

KANSAS WILDLIFE

JANUARY/FEBRUARY 1981 / \$1.50



Look for this line on your Kansas income tax form—

34. KANSAS NON-GAME WILDLIFE IMPROVEMENT PROGRAM. Check if you wish to donate, in addition to your tax liability, () \$1, () \$5, () \$10 or () \$_____ or designate () \$1, () \$5, () \$10 or () \$_____ of your tax refund for this program. If joint return, check if spouse wishes to donate or designate () \$1, () \$5, () \$10 or () \$_____. Enter total on line 34

Total Wildlife
Contribution



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Contribute to the future of wildlife . . .

Editorial

By now, the old brag that hunters and fishermen pay for wildlife conservation has become pretty worn, although it still contains a substantial grain of truth. Many of the hunter-fisherman funding systems are involuntary — wardens enforcing license laws, federal agencies selling duck stamps, and excise taxes skimming a little cash off the top of hunting and fishing equipment sales. Not all hunters and fishermen wait to have their arms twisted, however. Ducks Unlimited, Trout Unlimited, BASS, the Wild Turkey Federation, and a host of other private organizations are expressions of the sportsman's genuine concern for wildlife.

Interestingly enough, research in Colorado has shown that the lion's share of nongame contributions also come from hunters and fishermen. I'm proud to see that but also a little disturbed. Interest in wildlife reaches far beyond the sporting community, and I think most people


with a real interest in wildlife understand the problems that face America's wild communities. Good intentions and a backyard bird feeder by themselves won't make

much of a dent in these problems.

I hope Kansas sportsmen will be as free with their non-game wildlife contributions as sportsmen in Colorado and Oregon have

been. I also hope that nonhunters take this chance to make their presence known.

Check line 34 on Kansas Form 40, line 13 on 40A. Do something wild.



Form 40

KANSAS INDIVIDUAL INCOME TAX

1980

Do Not Write In This Space

USE KANSAS LABEL
Otherwise Print or Type

For the year January 1-December 31, 1980, or other taxable year beginning _____ 1980 ending _____ 19____

First Name(s) and Initial(s) _____ Last Name _____ Your Social Security Number _____

Home Address (Number and Street or Rural Route) _____ School District No. _____ Spouse's Social Security Number _____

City, Town or Post Office, and State _____ Zip Code _____ County _____

Residency Status (Check one) _____ (Schedule I, form 40, Nonresident Allocation Schedule must be attached) _____ For Office Use Only _____

Resident Nonresident # _____

YOUR TELEPHONE NUMBER _____ TELEPHONE NUMBER—The number you furnish will be confidential and should be the one at which you can be reached during our office hours.

Filing Status (Check ONE)

1. Single

2. Married filing joint return (Even if only one had income)

3. Married filing separately. Give spouse's name and social security number _____

4. Unmarried head of household

5a. Number of exemptions on your 1980 federal return _____

5b. If line 4 is checked, add one exemption _____

5c. Total (Add lines 5a and 5b) _____

6. Part-Year Resident From _____ to _____

NOTE: YOU MUST ATTACH A COPY OF YOUR FEDERAL RETURN AND SUPPORTING SCHEDULES TO THIS RETURN

Attach State Copy of W-2 Here

DEDUCTIONS

7. Federal adjusted gross income [A] 7 _____

8. Modifications to federal adjusted gross income (Line 13, Part I) 8 _____

9. Kansas adjusted gross income (Line 8 added or subtracted from line 7) [B] 9 _____

IF YOU ARE USING TAX TABLE A, B, OR C, OMIT LINES 10 THROUGH 14

10. Standard deduction—(See instr.) OR itemized deductions (Line 15, Part II) [C] 10 _____

11. Federal income tax deduction (Line 5, Part III) [D] 11 _____

12. Exemption allowance (\$1,000 × number of exemptions from line 5c) [E] 12 _____

13. Total deductions (Add lines 10, 11, & 12) 13 _____

14. Income subject to Kansas income tax (Subtract line 13 from line 9) 14 _____

IF YOU COMPLETE LINES 10 THROUGH 14, YOU MUST USE TAX TABLE D

15. Tax (Table A, B, C, or D) [F] 15 _____

16. Nonresident allocation percentage (Line 19, schedule I, form 40) [G] 16 _____ %

17. Nonresident tax (Multiply line 15 by line 16) [H] 17 _____

18. Kansas tax on lump sum distributions (See instructions) [I] 18 _____

19. Total Kansas tax (Residents: add lines 15 & 18; Nonresidents: add lines 17 & 18) [J] 19 _____

20. Credit for taxes paid to other states (Attach a copy of other state(s) return) (Residents: line 7, Part IV; Nonresidents and part year residents: see instructions) [K] 20 _____

21. 337 Liquidation credit (For residents ONLY; attach form 120L) [L] 21 _____

22. Business & job development credit (Attach schedule K-34) [M] 22 _____

23. Solar energy credit (Attach schedule K-35) [N] 23 _____

24. Handicap accessibility credit (Attach schedule K-37) [O] 24 _____

25. Credit for child & dependent care expenses (For Residents ONLY; see instructions) [P] 25 _____

26. Total credits (Add lines 20, 21, 22, 23, 24, & 25) 26 _____

27. Balance (Subtract line 26 from line 19) (Cannot be less than zero) 27 _____

28. Kansas income tax withheld (Attach Kansas copies Form W-2) [Q] 28 _____

29. Estimated tax paid [R] 29 _____

30. Solar energy refund [S] 30 _____

31. Total prepaid credits (Add lines 28, 29 & 30) 31 _____

32. BALANCE DUE (If line 27 is greater than line 31) [T] Interest _____ [U] _____ [V] _____ [W] _____ [X] Credit Forward _____ [Y] Refund _____

33. REFUND or Estimated tax credit carry forward (If line 31 is greater than line 27) 33 _____

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Total Wildlife Contribution



Lecompton, Kansas namesake comes home to roost

Bald Eagle Crossing

Ken Highfill

In 1852, William R. Simmons, a ferryman from Indiana, settled about seven miles up the Kaw River from Lawrence, Kansas. Attempting to name the area according to its most prominent residents, Simmons called the ferry crossing, "Bald Eagle". According to John Rydjord in *KANSAS PLACE-NAMES*, many bald eagles were reported to be nesting in high sycamore trees along both sides of the Kaw River at that time.

Two years later, in 1854, with the construction of log cabins and thus civilization, Bald Eagle was more properly renamed, Lecompton, in honor of Judge Lecompt.

Whether or not the bald eagles actually nested along the Kaw may be known only to Simmons, but nearly 130 years later, as the onset of winter begins to chill and freeze the waters of the Kaw and her tributaries, the bald eagles return to their town of "Bald Eagle".

Without an official aerial count, no one could be certain of the number of bald eagles which spend the winter in the vicinity of the Kaw from the Delaware River inlet near Lecompton to Lawrence—a flight distance of about seven miles. A realistic guess would be twenty-five eagles. The result of a census would also be somewhat dependent upon the winter month in which the survey was conducted and the severity of the weather in the North. Eagles are most commonly sighted in Kansas during January and February.

Some people do not have much respect for the bald eagle because of its feeding habits. There is no denial that the bald eagle is primarily a fish eating scavenger with a chirping call that in no manner resembles a bold, challenging scream. However, as a mature eagle glides into the first diffused light of an early morning

fog, and snares a fish from the icy river in the time it takes to click a camera, these slurs on the eagle's character pale into insignificance.

Around the turn of the century, the eagles were probably safer on the Kaw than in Alaska. It is reported by Arthur Bend in *LIFE HISTORIES OF NORTHERN BIRDS OF PREY* that during the first ten years of the 1917 Alaskan bounty law at least 40,812 eagles and perhaps as many as 70,000 eagles were killed for bounty in response to the law.

In more recent history, with the strict legal enforcement against eagle killing in the United States and a general human awareness for protecting eagles, there is an increase in reported numbers of wintering bald eagles in Kansas. Along the Kaw, the private landowners commonly accept the eagles as a part of the seasons. In fact, many of the farmers along the Kaw undoubtedly protect the eagles by challenging trespassers and recreational vehicle intruders.

The greatest threat to the eagles may come with the destruction of habitat along the Kaw. Farming practices along the river have not eliminated the wintering eagles; however, each year the chain saws whine closer to prime eagle roosting and perching areas. Additional river cottages and the resulting human occupants would also frustrate the eagles.

In the meantime, for vastness and splendor, the Alaskan, Canadian, and Montana wildernesses offer the best survival opportunity for the eagles. But during the winter months, the bald eagles are a welcomed visitor back at Bald Eagle—rather Lecompton, Kansas. □

Ken Highfill spends his time instructing high school biology classes in Lawrence when he's not stalking eagles and other wildlife with his camera.

Think hard now. What's the most important fish in Kansas?

Sure, channel catfish deserve some recognition. They're popular, widespread, subject to a variety of tackles and techniques, and unparalleled on a dinner platter.

And it's true that the flavor and tackle testing strength of walleye can turn the most casual angler into a walleye fanatic.

And, yes, white bass can provide some of the fastest fishing anywhere.

And then, of course, there is the largemouth bass, whose endearing qualities have attracted a uniquely dedicated brand of sportsman.

But the most important fish in Kansas may be one that is hardly ever caught. Or, if it does happen to swallow a hook, it's quickly lobbed back into the water or onto the bank. Or, rarer still, if it's caught and filleted and fried, it can stink up a kitchen faster than a lunker largemouth can suck up a minnow

It's the gizzard shad. Just the name suggests a bait jar full of rank, rotting fish parts. But it may well be the "MVP" of Kansas fishes.

Shad serve as the major food item for numerous sportfish and panfish that might not be worth catching if shad didn't exist . . . because a fish that doesn't eat well isn't going to grow up to keeper size. The shad's appeal as forage is not limited to other fish.

A favored food of some of our favorite fishes, the gizzard shad is both benefactor and troublemaker.

**Good, Bad,
Ugly . . . and
Irresistible**

Ducks, herons, mergansers, loons, gulls, grebes, and pelicans readily feed on young shad. Bald eagles wintering on Kansas reservoirs are often seen scratching through ice to get at frozen stores of shad.

Gizzard shad have played a major role in the growth of reservoir fisheries, especially. Once confined mainly to the larger streams of eastern Kansas, they have expanded their range and increased their numbers many times over with the proliferation of reservoirs. It doesn't take long for them to establish themselves in an environment that contains much deep, calm, open water.

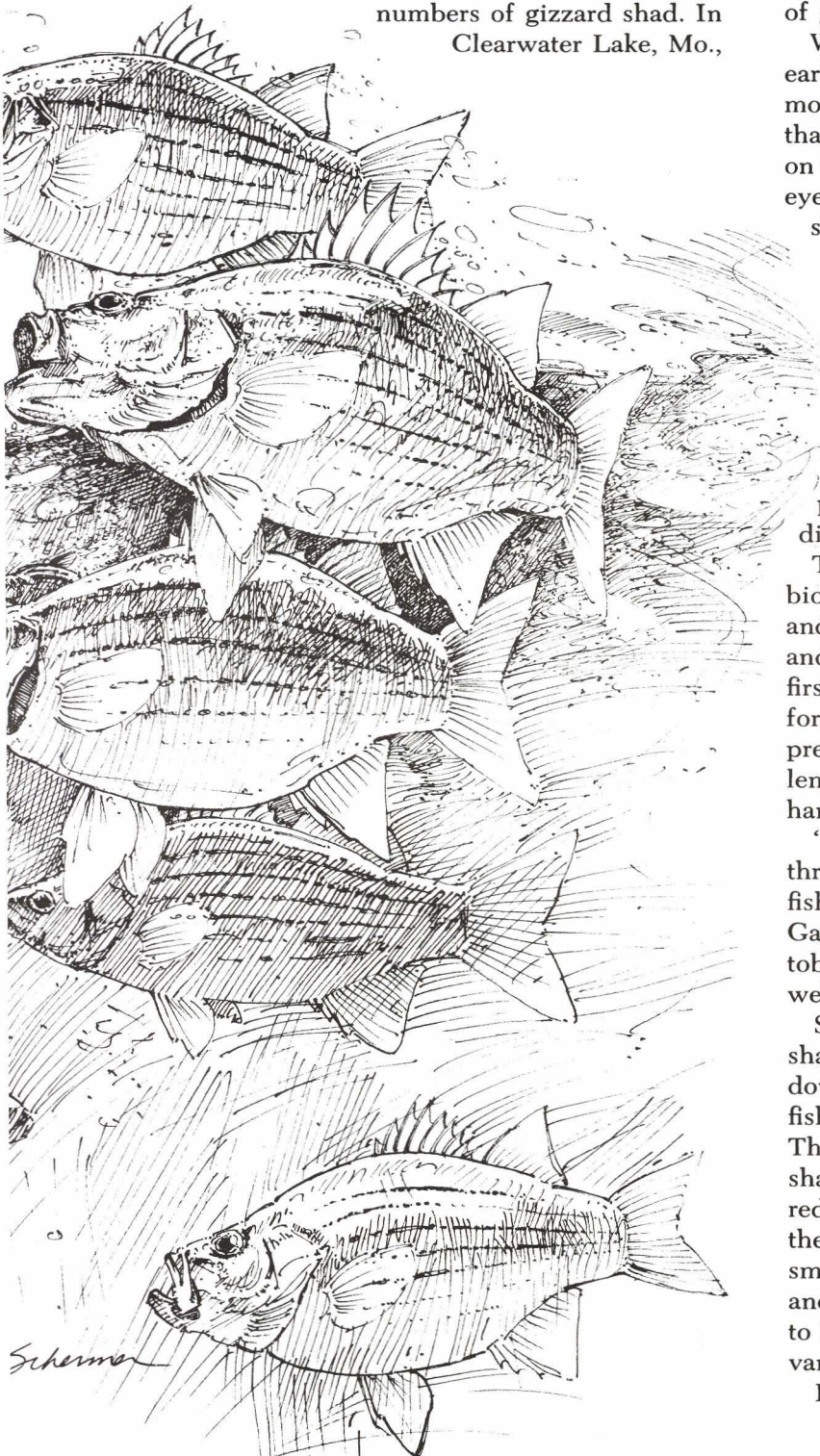
The main problem with gizzard shad, as fisheries



Bob Mathews

managers see it, is that they establish themselves too well. It's not uncommon for fish population samplings to reveal that shad comprise a disproportionate share of the total weight and numbers of fish in a reservoir. Sometimes their dominance can be downright shocking. A test netting of Fall River Reservoir just a few years after it was impounded showed that gizzard shad accounted for 97 percent of all fish by number and 83 percent by weight.

There are plenty of other examples. Black Hawk Lake, Iowa, became so overpopulated with shad that the game fishes were suppressed by sheer weight of numbers of gizzard shad. In Clearwater Lake, Mo.,



shad numbers grew from two percent of the lake's fish population in 1949 to almost sixty percent in 1950. In 31,000-acre Lake Apopka, Fla., biologists removed some 3.5 million pounds of shad with rotenone treatments after they found that more than 80 percent of the fish in the lake were shad.

Gizzard shad compete directly with other fish during the first few weeks of life. Most young fish, gizzard shad included, feed on the same thing: zooplankton. Obviously, fishermen and fisheries managers would like to see young walleye and bass get their share of the food available, without having to compete with hordes of gizzard shad.

Walleye have the advantage of starting life a month earlier than gizzard shad, unlike white bass and largemouth bass, which spawn about the same time or later than shad. As a result, young walleye get a head start on the zooplankton resource. In addition, young walleye are already developing a taste for shad by the time shad are born.

The competition for animal plankton doesn't last long. By the time a gizzard shad is an inch long its diet shifts from zooplankton to phytoplankton. Its formerly short, straight gut grows longer and more convoluted. Instead of sight-feeding on individual microorganisms it begins straining algal plankton and other microscopic plant life from water passed through its gill rakers. Its feeding habits and diet remain the same for the rest of its life.

The gizzard shad has been called the most efficient biologically of all the forage fishes because of the short and efficient link it provides between basic plant life and the sportfish desired by anglers. It is during the first few months of their life that they serve best as forage. One-to three-inch shad are prime food items for predaceous fish. Once a shad reaches five inches in length, however, it's too big for many predators to handle.

"Ideally, we'd like to see them stay in that one-to three-inch range," says Bob Hartmann, supervisor of fisheries investigations and development for Fish and Game. "When we have a lot of two-inch shad in October and November we know it's going right. But we'd rather not see many six-inch shad."

Several techniques are employed to counteract the shad's tendency to overpopulate. Reservoir draw-downs help. By lowering a lake's water level, forage fish and predators are concentrated in a smaller area. That makes it easier for predators to find and feed on shad and other forage fishes. Application of rotenone to reduce shad populations has been conducted more in the past than it is now. That technique works best on smaller lakes. The larger reservoirs are simply too large and shad populations there too dynamic for rotenone to be feasible. Predators also are stocked to take advantage of abundant shad crops.

Fisheries biologists are trying to learn more about

shad population dynamics. By understanding more completely the effects on shad of varying environmental conditions, their populations can be better manipulated.

"We want to find out how to get the most effective use of shad populations," says Ken McCloskey, Fish and Game biologist in charge of reservoir fisheries investigations. "Right now, we really don't have any information on our shad base at all. We get reports of them spawning both when the water is rising and when it is falling. We want to look at what adult shad population dynamics are like, what kind of crop they produce with what age structure."

"There are a lot of questions," adds Hartmann. "We need to know, for example, whether a two-foot raise in water level at Cheney Reservoir in July will cause a late spawn."

They also want to learn more about the effects on fish populations of shad overabundance. While shad occupy a different habitat in a lake ecosystem, and feed on an otherwise unused food resource for most of their lives, the concern is for the effect they can have by simply occupying so much space. At what point does the shad population, by its very abundance, begin to suppress reproduction among other desirable fishes?

Lake managers are studying the potential of another type of shad—the threadfin. Some of its traits are particularly appealing. Threadfin shad don't grow as large or as fast as gizzard shad.

As a result, they are available for a longer period of time at a more usable size. They are prolific reproducers, like gizzard shad, but are unable to survive Kansas winters. Thread-

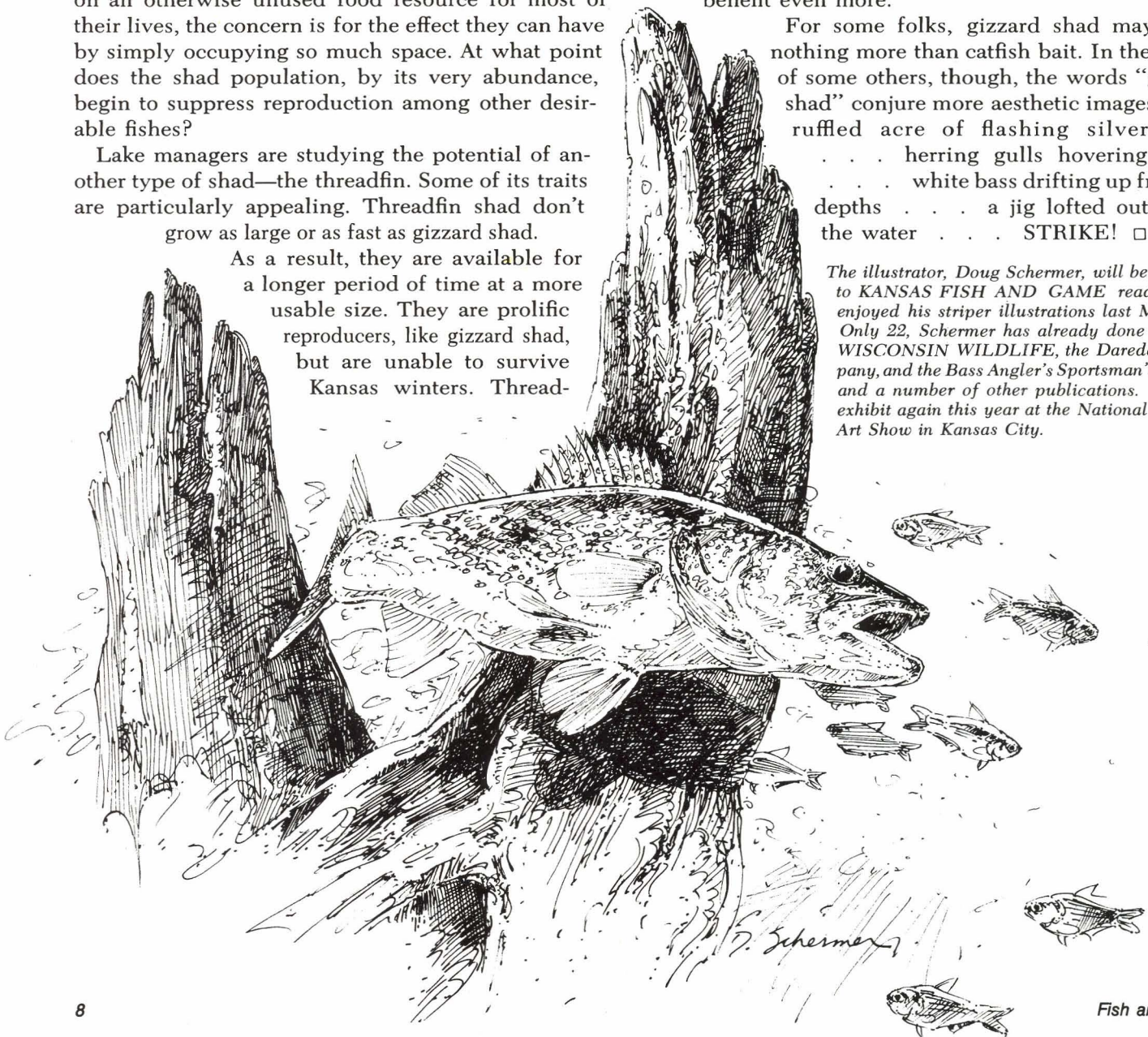
fin have been stocked in several southeast Kansas lakes but their entire populations die out in winter. That requires restocking of threadfins every year but assures the lake manager they won't overpopulate a lake.

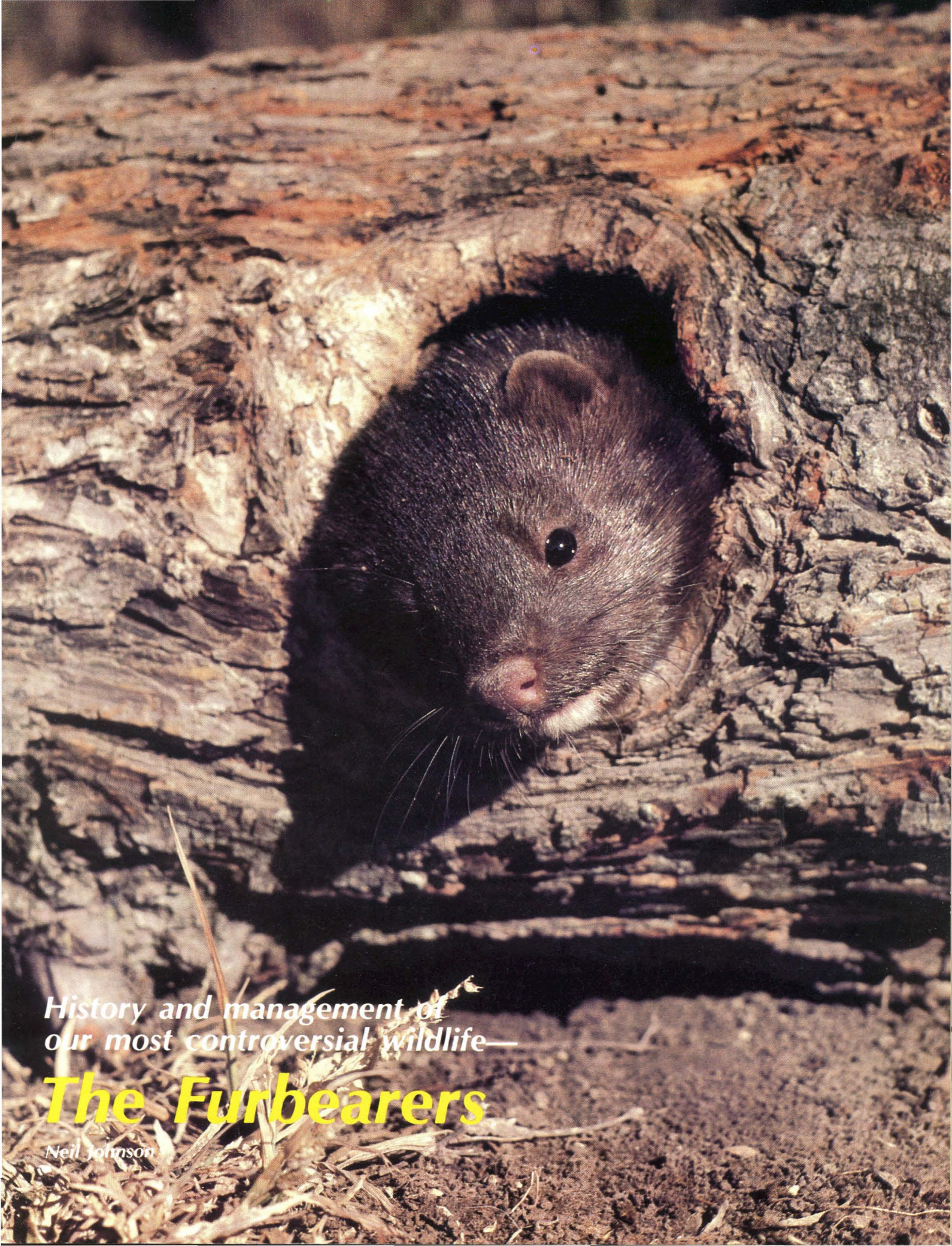
Gizzard shad are vulnerable to extreme temperature changes, too. While a portion of the gizzard shad population is able to survive Kansas winters, it is fairly common to see huge numbers of shad succumb to winter. Fisheries biologists would like to learn more about the age structure of gizzard shad populations which do survive. Having that information could be a great advantage in determining what techniques can be applied to shad populations to ensure a good supply of small forage fish without overpopulating a lake with them.

There aren't too many people who would prefer that we have no gizzard shad. Their advantages far outweigh the disadvantages they represent for Kansas fishermen. As we learn more about them, we stand to benefit even more.

For some folks, gizzard shad may mean nothing more than catfish bait. In the minds of some others, though, the words "gizzard shad" conjure more aesthetic images: a fin-ruffled acre of flashing silver sides . . . herring gulls hovering above . . . white bass drifting up from the depths . . . a jig lofted out across the water . . . STRIKE! □

The illustrator, Doug Schermer, will be familiar to KANSAS FISH AND GAME readers who enjoyed his striper illustrations last May/June. Only 22, Schermer has already done work for WISCONSIN WILDLIFE, the Daredevil Company, and the Bass Angler's Sportsman's Society, and a number of other publications. He will exhibit again this year at the National Wildlife Art Show in Kansas City.





*History and management of
our most controversial wildlife—*

The Furbearers

Neil Johnson

Furbearers have always figured prominently in human enterprise on the North American continent. Native Americans relied on them for thousands of years as sources of food and clothing. The first Euro-

Six notables among Kansas furbearers

peans to explore the New World used furbearers on a much broader scale: as raw materials for haberdashers

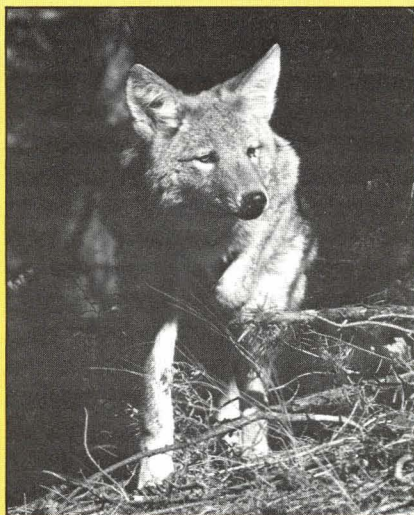
and tailors, and the standard form of "currency" in a land not yet equipped with dollars and cents. The search for beaver, mink, muskrat, and otter pulled trappers and hunters deep into the unexplored continent and evolved into the first large-scale commercial enterprise in North America. For two centuries, the fur trade was the economic foundation upon which the new land was being developed.

By the mid-nineteenth century, fur had been supplanted in importance by another great American resource: the land itself. The transformation from exploitation of a wild resource to production of domestic crops and livestock again focused attention on furbearers, this time for their negative value. Cougars,



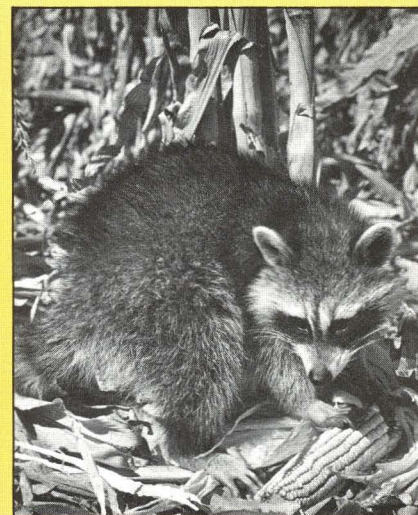
BOBCAT

Primarily nocturnal and seldom seen by humans, bobcats prefer life in lightly populated areas of broken terrain. They depend on keen eyesight and superlative hearing for their nightly hunting forays. Bobcats are good climbers and readily take to trees to rest or observe their surroundings. Although capable of killing an animal as large as a deer they primarily consume rabbits, squirrels, mice, rats, shrews, opossums, domestic cats, and carrion. Their reputation for controlling populations of rodents is tarnished by occasional reports that they destroy domestic fowl and young pigs. Their dens are usually located in inaccessible areas, often in rocky cliffs or hill-sides.



COYOTE

Nocturnal scavengers and predators, coyotes are respected for their craftiness and cunning. Their adaptability has enabled them to expand their range despite large-scale attempts to reduce coyote numbers. They prefer semi-open country and establish dens in unused fields and pastures, although they also may establish residence under hollow trees, in rock cavities, and under deserted buildings. Although they do occasionally kill young livestock and poultry they have often been blamed unjustly for damage done by free-running dogs. They rely on rabbits, mice, and other small rodents for the bulk of their diet, as well as carrion and some plant foods.



RACCOON

Expert climbers and swimmers, raccoons usually live in hollow trees near streams, lakes, and marshes. They are nocturnal, foraging from dusk to dawn on a diet more varied than that of any other furbearer. Crayfish, clams, fish, insects, frogs, snakes, turtles, wild fruits, grasses, and nuts make up a large part of their diet. They use the tactile senses in their front feet to locate food by groping in shallow pools, under rocks, or in rotting logs. On rare occasions, they can cause problems for rural residents by feeding on corn, eggs, or poultry. They also can be a suburban nuisance by taking up residence in and around buildings inhabited by humans.

bobcats, wolves, coyotes, and foxes were considered formidable liabilities for these new endeavors. In the new American mindset, these furbearers were not just pests, they were mortal enemies. Their eradication was considered just reward for their indiscretions.

Extermination techniques grew more sophisticated and effective. They became so effective that new factions eventually argued for, and often won, a reevaluation of these furbearers' role in the growing country.

The story of furbearers in Kansas and the entire country is a mixture of successes and failures, truths and myths, regrets and mollification. Some aspects of the story are timeless, such as their continuing economic role as the base of a multi-million dollar busi-

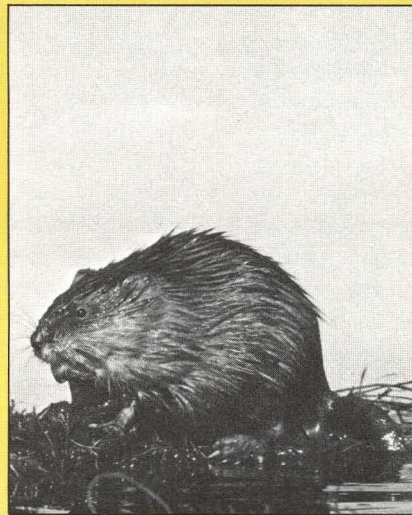
ness in Kansas. They still can be pests, jeopardizing the endeavors of their human neighbors. They continually face the threat of habitat loss.

Some changes have also been made. A strictly controlled harvest and improved management techniques help stabilize this wild resource. Changes in law have abolished some furbearer population control methods that were hurting more than they were helping. An enlightened public has helped make possible the return of many species from near disaster to again healthy populations. We keep learning. And furbearers continue to fill an important role in our society. Described below are six of Kansas' most important furbearing species. (Photos by Leonard Lee Rue III.)



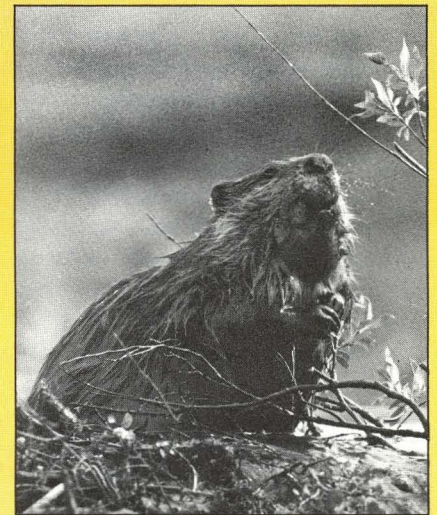
MINK

A basic requirement for mink is existence of permanent water. Mink live along banks of streams or shorelines of lakes and marshes, making their homes in cavities excavated in stream banks or under logs or stumps, in hollow trees, or in abandoned muskrat lodges. They are primarily nocturnal and live solitary lives except during rearing of their young. They are aggressive and often attack animals larger than themselves. Their eyesight is not acute but they rely heavily on a highly-developed sense of smell to locate prey. Mice, rabbits, and other small terrestrial animals, as well as fish, crayfish, frogs, and other small aquatic creatures are preferred mink food. Their living habits cause us few problems.



MUSKRAT

Musk rats prefer still or slow-moving water with abundant vegetation in the water and along the shore. They usually build their houses out of vegetation, with an entrance tunnel that opens underwater, or dig their homes in a stream bank. During most of the year a muskrat lives alone but several may bunch together in a den or lodge during winter. Chiefly vegetarians, they prefer the roots of aquatic plants, but also will feed on snails, crayfish, fish, frogs, reptiles, and young birds. They sometimes cause problems by tunneling in and around dikes and earthen dams.



BEAVER

The beaver, largest of North American rodents, is famous for its dam building capabilities. Beavers customarily confine their activities to a small home range, subsisting largely on the cambium of tender twigs, young trees, and woody plants. They are especially fond of cottonwood and willow bark. Beavers are nocturnal but may be seen during the day, especially in the fall when they are busiest with dam construction. Their dams can stabilize stream flows and control runoff but sometimes cause problems by backing up water and flooding roads, meadows, and crop fields. Their tree-gnawing tendencies also can cause damage in orchards located near beaver habitat.

The Lewis and Clark expedition is a convenient place to start a history of the American West. It was the first formal expression of American ownership of the Louisiana Purchase, far more telling than the shuffling

The Early Days

of papers between Europe and New York that marked the legal transfer of land from France to the U. S. It was a landmark in the American mind, of course, because the English colonies on the east coast had spent most of the eighteenth century just getting past the Appalachians, and it wasn't until the close of the Revolution that Americans gained claim to the "Northwest Territory"—later the states of Michigan, Wisconsin, Ohio, Indiana, and Illinois. To the settlers moving west from the Atlantic in the late 1700s, the Northwest Territory was howling wilderness. The land beyond was nothing more than rumor. Little wonder that the reports of captains Lewis and Clark caused such a sensation.

As far as the natives of the Great Plains were concerned, however, the process of European contact and trade began 200 years before Lewis and Clark. The Spanish were the first whites onto the grasslands. Coronado, Fray Augustin Rodriguez, Bonilla and Humana, and Juan de Onate all penetrated to Kansas and even Nebraska by 1600. Unfortunately for them and the Spanish empire, they explored the southwest constantly in the shadow of Cortez and the treasures he extracted from the Aztecs. They were too busy trying to find easy gold to recognize the other peculiar treasures the West offered. One early Spanish explorer, having heard of the numberless herds of bison on the plains, led an expedition into eastern Colorado to round up these wild cattle and domesticate them. After losing three horses and having another forty wounded, the would-be cowman realized that these American cattle were not the same critter as the European variety. Apparently, the idea of cashing in on the wildlife of the plains never occurred to the Spaniards again.

While the Spanish combed the Southwest for precious metals and pearls, more pragmatic explorers were moving onto the plains from the Canadian canoe country. After Champlain's settlement of Nova Scotia, the French moved rapidly up the St. Lawrence River and out into the Great Lakes. In 1658, two hardbitten

In the 150 years before the 1840 collapse of the beaver market, the beaver was perhaps the most consistently sought furbearer on the plains. The value of its fur combined with its vulnerability to trapping led to a radical population decline among flatland beaver even before the American entry into the fur trade. (Photo by Bruce Kintner.)

voyageurs, Pierre Radisson and Medard Groseilliers, pushed as far west as Lake Superior, opening a pathway for exploration of the Mississippi and Missouri rivers. By 1690, the British Hudson's Bay Company had also established trade contacts down into the Canadian plains from the north, and both France and Great Britain began to mine a resource that, in its entirety, may have been worth more than all the gold and silver on the continent.

These fur companies didn't work like the Rocky Mountain and American fur companies that sent "enterprising young men" into the Rockies 150 years later. The French and British fur companies let the Indians do the trapping and tanning, then traded for the finished furs. Some Indian tribes along the modern Canadian border and the upper Mississippi and Missouri quickly became middle men for this trade, bringing in furs from far out onto the plains along the ancient established pipestone and obsidian trade routes. They swapped these furs at a profit and used the white men's trade goods to buy more. These tribes were understandably jealous of their unique trading position and did all they could to prevent the white traders from moving out on the trade routes closer to the source of



supply. As a result, the number of white men doing fur business on the plains was small. The effect of the trade on furbearer populations, however, was probably considerable over the long haul.

By 1720, the French had established New Orleans as a base for their commerce upon the Mississippi. In 1719, a trading post was established near the present site of Texarkana, and by 1726, there was an important outpost near Lawrence, Kansas. The annual quota for this one trading post was 100 bales of fur. A bale of furs consisted of 100 otter skins, or 100 wolf, or 100 badger, or forty deer, or 500 muskrat and mink. And this post was only one of several in Texas, Missouri, Nebraska, and the Dakotas.

It was about this time that a concerned government in New Spain dispatched Pedro de Villasur to find out how entrenched the French threat to Spanish claims had become. Villasur proceeded across Kansas to the Platte River where he found out. After making contact with a group of Pawnees, Villasur and more than half of his expedition were killed in an early morning surprise attack. The Pawnees were armed with French guns and driven by French interests. The plains fur trade had become lucrative enough to kill for.

Trade on the plains became more and more cutthroat as the eighteenth century continued. A number of French and British companies emerged, and the Indians, shrewd traders in spite of their gullible reputation, soon learned to play one company off against another. The Hudson's Bay Company was distressed to find that the Indians were trading their heavier, more valuable furs with the French who were close by and saving the lighter hides for the more distant Hudson's Bay trade. The British traders immediately pushed closer to their trade in an attempt to close out the competition.

St. Louis, the capital of the American fur trade, was established in 1764 by a Frenchman, Pierre Laclede, who sought and received a license for fur trade along the Missouri from the Spaniards who had taken Louisiana as part of the agreement that ended the French and Indian War. By the beginning of the nineteenth century, St. Louis had already grown into a wealthy metropolis on the strength of the French-Indian fur trade.

The Europeans knew what they had in the American fur resource, but because of a variety of political and economic problems at home, neither the French nor



the British could establish an unassailable foothold in the New World. It was inevitable that American interests would eventually take control of the West. With the Louisiana Purchase and the Lewis and Clark exploration, U. S. entrepreneurs rushed into the fur trade. The best known of these efforts focused on the Yellowstone country, but trapping activity in southern Colorado and northern New Mexico was just as concentrated, if not as well organized. Although very little mention is made of trapping on the plains, the fur trade on the flatlands was alive and well. Buffalo were taken more and more frequently for their tongues and for production of pemmican which had found a market farther east. The plains Indians were now dependent on white trade for guns, powder, and other goods and, as a result, were compelled to trap and hunt buffalo for trading stock. A single record from 1829 indicates the volume of fur coming off the plains. Fredrick Choteau, one of two generations of St. Louis Choteau's who made their livings from western fur, brought 400 packs of furs into St. Louis from the Kansas River and its tributaries. The packs contained beaver, otter, and muskrat and had a market value of more than \$100,000 in St. Louis at that time.

The intense demand for beaver and the resulting high prices eventually force a change. Through the late 1830s, hat makers began experimenting with substitutes for beaver, and in the early 1840s, the opening of trade with China brought the silk hat into fashion and wiped out the beaver market. The collapse in this element of the fur business should have meant a respite for the aquatic furbearers on the plains, but it may have been disastrous for them. Many mountain men and would-be mountain men settled on the plains rivers when the market for beaver had dried up. They were skilled trappers hungry for a living, and may have pursued beaver, muskrat, and otter even more diligently because of the low prices. In any case, pressure on all the furbearers continued throughout the nineteenth century, culminating in the slaughter of the bison in the late '70s and early '80s. One of the mop-up operations that accompanied the last great buffalo hunt was wolf-hunting. The buffalo wolves prospered temporarily as the hide hunters left them millions of carcasses to pick on, but it wasn't long before itinerant hunters came looking for other prey. A favorite wolf "hunting" technique was to put down a few buffalo and lace the meat with strychnine. One wolf hunter, Robert Peck, reported taking more than 3,000 animals in the winter of 1861-62, 800 wolves, more than 2,000 coyotes, and about 100 foxes.

Although the overall loss of wildlife throughout the

country after 1880 was enough to spawn widespread calls for conservation, most wildlife, including furbearers, continued to decline into the twentieth century. The low water mark came around 1910.

Furbearers were unprotected in Kansas until 1911 when civet cats, raccoons, skunks, opossums, muskrats, and mink were officially brought under the Fish and Game Code with an open season from November 16 to March 14. Beaver and otter seasons were closed for ten years by an act of the state legislature. In 1921, the furbearer season ran from December 2 to February 28, and trappers were required to buy a \$1.00 trapping license for the first time. The state legislature limited trappers to thirty traps in 1925, a limit that was reduced to twenty traps in 1943. Beaver and otter seasons remained closed throughout this period. In 1943, control of the beaver season was turned over to the Fish and Game Commission.

In 1940, the hunting and trapping season on raccoons was sixty-one days—December 2 through January 31. The two seasons ran concurrently for the next twenty-one years, varying in length from sixty-two to 273 days. In 1962, the hunting season was opened year-round while the trapping season ran from December 1 through January 31. In 1974, the hunting season was trimmed to 151 days and has since been reduced to its present sixty-two days. Hunting and trapping seasons on raccoon now run concurrently again.

The muskrat, mink, and weasel season ran for sixty-one days in 1940 like the raccoon season. It was also extended by one day in 1943, running from December 1 through January 31. Both hunting and trapping seasons ran concurrently for sixty-two days out of the year until 1973 when the hunting season for these species was closed. Today, the mink and muskrat season runs from December 1 to February 28.

Throughout the history of furbearer season setting, little emphasis has been placed on understanding what was happening to furbearer populations. The only dependable information the Commission had collected prior to 1974 was the number of trapping licenses that were being sold and records of fur transactions from fur dealers beginning in 1927. In response to sharply increasing license sales and increasing pressure on long-haired furbearers, the Commission reduced the raccoon season in 1974. It wasn't until 1979 that the harvest season for raccoons was lengthened and then only after enough information had been collected to indicate that the season would not have an adverse impact on the state's raccoon population. □

In management of any wildlife species, the manager has to force himself to think at a level of the whole population. This is one of the major stumbling blocks in understanding efforts to manage furbearers, because

Ebb and Flow

most nonbiologists always think in terms of individuals or small groups.

What then, are the important principles that underlie the management of furbearers or any other wildlife? Every year, at one time or another, furbearers go through a breeding season. Beaver tend to pair and establish colonies; raccoon meet, breed and go on their way; muskrats have multiple litters in a year. But regardless of specific behavior of different species, young are born to all each year, and this fact is the basis of all population management.

If all these young survived, we would be up to our armpits in furbearers in a matter of a few years. An understanding of the process that keeps this from happening is crucial to understanding wildlife management.

For illustrative purposes, I will describe the annual population cycle of the raccoon, one of our most important furbearers. In January, there are still a fair number of raccoons around the state; for the sake of this explanation, let's say about 230,000. These coons are typically denned up and under considerable stress because of the cold. It is not at all unusual for a raccoon to lose thirty to forty percent of its total body weight as it burns fat to stay warm. There are those raccoons that don't have enough stored fat; these individuals either die in their dens from cold or are forced to forage for food. As

Bruce Kintner



they forage, they are exposed to predation and the elements and often die.

By late February, the population is reduced to 210,000 raccoons, close to the lowest point of the year, and mating is in full swing. Sixty-two days after mating, the sow will have her litter. In Kansas, this litter averages about 3.6 young. The earliest litters start whelping in late March and the numbers of raccoons start to increase, slowly at first and much more rapidly as the major portion of the female raccoons bear their litters.

Some time between February and March, the raccoons reach their lowest population level of 200,000. We call this level the "carrying capacity." It represents the maximum number of raccoons which the state's habitat can support or carry through the most crucial time of year.

By the end of March, our population has increased to 215,000 raccoons, of which 15,000 are less than a month old. Throughout April and May, about ninety percent of the litters are whelped, and by the end of

June, the state's population has reached a peak, potentially near 560,000 raccoons. This figure is never really attained since mortality is always occurring in both the adult portion (200,000) and the kitten portion (360,000) of our population. Right from birth, decimating factors such as still births, desertion of the litter, competition between litter mates, and diseases start reducing the total reproductive effort.

During July, the earliest litters are starting to get out more and are being exposed to other decimating factors such as predation and accidents. Although mortality occurs throughout the summer, the addition of later litters to the population tends to balance out and the total population declines by only a small amount. In

July and August, the living is easy; sweet corn, melons, fish and wild fruit are abundant, so food is not a real problem. Although there is severe weather during this period, it is not a very serious threat to raccoons. But as August draws to a close, most of the young are out and about. Mortality starts to increase as they are exposed to the world nature has created for them.

Sometimes luck determines which animals survive to breed and which die, but more often the individuals best equipped to cope with their world tend to hang on, while the slag of the population is skimmed off. This survival of the fittest, Nature's way of thinning a population, is not sweet, gentle, or compassionate. It is cold, ruthless, and unsentimental, but oddly enough it is responsible for much of what we find beautiful in the wild.

The mortality factors that thin the August raccoon population can be broken into three groupings; food, disease, and accidents. Food availability does not become a major problem for raccoons until late November, but, even before this period, food gathering is a raccoon's major activity. Coons have to eat enough to support themselves and lay down large amounts of body fat to keep them during their denning period in the winter. Disease is a constant threat to all furbearer populations. Raccoons are susceptible to a wide variety of diseases. The major ones are rabies, leptospirosis, distemper, and mange. Most diseases are spread by contact between individuals; therefore, during the months that the population is highest, there is the greatest chance of spreading the disease. Most of these diseases are not quick-killing; some may take as long as two months to cause an individual's death.

I have included predation in the third group, accidents. This group probably counts for the major portion of the reduction of the population during August, September, and October. Most people who drive a lot will notice a substantial increase in raccoon road kills during late August and September. These will generally be naive young-of-the-year animals that have not learned about automobiles. Similarly, animals are taken by predators. Among raccoons, only the young are vulnerable to birds of prey, and only two Kansas predators, bobcats and coyotes, are capable of taking adult raccoons. Predators tend to focus their attention on the young and naive or sick and incapacitated.

By the end of September, the raccoon population (450,000) is started into its major reduction of the year. As food becomes less abundant, raccoons' conditions start to decline and disease becomes a more serious threat. As October, November, and December go by, more and more individuals are removed from the pop-

ulation until only 230,000 of the fittest raccoons are alive in January.

This is where we started the yearly cycle and it is now a rerun. As a matter of fact, every year this is rerun for all wildlife populations. In furbearer management, we realize this and take it into account. Stable furbearer populations lose as many individuals each year as they gain from reproduction. This surplus may be young or old, healthy or diseased, but it has one dependable trait—it does not have access to good unoccupied year-round habitat. As a result, it will disappear. This, together with the fact that it doesn't matter what decimating factors reduce the population, means that we can allow a controlled harvest of raccoons.

With the concept of the yearly cycle in mind, let's take a look at some of the information we have collected on the bobcat. Bobcat research effort has been extremely intense because of the federal government's participation in the Convention on International Trade in Endangered Species (CITES) which requires that detailed population data be collected on certain furbearers like the bobcat before its pelts can be shipped outside the U. S. Our original estimate of Kansas bobcat numbers for CITES was about 10,000. We'll use this as a starting point.

Our research has shown that the average female bobcat will bear a litter of three kittens. Applying that productivity to the Kansas population, we find that Sunflower bobcats should number about 25,000 in the early fall after one breeding season. Hunters and trappers take about 1,000 of these each year. If this were the only source of mortality, the population would grow from 10,000 to 48,000 in just two years.

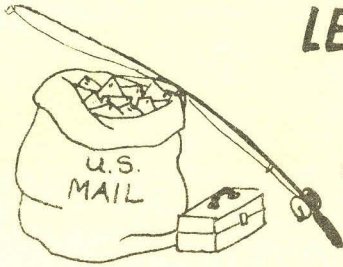
In fact, research done in 1978 indicated that young bobcats had trouble surviving to their first trapping season. If they made it into their first winter, they had a ninety percent chance of surviving another year. Bobcats more than a year-and-a-half old had about a fifty percent survival rate. At these survival rates, the bobcat population should have been growing from eight to ten percent a year. These estimates of survival were all based on information gleaned from carcasses turned in by hunters and trappers. When we looked at other 1978 surveys of bobcat numbers, they also indicated a slight increase.

We were lucky in 1978. Everything fell into place and pointed the same direction. This is generally not the case. Normally, information from different sources is contradictory and finding the truth of the situation finally depends on the interpretive ability of the biologist who is looking at the information. He has a far easier time when he is working with a number of independent surveys taken continuously over a

the YELLOW Pages

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LETTERS to the EDITOR

We welcome letters to the editor and ask only that they be kept as short as possible. Address correspondence to: Editor, Kansas Wildlife, Rt. 2 Box 54A, Pratt, Ks. 67124.

THOROUGH READER

I just want to comment on your magazine. It is the most informative magazine that I have seen on sports. I read every word cover to cover on the day it arrives. I am disabled and can't hunt but still get a little fishing done. Keep up the good work.

Lloyd B. Jackson
Opolis

RIVERS AND ACCESS

In the "River Ducks" article, Jim Kellenberger states that ninety-six percent of the duck hunters refuse to deal with private landowners.

I do not like to ask either. I do not believe that the landowners should control or have the right to deny the people of Kansas access to, or use of, any part of our state rivers. There should be hunting and fishing boundaries established on both sides of all our rivers and open

to the public just as it is at our state lakes.

Terry J. Johnson
Salina

RIVER DUCK LOVER

Thank you very much for printing the article "River Ducks" in the November-December issue. The articles and pictures are very much appreciated.

I started duck hunting on the Illinois-Fox-Kankakee River system around Joliet, Ill. fifteen years ago while in high school. The techniques I learned then were aptly discussed in the article. I still prefer river and stream hunting to the numerous public hunting areas in Kansas due to the overcrowding of the marshes.

Believe me, there is no greater thrill than to see a flock of greenheads turn and glide into the wind through the trees surrounding a stream on a winter day. It's too bad the other ninety-six percent of Kansas duck hunters don't know

what they are missing. Keep up the good work.

Paul E. Wilson, Jr.
Manhattan

PLEASED WITH CONTENTS

After months of reading KANSAS FISH & GAME I find that I am more and more impressed with each issue. Your November-December issue prompted me to finally write to commend you and the staff on a job superbly done.

It would be hard for an article to do justice to a Maass and a Raedeke but the late season hunting articles really hit the mark with me.

As I continued reading I took special interest in the article on rabbits. My two beagles made me read it to them.

Finally, the late season river duck hunting was right up my channel. I have had a growing interest in duck hunting since working on the National Wildlife Art Show in Kansas City each year. I have been frus-

trated after freeze-up, however, but thanks to your article and, I am sure, to the chagrin of the "enlightened" four percent, I will be "on stream" this year. I am not sure whether the article convinced me or those fantasy-land photographs did it. Both were exceptional. Keep up the good work.

James R. Cook
Gardner

CAT KILL?

The letter "Reno County Cougar" in the last issue was very interesting to me because of an experience I had about the same time (1959).

We used to run lots of sheep but finally had to quit because of huge losses to coyotes. However, we had one kill (and only one of this particular nature) that was entirely different from the common "slit the throat then eat the lungs and liver" kill of mature coyotes or the "hamstring 'em and eat part of the stomach" kill of young coyotes.

In this particular kill, the predator ate from the back of the neck and down to the back on this particular sheep. It is my understanding that only cats kill in this manner but I never reported this to Fish & Game until the letter mentioned above brought the incident to mind.

This happened just as a blizzard was moving in one late evening and I found this dead sheep as I moved the rest of the flock in to shelter. There were no tracks because the ground was frozen and the snow had blown any tracks in the snow shut. This happened near the Arkansas River northwest of Hutchinson but we never found any tracks in the mud along the river.

Doug Wildin
Rt. 2
Hutchinson

P. S.--I hope you folks at Fish & Game realize that the long hunting season sure makes a lot of farmers mad and increases their resistance to hunters simply because it exposes them to such a long period of road hunters and poachers. As the season progresses, road hunters increase rapidly in proportion to hunters that are willing to get out in the field and do it right.

Another thing, if there was some way to compensate farmers for leaving strips of uncut corn in the sprinkler-irrigated corn fields, it would sure make for dandy pheasant hunting. This is particularly effective a week or two after the season opens and the weather turns bad. We know as we do it! We also place a few big round bales of mature wheat around in spots on our farms where there is protection from livestock and under a large tree, for game birds to eat on if we get an ice storm freeze-up. The birds can always get to one side of these bales that is not frozen shut and it gets them past that starvation period.

COVER UP NEEDED

I just read my November-December issue of KANSAS FISH & GAME magazine. I want to congratulate you on the fine photography of wildlife. It is really good.

The thing I would like to see you do is put an outside cover on your magazine so as not to score up the great pictures. I also would like to see the mailing label on an outside cover. The label, when trying to take it off, always damages the photos.

Wyoming has adopted for their magazine a real thin white paper on the outside of their magazine. Then, when we tear it off, the magazine cover isn't damaged in any way.

As far as I'm concerned, you can charge \$12 a year for the magazine and it's still a bargain. Please keep up the good work.

Dale Losey
Oakley

COMMENDATION

My wife and I would like to tell you folks how much we enjoy this great magazine. And we know my brother in California will enjoy it. We hope you all had a Merry Christmas. Thanks again for a great magazine.

Cecil Rankin
Wichita

ACROSS THE OCEAN

I would like to purchase a subscription for my father-in-law who lives in France.

I have been subscribing to your magazine for a number of years. It is excellent and I would now like to share it with a French outdoorsman.

Stephen Parker
Lawrence

EAGLES IN KANSAS

I read the article on golden eagles nesting in Kansas in the November-December issue. After spending five years as a biologist with the Kansas Fish & Game Commission, and a few years in World War II in the U. S. Coast Guard, and completing a master's degree at Fort Hays State University in 1945 I took a training position with the Soil Conservation Service at Mankato. In the summer of 1947, I was transferred as conservationist at Ashland. The fourteen years that I was in Clark County I observed a golden eagle nest nearly every year. The article by Marvin Hamilton did not

name the county where nests were observed but I am willing to guess that one of the sightings was in Clark County.

I have told several Kansas Fish & Game people of the nesting. I never told people in Clark County about the nest, as I didn't want it disturbed. I spotted a large nest near Clark County Lake that looked like an eagle nest but never observed an eagle on the nest. The nest that I observed was near the Big Basin in a large elm tree in predominantly native grassland. I know the golden eagle has nested in Clark County.

H. Leo Brown
Eureka

KIND WORDS

Congratulations on your November-December issue of KANSAS FISH & GAME. Both the editorial content and the artwork are excellent in quality.

John J. O'Leary
Leawood

A COMPLAINT

For the most part I am very pleased with your efforts and your magazine. I do, however, feel the need to complain about two things concerning your finished product. If you check, I believe you will find you have a total of almost a full page of empty white spaces in the September-October issue and possibly that much in the next issue.

Your pictures are always great but why do you spread them over two pages? What prompted you to ruin the painting of the cougar by putting it on two pages? You also did a good job on the kid with the doves on page 28 of the September-October issue. He is cut neatly in half. If you have trou-

ble filling the pages with good stories and such why not sell the wasted space to carefully selected advertisers and make the magazine more self-sufficient.

I really do enjoy the magazine but there is a need to look into the empty space and the picture placement. Thank you.

Grady Elder
La Cygne

Thanks for your interest, Grady.

First of all, agency policy prohibits advertising in our magazine.

Now, about that blank space. Maybe we've just lived in Kansas too long and have converted our appreciation for wide open spaces to the pages of our magazine. In our opinions, there are many good reasons for uncluttered space. Filling a page to the margins with copy and/or illustrations may allow us to shoe-horn more material in the magazine, but our objective is to make the magazine as readable as possible. We believe a certain amount of white space lends an overall attractiveness and readability to the publication that wouldn't exist if we filled all available space with words or pictures. As for the size of individual photos or illustrations, we feel that the average reader appreciates large-scale reproduction of top-quality photos or art more than a conglomeration of small reproductions.

SHOWIN' OFF

Just a note to say you put out a great magazine. I take each new issue to work and let (or make) these idiots who live in Missouri read it. They don't joke and run down the state of Kansas anymore, especially after I

share some pheasants and quail with them. Keep up the good work.

Ed Vogin
Kansas City, Ks.

DENIED & DISILLUSIONED

Recently, my father and I decided to do some quail hunting close to home. We live in a Kansas City suburb and drove out near Perry Lake.

At the first likely looking spot we stopped at a farm house to get permission. We were turned away with a flat "No." I chalked this up to a bad experience this man must have had with hunters.

We asked seven other landowners without cattle to hunt their land. Six rudely turned us away and one said "I guess so." We got several suggestions to try the public hunting areas. It was obvious everybody and their brother had hunted it. We didn't even see so much as a sparrow. This trip shattered my dreams of when I get old enough to drive to go hunting with some friends.

I'm sure there are some really great landowners but are they getting more scarce by the year?

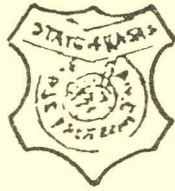
David Jones
Shawnee

P. S.--I really enjoy your magazine. It's about the only time I get to see any wildlife anymore.

COON HUNTER

Thanks for having such a nice magazine with great looking pictures and stories but I wish you would have stories on coon hunting. Keep up the good work.

Raymond Sinclair
Humboldt



It's The Law

Donald G. Callies, Culbertson, Neb., gambled big and lost heavily during a December hunting excursion into Rawlins County. Game Protector Larry Dawson, acting on a complaint from a landowner, arrested Callies Dec. 5. Charges against the Nebraska resident included: hunting by aid of artificial light, hunting without a license, hunting without written permission, possessing a beaver during closed season, and killing a beaver with a firearm. Rawlins County District Court Judge Dorothy Reinert fined Callies a total of \$2,025 on the five charges. He was sentenced to 120 days in jail with a conditional probation for one year, during which time he is not allowed to hunt in Kansas. Callies also surrendered the pelts of four raccoons, three coyotes, one badger, and one beaver.

Other recent violations include:

— Thomas D. Sharp, Denver, Colo., paid \$1,000 in fines on two illegal deer hunting charges. Sharp was charged with making false representation to obtain a deer permit and taking a deer unlawfully with an invalid permit.

— Two Jewell County men each paid fines and costs of more than \$100 for unlawful hunting with artificial lights. Ricky B. Boller, Mankato, and Daniel E. Libby, Esbon, were arrested Dec. 4. Jewell County District Court Judge Jack Bradrick levied the fine.

— Robert Schoenfeld, Rt. 2, Oakley, was fined \$125 for attempting to take a deer on a permit issued to his wife.

— Three Wichita men each paid a \$95 fine in Federal Court in Wichita. The three—Jack F. Gillmore, Dean D. Gillmore, and Kelly A. Gillmore—were charged with exceeding bag limits on ducks.

FUR AND POLITICS

At least two Kansas sportsmen's groups will be watching the 1981 Kansas legislative session with more than casual interest. The focus of their interest is a bill which would make some major changes in Kansas statutes governing use of furbearers.

Members of the two groups—the Kansas Fur Harvesters and the Kansas Federation of Houndsmen—were instrumental in sitting down together to formulate recommendations which resulted in the writing of the bill (HB 2976) during the 1980 legislative session. The

Four major changes are proposed in the bill. One of those changes involves implementing a furbearer license to replace the trapping and/or hunting license currently required of trappers and hunters. Under existing statutes, persons hunting furbearers must possess a hunting license to hunt and a trapping license to sell furs. A trapper must possess only a trapping license to trap and sell. The proposed legislation would unite the two licenses under a single license.

Another provision of the bill would require a course of instruction of at least six hours for all persons born after July 1, 1964 who wish to purchase a furbearer

license. The course would not be designed to provide instruction on how to catch more animals with traps or hounds but would emphasize ethical, humane, and selective methods of capturing furbearing animals. The aim of the course is to alleviate some of the conflicts that can occur between sportsmen and landowners, as well as sportsmen and other sportsmen.

A third major change proposed in the bill would allow nonresidents to legally trap or hunt furbearers and coyotes in Kansas, for a license fee of not less than \$50 nor more than \$400. Presently, only hunting of furbearers and coyotes is allowed by nonresidents. The reason for the provision is to provide greater control over non-resident hunters and trappers.

The final major change provided for in the proposal is to allow landowners and members of their immediate families living with them, and agricultural tenants and their families, to hunt or trap furbearers by legal methods on such land without a license. This would give the farmer or rancher a clear right to shoot or trap a coyote or furbearer causing him problems. However, if the farmer or rancher wishes to sell the pelt, other than a coyote, he would be required to have a furharvester license.

SHORT STUFF

THE BEST ART — The finest exhibit of wildlife art in the country is scheduled for March 20 and 21 in Kansas City, Mo. The Ninth Annual National Wildlife Art Show, sponsored by Ducks Unlimited, will run from 10 a.m. to 10 p.m. March 20 and from 10 a.m. to 6 p.m. March 21 at the Hilton Plaza Inn, Main at 45th Street. Featured artist for this year's show will be nationally-acclaimed painter David Maass. In addition, 97 other artists from 24 states will show their works. The painters, sculptors, and carvers will be exhibiting only original art. An auction of some of the art is slated for 3 p.m. March 21. Proceeds benefit wildlife conservation.

REWARDS OF HUNTING — The Plainville (Ks.) Times relates the story of Roger Rust, Kensington, who found a billfold while pheasant hunting near his hometown this past season. Contents of the wallet included \$500 and numerous credit cards. Rust finally located the owner—Les Booker of Moore, Okla.—who was staying with friends in Phillipsburg. Booker stopped by Rust's home on the way back to Oklahoma to personally thank the conscientious hunter . . . by giving him all the cash contained in the recovered billfold.

REMOTE SENSING STUDIES — The University of Kansas Applied Remote Sensing (KARS) program will offer two different short courses this spring and summer on the fundamentals of remote sensing, and the interpretation and application of information derived through remote sensing. "Remote sensing" refers to the gathering of data about the extent and condition of features on the earth's surface (land use, crops, woodlands, residential developments, etc.) with cameras, scanners, and other sensors mounted aboard aircraft and satellites.

The first course, a day-long session that is free-of-charge, will provide an overview of the subject. A second course, five days in length, will provide more detailed information and will be conducted at the University of Kansas Space Technology Center in Lawrence during two sessions (June 1-5 and July 13-17). For more information, contact Anne Kahle, KARS Program, KU Space Technology Center, Lawrence, Ks. 66045 (Tel.: 913-864-4775).

TOP TROUT — Kansas' rainbow trout record has been broken again. Manhattan resident Bruce L. Loyd pulled a 5-pound, 12-ounce rainbow from the river pond area below Tuttle Creek Reservoir Dec. 12. Loyd caught the 22 ¾-inch fish on salmon eggs. The catch was seven ounces bigger than the previous record, which came out of Wyandotte County Lake last March.

FOR DISABLED SPORTSMEN — Sportsmen with certain disabilities will be allowed to hunt migratory game birds from stationary motor vehicles under an amended hunting regulation announced in the Oct. 23, 1980 Federal Register. Paraplegic hunters and hunters missing one or both legs may use stationary motor vehicles—including cars, vans, and pick-up trucks—to enable them to participate in the sport. However, the change will not supersede existing laws or other restrictions which conflict with the ruling, such as limited vehicle access on some national wildlife refuges. By expanding hunting opportunities under the Migratory Bird Treaty Act to include these disabled sportsmen, the Service is making it possible for states to broaden their laws.

OVER 13 MILLION SERVED — Almost 14 million people visited the 15 lakes operated by the Kansas City District of the U.S. Army Corps of Engineers through the first nine months of 1980, the Corps has announced. That's an increase of more than two million visitors over the previous year. The Kansas City District operates eight lakes in Kansas, five in Missouri and one each in Nebraska and Iowa. Lake Perry, near Lawrence, topped the list of Corps attractions with 1,531,300 visitors. Visitation counts at other Kansas reservoirs operated by the Corps are: Milford, 1,211,100; Tuttle Creek, 882,800; Clinton, 868,100; Melvern, 843,100; Wilson, 633,900; Pomona, 633,400; and Kanopolis, 631,600.

ACID RAIN STORY — The Environmental Protection Agency's Office of Research and Development has published a 36-page report entitled ACID RAIN, the Wildlife Management Institute reports. It is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 for \$3.25. The booklet includes information on how acid rain is measured, what the acids are that make it up, its transport characteristics and the forms it takes. It also reports on its effects and how the pollution from its sources is being controlled, as well as a prognosis for the future.

INTO THE WILDERNESS — Nearly 24 million acres of public lands administered by the U.S. Bureau of Land Management have been designated as wilderness study areas following a two-year inventory in the western states, the Wildlife Management Institute reports. The inventory, which examined 174 million acres, excluding Alaska, also resulted in 150 million acres being released from further wilderness study and returned to multiple-use management. Formal studies will be conducted on the 23,772,000 acres involving 919 areas and reports will be prepared for consideration by Congress. These final reports will recommend that the areas either be added to the national wilderness preservation system or released for other forms of multiple-use management.

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SOME PEOPLE WHO MAKE US LOOK GOOD

At its heart, *Kansas Fish & Game* is about as small an operation as a magazine can be; two people handle subscriptions part-time, a typist, a photographer, and two part-time editors. The people who make the magazine possible are the contributors of articles and illustrations. Many of these contributors are Fish and Game personnel, but an increasing number are people from outside the agency who donate their work or make it available at a fraction of its true value. The magazine staff and the wildlife of Kansas owe them a special debt.

KEN HIGHFILL -- Ken teaches in the Lawrence school system when he isn't prowling the woods with a camera. Ken has almost singlehandedly developed a field study area for Lawrence science students and is active in a number of conservation organizations.

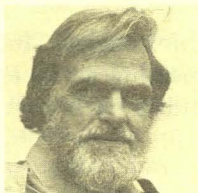
DOUG SHERMER -- Doug is rapidly developing a reputation for his striking treatment of sport fishes. In fact, he says he's beginning to wonder whether he's

being type cast as a fish painter. In the last year, he has begun researching waterfowl and wetlands with an eye toward expanding his portfolio in that direction. If he paints wigeon as well as he does walleye, his future should be bright.

BEN BROWN -- Like many other wildlife researchers, Ben Brown has more than his share of opportunities to take fine wildlife photographs. Brown ramrodded whitetail deer and quail studies on Fort Riley Military Reservation and was an advisor on research for Kansas State University's Konza Prairie before he left his position with the University. He is now on the Nature Conservancy's new 54,000-acre Niobrara Prairie reserve in Nebraska in charge of research and management.

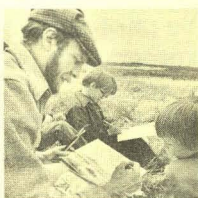
PARK CARTER -- A Eureka, Kansas businessman, Park Carter has also made excellent photographs of a variety of Kansas wildlife and wild places, specializing in some of the smaller, less obvious subjects available in the state. He has photographs of more than 150 Kansas wildflowers and a large number of insects along with a wide range of Kansas scenics.

JEAN AND ED SCHULENBERG--This husband and wife team has taken wildlife photographs over most of the continent. Jean is a past president of the Kansas Ornithological Society, and the entire Schulenberg family has shown a deep interest in the more technical side of wildlife research. Last summer they completed a statewide survey of the rare least tern for Fish and Game.



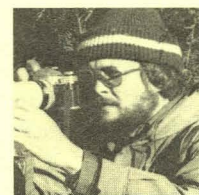
LEONARD LEE RUE III -- Author of sixteen books and hundreds of wildlife articles, Leonard Lee Rue is one of America's most widely known outdoor communicators. He has taken more than 1,000,000 wildlife photographs all over the world and is known particularly for his outstanding photography of the whitetail deer in all phases of its natural history. His son, Len Rue, Jr., is following his father's vocation and has also supplied photos for the magazine.

PATRICIA DUNCAN -- Pat Duncan is best known for her photographs of Flint Hills prairie. Her book, *Tallgrass Prairie: The Inland Sea* and a traveling exhibit of her work put together by the Smithsonian Institution have probably done as much as any other effort to bring the beauty of Midwestern grasslands to the attention of the American public. In the last year, she has broadened her scope with extended photographic trips to Maine and to wetlands along the Gulf coast.



JERRY RAEDEKE -- A dedicated waterfowler and upland bird hunter, Jerry Raedeke combines an outdoorsman's knowledge of wildlife with the discerning eye of a fine artist. Jerry was the featured artist at the 1979 National Wildlife Art Show and has won five "Best of Show" awards at that annual exhibit. He contributes his time and talent to a number of conservation programs, including Ducks Unlimited, WILDTRUST, and *Kansas Wildlife* magazine.

GENE BREHM -- Gene stepped out of his Macksville, Kansas science teaching job to take up farming—and photography. Gene says the farming lets him arrange his own schedule and do more picture taking. Most of his photographs that have appeared in *Kansas Fish & Game* have been taken in the area around Quivira National Wildlife Refuge and Cheyenne Bottoms. Unfortunately, *Kansas Wildlife* readers will see few of his outstanding Colorado elk pictures. Look for them in *Petersen's Hunting* and other hunting magazines.

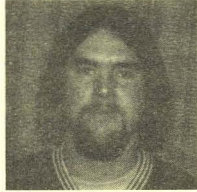
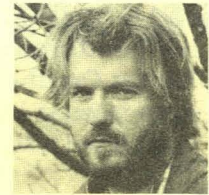


FRANK HEIDELBAUER -- Frank Heidelbauer is a craftsman in the finest sense of the term. Many waterfowlers know him as the maker of exquisite duck and goose calls and a tireless worker for Ducks Unlimited in South Dakota. He is a hunter and fisherman of measureless skill with a deep respect for the animals he stalks. Both his knowledge of wildlife and his meticulous craftsmanship are reflected in his photography.

KARL MASLOWSKI -- An experienced photographer, writer, cinematographer, and public speaker, Karl Maslowski is one of the most widely respected naturalists around. He has worked with the Ohio Division of Conservation as photographer-naturalist, with the University of Cincinnati as lecturer in nature study, is a member of the Board of the Cincinnati Museum of Natural History, and is vice-president of the Cincinnati Nature Center. He has written a weekly nature column for the *Cincinnati Enquirer* for nearly 40 years. Karl and his son, Steve, comprise one of the most proficient father-son filmmaking teams anywhere.

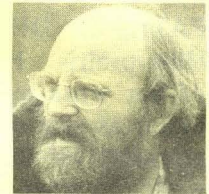


KENT STUCKY -- Kent's elk and buffalo photographs have appeared on several occasions in our pages. Stucky, a McPherson County farmer who lives near Moundridge, has contributed photographs to numerous other publications. The 27-year-old Kansan has made three Alaska photographic trips to expose film on grizzly bear, Alaskan brown bear, and Dall sheep.



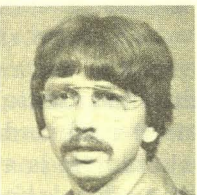
TIMOTHY BERGIN -- When he's not out observing and photographing eagles, Tim is usually in the high school classrooms of Washington, Ks., teaching science, biology, and physics courses. The 27-year-old Holyrood native holds a bachelor's degree in wildlife biology from Kansas State University.

JOSEPH T. COLLINS -- J. T., vertebrate zoologist with the University of Kansas Museum of Natural History, is well known among reptile and amphibian-lovers, especially. In addition to his contributions of story and photos for a *Kansas Fish & Game* story on Kansas' turtles, Collins also appeared as featured guest on an agency television program on snakes this past year. He has authored or co-authored numerous guides to Kansas wildlife, and has contributed over 65 professional and semi-popular papers to various journals and technical publications.



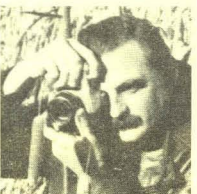
BARBARA PRATT -- Barbara's deep affection for birds shows in the photographs she has contributed. An avid birdwatcher, she is a reporter and photographer for the *Hoxie (Ks.) Sentinel*. Mrs. Pratt lives with her husband, Fred, and son, Jeff, on a farm north of Tasco. Their farmstead, located along the South Fork of the Solomon River, makes an ideal location for hunting, fishing, photography, and birding--some of Barbara's favorite pastimes.

SUSAN SOUTHWICK -- One of a new generation of gifted wildlife artists, Susan Southwick is a Minneapolis native who exhibits regularly at the National Wildlife Art Show in Kansas City. Susan comes from an outdoor family. Her father was a regional wildlife manager with the Minnesota Department of Natural Resources. Many of her watercolors are based on her own photographic studies of wildlife.



GEORGE LAVANISH -- George Lavanish is a Pennsylvania resident whose pen-and-ink illustrations have illustrated stories in *Trout*, *Pennsylvania Game News*, *Fly Fisherman*, and other state and national publications. He recently illustrated a book, *Trout Tactics*, written by Joe Humphreys and published by the Stackpole Publishing Co. A member of the Pennsylvania Outdoor Writer's Association, George attended the Art Institute of Philadelphia.

NEAL ANDERSON -- Neal is commissioned wildlife artist for *NEBRASKAland* magazine. The father of four sells his wildlife paintings and prints and works as a commercial artist in Lincoln, Nebraska. He has shown his work in many regional and national shows and in 1978 won 1st place for animal predator class at the D.U. National Wildlife show. His work is owned by galleries throughout the U.S. and Canada.



RAY BROCKUS -- Ray is a freelance writer-photographer who resides in Alva, Oklahoma. An avid hunter and fisherman, his work has also appeared in *Fins and Feathers* magazine. He is a self-taught naturalist with much outdoor experience. Waterfowling, especially calling geese, takes up a lot of Ray's time.

number of years. There is no substitute for good information collected every year.

How do we use all these surveys and research efforts to set seasons? With great care. Most of our calculations are only loose estimates and they reflect only the past, never the future. These studies have shown us that sport harvests under past regulations have had no detrimental effect on furbearer populations. New seasons are always set on the safe side; that is, we never set a season that has any chance of permanently reducing a furbearer population.

A season's length and the period of the year in which it occurs are determined more by the way hunters and trappers pursue furbearers than by the biology of the animal. The coon hunter, for example, enjoys listening to his hounds running the ridges. His hunting is best when the evenings are crisp but not so cold as to make

the raccoons den up. Some houndsmen are mainly interested in training their dogs and argue for a year-round running season on raccoons; others want to market hides and hold out for a liberal killing season. Trappers are mainly interested in taking raccoons in prime coat. If they had their way, they would like to take raccoons as long as the pelts are in good shape.

Because of the variety of demands for raccoon seasons, any proposal sparks heated debates. The final product is always a compromise, the best arrangement that can be worked out to give each special interest as much as possible without depriving another group. □

U.S. entry into the Convention on International Trade in Endangered Species (CITES) brought the bobcat into the middle of a heated debate. Many eastern states consider the bobcat to be endangered while western states like Colorado, Texas, and Kansas feel their populations are in good shape. As a result of the controversy, research on bobcats has expanded radically in the last five years.



Photo by Bob Henderson

There is no practical way to count all the furbearers in Kansas. Even a carefully collected unbiased sample of furbearer populations would be unbearably expensive if it were run year after year, but it is critical that

The Census

biologists have some way of tracing the effect their seasons and limits have on furbearers. Over the years, the Fish and Game Commission has monitored the prosperity of a number of game animals with two basic approaches—surveys of populations in the field and biological examination of harvested animals. Unfortunately, most Commission surveys are designed to track population trends among small game species and are not very useful in furbearer management. The list of effective furbearer surveys is growing in Kansas, but we're still in need of more dependable indicators of population ups and downs.

The longest running furbearer survey in the state is derived from the purchase records of our licensed fur dealers. It has two considerable advantages—it is a long-term survey that is at least partly related to changing furbearer numbers, and it is an inexpensive way to collect a lot of information. It also has its problems. Fur dealers will tend to buy those furs which are most valuable. They may not even be interested in dealing in furs for which there is little or no market. As a result, records of fur dealer purchases often reflect what was bought and may not always be an accurate indicator of how many animals were harvested or how abundant furbearers were. This problem is compounded by the fact that trappers will tend to hold onto furs that have low market value, hoping that the price will eventually go back up. They will also tend to concentrate their efforts on those furbearers that are most valuable.

Over the years, these two biases have resulted in some interesting trends in fur dealer records. Since 1956, the number of bobcat pelts sold to Kansas fur dealers has varied from zero to 1,673 in 1976. In 1958, fur dealers bought only sixteen coyotes and 17,000 raccoons. In 1977, dealers purchased 56,000 coyote hides and in 1979 bought 86,000. These variations do not reflect changes in raccoon, coyote, or bobcat populations but fluctuating demand for these furs on national and international markets.

Mink and muskrat trading, on the other hand, has been fairly stable over the years. Since hunters and trappers seem to put in a constant effort on these furbearers over the years, fluctuations in fur dealer

records probably reflect actual population changes.

In 1965, the Commission started a survey of trapping license holders to augment information gleaned from the fur dealer's records. This survey gets right to the source of furs and avoids some of the market bias that appears in fur dealer's records, but it still has some problems. A group of hunters or trappers may often report the success of their entire party instead of their own harvest, or they may exaggerate their actual success. As a result, there may be substantial differences between what the trappers say they took and the number of furs they actually sold to Kansas dealers. For some furbearers, the difference isn't all that great. Fur dealer reports show that 1,800 mink pelts were sold in 1979. The trapper license survey indicates that 3,300 were harvested. On the other hand, dealers reported 86,000 raccoon pelts purchased in 1979 while the license survey showed a harvest of 207,000!

Although there are significant differences in these numbers, that doesn't mean that these surveys are worthless. Their importance isn't how they relate to each other in any one year but how their trends compare. Until 1977, our contact with trapping license holders came only once every three years, but we now have three years of continuous reports from trappers and hunters and, in general, they show the same trends as the fur dealer's records. The magnitude of change are different, but the directions of change corroborate each other.

Furbearer biologists across the country have searched diligently for better surveys to augment fur-dealer reports and trapper surveys. In the early 1970s, Kansas biologists aware of intense pressure on beaver walked, floated, canoed, and flew rivers throughout the state during November and December, counting food caches and dams to find out how beaver were being affected. The resulting counts were a good index to beaver populations on the rivers that were surveyed. However, because of the decline in demand for beaver and the tremendous expense of the survey, we abandoned it in the mid-1970s.

In 1972 when President Nixon banned the use of the compound 1080 for coyote control, U. S. Fish and Wildlife Service biologists began a coyote population survey to find out whether the end of the poisoning program brought on an increase in coyote populations. They developed a coyote attractant which could be placed in a small, ventilated capsule. The capsule was stuck on a toothpick in the middle of a three-foot circle that had been covered with dust. Biologists across the western U. S. set out lines of such stations, fifty stations to a line spaced three-tenths of a mile apart.

Every morning, they checked these fifteen-mile lines, recording the footprints of wildlife that appeared in each. With recent improvements in statistical treatment of these records, biologists in charge of the program have documented changes in coyote populations. The survey works for coyotes because so many coyotes visit the stations. Other, rarer furbearers show up at the stations much less frequently, so the survey is of little use for following their population changes. Kansas biologists run twenty-one of these scent post lines across Kansas in early September.

Because raccoons are in such great demand in Kansas, we have been looking for surveys that will give us a better handle on coon populations. Right now, we're investigating two possibilities. Iowa biologists have developed a spotlight raccoon count which may have value in Kansas, although we've had trouble finding raccoons during our experiments with it. We are also trying to develop a late summer, early fall raccoon survey based on random raccoon sightings by agency

personnel. This is the first year we've tried this technique. It will probably be four or five years before we can adequately evaluate it.

In 1977, federal regulations threatened to close down the booming business in bobcat pelts by stopping export to the lucrative European markets. The Commission needed information on the state's bobcat population to avoid this closure. Bobcats are particularly elusive predators, so we needed some survey technique that put a large number of people in the field for long periods of intense observation. After a lot of thought, we decided to ask for help from bowhunters. Each archery deer hunter now receives a questionnaire with his permit, asking him to record the number of raccoons, coyotes, bobcats, foxes, and tree squirrels he sees during a season of hunting. In the first year of the survey, more than 4,000 bowhunters responded. They

One of the most effective methods of keeping track of beaver populations, the aerial survey, is unfortunately one of the most expensive. (Photo by Bob Henderson.)



reported seeing more than 896 bobcats, 4,700 raccoons, and 12,000 coyotes. This program has gone on for three years and has shown good agreement with our other surveys. The archery index for coyotes and the scent post index have paralleled each other all three years, and the bobcat numbers from the two surveys have agreed two out of the three years. Although these results are encouraging, only time will show us how dependable the archery survey is.

So far, these are the most promising methods we

have been able to find for following furbearer populations, but until it can be shown that they accurately reflect population changes, we will keep trying new methods and evaluating their effectiveness. Major efforts will have to be made to find techniques for monitoring badger, beaver, muskrat, mink, opossum, skunk, and fox.

One of the most dependable sources of information on furbearers is the furbearer population itself. There are two characteristics of these populations that are

Muskrats and their works (left) are one of the most common sights on a marsh. Prolific breeders, rats can "eat out" a wetland in a surprisingly short time, removing almost all emergent vegetation. Luckily for most other marsh residents, there are checks on muskrat population growth. Crowded muskrats tend to force the younger, less dominant members of the population into less secure habitat where they are easy prey for their arch enemy, the mink (far right, page 21). Mink are seldom as obvious as muskrats around a marsh, partly because they are less abundant and partly because they are too busy hunting to spend much time loafing in the open. The most common mink sign is a set of tracks along the marsh edge (page 21, left). For a young muskrat wandering far from the security of its lodge, those tracks are very bad news. (Mink, upper right, by Bruce Kintner. All others by Kent Stucky.)



particularly important to wildlife managers. The first is the age distribution of a given population. In most healthy animal populations, there are more young of the year than any other age group. As a year goes by, each age class loses some of its members to the gauntlet of threats that beset all species—predation, starvation, disease, accident. It makes sense, then, that a population of animals more or less in balance with these threats should have many young individuals and progressively fewer older members. If a breeding year is

unusually poor or the young born are unusually vulnerable to some mortality factor, the unsuccessful generation will make up a smaller part of the overall population than the wildlife manager would expect. If this lack of breeding success continues for a number of years, the population is obviously in trouble.

The age structure of a population is a recording of breeding success and mortality. One look at the ages in a population can tell a biologist a lot, not only about the previous year's breeding success but about the



general success of the population for three or four years into the past.

The age of most furbearers shows in their teeth. The age of a young animal can be determined by looking at the permanent teeth it has, and in older animals, wear patterns in the teeth are usually an indicator of age. In addition, the roots of teeth put on annual growth rings not too different from tree rings.

For the last few years, we have asked for volunteers from our trapping license survey to send us the jaws of furbearers they have taken. We use this sample to establish the age structure of raccoon and coyote populations. Eventually, we hope to have enough cooperation from trappers and hunters around the state to obtain age structure information for beaver, badger, red and gray fox, and mink as well.

The second major population characteristic we're after is the productivity of female furbearers. Each embryo leaves a scar on the mother's womb where its placenta was attached. By dissecting dead animals and counting these scars, we can find out how many young the female bore in her last breeding season. Once we know the age of the female, we can get a good idea of how many young animals a furbearer population is producing, a critical factor in the population's ability to safely support hunting and trapping. Commission personnel collect a sample of furbearer carcasses from

In the face of great adversity, the coyote continues to be our most successful furbearers. Coyote populations have survived years of bounty hunting and strychnine, 1080, and cyanide control efforts and are thriving in Kansas. Years of this pressure have caused coyotes to breed younger and have more young in order to keep up with constant losses. (Photo by Bruce Kintner.)



fur dealers each winter so that this information can be obtained. □

The annihilation and subsequent return of beaver populations to Kansas is an interesting tale of exploitation and management of a natural resource. With the advent of mass-production in the manufacture of steel

Back From the Brink

leghold traps by 1823, pressure on furbearers drastically changed. Beaver in Kansas were exploited extensively through 1846. At this time, fashion trends had replaced the beaver hat with silk hats and the demand for beaver dropped off substantially. Yet, even though the monetary reward for beaver pelts had dropped, there were too many people who knew no other way of life and continued harvesting beaver, often redoubling their effort in order to make a living on the cheaper fur. By the turn of the century, the damage to Kansas beaver populations had been done and they were scarce. In 1907, what was claimed to be the last beaver in Kansas was trapped near Lawrence.

This prompted the 1911 state legislature to close the beaver season for ten years. At that time, there were still probably scattered colonies spread through the northcentral and western parts of Kansas. It is doubtful that at this time there were more than 500 beaver in the entire state. In 1921, the legislature passed a bill closing the beaver season until the Fish and Game Commission decided a season was warranted. It was not until 1951-52 that the beaver season was again opened. During the forty years that the season was closed there still was a constant harvest of beaver. Initially, the major portion was illegal harvest because of high prices and poor economic times. Later as these populations started to rebound, landowner complaints became more frequent. These complaints were handled several ways. Originally, landowners were given permits to take the beaver. Then, the agency hired people to trap them. Later, game protectors were authorized to take them, and finally they were live-trapped and moved. At various times, policy dictated one of these methods over the others. As the beaver population kept expanding, the significance of this harvest to the population decreased. As a result, the populations increased as did the complaints the agency had to handle. Therefore in 1951, the beaver season was again opened. It had an on-again, off-again existence until 1959 when we began a yearly season.

Today, our annual harvest fluctuates with the pelt prices and judging from the frequency of beaver complaints, our population in Kansas is still increasing. There are few areas with beaver habitat in the state which don't have beaver today. The future looks bright for Kansas beaver except in areas where groundwater is being depleted and rivers such as the Arkansas are being pumped dry. No water, no beaver.

The swift fox is another furbearer that has come back from near extinction in Kansas. The swift, red, and gray foxes were assigned furbearer status in 1943. Prior to this time, they had been bountied and unprotected like the coyote. It was not until 1956 that the swift fox was given protection. Earlier, it was feared that the swift fox had disappeared from Kansas but just prior to 1956 several sightings were reported. Today, sightings of swift fox are not at all uncommon in far western Kansas and roadkilled foxes are found fairly regularly. The feeling is that our swift fox population has started to really rebound. What has caused this is not really clear. It probably has less to do with the closing of the season than with federal laws and regulations. When the federal authorities restricted the uses of poisons like strychnine and 1080, it probably benefited the swift fox. In Kansas, use of poisons was further restricted by state laws. Today, these poisons are strictly controlled and the continued survival of the swift fox is probably assured.

With these comeback stories behind us, it may not be too much to hope that other original Kansas furbearers could return to the state. One of the most likely candidates for reintroduction is the river otter. A common resident along most large Kansas streams before commercial trapping began, otters were reported in the state until 1904 when the last specimen was taken near Lawrence. There has been no trapping or hunting season for otter since 1911. Considering the recent success of Kansas' beaver population, there is little question that the otter could survive if transplanted here. The two major problems standing in the way of this reintroduction are pesticides and overharvest. Sampling of rivers across the state indicates that the pesticide problem may not be nearly as severe today as it once was. The prevention of overharvest obviously depends on the public. In other states like Colorado, there have been successful reintroductions of otter, and local trappers have accepted restrictions to make sure the initially stocked otter weren't taken accidentally. So far, three of Colorado's releases have shown signs of success. Whether a similar program could get off the ground in Kansas depends on the support it gets from the state's trappers and wildlife enthusiasts. □

The biological and survey problems we have described will be solved as years go by and more information is collected. The primary problem which will be facing the sporting public involved with furbearers

A Look Ahead

is one of public opinion. Ohio and Oregon have both had referendums on proposals to curtail trapping, and Washington legislators recently considered a bill to



Lloyd Brockus

outlaw the use of dogs for chasing game and furbearers. The problem is that the public at large doesn't know and understand what the issues are. It is going to be more and more the responsibility of everybody who hunts or traps not to cause bad relations with landowners, other sportsmen, and the public in general. This means that hunters and trappers must maintain high standards of ethical conduct. It means the hunter must stop hiding his trespassing behind the excuse that his dog can't read the signs. It means the trapper must not set traps that could catch coon dogs or pet dogs or leave a caught animal visible to the public. Only through this kind of effort can the roots of the anti-hunt, anti-trap movement be cut. It is a fight which every sportsman must be involved with because the ultimate goal of the anti-trappers is to abolish all wildlife harvest, including hunting. Such an outcome would not only deprive millions of Americans of a unique freedom but would virtually eliminate the financial base on which American wildlife management is built.

In an attempt to upgrade the ethical awareness of trappers and hunters and promote better understanding between the hunter and the trapper, the Kansas Fur Harvesters and the Federation of Houndsmen introduced a furharvester training and licensing proposal in the 1979 legislative session. The principle purpose of the bill was to create one license for harvesting any furbearer, doing away with the need for both the trapping and hunting licenses. It also proposed a course of instruction in ethical behavior of hunters and trappers. Young hunters and trappers would be required to take this course before they could obtain a license. This is one of the biggest steps that sportsmen can take to disarm the anti-groups. It is only through this avenue that we can take away their argument that we have untrained people creating havoc across the state on furbearers.

The Commission strongly urges all sportsmen to look into this bill as it is reintroduced into the 1980 legislative session. □

Neil Johnson, furbearer biologist for the Fish and Game Commission, stepped into his position when CITES regulations forced the Commission to expand its work on bobcats. Johnson has ramrodded many of the Commission's small game surveys over the last five years, work that has helped prepare him for the problems of collecting and interpreting furbearer data.



Who's who at Kansas birdfeeders
Guide to a Winter Windowsill

Cardinal

◀ The cardinal is a prized visitor at any birdfeeder, combining beautiful plumage with an appealing song. The male cardinal's red pigmentation actually intensifies as the winter goes on and the gray tips of his body feathers wear off, leaving only the brighter red below. Before the turn of the century, cardinals were considered to be southern birds. Bent's 1886 check list established their common northern range limit at the Ohio River, but they are now found well into eastern Canada, the upper Mississippi River valley, and the northern Plains even in winter. This range extension could be due in part to the increasing popularity of bird feeding which may be changing the wintering habits of a number of bird species. Photo by Jean & Ed Schulenberg.

Blue Jay

The blue jay, like its relatives, the crow and magpie, is magnificently adaptable. Through the year, a jay is likely to eat anything from mice (which he will hunt and catch himself) to acorns. The bulk of the blue jay's diet is vegetable, however, and includes corn, sunflower seeds, some small grains, and a variety of wild seeds and insects. Known for its raucous call, the jay also sings more pleasing songs, including a slightly wistful two-note "tea cup" air that is totally out of character for a neighborhood tough with a reputation as a nest robber. Photo by Bob Gress.





White-breasted Nuthatch

The white-breasted nuthatch doesn't bother to head south at the threat of winter. This nuthatch is resident through most of its range, although it seems to be more conspicuous during the winter after leaf fall when most breeding birds have evacuated, leaving the nuthatches, chickadees, and woodpeckers to animate the woods. Nuthatches take advantage of most of the nuts and fruits that persist through the winter in a woodlot, and they take insect larvae and eggs from bark crevices as well. Proprietors of bird feeders report that nuthatches are especially fond of sunflower seeds, suet, peanut butter, and whole peanuts. Photo by Barbara Pratt.



Red-breasted Nuthatch

The red-breasted nuthatch is a smaller version of the white-breasted with the same high white cheeks, broken in the red-breasted with a prominent black line through the eye. Unlike the white-breasted nuthatch, the red-breasted does migrate out of some of its nesting range in the coniferous timber of Canada and the Rockies, in most winters appearing at feeders from southern Canada to as far south as the Gulf coast. These small nuthatches seem even fonder of suet than their larger relatives. Photo by Lloyd Brockus.

Black-capped Chickadee

Chickadees are almost always in an awful hurry which may be a reflection of irrepressible *joie de vivre* as many dedicated bird watchers would have you believe or just the demands of an insatiable appetite. The acrobatic skill that has endeared the chickadee to so many bird watchers is a necessity for a bird that spends so much of its time feeding along tree branches and trunks. Even in the middle of the winter, a substantial part of the chickadee's diet consists of insects—adults, larvae, and eggs—gleaned from tree bark. On the feeder, chickadees focus on sunflower seeds, peanuts, and suet. Photo by Barbara Pratt.





Tree Sparrow

The tree sparrow summers in central Canada in scrubby timber just south of tree line, coming south only when the northern winter shows its teeth. In most years, this hardy species will not be found much south of Oklahoma and northern Texas. At least one study has found that tree sparrows prefer the smaller seeds commonly offered at feeding stations, especially white milo and millet. Like most other sparrows, they like their seed on the ground. Away from the feeder, these birds depend on a variety of weed seeds including greater and lesser ragweed, hemp, and a variety of grasses. Photo by Ed & Jean Schulenberg.

Harris' Sparrow

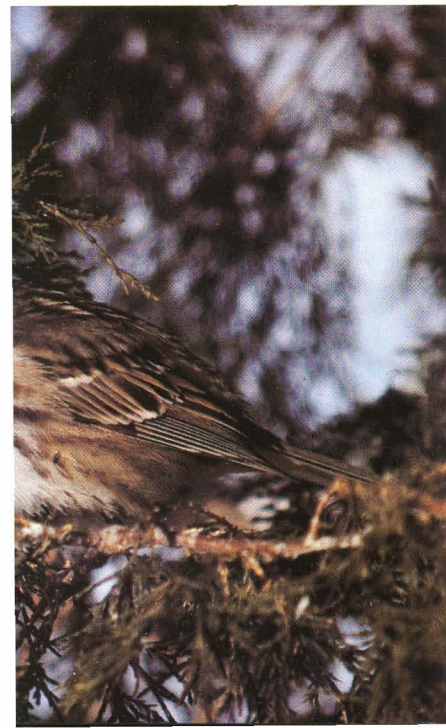
The Harris' sparrow is a bird of the Midwest, seldom found east of Michigan and Ohio. The species breeds well up in Canada where it managed to hide its nests from ornithologists until 1930. This elusiveness on the breeding grounds may strike a Kansas bird watcher as strange since the Harris' sparrow is one of the most common visitors to Kansas feeders. Like other winter sparrows, the Harris' has an appetite for small weed seeds and the smaller feeder offerings like millet and milo. Photo by Jean and Ed Schulenberg.





White-crowned Sparrow

A handsome, easily recognized sparrow, the white-crowned is another Canadian breeder that spends its winters on the southern plains. Bent describes the white-crowned on its northern breeding grounds as a nervous, high-strung bird, more fidgety than its close relation, the white-throated sparrow. Analysis of Christmas bird count information indicates two possible centers of concentration for white-crowned sparrows, one in western Texas and southeastern New Mexico, the other in the southern Appalachians and Ozarks. Like many other birds, the white-crowned shows signs of expanding its range in response to widespread bird feeding. Photo by Karl Maslowski.



Dark-eyed Junco

One of the most common visitors at a winter feeder, the dark-eyed junco is also one of the easiest to recognize. Juncos seem willing to eat almost anything offered in a bird feeder—sunflower, milo, millet, cracked corn, and even cracked wheat. Given a choice however, they prefer to eat on the ground. At least one study indicates that juncos form stable feeding groups during the winter that stake out their own territories and exclude other juncos. Photo by Jean and Ed Schulenberg.



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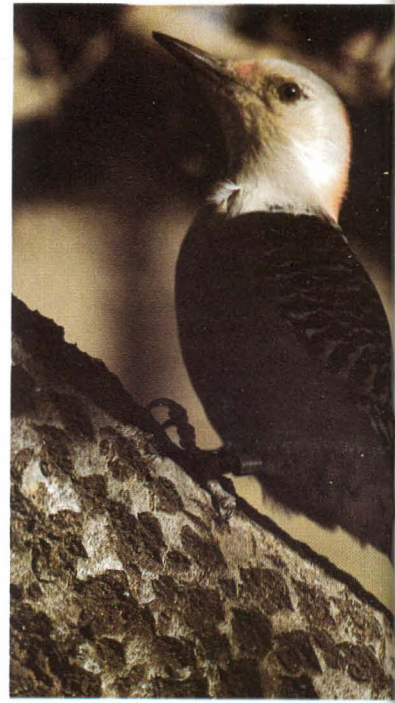
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American Goldfinch

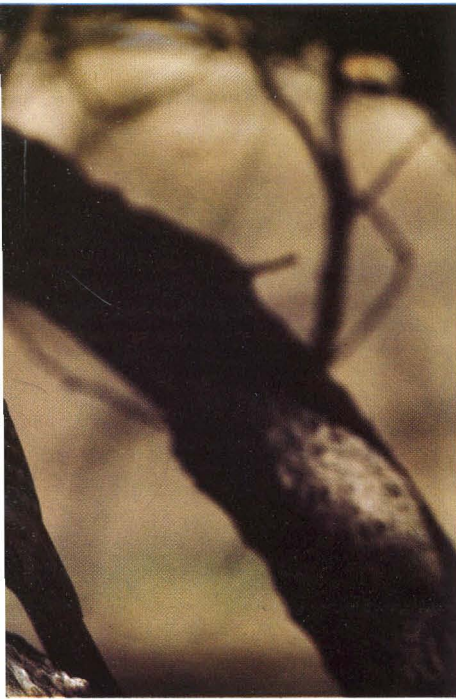
Goldfinches are inclined to move in bunches, especially during the winter. A lone goldfinch suddenly appearing at feeder almost invariably heralds the approach of a small treeful. The goldfinch is primarily a seed eater and, according to Bent, leans especially toward the seeds of composites like sunflower, thistle, ragweed, and, in summer, dandelions. At the feeder, the species seems especially fond of sunflower seeds. In mid-winter, goldfinches may be a little confusing for beginning bird watchers since they show very little of their summer brilliance. As spring approaches, the males color up by degrees, reaching their full blinding yellow by May. Photo by Jean and Ed Schulenberg.



Pine Siskin

An extremely social finch, the pine siskin is almost always found in groups which often include goldfinches, purple finches, and other species. As the name implies, the siskin breeds most often in coniferous forest but has expanded its breeding range into Kansas where it often nests in deciduous trees in city parks and backyards. These summer residents are joined in winter by other siskins moving out of the Colorado Rockies. The siskin forages on the seeds of a variety of conifers but will also feed on weed seeds and insects in clearings and along roadsides. Siskins are very fond of the waste seed found in commercial sunflower fields in Kansas. They seem to prefer thistle seed feeders in town although they can be weaned onto less expensive sunflower seed. Photo by Jean and Ed Schulenberg.





Red-bellied Woodpecker

The red-bellied is one of the largest woodpeckers that commonly visit winter feeders. Like most of the other woodpeckers, the red-bellied is fond of suet but will take cracked or shelled corn and sunflower seed as well. Some red-bellied woodpeckers stay near the northern limits of their breeding range over winter, but, generally speaking, the species seems to retreat southward a little during the coldest part of the year. Photo by Jean and Ed Schulenberg.

Tufted Titmouse

Like the nuthatches and chickadee, the tufted titmouse is a bird of the woods. Titmice aren't too common at feeders, preferring to keep to heavier timber where they forage for insects and mast. When they do turn up in the backyard, however, they aren't shy about asserting themselves. One ornithologist has observed that titmice will bluff almost any visitor to a feeder—except the blue jay. Photo by Karl Maslowski.





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