water is not healthy. In fact, you should use a special commercial hummingbird mix or diluted honey in your feeder, not refined sugar. And take the feeder down as the season progresses. Hummingbirds have been known to hang around a full feeder until cold weather moved in and killed them.

Bird feeding is not necessary for birds. They've been surviving the winter months for thousands of years without man's help. Still, there's no real harm

the yellow pages

edited by Ron Spomer

WRITING READERS “?&..!”

Proud Native

Editor:

I was reading my *Outdoor Life* magazine the other day and was noticing where you are working with the antelope program. The transfer of them from other states and from western Kansas to the Flint Hills of Kansas is a very good idea. I hope this program is a success.

Keep up the good work. As a native Kansan, I'm proud of the Kansas Fish and Game Commission and the fact that I am a lifetime holder of both the fishing and hunting license.

Larry Dimon
Winfield

Pesti-Side

Editor:

I ran across a very interesting letter, entitled "Pesticide Profits," in a recent issue of your paper.

I noticed the referral to 'modern fencerow to fencerow and chemical farming as one of the most serious threats to wildlife and us all.' I assume this to mean the total population of the world.

While I agree that restrictions on the use of specific chemicals are needed, and possibly should be tightened even more so than they are at present, to take a broad shot (pardon the pun) at the use of all 'chemicals' in the production of farm commodities leaves a somewhat 'hungry' feeling in the back of my mind.

When you consider that the term 'chemicals' encompasses everything from pesticides to fertilizer, I feel that two points should be mentioned in their behalf: (1) Even with the use of pesticides today, 30 percent of all growing crops are still lost to pest damage, and without their use, U. S. crop production would drop 40 percent from present levels. (2) As far as a growing crop is concerned, whether the nutrients needed for growth and food production is synthetic (commercial fertilizer) or nonsynthetic (compost piles), is immaterial, so long as they are available in adequate amounts for its use.

If the four-billion-plus population of the world today doubles in the next 35 years, as is predicted, the farmers of the world will have to produce as much food on a yearly basis as the total food produced since the time of recorded history.

Today's American consumer pays about 13.8 percent of his yearly income toward his grocery bill. This compares with the following world figures: Japan, 21.5 percent; Mexico, 40 percent; U.S.S.R., 31 percent; China, 60 percent; U. S. (1951), 23 percent.

As a fellow supporter of maintaining a sound environment, not only for

wildlife, but the peoples of the world, it is somewhat disturbing to me when I see the misuse of one chemical being used as a springboard to encompass all chemical materials. The farmers in your area, through the use of chemicals, feed not only an additional 78 people in the world, but the very wildlife we are trying to protect. It would, indeed, be a very hungry world out there without them.

Galen L. Mears
President, Kansas
Fertilizer and Chemical
Institute

Chemical Hero

Editor:

Just a reply to "Pesticide Profits" by Larry Miller, Caldwell. There is nothing more important to our society than agricultural production.

There are about 2.4 million farms in the U. S. About 1.6 percent of the U. S. population is engaged in farming. Compare that with 71 percent in China, 37 percent in Mexico, 15 percent in the Soviet Union, and 13 percent in Japan.

The price of food would increase from 50 to 75 percent without the use of agricultural chemicals. In the U. S., we now spend only 13.8 percent of our gross income for food. Compared to 60 percent in China, 40 percent in Mexico, 31 percent in the Soviet Union, and 21.5 percent in Japan. In 1951, Americans spent 23 percent of their budget for food.

Pests destroy 30 percent (or \$20 billion worth) of crops annually in the U. S. To thrive, the crops in this country must "compete" with 800,000 species of insects, 100,000 plant diseases, 30,000 species of weeds, and 3,000 species of nematodes.

Without agricultural chemists, the world food supply would drop as much as 40 percent. Crops like fruits and vegetables could not be produced in commercial quantities without agricultural chemicals.

Jim Widrig
Beloit

Happy Hunter

Editor:

This note is to let you know how much I and the group of five that I hunt with enjoy the hunting in your state. We have been hunting in Kansas for the past seven years.

Last year's hunting trip, which was northeast of Greensburg, was from Nov. 15-20. We noticed that the quail population seemed to be down from previous years. Coveys of quail seemed to be smaller while the pheasants were more abundant. Prairie chickens were about the same as the past few years.

Looking forward to hunting in your state again next fall.

Steve Swanson

Laporte, IN

Memorial Win

Editor:

The article "Build A Better Duck Call" in your November-December issue was well written. A lot of people around here expressed their approval. I made copies and sent them to G.A.'s sisters.

I don't know whether you heard or not, but Sam Hoepfer, Jr. of Grandview won the World Duck Calling Contest at Stuttgart, Ark. in November (blowing a "Bog" Pettibon call). One of our dreams-come-true. A real proud bunch of guys. Tears were falling as bad as the rain drops. I had four callers at the contest, and they all made it into the call-off. Sure was proud and I'm sure G. A. was there and knew what went on. I wasn't the only one who felt that. Real memorable occasion. Thanks again.

Mary E. Pettibon
Deerfield, MO

Pity For Millions

Editor:

During the more than 70 years I have lived in Kansas, I have, at one time or another, seen most of the birds, wild animals, and beautiful scenery which was captured on camera by Ron Spomer, Gene Brehm, and Chris Madson, and which were recorded in the pages of the January-February issue. But seeing them all again in such beauty and profusion causes me to feel a great amount of pity for those many millions of my fellow Americans who are prisoners of concrete, brick, and smog, and to wonder

why the Maker of it all has blessed me so.

How tragic that so many of those unfortunate city folks impatiently hurry across our state and miss so much of the natural beauty that is so near to them.

My sincere thanks to *Kansas Wildlife* editors and photographers for the fine publication, and to the Kansas Fish and Game Commission for helping to make and keep Kansas the best place in the world to spend a lifetime.

W. Darrel Kelsey
Salina

King & Rex

Editor:

I just finished reading your article, "Let It Snow, Let It..." Sergeant Preston's dog was King and his horse was Rex.

Jim A. Baier
Holcomb

Not Said Enough

Editor:

It was a banner year for pheasant and quail and thanks to the landowners and farmers I've had many things given to me. Because of you landowners' consideration in allowing me to hunt your land, I've enjoyed delicious meals of wild game. I've seen our state's glorious fall beauty. And every time I look at the beautiful mounted pheasant rooster above my fireplace I'll be grateful to you. Some of you I met this year. Some of you I've known for years. Others I would like to meet, but I want ALL to know that there are hunters who truly

appreciate your understanding and cooperation. By allowing us to hunt your land, you are letting us carry on part of an American heritage and enjoy our beloved pastime. For this, a sincere, heartfelt "thank you" to you all, because it's just not said enough.

Robert Sherffius, Jr.
Wichita

Deputy GP

Editor:

While reading back issues of *Kansas Wildlife*, I ran across the letter titled "Sincerely Anonymous" in the January-February 1982 issue. Probably if the deputies would have checked with neighboring property owners they would have found that these guys didn't have permission to hunt neighboring property, which meant they shouldn't have wounded game to chase on this other person's property.

I, like many other hunters, have been concerned about this problem for a long time. I have often wondered why the Fish & Game Commission can't deputize citizens in each county to help out with this problem as the law enforcement officers do.

I'm sure there would be many volunteers to help the thinly-spread game protectors. I do hope the person who wrote the letter and other landowners will be considerate of those of us who are not slob hunters, when we ask to hunt.

D. W. League
Clearwater

Dear Mr. League:

In fact, we all are "deputy game protectors," in that each of us has the ability and responsibility to report game law violations. Just gather as

much information as you can about a violation, such as license plate numbers, individual descriptions, time of day, etc. Then immediately contact the nearest law enforcement officer. They'll radio a game protector.

Re-cycle

Editor:

I wish you would write an editorial about one of my pet peeves: littering. I fish Perry, Clinton, Pomona, and Melvern from shore, and the trash I have to wade through makes me sick. I see trash everywhere--beer cans, broken beer bottles, bait containers, lure cards, tangles of monofilament, etc. The cause is laziness and thoughtlessness. Anyone who can carry that stuff in can carry it out.

The true sportsman cares about the land, public or private. We need to convince outdoorsmen that the sportsman not only doesn't litter, he goes a step further and cleans up others' trash. We'll never get everyone to stop littering, but if sportsmen do that little bit extra, we'll take a big step toward cleaning up our favorite fishing spots.

Richard Rucker
Lawrence

P.S.--I've heard many fishermen complain about kids, those dirty longhairs who are spoiling the lake. But I've watched those rowdy longhairs clean up a mess after their parties and I've never seen a group of fishermen volunteer to police the shore of a fishing spot. Surely fishermen can do better than a motorcycle gang.

MISC. INFRACTIONS

THE LAW



Almost Legal

Being arrested for killing a deer without a permit is one thing, but getting into trouble for shooting a deer in season when you do have a permit takes special effort.

Allen Flax, Hays, harvested a mule deer on Dec. 5, 1982. Unfortunately, his permit was for a whitetail deer only. Mistaken identity might have been at least a partial excuse, but Flax further jeopardized himself by failing to tag the animal.

Game Protector Jim Kellenberger showed Flax the error of his ways. The judge emphasized the lesson with a \$250 fine and \$19 court costs.

Wrong Place

Joseph L. Munn and Leonard R. Shockey picked the wrong place and wrong time to trespass for a pheasant shoot. The two were driving down a county road when they spotted pheasants flying into the end of a stubble field. Ignoring the "No Trespassing" signs posted at the edge of the field, they bailed out and gave those roosters their best shots. They should have looked closer before they leaped.

The landowner just happened to be hunting that field. His guests were two young boys, their friend, and their father, Mike Smyth, a game protector. The rest of the story is anticlimactic. The landowner approached the illegal hunters, introduced himself, and then introduced his friends.

Munn and Shockey were mum and shocked. Each paid \$81 plus \$19 court costs.

Run, Run

A deer poacher found out he could run, run, and run some more, but he couldn't hide. The law caught up with him in Florida.

More than a year ago, Kenneth Landry, formerly of the Topeka area, killed a deer in Missouri. He had no permit. When he transported the carcass to a Topeka shopping center cooler, he violated the federal Lacey Act.

An anonymous caller told Kansas Game Protector Bruce Burlew about the deer hanging in the cooler, but by the time Burlew got there to check it out, the carcass was gone. And so was Landry. He had moved to Iowa. No one in the shopping center seemed to know much about the deer. Landry feigned innocence when he was contacted, too.

A year later, Burlew received a phone call from a store manager in the shopping center who could no longer live with his conscience. He signed a written statement, and federal wardens went looking for Landry. He seemed to have vanished, but they eventually caught up with him in Florida. He was assessed a \$500 civil penalty.

Slow Learner

When Game Protector Tracy Galvin caught Roger A. Clark dove hunting with an unplugged shotgun last October, he was a bit surprised. This was the same Clark he'd ticketed for fishing without a license a few months earlier. That infraction had cost the Pratt resident \$64. Galvin had expected the man would have learned his lesson. Now he would have to pay for a second educational experience. Total cost was \$69 and the loss of his hunting license for 30 days.

But Galvin had not seen the last of Clark, who got nabbed for hunting pheasant without a license on opening weekend. The judge took another \$69 from him. But by late December, Clark was ready for another lesson.

$\$64 \times ? = \$?$

The day after Christmas, a bowhunter saw a car chasing a deer over a rise. Then he heard shots. He scrambled out of his tree stand, ran to his own car, chased the poachers out of his field and called Galvin. The vehicle license number and description of one suspect pointed to a certain Roger A. Clark.

The judge hit Clark with \$250 for chasing deer with a motor vehicle. Then he took \$19 for court costs. And for good measure he sentenced Clark to 60 days in jail. Whether this inspires Clark to begin playing by the rules remains to be seen. Galvin isn't getting his hopes up.

Sundown

The law says that when the sun is done for the day, so are the small game hunters. At least they're supposed to be. Some just don't want to quit. They risk a few shots at sure targets, knowing the game protector can't be everywhere at once.

On Jan. 15, Charles D. Durham, Wichita, took a chance that his area GP wasn't around, shot at some critters, and was right. No GP jumped out of the bushes. But a nearby farmer witnessed the action and called the county sheriff. Two deputies drove out and collared the culprit, turning him over to Game Protector Virgil Cox who cited him for hunting without a current license and hunting game animals after sunset.

Law's Law

The Game Protector understood the rancher's point, but the law is the law, and when the Kansas Legislature establishes it, a game protector's duty is to enforce it.

Game Protector Bruce Peters caught a Colorado ranch hand, Marvin Rushton, shooting coyotes in Kansas on land his boss owned. The landowner had provided Rushton with the rifle and instructions to shoot coyotes. It would have been legal for the Colorado resident landowner to shoot coyotes on his Kansas property without a license, but his hired hand needed a current hunting license. The judge fined him \$90 and \$19 costs.

A MOST DANGEROUS GAME

HUNTING



Want to live dangerously? Go turkey hunting.

That isn't funny, it's fact. Spring turkey hunting is the most dangerous shooting sport—for obvious reasons.

A deer hunter who dressed in camouflage, secreted himself in brush and proceeded to snort, bleat, and crash antlers together would be considered suicidal. Yet turkey hunters perform in a similar manner as a matter of course. Their success depends on their ability to evade the sharp eyes of old gobblers and convince them that they (the hunters) are "birds of a feather." Usually, a good turkey caller brings the gobblers running, but occasionally he'll bring a poor hunter sneaking. When an inexperienced hunter crawls within shotgun range of what sounds like a turkey lurking in the brush, he'll sometimes shoot first and ask for identification later. This, of course, is unforgivable, cloddish hunting behavior, but that is of little consolation to the turkey imitator in the bushes who experiences it firsthand.

So what do you do about it? Take defensive and offensive action. If every turkey hunter played fair, there would be less need for defending oneself. Since gobblers are the only legal game during the spring season, identification is

mandatory. Don't shoot at sounds in the bushes, no matter how authentic. Make sure you are shooting at a black and brown turkey bigger than a bread box with a beak, red and blue unfeathered head, and a beard sprouting from its breast. Very few hunters look like that. Don't shoot at a patch of red near a turkey sound, either. A young man in South Dakota did that a few years ago and discovered he'd

killed his hunting partner who'd decided to wear a red hat for visibility. Use small shot. It will kill head shot turkeys, but is less likely to drop a man.

For offense, consider identifying your hiding area with a portable sign spelling "MAN." Missouri is experimenting with a hunter orange band wrapped around a tree above calling turkey hunters. Turkeys have been taken by hunters sitting under these colored ribbons,

so you might want to try one. Call sparingly. Gobblers will hear and respond to one alluring yelp from remarkable distances. Hunters need a steady trail of yelps and gobbles to follow to you. Don't give it to them.

Turkey hunting can be a challenging, pleasant, and rewarding experience but not when foolish accidents happen. Do your part to prevent them, and have a truly good hunt.

RS

'82 Crop Report

Turkey

Tentative harvest data from 95.7 percent of Fall 1982 turkey permit holders (639 of 667) reflects a very good success rate.

Although bow hunting continues to be the least popular hunting method during the fall turkey season, those archers who tried it bagged 66 turkeys (16 toms and 50 hens) for a statewide harvest success of 29.7 percent compared to 48 turkeys (15 toms and 33 hens) and 22.7 percent success in 1981.

The 348 active firearms hunters harvested 228 turkeys (106 toms and 122 hens) for a 65.5 percent success rate, up from 56.2 percent in 1981. Toms accounted for 46.5 percent of the harvest this year compared to 43.3 percent in

1981, indicating hunters are becoming more proficient and more selective. The statewide turkey population is also increasing.

Pronghorn

Only 69 bowmen went afield for the fleet footed pronghorns, and just 11 of them were skilled enough to bring home the bacon. They took eight bucks and three does for a success rate of 15.9 percent. Archers in 1981 took seven bucks and five does for a hunter success of 13.9 percent.

As expected, 181 riflemen did much better, bagging 130 bucks and 43 does for a 95.6 percent success. Half the firearms permits went to landowners; the other half

went to general Kansas residents.

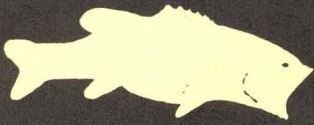
The post season winter antelope count in Wallace, Sherman, and Logan counties tallied 1,225 pronghorns. That count, up 39.8 percent from 1982, reflected better censusing techniques.

Deer

Kansas' deer herd continues to increase, and the harvest is moving up with it. The 1982 season for firearms hunters saw 19,633 sportsmen in the field. They took 11,446 deer--10,130 whitetails and 1,316 mule deer--for a success rate of 58.3 percent. Included in that total were 8,465 bucks and 2,981 does.

Results of the archery season haven't been compiled yet.

FISHING



LUNKER LARGEMOUTH

Now is the time for all bass fishermen to catch the lunker of a lifetime--and lots of semi-lunkers.

The pre-spawn and spawn periods seldom last more than a few weeks each spring, but they can be the best time to haul in a really big largemouth for several reasons. For one thing, the water is warming from its winter chill, and the bass are feeding more aggressively. Secondly, the females are ripe with eggs and weigh more than at any other time of year. Because they spawn in the shallows, they are easier to locate. Finally, the males that guard the nests

attack anything that moves too close.

The early action begins with the bass following structure toward the shallows. Hunt for them along ledges, old road beds, and creek channels. Bump a jig with pork trailer along the bottom and into the holes. Don't expect smashing strikes, but be alert to subtle pick-ups. When you hook a fish, work the area thoroughly. Several bass often school in the deeper holes.

On hot, sunny days the shallows will warm and entice the bass into them. Sometimes you'll see them

chasing frogs and bait fish into shore in less than six inches of water. That's when you should offer them a plastic worm, spinner, minnow, or anything else with a hook in it. Live bait is effective when dropped into brush and pockets. Approach them cautiously, for they're spooky in the low water, especially if it's clear. Use the lightest line you think you can get away with.

A cold front or cold night will push the bucketmouths back into their deep hideouts, so in the mornings and during blustery, wet days, search for them near that deeper structure

close to the shallows.

Spawning will begin when the water temperature reaches 68 degrees. Males will fan out nests on firm bottom in about 30 inches of water, less if it's murky, more if it's clear. The big females will move in for a few days, lay their eggs and leave. The feisty males will hang around guarding the nest, striking anything that moves too close. Get out to the lake when that happens, fish hard and be ready to battle the biggest bass of your life.

RS

WARBLER WATCHING

NATURE



Poets have long held that spring is a ripe time for man's earthier interests. A time when our fancies turn to natural callings. These spring urges pull certain ones of us from the comforts of our beds at the tender hours of dawn so that we may participate in the passion and color that is passing through our verdant woods, singing lustily. We wake to see the migration of the wood warblers.

Wood warblers aren't mythical elves or fairies. They are a family of small, brightly-colored, insectivorous songbirds. The largest (yellow-breasted chat) is 6¼ inches long from the tip of its beak to the tip of its tail. The smallest (parula warbler) measures just 3¾ inches over the same course. Most warblers dress in contrasting black, yellow, and white, but many wear blue, gray, orange, chestnut, and red. When you see one for the first time, you gasp in amazement. The trick is seeing one.

Warblers migrate at night, which means they're available for study during daylight hours while they refuel for the next flight north. Woods that are empty one day can be fluttering with warblers

the next. The best weather for warbler watching is a stalled cold front which causes the birds to "stack up" as they bump into it from the south. The nasty weather also forces them to feed more aggressively, making them more noticeable.

Best places to find warblers include forests, shelterbelts, riparian woods, and city parks. Parks are especially good because mature trees are usually well spaced for unobstructed viewing. The manicured lawns make for easy walking, and hedges concentrate ground-feeding warblers. An effective birding technique is to post watchers at one end of a line of hedges while someone slowly walks toward them from the other end, pushing all the birds into a

convenient concentration. Birds in heavy vegetation can often be lured out with a squeaking or hissing sound. (Say "psst" to imitate air escaping from a tire.) Warblers don't warble, but they have distinctive songs and calls. With experience, you'll be able to recognize and use them to locate their makers.

The migration peaks in mid-May, but April birds are easier to see because there is less foliage. Forty-three species of warblers pass through Kansas, but only thirteen have been recorded nesting here. If you want to see as many as you can, break out the binoculars and an identification book and start looking. Spring comes only once each year.

RS

Nature's Notebook

by Joyce Harmon

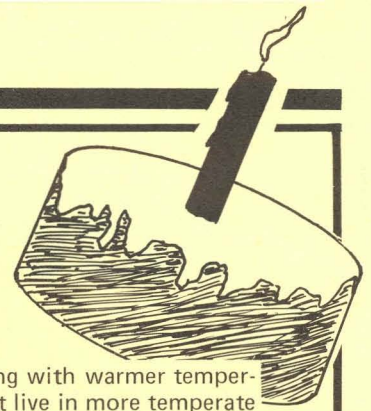
Wildlife Education Coordinator
Kansas Fish and Game Commission



“Spring Fling”

“Spring brings warmer days, flowers, food, singing birds, and animal babies.”

HAPPY BIRTHDAY TO YOU!



Spring is birthday time for most wild animals. Increased daylight and food sources along with warmer temperatures make the beginning of life easier than it would be in winter or fall. Those creatures that live in more temperate climates or those indoor animals have the benefit of a constant spring. Their young may be born anytime.

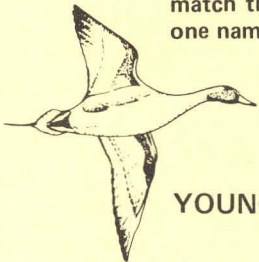
Gestation is the period of time between mating and birth. During this time, animal young are developing either inside their mother or inside an egg. **Incubation** describes gestation in birds and other animals that develop in eggs. They are kept warm until they are ready to hatch. Eggs from insects and fish are not incubated.

The chart below gives an idea of how wild animals differ in birthdates. How does their birthday compare with yours? Can you make a similar chart for other Kansas species?

WILDLIFE	MATING SEASON	GESTATION OR INCUBATION	NUMBER OF YOUNG	COMMENTS
Black-tailed Prairie Dog	Late March or early April	28 to 33 days.	Litter of 2 to 10, usually 5 or 6.	Born hairless and with closed eyes. Yearling females produce fewer young than older females. Fully furred in 26 days. In 33 to 37 days, eyes open and pups can call. Begin foraging at six weeks.
Arkansas River Shiner	Spawns from June to August when streams near flood stage.	3 to 4 days.	100's (exact number unknown).	Eggs drift near water surface in swift currents of open channel. Hatchlings swim to shelter in 3 to 4 days.
Massasauga	Both in spring and fall.	15 to 16 weeks.	5 to 13 per litter.	Young are born in July and August and are venomous at birth. Male does a courtship "dance."
American Toad	During spring rains from March through early May.	Eggs quickly hatch to tiny tadpoles, and metamorphose into tiny toadlets within a week.	4,000 to 20,500 eggs.	Gather at breeding sites of shallow streams or ponds. Males attract a mate by singing choruses.
Marsh Wren	May	13 to 14 days.	3 to 10 eggs; 5 or 6 most common.	Courtship songs and display attract mates. Nest in cattails of wet marshes. Incubation done by female. Male helps in feeding young.
Red Bat	In autumn, sperm remain dormant until spring ovulation.	Up to 3 months.	1 to 5; 3 or 4 most common.	Young born hairless and blind in mid-June. Can fly after one month and are weaned in 5 to 6 weeks.
Mule Deer	Rut runs from September into December. Breeding peak in late October to early November.	200 days.	1 or 2, usually twins.	Spotted fawns born in late May or June. Follow doe to forage 1 week after birth. Nurse for 3 to 5 months.

NATURE'S NICKNAMES

The young of many species are given special names. See if you can match the animal baby with the adult. Some young may have more than one name.

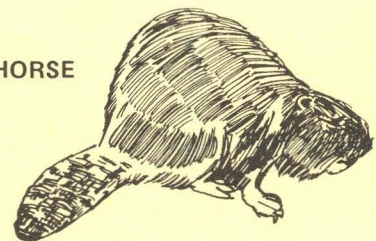
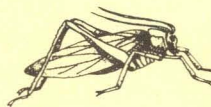
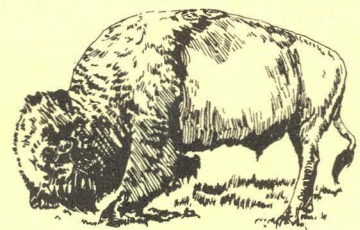


YOUNG

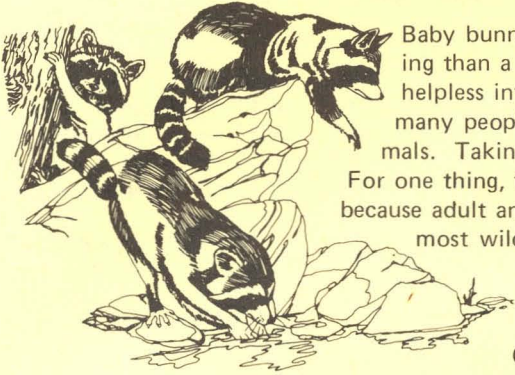
ADULT

- A. SQUAB
- B. EAGLET
- C. CATERPILLAR
- D. FAWN
- E. DUCKLING
- F. PUP
- G. KIT
- H. SHOAT
- I. KID
- J. POULT
- K. FRY
- L. WHELP
- M. TADPOLE
- N. CUB
- O. LARVAE
- P. OWLET
- Q. CYGNET
- R. JOEY
- S. FOAL
- T. GOSLING
- U. FLEDGLING, HATCHLING, NESTLING
- V. CHICK
- W. CALF
- X. ELVER

- _____ BEAR, LION, SHARK, TIGER
- _____ BIRD
- _____ FOX, BEAVER, RABBIT, CAT
- _____ GOAT
- _____ SWAN
- _____ TURKEY
- _____ KANGAROO
- _____ DUCK
- _____ OWL
- _____ FISH
- _____ EEL
- _____ CHICKEN, OSTRICH, OTHER BIRDS
- _____ FROG
- _____ INSECT
- _____ EAGLE
- _____ HOG
- _____ PIGEON
- _____ GOOSE
- _____ BUFFALO, ANTELOPE, OTHER MAMMALS
- _____ DOG, FOX, SEAL, COYOTE
- _____ DEER
- _____ ZEBRA, HORSE



Mother Nature's Babies



Baby bunnies, cuddly raccoons, and big-eyed fawns. What could be more endearing than a baby wild animal? Just one look at any of Nature's cute and seemingly helpless infants is enough to melt the heart of the toughest hombre. That's why so many people create problems by "rescuing" what they assume to be orphaned animals. Taking a young animal from the wild is bad for it and you for several reasons.

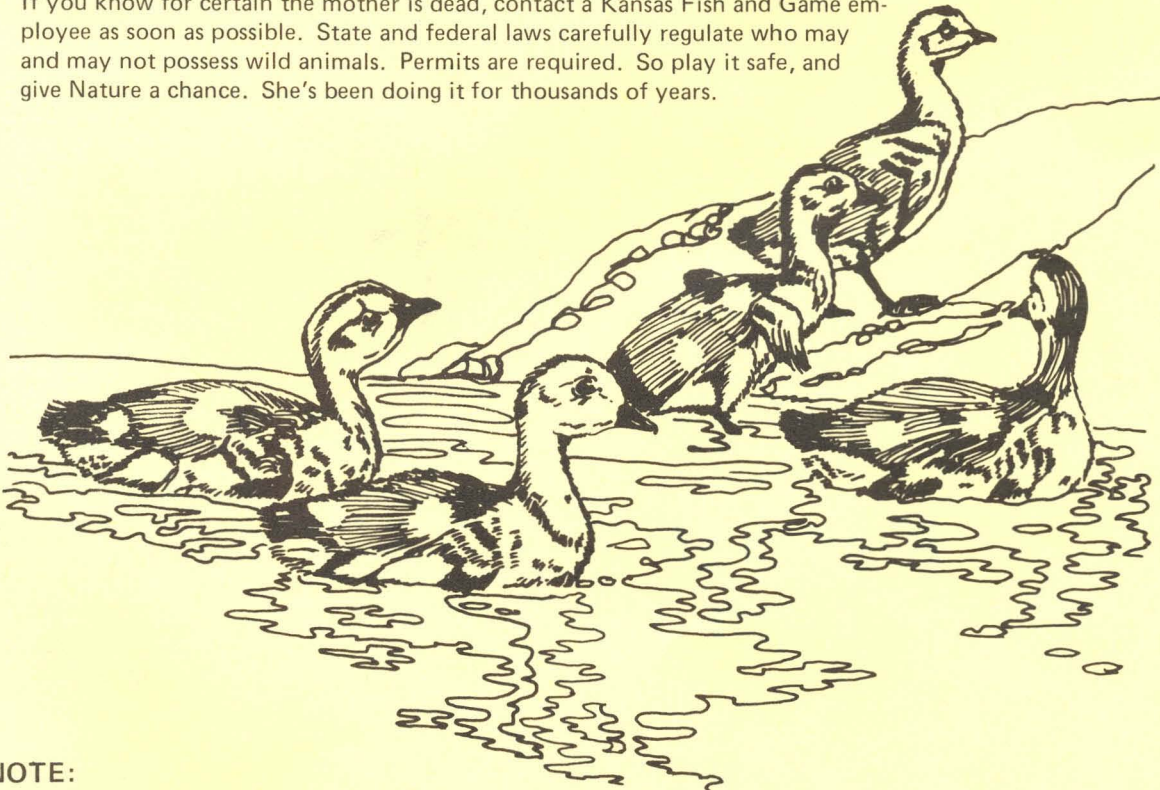
For one thing, few wild animal babies are ever abandoned. People just think they are because adult animals flee when man comes snooping around. Even when undisturbed, most wild mammals leave their young alone and hidden, visiting them only for brief feeding periods. This protects the scentless and camouflaged youngsters from the sharp eyes and noses of predators.

Taking a baby wild animal from the wild is really a form of kidnapping. Chances are the young critter will die from poor or improper nutrition.

If it does live, it will not be part of the natural wildlife population, and chances are it will not even make a good pet. Many wild animals turn vicious without warning when they mature. People have been bitten, gored, and even killed by "pet" deer, raccoons, coyotes, etc. When an unruly pet is no longer wanted, its owners sentence it to life behind bars or dump it into the wild where it does not know how to fend for itself. Zoos cannot handle all of the wild pets that become unmanageable. Another danger is that wild animals can transmit rabies, distemper, tuberculosis, skin diseases, respiratory diseases, tapeworms, mites, lice, flukes, roundworms, ticks, and fleas to you or your domestic pets.

Yes, Mother Nature is occasionally cruel when a mother animal dies and leaves her young to starve, but chances are you'll be more cruel by stealing perfectly healthy babies from their mother. If you find wild animals this spring, quickly and quietly leave the area. The mother will return, probably at night.

If you know for certain the mother is dead, contact a Kansas Fish and Game employee as soon as possible. State and federal laws carefully regulate who may and may not possess wild animals. Permits are required. So play it safe, and give Nature a chance. She's been doing it for thousands of years.



NOTE:

School districts interested in receiving free wildlife education materials for kindergarten through third grade may contact Joyce Harmon at Kansas Fish & Game Commission, R. R. 2 Box 54A, Pratt, Kansas 67124. Phone: (316) 672-5911, ext. 168. The materials include children's booklets and an accompanying teacher's guide with worksheets, activities, and bulletin board ideas. All Kansas schools can receive a complete set of the four grades' materials.

Eat, Drink, & Be Wary

NATURAL ISSUES



Bye, Bye, Soil

It takes 1,000 years for one inch of topsoil to form under natural conditions. And it takes less than four years for erosion to destroy that inch.

Considering those facts, you don't have to be a mathematician to figure out that high rates of erosion can do devastating--and virtually irreversible--damage to topsoil, the dark, rich layer of earth that can transform ordinary land into productive farmland.

Increasing erosion is a problem with ominous implications for future generations. Thousands of acres of farmland are being lost at a time when the need for food around the world is on a sharp increase.

If erosion throughout the United States were confined to one region, all of the topsoil from an area the size of the State of Rhode Island would be gone in less than three months. According to the U. S. Department of Agriculture, one third of the nation's cropland is currently eroding at an unacceptable rate. Losses range from one to more than 40 tons per acre per year. In the Corn Belt, Delta states, and the Appalachian states, more than a third of the cropland is eroding at rates exceeding five tons annually--well

beyond the rates that can be replaced by mechanical, chemical, and natural forces.

Ironically, technological advances have masked erosion's adverse impacts on farmland. As erosion diminishes the productivity of land, farmers boost yields with new technology, such as hybrid seeds, pesticides, more efficient equipment, chemical fertilizers, and intensive tilling practices. The innovations hide the losses that would have resulted had the stripped soil been left on its own.

In addition, erosion has not been concentrated in one area, where its impact could have been more easily assessed. Instead, it has been spread over hundreds of millions of acres. When the damages became evident, the problem was already beginning to reach crisis proportions.

Solutions to soil losses--such as an end to government support for policies and projects that erode away topsoil--are available, but because farmers are a small and financially pressed group (they make up less than four percent of the U. S. population), the public will have to be the driving force behind reforms.

Keep It Clean

A large majority of Americans want clean, safe water--even if attaining it requires higher taxes and additional industrial controls, according to a comprehensive public opinion poll released by Louis Harris and Associates and commissioned by the Natural Resources Council of America.

Curbing water pollution was named by 74 percent of the adult population as "very important" in making the quality of life better. And Americans do not feel they must sacrifice economic growth for environmental quality. By 89 percent to 6 percent, citizens are convinced that such a trade-off is not necessary. They believe the country can have economic growth AND clean water.

This poll is important since the Congress will be considering an extension of the Clean Water Act this year. When asked directly about the Act, 94 percent of the public want it kept at least as tough, and 60 percent want to make it "stricter." Such resolve should make it tough for Congress to weaken the Act, including those sections that protect wetlands important to wildlife.

Wet-Suit

Charging that the Administration is "abandoning the nation's wetlands under the guise of regulatory reform," 14 conservation groups have sued to revoke some 1982 regulations that eliminated a popular wetland protection program, according to the Wildlife Management Institute.

The Army Department issued new regulations last July under Section 404 of the federal Clean Water Act that withdrew protection from most of the nation's 148 million acres of remaining wetlands. The so-called "404" program originally required developers to get permits from the Corps of

Engineers in order to dredge or fill in wetlands. But last year's regulations lifted that requirement for many types of wetlands important to wildlife.

"Wetlands are some of the richest fish and wildlife habitat in this country, and the Reagan Administration is attempting to simply write them off," said National Wildlife Federation executive Jay D. Hair. NWF is a party in the suit.

The suit states that the Army's regulations allow discharges that are illegal under the Clean Water Act, and that the regulations were adopted without adequate consideration to the procedures of the National Environmental Policy Act.

NWF says that the primary targets of the suit are six of 27 nationwide permits that have been issued under the regulations and which automatically authorize any person to destroy aquatic areas without federal oversight.

Wetland programs in the current Administration are hard to figure. On the one hand Army is inside government apparently trying to destroy them. On the other hand, Interior Secretary Jim Watt has launched a strong effort outside government to protect the country's remaining wetland resources.

NWCP

The Nature Conservancy and the Richard King Mellon Foundation have launched a \$50 million program to conserve wetlands, according to the Wildlife Management Institute.

The new National Wetlands Conservation

Project will identify critical wetland areas across the country. During the next five years, key areas will be acquired and managed with the help of government, business, and private philanthropy. The first emphasis will be on acquiring 17,000 acres of wetlands along the Escambia River in Florida.

The Mellon Foundation contributed \$25 million to the project, the Conservancy said, which is the largest single grant made by a private philanthropy for conservation purposes.

The gift will be matched by the Conservancy with contributions from individuals, businesses, government agencies, and other philanthropies.

Loving Deer To...

When the Florida state wildlife agency opened a "mercy kill" season on deer in the Everglades last year, the hunters, anti-hunters, and media managed to stage such a circus of controversy that the real issue was overlooked. Preservationists tried to stop the limited hunt which was ordered to thin starving deer herds stranded by high waters. The protectionists tried to capture and transplant the deer to a "Wild Kingdom." The area was jammed with hunters, saviors, and reporters. In the ensuing media melee, southern Florida's larger environmental problems were ignored. The natural hydrologic system of the swampy panhandle has been disrupted by development and drainage projects. Wildlife has been decimated. The currently starving deer are only a surface symptom of a much larger malignancy.

...Death

Animal protectionists have managed to kill another population of deer. And this time it cost about \$3,000 per deer, the Wildlife Management Institute reports. More than 85 percent of 203 deer captured and moved from Angel Island State Park in California have died in their new home in the Myacamas Mountains near Ukiah. As predicted by professional wildlife managers, what started out as a rescue evolved into an inhumane slaughter.

The Angel Island herd had expanded beyond the park food supply. The California Department of Fish and Game, which is legally responsible for the state's wildlife, recommended that the most humane and economical way to reduce the number of deer was for biologists to shoot the excess. But protectionists complained, sued, and forced the state to capture and remove the extra animals to an area with fewer deer. It cost \$3,000 each to transplant the animals.

Dale McCullough, professor of forestry and resource management at the University of California, said last week that most of the deer did not survive in the new habitat. He said 85 percent died in the first year and more than half died in the first three months. He blamed the poor condition of the deer at the time they were transported and their lack of experience outside a controlled refuge environment. McCullough said that 15 of the deer were fitted with radio transmitters to allow biologists to monitor their fate. Two died of malnutrition, two were killed by predators, two were run down by vehicles, two were victims of poachers or vehicles, one was killed by dogs and three died of unknown causes.

McCullough said that two of the 15 remain alive, and one has disappeared.

A similar situation exists with a captive deer herd on Smithsonian Institution property in Virginia. The herd needs reducing but the Smithsonian hierarchy has been buffaloeed by protectionists. The Institution is ignoring its wildlife specialists and may try a transplant similar to the Angel Island fiasco.

Hippy Candy

Many hikers and hunters are convinced that a candy bar is the perfect midday pick-me-up. Candy has become a traditional trailside ration. The burgeoning new science of athletic medicine has punctured the sweet old candy bar-in-the-daypack myth. According to the new jock docs, candy will indeed spike your blood glucose level for a few minutes. But your pancreas will overcompensate with a double shot of insulin which will cause your glucose level to drop lower than it was before. A shortage of glucose leads to lightheadedness, the shakes, hunger, and generally poor bodily performance. The hippies were right all along; the best goodies for the pack are dried fruits, granola, nuts, and appropriate stimulants--such as cold tea.

Fair Fee

The fee for grazing livestock on public land will be \$1.40 per animal per month in 1983. That is 46 cents less than last year and is about one-fifth of the forage's fair market value.

Pay The Piper

Hikers, bird watchers, water skiers, and others who use state game lands in Washington, but who do not buy hunting, trapping, or fishing licenses are now paying their way.

State officials require these recreationists to buy a \$5 conservation decal for their car. The new law went into effect in 1981, and although there have been a few hitches implementing the measure, spokesman Ed Ives says the general public is becoming aware they too have to help pay the freight for wildlife.

Tradin'

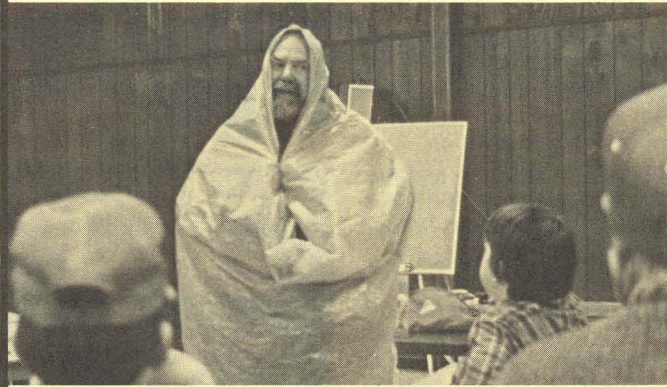
In a series of trades that would confound even the topsy-turvy sports world, the state of Idaho is continuing to improve its wild turkey population.

Last year, Idaho completed a series of trades with various states that brought 177 Rio Grande turkeys and 73 Merriam turkeys. This year, it will bring another 150 Rio Grandes and 50 Merriams if all goes as planned. South Dakota still owes Idaho some Merriams for the pine martens received earlier. Texas is trading for pheasants. New Mexico will get surplus kokanee salmon eggs and Oklahoma will get antelope.

Kansas will send turkeys in return for sharp-tailed grouse from North Dakota, which will get chukars from Idaho. Idaho will get those chukars from Nevada in a trade for Columbian sharp-tails.

Now, what about the player to be named later?

(From South Dakota Game, Fish & Parks News)



Stayin' Alive

Papa Bear (above) dons the "shelter" from a commercial survival kit that he says could kill you. At right, he ignites 0000 steel wool with a 9-volt battery.

It was a perfect place to catch a big trout, but the young fisherman was not going to get the chance. He was about to begin a desperate struggle to save his life.

Earlier that day he'd walked three miles up the mountain creek from where he'd parked his car. The warm autumn sun sparkled off the golden aspen leaves. But as he waded eagerly toward the deep hole where the big trout lurked, he slipped into the icy water. The cold shocked him, and he immediately lost all desire except to get back to his car and warm up. He never made it.

He'd paid little attention to the lay of the land behind him as he'd fished up the stream. Now that he was hurrying back through it, teeth chattering, it was easy to take the wrong fork at a beaver dam.

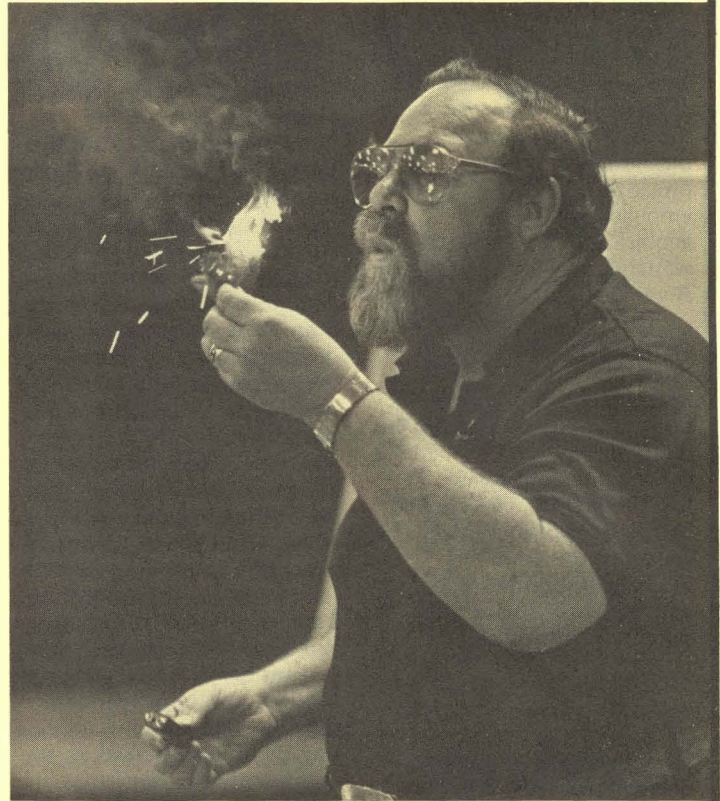
Rescuers found him the next day, dead from exposure (hypothermia--severe lowering of body temperature). Dry matches were in his pockets, and several small piles of tinder dotted the ground nearby. He'd tried to light a fire to warm himself, but by the time he'd begun, he'd lost the mental and physical coordination to succeed.

Bob Whitmore, better known by his officially adopted Indian name, "Papa Bear," tells this story and too many more like it. Gruesome tales of people who died needlessly because they lacked the basic knowledge and few materials to keep themselves alive for a few hours in the outdoors.

According to Papa Bear, survival in the wilderness--or for that matter in a snowbound vehicle or during other life-threatening situations--is only 10 percent equipment and 10 percent knowledge, but 80 percent attitude. You have to be confident that you have what it takes to survive. And, after attending one of Papa Bear's entertaining classes, one has the attitude he could survive an overnight on the moon without oxygen.

Papa begins his seminars with some lively talk that dramatizes the significance of the course, outlines its goals, and draws the audience into a friendly "one-on-one" relationship that makes the two-day, fifteen-hour course sail by. Papa Bear is no boring drone, and he lets his students know it immediately. Then he hits his stride and the sparks really fly.

He starts fires with a magician's bag of tricks: steel



wool and a dry-cell battery; gunpowder and nail polish remover, carbide, water and a spark; flint and steel. He gives his students more options for starting fires than they knew existed.

He shows how to build shelters out of sticks, branches, and snow piles. He signals search planes ten miles away with a small mirror (it takes practice). He describes how to manufacture water out of thin air--even dry desert air. He lists and shows what to carry in your vehicle and on your person to survive in mountains, plains, and deserts. He points out the inaccuracies in many survival techniques, including some described in the Boy Scout Handbook. He exposes the woefully inadequate commercial "survival kits" that could do more to kill you than save you.

Afraid of snakes? Papa Bear swears you'll survive a rattlesnake bite in spite of everything you do to save yourself--his way of saying

most first aid treatments for snake bite are worse than the bite itself. His only treatment is to wrap a few small rubber bands above and below the site of the bite and calmly take the victim to a doctor. Fewer than one percent of rattlesnake bite victims in the U. S. died last year.

Papa Bear's weekend Wilderness Survival Seminars are being sponsored in Kansas by the Hunter Safety Instructor Association in cooperation with the Hunter Safety Division of the Kansas Fish and Game Commission. Courses have been held in Wichita, Topeka, Garden City, Syracuse, Ottawa, and Salina. Pittsburg will host one April 30-May 1 at the National Guard Armory.

The popularity of Papa Bear and his message will undoubtedly bring him back for more seminars later. Watch for them. And stay alive.

	● best ○ good	sun flowers	Proso millet	cracked corn	thistle	suet
white-crowned sparrow	●	●	○			
song sparrow	○	●	○			
tree sparrow	○	●	●			○
Harris' sparrow	●	○	●			
cardinal	●	○	○			
purple finch	●	○	○	○		
house finch	●	○	○	○		
dark-eyed junco	●	○	○	○		○
goldfinch	●	○	●	○		
pine siskin	●	○		●		
black-capped chickadee	●					●
tufted titmouse	●					●
red-breasted nuthatch	●					●
white-breasted nuthatch	●		○			●
blue jay	●		○			○
red-bellied woodpecker	●		●			●
hairy woodpecker	○					●
downy woodpecker	○					●
common flicker			○			●



Ron Spomer

in providing them with healthy, untainted food. During an occasional blizzard or ice storm, you could save the neighborhood birds from starving. Just don't turn their artificial dining hall into a death trap by letting cats and other predators take advantage of it. Place the feeders near cover but not so close that predators can lie in ambush. Keep the feeding area clean of droppings, which could spread disease. Once you begin winter feeding,

don't stop. Birds will become dependent on you. Without their daily "fix," they could starve. If you leave for several days, have a friend refill any empty trays.

Besides the esthetic enjoyment, there's another good reason to encourage birds to live in your yard. They'll glean insects from your trees, lawn and garden, keeping a more natural balance without resorting to dangerous chemical sprays.

a place to nest

For man, home is where the heart is, but for many animals, home is where the cavity is. Holes and hollows in trees are essential for the survival of wood ducks, kestrels, bluebirds, flying squirrels and dozens more species. Traditionally, man has jeopardized cavity nesters by felling dead branches and trunks, the very materials needed for good hollows. Fortunately, concerned persons can replace many of these destroyed wildlife homes by building and erecting artificial tree cavities—more commonly called bird houses or boxes.

A bird box should imitate a tree cavity as much as possible. Use heavy, rough wood for insulation and a rustic look. If you can get sawmill waste with the bark still on, so much the better. Cypress, cedar or redwood will last the longest outdoors, but heavy pine is cheaper. Protect it with a varnish or tung oil finish on exterior surfaces only. Don't build boxes out of metal or plastic. They can overheat and kill nestlings.

The size of the entrance hole and its distance above the floor are important in keeping predators out. For instance, starlings will reach into shallow bluebird boxes and peck the young or adults to death. Follow the dimensions given in the accompanying chart. Don't put dowel rods or other

perches beneath the entrance hole. Cavity nesting birds don't need them, but pests such as house sparrow use them as harassment platforms.

Cut the roof larger than the floor so it overhangs and slant it forward so it sheds rain. Hinge the roof, floor or one side so you can remove parasite-riddled old nests immediately after a brood has fledged.

Mount the boxes on posts or metal poles if predation is a problem. Some snakes will crawl into nests and eat the eggs or young. Raccoons, opossums and house cats can also be a problem. Face the entrance holes away from prevailing winds and toward some type of brush or branch that fledglings can fly to. Place wood duck boxes near or over water. Put barn owl boxes in large trees or high on the outer walls of buildings and silos. Barn owl nests are critically needed near farms. These unusual birds are famous for their rat catching talents.

The only nesting material you should put in the boxes is a soft layer of sawdust for woodpeckers, owls and kestrels. All other birds will haul in their own bedding.

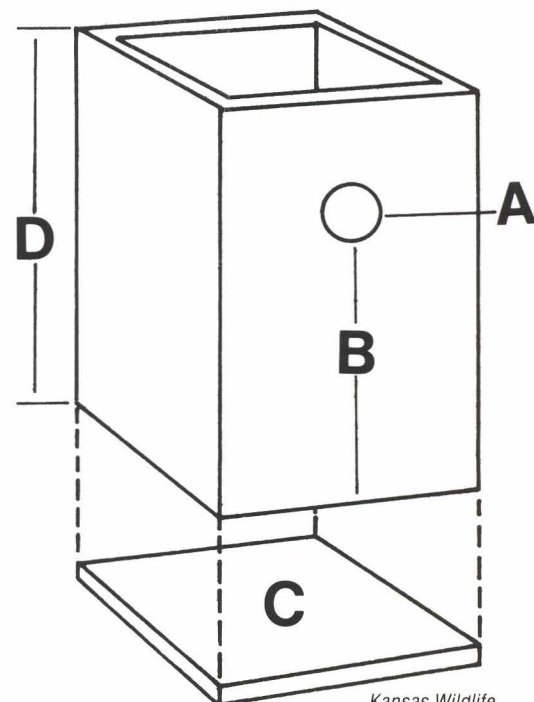
A simple shelf mounted under building eaves may encourage barn swallows, phoebes or robins to nest.

Mammal houses are easy to build. For

Most birds are comfortable with very simple shelter as long as the dimensions of their home are appropriate. The table below summarizes the preferred nest box sizes for many common backyard species. The dimensions refer to the generalized nest box to the right of the table. One extremely beneficial summer bird, the purple martin, would rather live in an apartment than in a single dwelling. The plans shown at far right can be used to build any number of stories that suits your fancy.

Dimensions for Tailoring Nest Boxes

BIRDS USING SINGLE ENTRANCE BOXES	Entrance		Dimensions		Location Height Feet
	A Diameter Inches	B Above Floor Inches	C Floor Inches	D Sides Inches	
Barn owl	6	4	10 x 18	15 to 18	12 to 18
Bewick's wren	1 to 1-1/4	1 to 6	4 x 4	6 to 8	6 to 10
Bluebird	1-1/2	6	5 x 5	8	5 to 10
Carolina wren	1-1/2	1 to 6	4 x 4	6 to 8	6 to 10
Chickadees	1-1/8	6 to 8	4 x 4	8 to 10	6 to 15
Crested flycatcher	2	6 to 8	6 x 6	8 to 10	8 to 20
Downy woodpecker	1-1/4	6 to 8*	4 x 4	8 to 10	6 to 20
Flickers	2-1/2	14 to 16	7 x 7	16 to 18	6 to 20
Hairy woodpecker	1-1/8	9 to 12	6 x 6	12 to 15	12 to 20
House wren	7/8	1 to 6	4 x 4	6 to 8	6 to 10
Nuthatches	1-1/4	6 to 8	4 x 4	8 to 10	12 to 20
Redheaded woodpecker	2	9 to 12	6 x 6	12 to 15	12 to 20
Screech owl	3	9 to 12	8 x 8	12 to 15	10 to 20
Sparrow hawk	3	9 to 12	8 x 8	12 to 15	10 to 30
Titmouse	1-1/4	6 to 8	4 x 4	8 to 10	6 to 15
Tree swallow	1-1/2	1 to 5	5 x 5	6	10 to 15



Kansas Wildlife

chipmunks, just pile rocks or rubble in an odd corner, being careful to leave many cavities. You can also cover small tiles, boxes or cans with rocks.

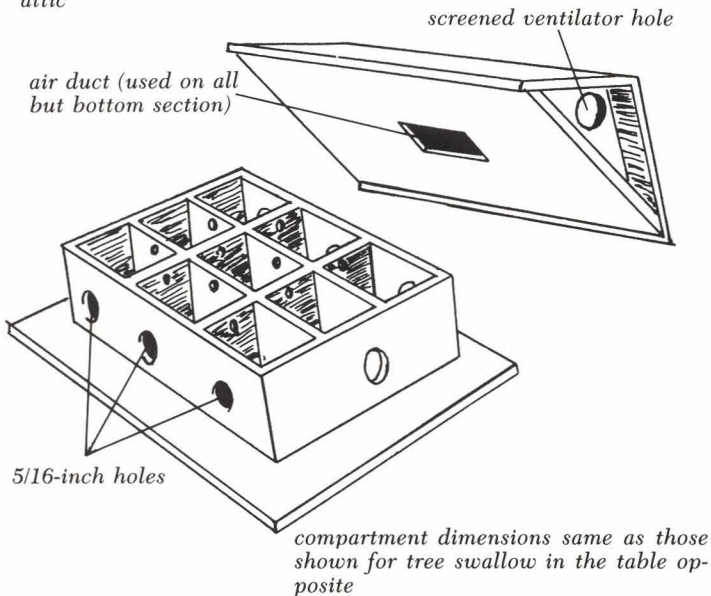
Tree squirrels readily accept man-made boxes. In fact, they often commandeer wood duck boxes. A squirrel box should be twenty inches deep, ten inches front to back and six inches side to side. Cut an entrance in a top corner two and a half inches square, and secure the box in a mature tree twenty feet off the ground.

Raccoons will move into a similarly designed box. Increase all dimensions by six inches and make the entrance four inches square. Before you encourage any to live with you, remember that raccoons can wreak havoc among birds, garbage and garden crops.

Few folks think of toads as backyard wildlife, but they are. And valuable ones at that, considering how many harmful insects they eat. They spend days in moist, underground "caves." You can build these at the edges of your lawn and garden by burying plastic margarine tubs a few inches underground. Cut one side away for an entrance leading to a short runway to the surface.

Insect-eating reptiles such as ribbon snakes, garter snakes and fence lizards will room in rock heaps, rooting stumps, brush piles and stone fences.

additional sections can be added as colony grows; bottomless center compartments form an air duct to the ventilated attic



a place to drink

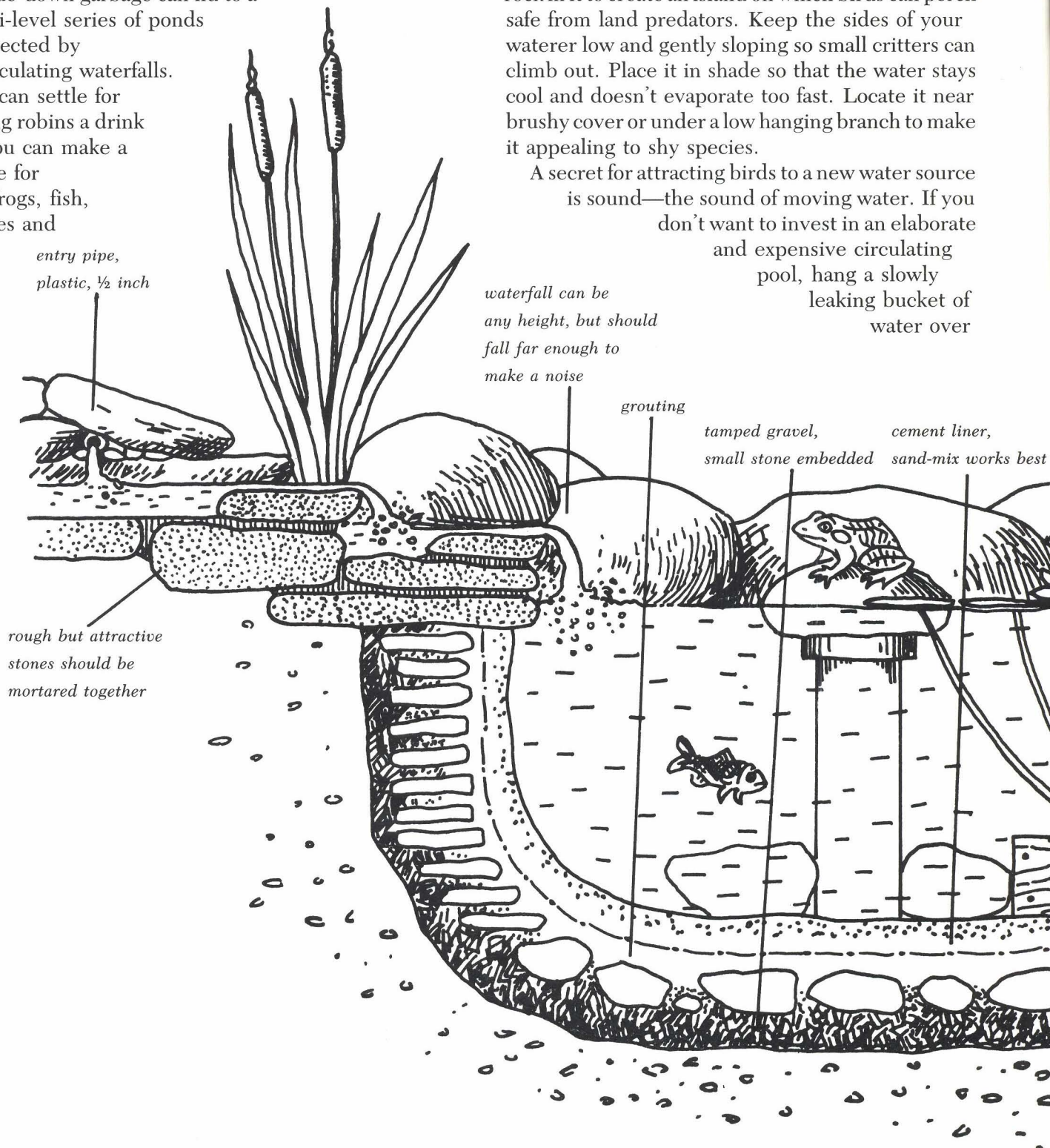
A cool drink of water can do wonders for a backyard wildlife refuge. Research has shown that virtually every type of terrestrial habitat becomes more attractive to wildlife when it has a steady water supply.

Your private reservoir can be anything from an upside-down garbage can lid to a multi-level series of ponds connected by recirculating waterfalls. You can settle for giving robins a drink or you can make a home for bullfrogs, fish, turtles and

even wild ducks.

A few guidelines will help you make your "waterhole" attractive and safe. First, make it shallow (one inch deep or less) so small birds can stand in it and bathe. If you build a large pool, make one end of it shallow enough for this purpose. Place a rock in it to create an island on which birds can perch safe from land predators. Keep the sides of your waterer low and gently sloping so small critters can climb out. Place it in shade so that the water stays cool and doesn't evaporate too fast. Locate it near brushy cover or under a low hanging branch to make it appealing to shy species.

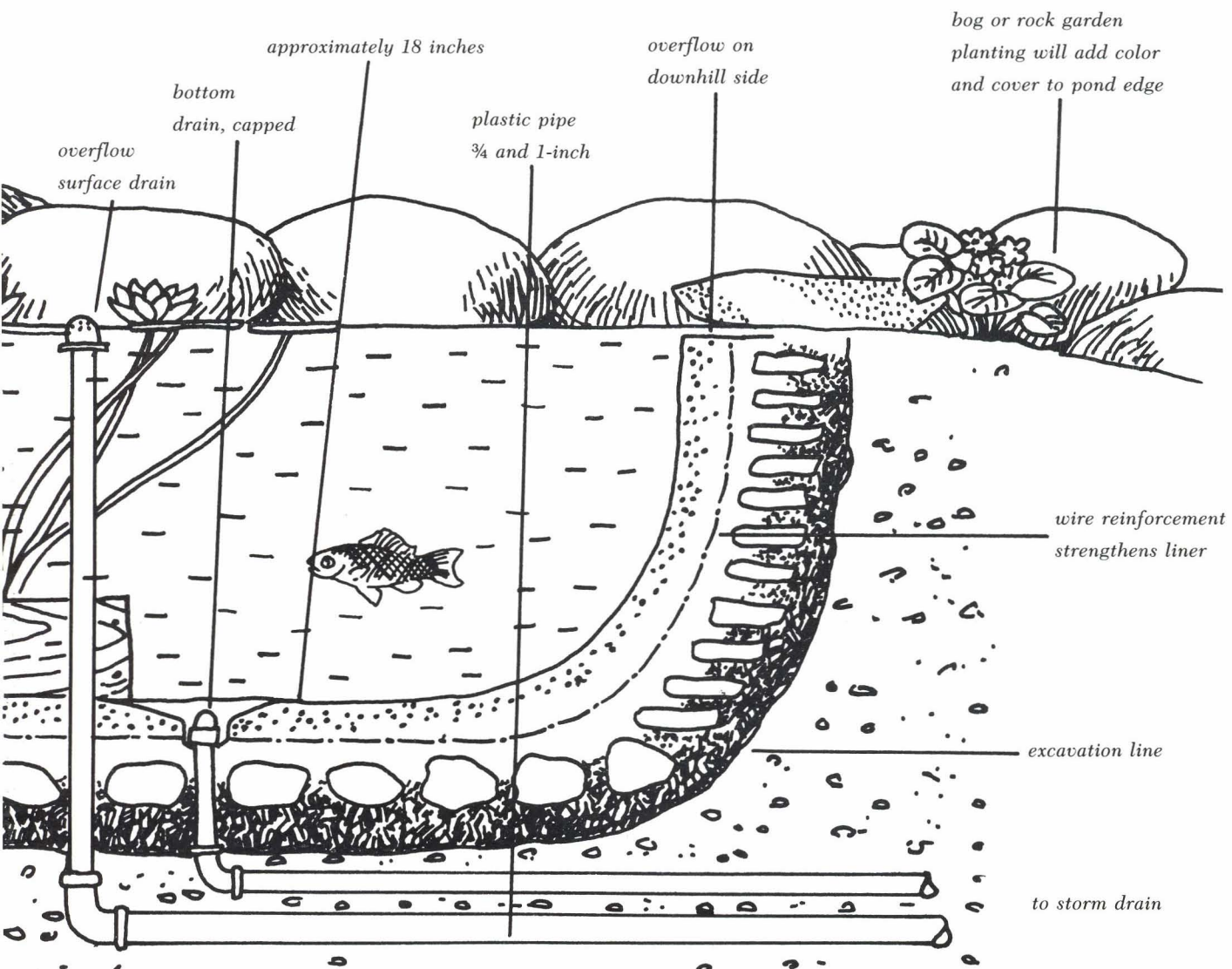
A secret for attracting birds to a new water source is sound—the sound of moving water. If you don't want to invest in an elaborate and expensive circulating pool, hang a slowly leaking bucket of water over



your bird bath or suspend the end of a water hose over it and let it drip, drip, drip. On a hot summer day, that sound draws songbirds like ice cream draws kids. A foot-deep pool or series of pools highlighted with a few lilies, arrowheads, cattails, and other water plants can be a landscaping centerpiece as well as a wildlife haven. The more vegetation cover and diversity near the pool, the more valuable it will be. Insects will live in the vegetation and provide food for frogs, salamanders, birds and even bats at night.

Hardware stores and bird feeding supply shops sell circulating pumps to keep the water fresh. You'll have to import a few fish and amphibians from a nearby stream or pond. Return them to their natural habitat before winter sets in and freezes them. You can keep a portion of your pool open in winter with a livestock trough warmer. You'll be surprised at how many birds take brisk winter baths.

Illustration from National Wildlife Federation's book Gardening with Wildlife.



problem solving

Ah, the pleasures of wild neighbors. The magic of a hummingbird hovering over your patio flowers. The soothing song of the cardinal in your hedge. The comic waddle of a skunk running under your porch. The 2:00 a.m. alarm of a raccoon clanging through your garbage cans. The percussion

of a territorial woodpecker drumming on your shingles. . . . Wait a minute. What's all this smell and noise? Wasn't this wildlife habitat supposed to bring a never-ending stream of esthetic charm?

There's plenty of charm, but living near wild



Ron Spomer

Normally skunks eat insects, rodents, and wild fruits, but in the garden they can put quite a dent in the tomatoes and other crops. Under a porch or foundation, they can lower the real estate value of an entire neighborhood. If you suspect one of these malodorous weasels needs to be nudged out of your backyard, fight fire with fire and offend them with mothballs. Slip a box of the naphthalene into the skunks den. Put some around plants you wish to protect. If that fails, call your community animal damage control officer or local game protector. Never approach a skunk or other mammal that is acting belligerent or otherwise unusual—it might have rabies. Report the animal's behavior to health officials or local police.



Ron Spomer

When vegetables start disappearing from the garden, the common cottontail often gets the blame. After all, Bugs Bunny has been stealing carrots for years. Often cottontails are the culprits, but sometimes they play scapegoat for ground squirrels, wood rats, crows, and even worms. Check the site of damage carefully for tracks and droppings before passing judgment. If you want a few rabbits around but not in your vegetables, plant lure crops of clover, alfalfa, and dandelions in a far corner of your yard. Keep brush far from the garden. Clippings of human hair spread around plants reportedly ward off bunnies. Some innovative green thumbers swear by lion or bobcat urine obtained from zoos or trapper supply houses. A tight, three-foot fence buried a foot deep should keep the varmints out.

animals has its drawbacks, too. Nearly everyone enjoys having a robin nest in his yard, but few people would put up with the din and stench of a heron rookery. The level of human tolerance an animal inspires is no measure of its intrinsic worth. Critters are neither good nor bad; they simply do

what they do as part of the natural system, trying to survive and perpetuate their species. The moral is to be sure you have a problem before you try to solve it. If you take the time to find out a little about your new wildlife neighbors, you'll find that they generally do you more good than harm.

When protected in suburban settings, raccoons quickly learn to exploit the manmade environment, denning in garages, dog houses, and chimneys. They learn to open locks and gates, manhandle garbage cans and steal cat food off the back steps. Sometimes they even steal the cat. If you don't want coons around, don't encourage them by providing den sites or food supplies. They'll find your garden, especially the sweet corn, without any help. You can try keeping them out with a dog leashed near the vegetables, a radio blaring in the corn stalks, or an electric fence strung about six inches off the ground. If they persist, call those animal control people again. A coon is like a plant. When it's in the wrong place, it's a weed.



Bruce Kintner

Most birds are good citizens, but two European immigrants have earned a bad reputation—the English house sparrow (really a finch) and the starling. Both birds out-compete many beneficial native birds for food and housing. Frustrated bird lovers have done everything from poisoning to electrocuting them. More practical defense measures include removing their messy nests daily, covering crevices and eaves around buildings with screens, and feeding the right seeds. Starlings rarely take sunflowers or millet. They do like suet and various table scraps. Sparrows love most seeds except sunflowers. Starlings won't nest in boxes with shiny walls, so you might consider placing a sheet of tin or aluminum foil on the back wall of your martin houses. Several live traps have been designed to catch sparrows and starlings.



Ron Spomer

weeds in the courts

A suburban lot edged with oaks and dogwood and softened with a little native prairie is something of a statement these days, a commitment to a less regimented lifestyle and a blow against Toro lawn mowers. The ranks of backyard wildlife activists are swelling slowly, but, as with any transition in our way of thinking, there are people who would rather stay with the old ways. In far too many cases, these people have some backing from state statutes and local ordinances.

The face-off between the growers and the mowers first surfaced in Wisconsin in the early Seventies. Lorrie Otto of suburban Milwaukee decided to let her yard do what it wanted to do—produce wildlife habitat. Maintenance workers with the municipality in which Mrs. Otto lived watched the yard grow up for some time before their innate sense of neatness prodded them to take action. Backed by a local ordinance against “weeds” on private property, the workers mowed Mrs. Otto’s lawn without her consent. She immediately threatened to sue the city for invasion of privacy unless they could prove that the yard had contained noxious weeds. When they couldn’t, the case was settled out of court and Mrs. Otto “bought a landscape painting with the settlement.”

Similar legal challenges have sprung up all over the country in the decade since Mrs. Otto’s successful action. Since an overwhelming number of city

governments have adopted anti-weed ordinances, a scattering of amateur wildlife managers have been forced to defend their actions in meetings with officials and in court. Kansas is going through such a case this year. The city of Lawrence mowed a yard belonging to Paul Lanz because the vegetation was more than twelve inches high. According to the Lawrence ordinance, twelve inches is the magic boundary between lawn plants and weeds. Lawrence has other weed definitions as well. Brush or woody vines may be considered weeds. Native grass or other plants which may constitute a fire hazard also qualify as do plants which may shelter rats or other vermin. If Lawrence finds one of its citizens harboring such plants, the city may require that the lawn be mowed. If it is not mowed, the city may finally do the mowing itself, then charge the owner for the cost of the job.

In the first round of the Lanz vs. the city of Lawrence case, the district court ruled in favor of the city. Lanz appealed to the state Supreme Court where the district court’s decision was overturned and the case sent back to the district for further deliberation. Before the case is closed, we may see learned members of the state judiciary attempting to clarify the concept of a “weed.” *That* ought to be interesting.

Wisconsin has responded to repeated challenges of local weed ordinances by passing

state statutes that grant a homeowner broad discretion in his landscaping decisions. Until similar action is taken in Kansas, there are a few things you can do to reduce the chances of a legal challenge to your habitat efforts.

The first is to avoid those plants classified as official noxious weeds by the state. Right now, those are musk thistle, Canada thistle, kudzu, field bindweed, Russian knapweed, hoary cress, quackgrass, leafy spurge, bur ragweed, pignut, and johnsongrass. These introduced species are easy to recognize; if you have any difficulties, your extension agent ought to be able to help you.

For most amateur landscapers with a few patches of native flowers and a shrub or two, the question of weed control will never arise. For those few activists who want to turn their yards completely over to Mother Nature, a few additional precautions might be in order. Plan your habitat development. Map your yard, research the values of the plants you intend to establish. If there is any sign of design and organization in your effort, you are quite likely to prevail in any formal or informal challenges to your sanctuary. And, most important, tell your neighbors what you’re up to. Sell them on the value of wildlife habitat, both in terms of enjoyment and enhanced real estate values. Who knows? You may start a movement.

Sixty years ago, western Kansas' Deep Creek really deserved its name.

"It used to be so clear—like a mountain stream. The bottom was mostly rock and gravel, and the drainage was mostly rangeland. I caught my first fish there, a black bass, with a worm and a willow stick. Now the holes are silted in, and what little water remains is so muddy that even the worst sinner could walk across it." Dr. Gerald Tomanek, president and past professor of ecology at Fort Hays State University, spent his boyhood on the Kansas plains, but the images he recalls are of a different landscape than the one he sees today. Scattered across the plains like the bones of an old steer, the parched, sandy remains of grassland streams are unsettling evidence of the changes that have occurred in less than a lifetime. The fish are gone—that's obvious enough—and so is the terrestrial wildlife that depended on the water—deer, quail, beaver, squirrels, turkeys, and the rest. The pressure of a growing population, new industrial development, and, most of all, an enthusiastic move to irrigated agriculture are threatening the plains' flowing water. Like many other concerned scientists, Dr. Tomanek sees a critical need to respond to that threat.

"It seems to me that we need much stricter water use laws. Water is the key to the conservation of all wildlife. I think it's a sociological problem. We have developed some very dangerous water use habits. These streams are highly important on the prairie, where they often support essential stands of flood plain habitat. Soil conservation, too, has caused some of the dewatering of streams, with ponds and terraces holding much of the water. We need to see the total picture with some foresight before we build dams, plow up the prairie, and drill water wells."

Unfortunately, the problem of guaranteeing stream flows is far from simple. To begin with, there

seems to be little interest in saving flatland streams, few of which measure up to more scenic watercourses farther east. And, even if the support for stream protection could be found, there is the difficulty of determining to the satisfaction of lawmakers how much flowing water should be protected. The technicians who are working on the in-stream flow problem are confronted with some thorny questions. How fast are we losing our streams? What

is a "quality stream" in terms of wildlife abundance and diversity? How much water does it take to support this kind of quality? And, in the face-off between wildlife and human uses of flowing water, what compromises are acceptable? The issues are complex, and the solutions can only be forged in the politically charged atmosphere of legislatures and state offices. The recent history of the stream protection effort on the plains is a tangled web of concern and indifference, progress and disappointments.

In Montana's Yellowstone River basin, wildlife conservationists sensed an approaching disaster in the early Sixties. In that state as in Kansas, water has historically been allocated according to the western doctrine which rests on the rule of "first in time, first in right." In other words, the first application for water has preference over any subsequent filings. There are few legal restrictions on who can use the water, and little consideration given to in-stream uses under this doctrine.

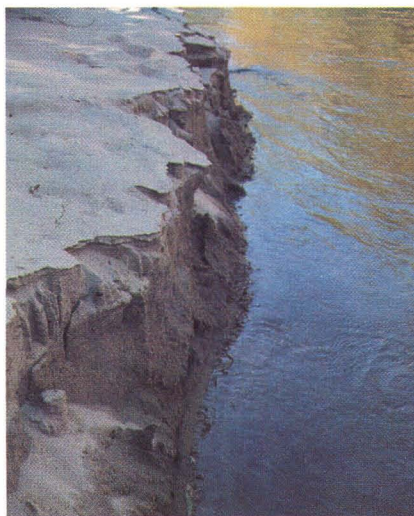
In 1969, the Montana legislature formally recognized wildlife conservation as a beneficial use of water with a law that gave the state's Fish, Wildlife, and Parks Department authority to claim unappropriated water in twelve streams. Lawmakers showed further insight by directing the department to take an active part in stream preservation by acquiring lands and waters for nursery ponds, building hatcheries and fish ladders, and working with the State Board of Health in maintaining water quality primarily for fish habitat. However, this measure provided protection for only twelve streams.

The 1972 Montana constitution paved the way for several pieces of legislation in the interest of minimum stream flows. Power was given to the Department of Natural Resources and Conservation to pass judgment on any new water appropriations and to order all present and future water claimants to declare their claims. This formally es-

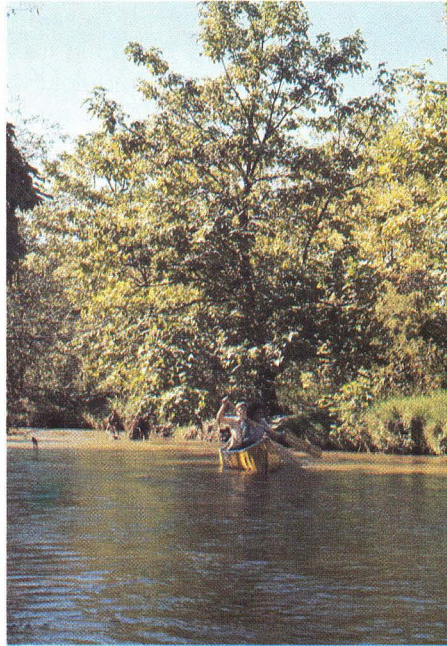
***Kansas
and its plains
neighbors
are moving
slowly to save
their streams.***

***roll
on,
you
rivers***

Rob Manes



Current laws restrict the general public's access to most Kansas streams. Because of that difficulty and the increasing blight of reduced flows, float canoeing is less popular in Kansas than in states farther east. That doesn't mean there aren't streams worth floating, however. (Canoeists by Chris Madison, South Fork Ninescah, opposite, by Ron Spomer.)



established a water use permit system while allowing a thorough accounting of the amount of water being used in a given area.

In addition, some important criteria for appropriating water were set forth in the Water Use Act:

- * There must be unappropriated water in the source of supply;
- * The rights of a prior appropriator cannot be adversely affected;
- * The proposed means of diversion or construction must be adequate;
- * The proposed use cannot interfere unreasonably with either planned uses or developments for which a permit has been issued or for which water has been reserved;
- * The proposed use of the water must be beneficial, and further examination of the benefits of various uses may take place at some future date.

The Montana Water Use Act defines "beneficial uses" as including agricultural, domestic, fish and wildlife, industrial, mining, municipal, power, and recreational activities. The law does not allow water to be used in the shipment of coal slurry out of state. At this point, instream uses of water are clearly recognized as valid demands in Montana. More significantly, the Water

Use Act makes possible the reservation of instream flows by the Fish, Wildlife, and Parks Department, although the DNRC must agree that any such reservation is beneficial to the public. In addition, the DNRC was given the power to review, modify, and even revoke existing reservations. They were not, however, given the right to revoke a previously established water right.

By 1974, the existing demands on the Yellowstone River basin's water in combination with a growing interest in coal mining in the area, threatened to dry up the river. Again demonstrating great foresight, the Montana legislature directed the DNRC not to take any action on water applications for at least three years or until a final accounting of existing water rights and commitments had been made. The delay allowed conservationists time to marshal critical information on instream flow needs in the basin. The legislature also provided that "wide use is to be made of the state's water resources with the least possible degradation of the natural aquatic system." Armed with this indication of the legislature's concern, the DNRC has monitored stream flows at diversions along the river and generally has done what it could to protect instream flows. This effort

has prompted protests from agricultural water users who feel that instream flow protection conflicts with their interests. Actually, the laws currently in place in Montana protect human water users as well as stream fisheries and wildlife by preventing an unforeseen depletion of reserved water. And, if wildlife-related water reservations should ever really conflict with human needs, there is the clause in the Montana laws which allows previous reservations to be changed.

Kansas' neighbor to the north, Nebraska, has been embroiled in a longstanding fight over water in the Platte and other rivers in the state. Unlike Montana, Nebraska has no law which recognizes wildlife conservation as a beneficial use for unallocated water, and the statutes which govern groundwater allocation are old and lenient. As a result, groundwater exploitation is widespread and profoundly threatens the Platte River, especially in the Grand Island vicinity. Of seven applications before the Nebraska Water Resources Commission to use Platte River water for irrigation, two proposals are being considered seriously. Between them, they would commit 940,800 acre-feet of water from a stretch of river where average annual flow is only 930,500 acre-feet. The water in this part of the Platte currently provides critical habitat for whooping cranes not to mention countless species of waterfowl and other wildlife.

The Nebraska Game and Parks Commission is presently involved in an uphill battle to preserve flow on the Platte. Faced with the fact that no preference is given to wildlife in the state's laws, the Commission has set out to gather data through the Platte River Forum to show that minimum stream flows are necessary to support some highly desirable wildlife populations.

Six public meetings were recently held throughout Nebraska as a part of a study on instream flows. Comments from the public covered both

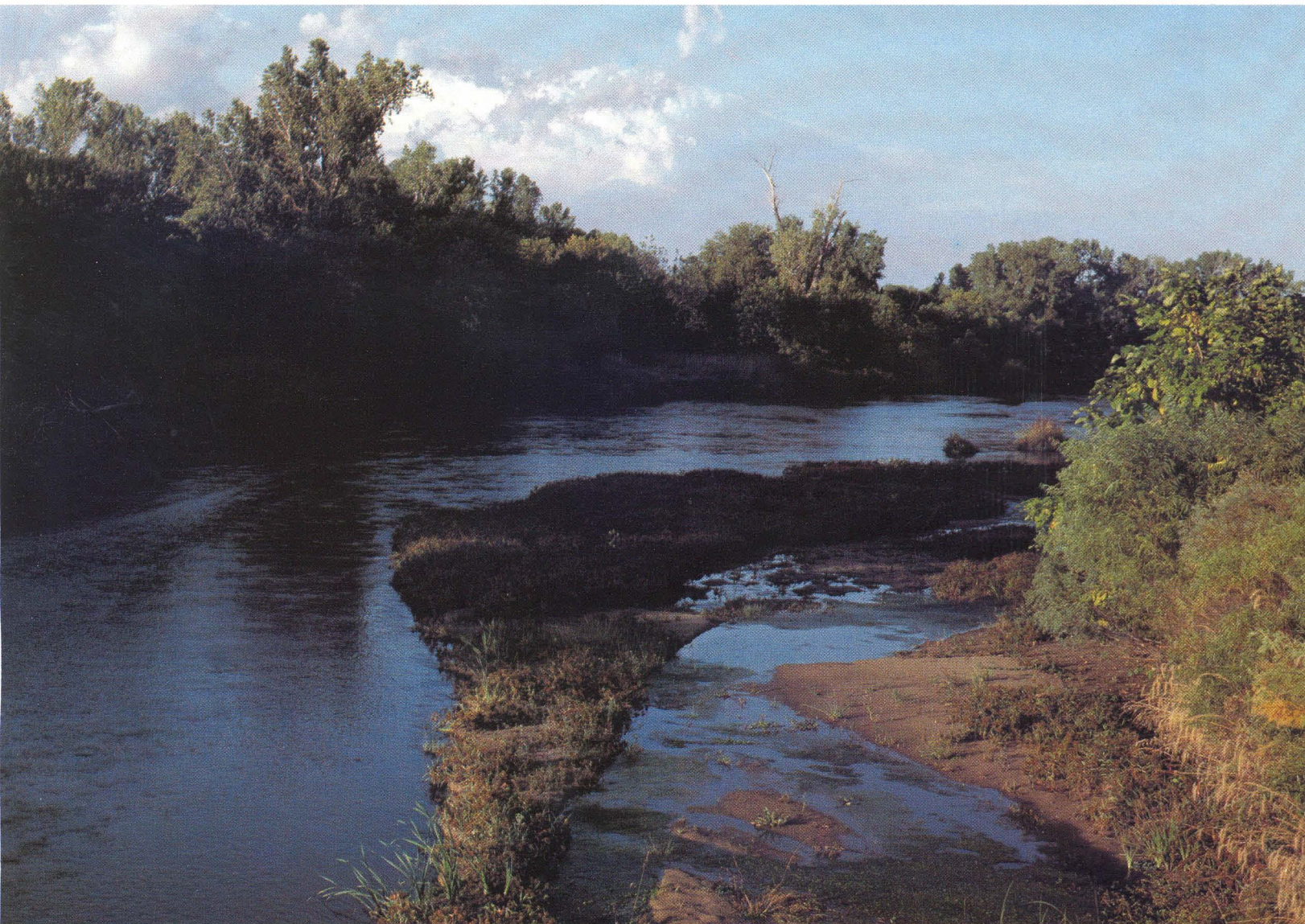
extremes and most of the ground in between. One opponent objected to any kind of instream flow guarantees, openly admitting that he didn't want to give stream proponents a chance "to get their foot in the door." Others were much in favor of some kind of instream flow protection. Translating this support into law, however, promises to be tough. As Gene Zurlein of the Game and Parks Commission points out, "The Platte is considered a public watering trough where everyone takes a little swig until there is nothing left. To be against that is like being against God and motherhood."

When you get in a fight to save a stream, it's a real advantage to have a trout fisherman on your side. The

Colorado Division of Wildlife has had that luxury in its instream flow efforts. During the late Sixties and early Seventies, public clamour over the loss of stream flows in some of Colorado's best trout country became too loud for the Colorado legislature to ignore. With pressure from "zealous environmentalists" on one side and the demands of mining and irrigation interests on the other, the state legislature passed a fairly mild bill in 1973. It stated that the Colorado Division of Wildlife would identify stream flows that protected the environment to a "reasonable degree." It also allowed the Division of Wildlife, working through the Attorney General, to stop construction of new

diversion sites if just cause could be shown.

As limited as these provisions are, the law has been one of those rare success stories where environmental protection is concerned. Rex Talliaferro of the Division of Wildlife points to some specific cases. On the Colorado River below Granby, a dam was constructed to supply water to other areas in the Northern Colorado Conservancy District. The Division of Wildlife used the 1973 legislation to have by-passes built around the dam, thus insuring stream flows below. In other cases, the prairie stream habitat on the Arikaree River was largely protected during a development project in that region, and part of another





The Arkansas River may be a harbinger of dry times to come on the plains. A blue-ribbon stream in its upper reaches, the Ark attracts hoards of rafters and canoeists to Colorado each summer. Not many years ago, the stretch of the Ark at Dundee (opposite) attracted its share of recreationists, too—mostly catfishermen. (All photos by Chris Madson.)

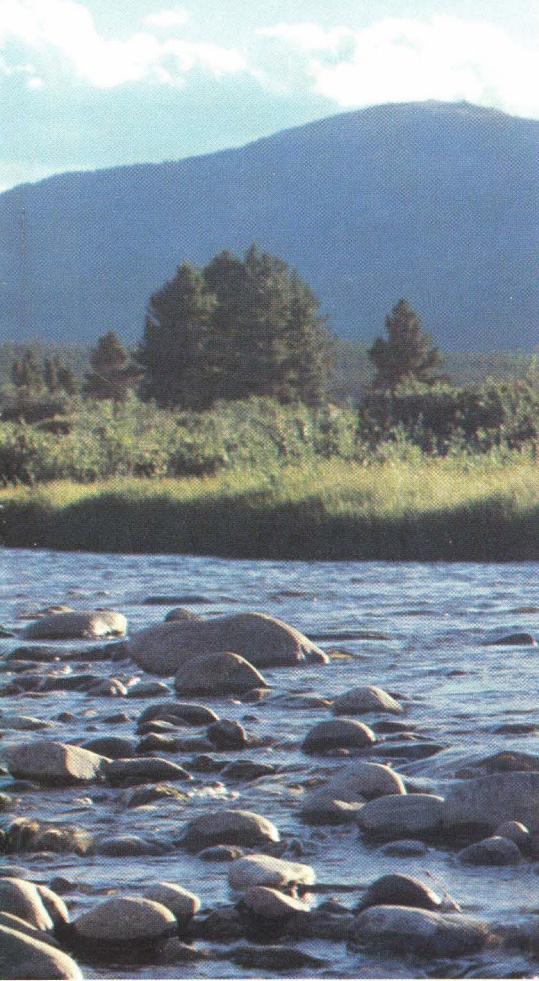
prairie stream system was saved on northeast Colorado's Republican River.

Still, all is not well in Colorado. A recent bill in the legislature challenged the constitutionality of the 1973 law. The measure went to the governor who demonstrated his foresight by vetoing the challenge. Then there are the water allocations that just slip by. A number of ski

lodges filed to use stream water for snowmaking a few years ago, and the application went through before the Colorado Water Conservation Board notified the Division of Wildlife. In spite of the difficulties, however, it would seem that other states in the arid West could learn a valuable lesson from the people who first made themselves heard in Colorado.

In many ways, the minimum stream flow crisis is far more serious in Kansas than in most neighboring states. The Arkansas River was once a free-flowing river from the Colorado border to Oklahoma, a haven for an abundant array of fish and terrestrial wildlife. Now the headwaters of the Ark River in Kansas are somewhere near Larned. To the west, all that remains are dead and dying cottonwoods. Formerly a productive channel cat stream, nothing remains of the Arkansas River above Dodge City.

Nor is the Ark the only major stream in Kansas with problems.



The Smoky Hill River can no longer keep Cedar Bluff Reservoir charged with water. In fact, as far east as Gove and Trego counties, it is little more than an intermittent trickle. Many people who relied on it for domestic water are now forced to haul their water by truck. Rattlesnake Creek in the southcentral part of the state also lies in the path of the approaching desert. The Rattlesnake provides unique aquatic habitat since it isn't as sandy as most streams in the area and cuts deeper holes as a result. And there are others—the Solomon, the Wet Walnut, the Pawnee, Prairie Dog Creek, Sappa Creek. Fish and Game stream biologist Ken Brunson notes that a few rivers in eastern Kansas are even showing signs of a lack of water. The Marmaton River in far southeast Kansas nearly dried up in 1980 as a result of added irrigation withdrawals during that summer's drought. The Wakarusa River in the northeast part of the state was the subject of some concern that same

year when flow almost stopped on some reaches. Other quality streams in the Chase County Flint Hills also suffered.

Lost rivers aren't the only price paid for a lack of water conservation. Many Kansas impoundments are shrinking steadily as the streams that feed them dry up. While many of these lakes aren't yet "dry holes," their fish populations are showing signs of stress. Gray, Lane, Hamilton, Logan, Hodgeman, and McKinney state fishing lakes are all either dry or severely stressed. Cheyenne Bottoms, southcentral Kansas' waterfowl and shorebird haven, is also at risk. The Arkansas River, once a reliable and vital source of water for the Bottoms, is waning at Great Bend, and, at the same time, terraces and watershed ponds are holding much of the run-off on the tilled hillsides above the marsh. Joe Kramer, supervisor for the Fish and Game Commission's southwestern region, warns that "the future of Cheyenne Bottoms as we know it is in great jeopardy."

So, with this evidence frighteningly at hand, what will we do now? Will Kansans sit back and ignore the dewatering disaster or will they fight for their streams?

During the mid-Seventies, the Governor's Task Force on Water was formed to examine water problems in Kansas. By the end of the decade, the task force had submitted a report to the legislature recommending that minimum stream flow standards be adopted. The 1980 Kansas legislature passed House Bill 2737 which called for the establishment of minimum stream flows. When these flows were determined, the bill directed the chief engineer of the Division of Water Resources to withhold that amount of water from appropriation. This law, like so many others across the country, also stated that such withholdings could not interfere with the public interest or any existing water right.

The minimum stream flow law encouraged the Kansas Water Re-

sources Board to form a technical committee to make stream flow recommendations. Unfortunately, the committee ceased to function early in its efforts when a key staff member of the Water Resources Board resigned. It was many months before any further progress was made by that group.

In the meantime, the Kansas Water Authority came into being and began to develop plans for some Kansas stream systems. Shortly afterward, the Water Resources Board (renamed the Kansas Water Office in the interim) reactivated its technical committee. It is now the task of these committees and bureaus to determine minimum stream flow needs for the state.

So, the groundwork has been laid. The heart of the task now falls to those members of the general public who care about streams. The minimum stream flow effort needs the weight of popular support behind it if it is to succeed. And here another difficulty arises. The public simply doesn't seem to be too concerned about its streams. Ron Klatske of the National Audubon Society cites this lack of public



the watercrats

With the passage of the Kansas legislature's 1980 Minimum Stream Flow Bill and all the attention that has been given to water shortages in the last decade, a new kind of bureaucrat has come onto the scene—the watercrat. These planners and technicians have been mustered primarily from the state's three water agencies to respond to the legislature's 1980 directives. Prompted by different constituents and points of view, each of these agencies and its representatives occupies a special role in the effort to implement minimum stream flows.

the planners

Retaining the staff of the Water Resources Board, the newly named Kansas Water Office is continuing its technical planning sessions with new emphasis on minimum stream flows. After some prodding from the Fish and Game Commission in 1980, the Water Office made an effort to put together a systematic approach to implementing minimum stream flows with advice and technical support from Fish and Game, the Department of Health and Environment, and other water-oriented agencies. However, the planning effort stalled within a year when the Water Office failed to staff it. The sessions were resurrected only after the sudden appearance of the Water Authority in 1981 and are making some progress.

the stimulators

The Kansas Water Authority is a group of watercrats handpicked by the Governor and key legislators. It is responsible for deciding how Kansas should parcel out its water. This group has yet to obtain much of the regulatory power it seeks, but it has certainly stimulated the Water Office and others into frenetic activity. Although its one-sided castigation of the Water Office and departure from normal protocol have raised an eyebrow or two, the Authority has definitely spurred progress. It has also recognized the need for critical input from a part-time rival of the Water Office, the Division of Water Resources of the State Board of Agriculture.

the enforcers

The most powerful water agency in the state, the Division will have the job of administering and enforcing any regulations made to reserve water for in-channel use. The chief engineer has possessed exclusive power to grant water rights since 1945 and has actually had the ability to protect stream flows because of wording in the water appropriation statutes that requires him to consider "the public interest" when he grants permits. Judging from the condition of many Kansas streams, the part of "the public interest" that concerns itself with fish and wildlife, recreation, and the esthetic value of flowing water has been surreptitiously ignored. Perhaps one reason has been lack of public outcry.

Considering the lack of supportive testimony from environmental groups and citizens, it's surprising that we have a minimum stream flow law on the books. But the fact is that we do, even if it is nothing more than a directive to plan. Perceptible dividends have already been realized from this planning effort. A recent analysis of summer flows and water rights along the Marais des Cygnes River in eastern Kansas showed that no surplus water existed. Realizing that future appropriations from the basin could not be satisfied, the chief engineer decided that no new water rights would be issued or that, if they were, they would restrict summer pumping. We can only hope that this kind of analysis may also be applied to streams in central and western Kansas that are drying up.

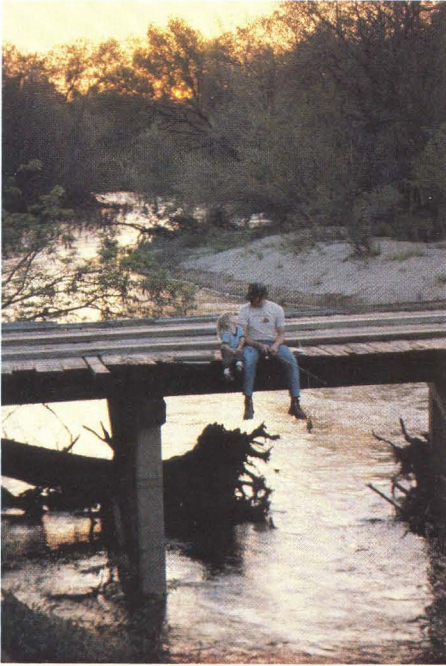
The key to the success of this and other goals of the minimum stream flow effort is an informed and active public. If you or your organization ever intended to register views on this issue with the Kansas watercrats, don't make the mistake of thinking that the time for such activism is past. Find out more about the need for minimum stream flows, and, if you intend to make a stand, do it soon. The Ark River is getting shorter every year.

support as a barrier to progress in Nebraska and as justification for Audubon's lack of effort in Kansas' minimum stream flow battle.

Some concerned conservationists have expressed dissatisfaction with Audubon's lack of involvement in the struggle for minimum flows. Klataske points out that, in Ne-

braska, a public information campaign is well underway and that Audubon chapters are being organized across the state to join in the effort. In addition, he reports that Nebraska Audubon members are focusing pressure on their legislature. While this rank-and-file action in Nebraska is heartening, Audu-

bon's involvement in the Kansas stream preservation fight has been minimal. Other environmental groups, such as the Sierra Club, have made statements in support of stream flow legislation but have yet to get into the thick of the controversy. The absence of these and other influential environmental



groups has not gone unnoticed by legislators and irrigation interests since the start of the instream flow debate.

Even without extensive public pressure, a few strides have been made. In southcentral Kansas, the Corbin Dam may soon drown a stretch of the Chikaskia River. Biologists and conservationists worried that it might impair downstream flow. As a result of intensive effort by the Fish and Game Commission and the United States Fish and Wildlife Service, plans for the dam have been modified to protect streamside habitat above and below the dam and to guarantee releases of water that will keep the river alive downstream. In eastern Kansas, the Corps of Engineers has been led to

investigate the reallocation of water in some federal reservoirs to help maintain stream flows. The Corps has engaged the Fish and Wildlife Service to study the reallocation and make recommendations concerning the amount of water needed. Information from the USFWS studies will also be used by state fish and wildlife researchers in establishing further minimum stream flow recommendations.

Level headedness must prevail when decision about conserving Kansas streams are made. It would be foolish to insist that economic lifelines be cut simply to save a stretch of stream. On the other hand, it would be equally foolish to condone unregulated water consumption, especially irrigation, in the face of an imminent water shortage. Since stream flows are often directly influenced by underlying groundwater reserves, the establishment of a minimum surface flow also sets a limit on groundwater use, effectively protecting the rights of all water users in the drainage. As is so often the case, an action taken in the interest of wildlife conservation can protect the long-term interests of people as well.

In the ongoing debate over instream flows, one fact cannot be changed, no matter how hard some segments of the public try to ignore it—sooner or later, our water consumption *will* be curtailed. We can impose restrictions on ourselves now, or we can wait for more unyielding restrictions to be enforced by the land itself. While we delay, the state's most valuable and most scenic resource is being sucked out of the ground. Like the proverbial miner's canary, the bleached cottonwoods along the Ark and the Smoky Hill are trying to tell us something. Maybe it's time we listened. □

Rob Manes is an urban information/education specialist in Wichita. With a wildlife education degree from Kansas State University, Rob is equipped to appreciate the technical side of the dewatering problem. As a longtime resident of western Kansas, he also knows the personal side.

