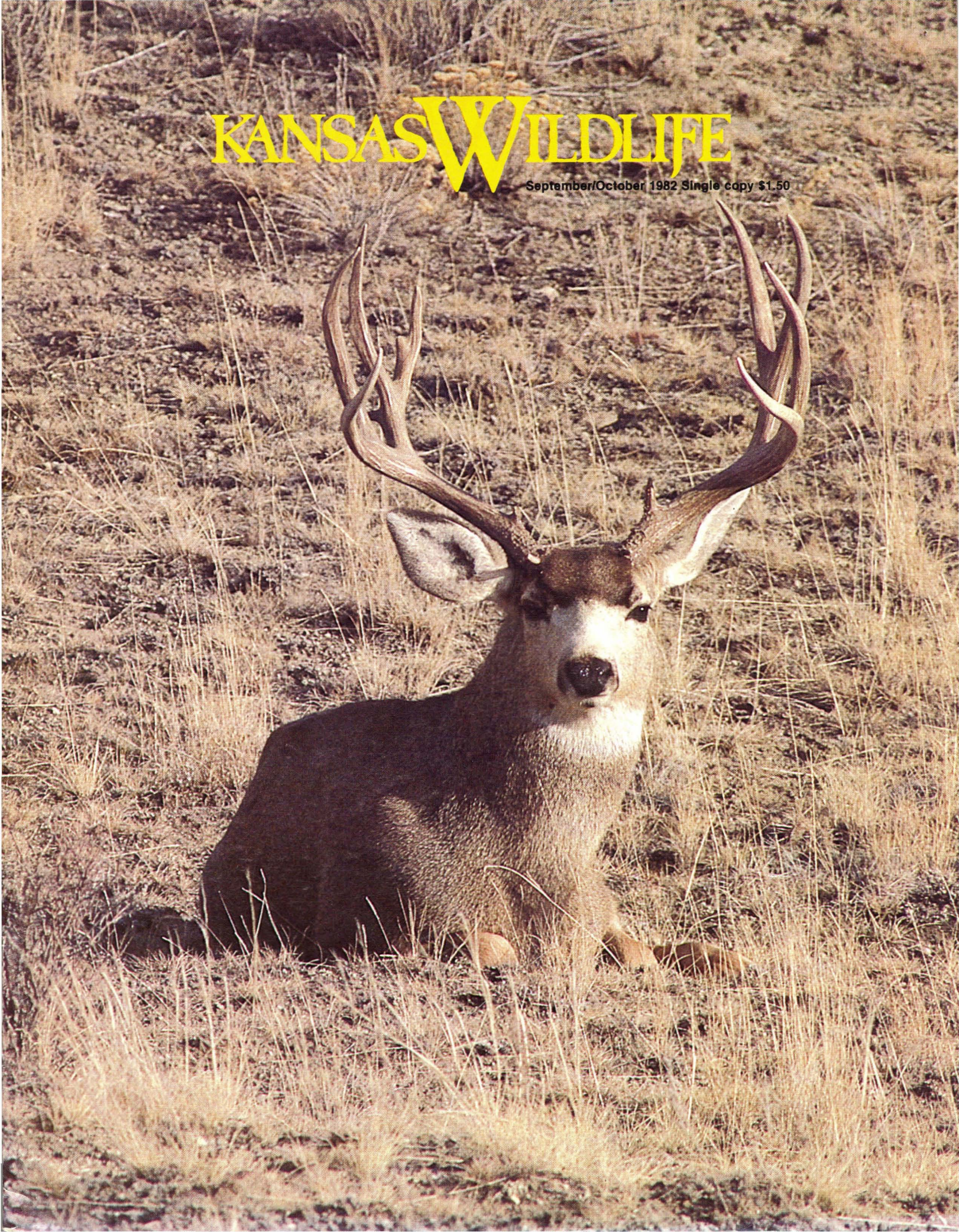


# KANSAS WILDLIFE

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Covers: Mule deer buck and doe by Gene Brehm

## A tribute

The day started out like any other Friday, the end of a cold, slow, midwinter work week. Pheasant season was winding down, but the recent snow had pushed the birds into heavy cover, adding a fresh excitement to the end of the season.

Brandy was almost ten years old. She had faced plenty of hard times through her life as most working dogs do and had handled them all well. She had been bitten by snakes and swept under a low-water bridge in a rain-swollen river; she had battled heart worm, and been cut by barbed wire many times in the field.

I got her as I was graduating from junior college in 1977. She was the cutest pup you've ever seen (aren't they all?) She was a German shorthair, but that didn't really matter. It was her personality that made her special. Lately, she'd been having trouble handling the bitterly cold weather, and I'd almost lost her early in the winter, but she met the challenge as she had so many others and gained strength enough to hunt several more times. This time, though, her time had come.

As I walked through the six-inch snow to the kennel, I could see things weren't right. Brandy,

who was usually snuggled deep in the hay in her dog house, was lying in the doorway. The Weimaraner pup I had gotten the previous spring was peeking out of the dog house with a puzzled look on his face. I knew before I got to her that Brandy was gone.

One often hears stories of losing a bird dog, but, until you experience the loss personally, you can never understand the deep feelings that exist between the man and the animal.

My first reaction was "if only I had done this or that." But that was probably feeling sorry for myself more than anything else. As I sat beside her there in the snow, a tidal wave of hunting experiences flooded my mind. Brandy could do it all. She was, as my brother once said, "so sure of herself" when hunting upland birds. She was brought up on quail in eastern Kansas, and they were always her first love. My mind will be forever etched with pictures of her points, her sure trailing on running cripples, and her gentle retrieves. When she went down on a solid point, you could bet your paycheck there was at least one bob under her nose.

When we moved to pheasant

territory, she made the switch effortlessly. The more years she worked the longtails, the better she got. I don't know how many roosters I've taken over her as she snaked her way up a heavily grassed waterway into the wind. She had such a gentle, easy-going nature and a passion for hunting that made it a pleasure and privilege to hunt behind her.

Brandy had just been hunting the weekend before. She rode along three days in a row, and every time she crawled out of the dog box in the back of the pickup, I took her with me. I think all dog owners feel that way. As long as she wanted to go and could go, she would go. You owe them that much.

Yes, this Friday will always stick in my mind. It was a sad day, but it was a special day, too. It was a day to reflect on many good times with a close friend, a day to pay tribute to a lady I was mighty fond of. She was a sweetheart, and I'm going to miss her.

*Jim Hays works in the Fish Culture Section of the Commission's Fisheries Division.*

# stories behind the signs

*Bob Mathews*

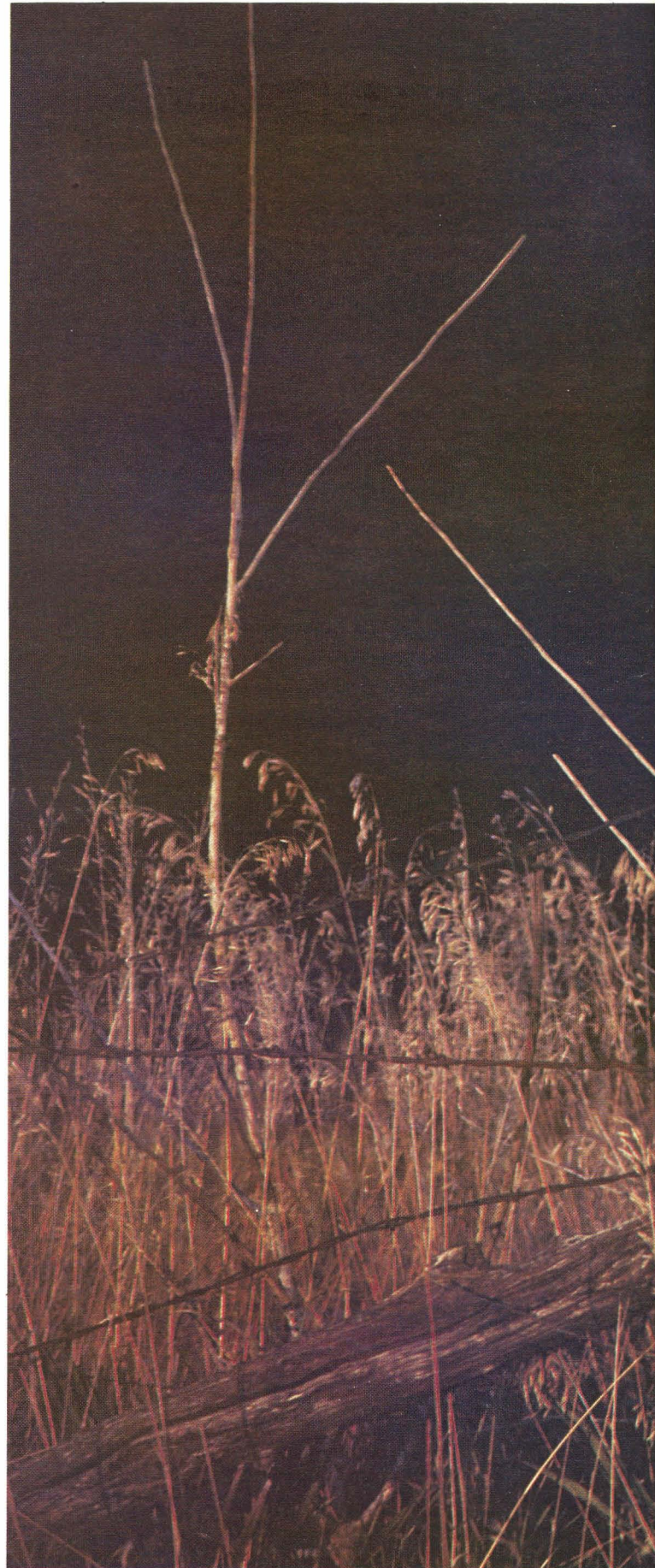
*Illustrations by Dycie Madson*

**J**im is a serious hunter. He works at making his sport as enjoyable as possible. For him, that means being prepared. Every year, before the first bird season opens, he has put his hunting world in order. Guns and dogs are ready for the hunt. Shooting skills revived on the trap range. Season dates, bag limits, and hunting regulations reviewed. Hunting license in his wallet. Legs, arms, lungs, and heart in shape for the physical demands of kicking through fields and fencerows. And . . . oh, yes . . . permission sought and obtained on several sections of hunting ground.

If any of those chores are neglected, Jim has found, the hunting season is not nearly as enjoyable as it could have been. To hear him tell it, the preparation is half the fun. Even seeking permission from the landowners has become an enjoyable part of his sport. Although he has been turned away by some, he has established friendships with many more. A couple of weeks before hunting opens, he visits the landowners who have allowed him to hunt on their land before. Although he might not admit it, Jim gets some satisfaction knowing that he is doing his part to uphold a positive image the word “sportsman” represents.

A respectful attitude goes a long way, he has found. It all goes back to a lesson Jim learned early in life: How you treat the people in your world—not just the people you deal with face to face but everyone whose lives you affect with your actions—ultimately determines how you will be treated by them.

Hunting has changed over the years. When Jim’s







## Lincoln County

“We always

have more hunters

looking for a place to

hunt than we have places to hunt on. I

never like to see big groups—like two or three pickup loads—come in at the same time, so it’s hard for me to give permission to them. I’d rather see two or three or four hunters in a group, like it ought to be.

“I like to know the people who are coming in to hunt, even if it’s just to talk with me for awhile. If a person is a hunter I assume he’ll be hunting next year and the year after that. So, if they’re not concerned enough to get to know the people overseeing the land, it tells me they are just here for a one-shot deal. I don’t care if I ever see them again.

“We do have two fellows from Wichita who come up here every year to hunt. They even stay with me out here.

“It’s easier to just say no to everybody during the first two weeks of the season because that’s when all these ‘basket cases’ come out. It’s simpler a lot of times to either let them all in or keep them all out. We have a lot of livestock so we can’t open it all up.”

*Chris Meyer*

## Finney County

“I’ve got a circle (center pivot) completely surrounded with trees. It’s great for hunting. I pretty much like to see father and son hunting teams. Mainly I like to allow people I know. Feel it’s a good way for fathers and sons to get to know each other. But some people just shoot everything in sight, no matter what it is. I’ve been trying to get quail established, but they shoot them faster than I can plant them. I’ve got signs posted all over but most of them have been shot or run over. Some come in and start hunting . . . I kindly ask them to leave and they tell me they can hunt wherever they want to. That sours me faster than about anything else.”

*Charles Palkowitsh*

grandfather was growing up on his central Kansas farm, it was a little simpler. Access to hunting grounds, especially, was less of a problem than it is now. Jim’s grandfather had the run of his own place. In addition, his neighbors knew him and were quite willing to allow him on their land as long as he didn’t do any damage. He had all the hunting he could handle right out his back door.

Of course, more than hunting has changed. The American life-style, set in a rural environment until a couple of generations ago, is now predominately urban. Eighty percent of the U.S. population lived in rural areas in the mid-1800s; by 1950, less than ten percent of America’s citizens were country folk.

The demographic pattern of America may have changed dramatically in the past century, but the American concept of free public hunting has not. Open and free hunting and fishing have grown into a tradition that both sportsmen and some private landowners hold high in their personal values. Therein lies the conflict, much of which is expressed in the status of “hunter-landowner relations.” More hunters are competing for fewer hunting grounds. Individual landowners, on the average, control more land than their predecessors. As a result, they deal with more and more hunters, either knocking on their door to ask permission . . . or foregoing permission and illegally trespassing. Too often, a mangled gate or rutted field is all the landowner sees of trespassers. It’s an image America’s hunters can no longer afford. Yet, it’s a conflict that seems to grow a little every year.

Unfortunately, the hunters who pursue their sport ethically and legally generally go unnoticed. It’s the slob whose deeds are publicized and remembered. And it is their handiwork that is to blame for the growing number of landowners who are showing their concern by prohibiting or restricting access to their lands.

Although there have been no studies aimed at quantifying the amount of private land in Kansas closed to hunters, we can infer from casual observation and the number of complaints received each season that there is increasing landowner concern over uncontrolled access to private land. Some states, especially those with large populations, are experiencing more problems coping with hunter-landowner relations. A study of New York landowners in the early 1970s indicated that private posting of rural lands increased from twenty-five percent in 1963 to forty-two percent in 1972. Almost all of the posting landowners indicated that the behavior of some recreationists had contributed to their decision to post. Landowners had personally encountered bad experiences with recreationists; friends or neighbors had encountered such experiences; landowners felt the recreationists had the reputation of damaging property, or landowners felt endangered by the presence of various recreationists on their property.

The New York Department of Environmental Con-

ervation had already begun to address the problem by the time these survey results were known. In the mid-1950s, their state legislature authorized cooperative programs between the Department of Environmental Conservation and rural landowners in which the landowner agreed not to post portions of his land in exchange for increased law enforcement patrols, installation of "posted" signs near buildings and dwellings, free trees and shrubs for habitat improvement, and free technical fish and wildlife management services. By the early 1970s, the program had gained cooperative agreement on some one-half million acres of private land.

Another populous eastern state—Pennsylvania—established cooperative agreements with private landowners to keep over four million acres of private ground open to hunting.

However, obtaining public access to private lands can not defuse the conflict alone. Many states have initiated programs aimed at improving the public image of hunters. Usually, such efforts call on ethical hunters to help police their own ranks by setting an example for young sportsmen, projecting a positive image to the non-hunting public, and helping law enforcement efforts by reporting violating hunters.

Just this year, a Wichita-based organization began forming to step up citizen involvement in preserving the outdoor sports in Kansas. The group, initiated by a group of Wichita Jaycees, calls itself SPORT (Sportsmen Preserving Outdoor Recreational Traditions). Using entirely volunteer help, they hope to reverse the negative trend with positive action. They indicated that volunteer workers would strive to improve hunter-landowner relations by helping farmers who have sustained damage to their property through the misconduct of hunters and other outdoor recreationists. They also plan to post the landowners' property "Hunting By Written Permission Only" if the landowner desires. They also hope to provide manpower to plant wildlife habitat on private land. And they want to develop other strategies to rebuild the hunter's tattered image.

The Colorado Division of Wildlife this year appointed a full-time coordinator to improve relations between sportsmen, landowners, and the Division. The coordinator's job is to develop several key projects aimed at improving relations. Among those is reviving the use of courtesy cards which give sportsmen permission to hunt, fish or trap on a landowner's property and provide the landowner with the sportsman's signed assurance that he will respect the landowner's property and rules.

Complementing the various public relations efforts is improved education for hunters and other outdoor users. Most states have now implemented mandatory hunter education programs for young hunters. Kansas' Safe Hunter Program—required training for any hunter born after July 1, 1957—stresses the importance

## Brown County



“I allow access when I can go

along and see that hen pheasants and quail are not taken.

Quail are very scarce here, and I am trying to help them make a comeback.

“One time, six fellows were hunting my milo field when I drove by. I ordered them off and they said they had a right to hunt there as a wounded pheasant had flown in there. They had several pheasants with them at the time which they claimed were shot on adjacent property. I know it was a lie, but what can you do about a situation like that? A few days later, I just missed two four-wheel drive vehicles with several hunters in each. They were driving through milo fields flushing pheasants while hunters riding in the back did the shooting. There have been lots of similar incidents.

“The law that states a hunter may lawfully pursue wounded game across posted land without committing a trespass violation is a bad deal. It is a loophole that all slob hunters take advantage of.

“I am 65 years old and have spent many hours trying to improve wildlife habitat. I left around forty acres out for that purpose, and have hedgerows, draws, and woody areas. I always have left a few rows of grain around those places for wildlife. I limit hunting to a few passes a year. For my pains I've been badmouthed and cursed out for trying to keep some of the slob hunters off.”

*Donald C. Merchant*

## Decatur County

“We allow hunting with written permission where there are no cattle or unharvested crops. I had a group of hunters come in from Colorado last season. They had hunted before with permission but came in last season and hunted without permission. I called the game protector. They were arrested and fined.

“I have a lot of problems with local hunters that hunt without permission. They figure 'old Jack is a good guy and he won't care. They don't seem to realize what five or six strangers can do to a cow herd with young calves.”

*Jack Barrett*

## Brown County



“I allow access to anyone that asks and acts like a gentleman, unless I have other hunters coming. I normally tell them the different farm locations and where I have seen birds.

“I don’t get bent out of shape about trespassers. I think

the more property you control the more lenient you become. I can only think of two incidents when I became disgruntled with hunters. Both times they were coyote hunters. Once they ran through an electric fence that I had just put up. Another time they backed into and ruined a metal gate. They were friends and I’m sure no malice was intended. I don’t believe I would ever sign a complaint.”

*Ted Compton*

## Doniphan County

“We allow access with written permission. This plan works very well as we can give or refuse permits. We have our land posted to this effect. Actually, we do not have much of a problem any more with hunters. We had a few arrested that we knew to be poaching and trespassing.

“Our game protector, David Hoffman, is farther away so we sometimes have called our local sheriff. We are on the Missouri River and waterfowl hunters come up the river by boat, sometimes stealing tools and gasoline and anything they can haul away. We have had David arrest a three-man party some years ago. The warden before him arrested a four-man team that had been averaging a deer a week. After their arrest, they did not bother us anymore. Previously, they had disregarded our efforts to keep them off. All in all, we have far more problems with mushroom hunters in the spring. We seriously advocate requiring a license to hunt them.

“People who run coyote hounds for sport are far more detrimental to the wild game and farmers’ tempers than legal hunters or otherwise. True, the coyote population dwindled when pelt prices were high. But a lot of deer went home to coyote hunters’ lockers, to say nothing of the red fox and other small game the dogs killed.”

*Cecil Schneider*



of the hunter’s responsibility in maintaining good relations with the state’s landowners. The first hunters to complete the training, which was initiated in 1973, are now in their mid-twenties. Hunting accidents have been reduced dramatically as a result of the training course, but its contribution to improved hunter behavior is not easily documented. There are many who claim that present hunter education programs need to be beefed up. But financial and manpower constraints limit what can be done in the immediate future.

Another potential strategy involves developing more incentives for hunters to improve. For example, developing a program in which a skilled hunter’s expertise is rewarded with certain hunting privileges denied to casual hunters could provide just such an incentive. The strength of the European hunting system is due largely to the rigorous training required of its hunters.

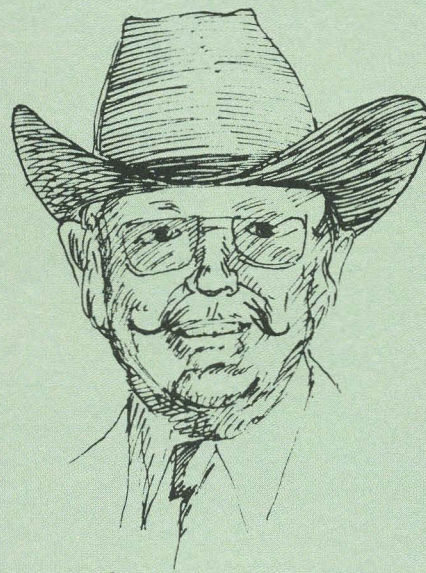




Casual hunters simply have no place in their system. Trespass is not a significant problem in the European system, either, since the landowner owns the game, as well as the land.

Still, the American concept of public game on private land is a manifestation of the democratic principles on which our country was founded. As such, the American hunting system is not likely to change fundamentally. What must change are the flaws, such as uncontrolled trespass, which threaten the system.

We can't expect the problem to simply disappear. We can't expect the fish and game commissions, or private sportsmen's groups, or landowners organizations to do the job. We can't expect the legislature to enact laws which will resolve the problem. All of these factions can contribute to a resolution. But the real responsibility rests with us all. □



## Kingman County

“I allow access with my permission. My property located on the river is frequently being hunted. Hunters will run two or three miles at a time and cover several landowners. Deer and quail hunters do the same thing. They are generally in and out before I know it. If I see or catch them I ask them to leave. I tell them if the land isn't worth asking permission to hunt on, it isn't worth hunting on.

“There are several hunters in our family and I feel they come first. There also have been times when we have been in our deer stand and strangers will come strolling by. That sure does irritate me. Or a hunter with a dog will go by looking or acting like he's hunting birds when he is really trying to drive deer out.

“We don't let everybody hunt or fish on our land but do allow some.”

*Lee Van Gieson*

## Neosho County

“I don't allow anybody on my place unless I absolutely know them. One problem is that drinking and hunting don't go very well together. Also, there is a law against shooting from the road and there are probably more hunters breaking that law than all the rest put together. I have lost several head of cattle over the years. Last year, one of my cows was wounded.

“I was down there one day and saw some guys shooting from the bridge up and down the river just to be shooting. They could kill somebody. They get real hostile if you ask them what they're doing. They tell you it's none of your damn business. That really irritates me.”

*Frank Stich*



92-  
1980  
Don't know if you can see  
this call for a wilderness call

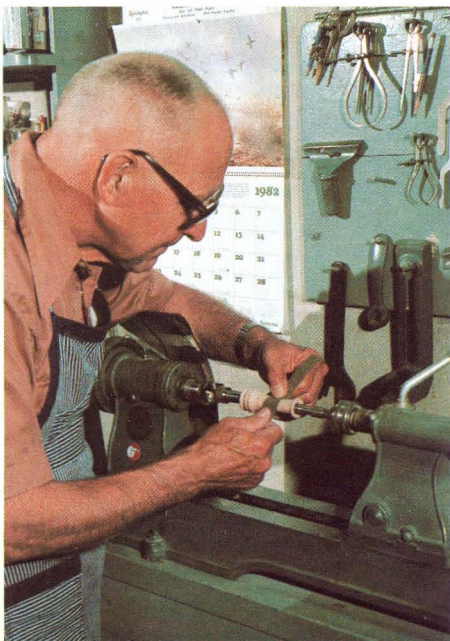
# build a better duck call

photos and text by Ron Spomer

This may surprise you, but it's true. Duck calls were not made to call ducks. They were made to wake them up.

Until they were outlawed in 1935, live decoys did all the talking along American flyways. English call ducks were prized for their vocal talents, and every waterfowler worth his weight in teal kept a flock tied out front of his blind. When these pampered birds spotted a flight of their wild cousins, they hailed them lustily, flapping and swimming at the ends of their tethers, luring the lonesome flock into the ambush. With that kind of Judas help, few hunters needed an imitation call. Except those with lazy decoys.

Even the most dedicated live decoy occasionally succumbed to the lull of a warm autumn afternoon.



Then the wild flocks would fly safely out of gun range while the deceivers slept and the frustrated hunters hissed and tossed pebbles to wake them. Some gunners rattled corn in cans to rouse their birds. Others kept one duck beside them in a small cage, jostling it when necessary in hopes it would squawk and inspire the main flock. One enterprising fellow concocted a mouth blown device that sounded enough like a duck to snap his drowsy decoys into action.

This inventor was reportedly an Illinois Frenchman named Glodo. His call was undoubtedly widely copied, and many determined hunters who couldn't afford live decoys learned to blow the new fangled calls well enough to lure wild ducks into shotgun range. Of course, after the federal restrictions took effect in 1935, everyone had to learn to imitate ducks, and the search for the perfect duck call—one that would pull late season mallards to a blind like they were on strings—began in earnest. Today, the search continues, for some folks just aren't satisfied with mass-produced duck calls. They think they can do better, so they make their own.

Frank Heidelberg, an experienced waterfowler from Sioux Falls, South Dakota, builds what many consider the finest duck call ever made. In design, it is only slightly different from hundreds of other commercial and hand made calls, but in performance, it stands

alone. The Heidelberg Mallard Toller rings like a clarion—a crisp, open sound that reaches across the wide Missouri to entice a distant flock of mallards. That's the way Frank makes it, because that's the way Frank uses it.

The history of the Mallard Toller began in the late 1920's on a small farm in northwest Iowa where Frank's German immigrant father mowed over a wild mallard's nest.

*Heidelberg's black rubber duck-call reed has a complex taper that lets it respond easily to minimum and maximum air flow without changing pitch. The mylar goose-call reed is built to do just the opposite. Its molded tip, uniform thickness, and double-channel trough are designed to break the call's sound into the two-note honk of a Canada goose. The threads mate with a maple barrel like the one Heidelberg is sanding at left, virtually guaranteeing neither piece will fall out and be lost. The fine finish is a Heidelberg trademark.*



He brought six undamaged eggs home, instructing his son to place them under a setting hen and sprinkle them with water every day. Soon Frank was foster parent to a young drake and three hens. The next spring his father told him to trade the male for another from the neighbor's flock to prevent inbreeding. Frank brought the strange green-head home, and within four years had a flock of ninety-eight semi-wild mallards.

"Every fall the young birds of the year would fly around the farmstead," Frank said, "but the old birds were reluctant to. They'd call their young back to the ground, and that's how I learned to call ducks." He did it with his voice, but one day when he was about thirteen, his beautiful, clear quack broke into a harsh croak. Puberty. "My voice changed almost overnight," he said. But by then the damage had been done. He'd developed a critical ear, and knew just what he wanted in a duck call. The problem was finding it.

World War II saw Heidelbergbauer flying support for the Chinese army, but when the fighting stopped, he went back to the Iowa marshes and cornfields he loved, back to waterfowling. He hunted hard with a variety of calls, but none measured up. Most broke pitch when he blew hard to signal a far flock. Moisture from his breath soon turned a quack into a squeak. And, inevitably, the sounding device fell out, leaving him with a barrel that couldn't reproduce a note. He figured he could do better.

Frank had been studying the development of plastics for some time. If these inert materials could be worked into the proper shape, he reasoned, they would make ideal calls. He began experimenting with acrylic and nylon, designing better sounding boards and reeds. To keep the keg from falling out of the barrel, he cut threads in the two pieces and screwed them together. It didn't take him long to produce calls that didn't change pitch with fluctuations in temperature or moisture. But they

did break when he sent that loud highball after an un-neighborly flock. Back to the shop. He wanted what he calls complete tolerance—a call that would quack with very little air pressure and keep quacking under maximum strain without breaking or squealing. As he said, "When I have a bird coming in, the hair on the back of my neck stands on end, my legs shake and I'm liable to lose a bit of breath control. I didn't want that call to break and flare that duck. I wanted it to sound real all the time." What he wanted was perfection.

By 1956 he had it.

Today Frank Heidelbergbauer makes his Mallard Tollers in his home workshop. From start to fine finish, he puts fourteen hours into each. He begins with a clear acrylic rod which will become the anvil. After slicing the top off of it lengthwise, he drills a 7/32 inch channel into it creating the trough and anvil on which the reed will lie. Next he carefully trims and sands these parts, for they determine much of the call's tone. The final stage is a polishing with AAA buffing compound. The reed is handcrafted from hard rubber and bent to curve slightly upward. Careful sanding and buffing taper it from .015 at the butt to .010 at the center to .012 at the end. An acrylic wedge holds the butt of the reed against the rear of the anvil when all these parts are pushed into a nylon collar. This completed sounding device will eventually be fitted tightly into the keg.

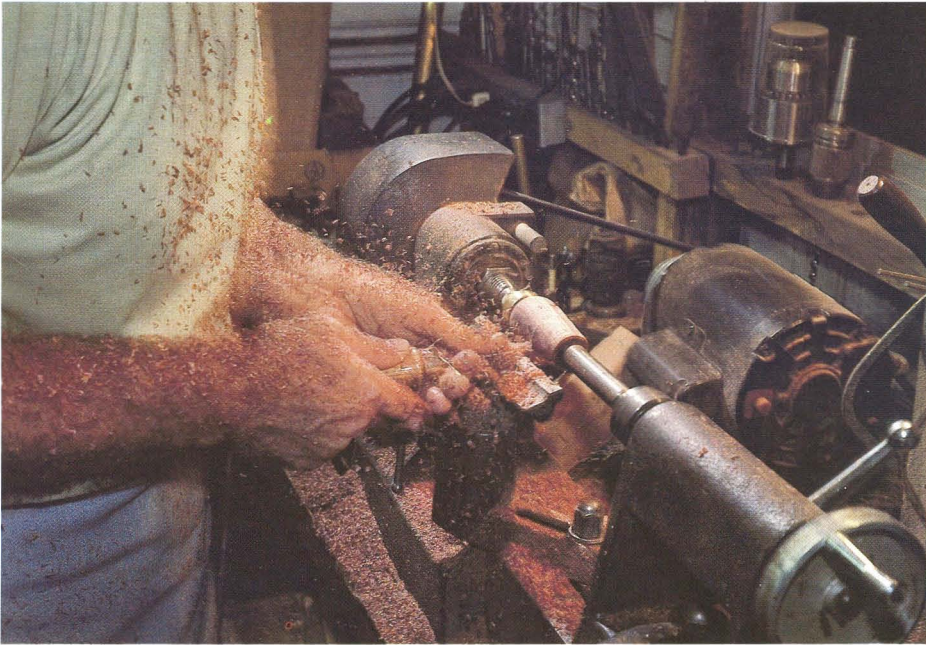
Most kegs are turned from wood, but Heidelbergbauer turns his from PVC pipe. One end is threaded on the outside and reamed inside for a .002 press fit with the sounding device. The other end is sanded into a flaring bell shape. The hole through the keg, about 9/16 inch in diameter, is considerably larger than those in most commercial calls, which can be as small as 3/16 inch diameter. Frank feels the larger the keg opening, the better. "You need to let all the sound out you can," he said. The keg is polished with buffing com-

pound by spinning it on a drill and touching it to a buffer disc attached to the lathe.

The barrel is the only wood portion of Heidelbergbauer's call. Since it does not effect the action of the reed, Frank opts for esthetics, building it out of bird's-eye maple. It takes him just ten minutes to bore a 9/16 inch hole through a rough block of wood and turn it on a lathe into his distinctive flared barrel. One end is threaded inside to accept the keg. It takes another hour to sand it through three grades of paper—220, 400, and 600. This extra fine sanding is followed by AAA buffing compound applied with caribou skin tanned by native Canadian Indians. The ends of the barrel are burned by pressing denim cloth against them while they're spinning on the lathe. This seals the end grain and makes the wood stronger. The inside is also sanded smooth, then the entire barrel, inside and out, is sprayed with three coats of urethane concrete floor finish, the only material Heidelbergbauer has found that will take the abuse of the repeated thawing, soaking, freezing and drying a duck call is subjected to. The urethane is applied in a special room at seventy percent humidity. After drying for twenty-four hours, the barrels are sanded lightly with 600 grit paper so that they will take India ink, which Heidelbergbauer's daughter-in-law uses to write on the barrel the name of the recipient as well as the date, name of call and maker. Frank then opens any closed letters with a pin and jeweler's loup. Finally, the barrel gets five more coats of the heavy duty floor finish.

When everything is dry, Frank screws in a keg and sounding device and begins tuning. With minute adjustments of the reed on the anvil, he manipulates the tone until he's reminded of the ninety-eight semi-wild mallards he talked to as a boy. Only then is the call finished.

Frank doesn't know if any of his old calls have ever been used to win the world duck calling championships held each November in Stutt-



gart, Arkansas, but he knows they've taken home the gold at several state contests. In fact, the 1977 South Dakota duck and goose calling championships were won with Heidelbergbauer calls. Blown by Heidelbergbauer.

The Heidelbergbauer Canada Goose Hail Call was first marketed about 1954, two years before the Mallard Toller. Frank used it to win the 1953 and 1954 World Goose Calling Contest in Iowa. It looks the twin to his duck call, except the barrel is 3/4 inch longer. The anvil and reed are the big difference.

The reed is cut from .015 mylar, then carefully shaped with an emery board. When it is just the right size, Frank pushes its tip into a small hole cut in the bottom on an old iron. Heat molds the plastic into a shape reminiscent of a goose's tongue and gives the call its authentic sound. The anvil differs from the one in the duck call by having a steeper slope and a narrow secondary trough just in front of the main trough. This additional groove gives the call its break. All parts of the goose call are finished with the same care given the duck call.

The Heidelbergbauer goose call fell on hard times during the 1970's when the chemical composition of the reed material he'd been using was changed. He searched the country

for a stock of the old plastic, twice being assured by suppliers that they had the old style. They required a large minimum order, then delivered the weaker, new formula material, taking Heidelbergbauer for a tidy wad of cash. Frank stopped production of his Canada caller until his experiments finally uncovered a suitable new reed plastic.

The Heidelbergbauer line once included a high pitched Corn Belt Highball duck call and a snow goose call that, according to those who've heard it, has a delightful, clear, high note. These were produced along with the two current models in a set of four wrapped in a velvet-lined, birch wood case handmade by Frank. Collectors would probably kill for one.

Frank didn't develop the graceful, flaring lines of his calls consciously. They evolved over the years as his love for waterfowling matured. When he realized what had happened, he understood why. "Any tool used for such a fine purpose as this," he said, "demands grace."

**D**on Dennis is a perfectionist. His wife Jeanette knows it. That's why she prodded him into making his own duck calls. "He was always complaining that the

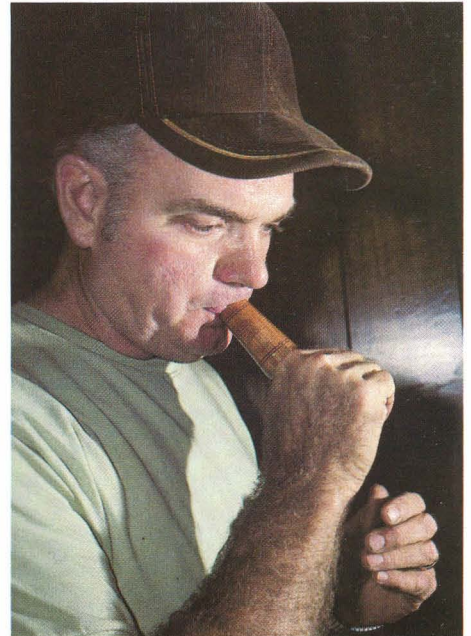
calls he bought weren't good enough, so I asked him why he didn't make one better."

He did. In 1964. It wasn't much, and he laughs when he looks at it today, but that crude walnut call threw Don a challenge, and he's been meeting it ever since.

A Don Dennis call is tradition taken to the top. He leaves innovation to others and concentrates on turning native and exotic woods into conventional, accurate sounding duck calls finished to within a sigh of perfection.

Dennis starts his call by drilling an 11/16 inch bore through a block of wood. He then slides this chunk of raw material onto a metal rod on his lathe. The chips fly as he holds gouges against the rapidly spinning block. Within minutes he's turned the contours of his barrel and slipped a brass ring over the insert end. This metal band strengthens the wood somewhat, but Don admits he uses it for esthetics. To make sure it doesn't slip loose as the wood shrinks with humidity changes, he turns two tiny brass screws through it and into the wood. He files them off and sands the entire band until it

*Dennis's experienced hands can turn a barrel in short order, but his critical ear demands that he spend considerably more time fine tuning.*





is one shiny flow of metal.

With steady, experienced hands, Don finishes cutting the neck contours behind the brass ring. Then he burns this narrow neck by holding a cotton cloth against it as it spins. He marks the barrel with a wire jig, cuts his identification grooves and burns them with a length of thread. Finally, he sands everything with 600 grit and burns the muzzle edge with cloth to seal the end grain. The barrel is done, and it's time to build the hard part—the insert.

The sounding device and keg of a Dennis call are spun from one chunk of wood. Osage orange and rosewood are two favorites because of their density. He cuts them to two sizes, a short one for loud calling and a longer one for less volume. Since the finished sounding device will be secured to the barrel with a press fit, Don must put the perfect taper at just the right spot. He does it with a sharp eye, checking himself with calipers. This is a touchy spot because, as Don said, "You can always shave a little more off, but

you can't add any more on." He sands down to the final fit with 600 grit.

While the keg is still spinning on the lathe, Don pushes a 19/64 inch drill bit into the end of it. This cuts the hole through which the sound will exit. Next, he places the keg into a custom-made steel jig and cuts away the wood that protrudes from it. This gives him the proper taper on the anvil and the notch for the reed wedge, which is cut from cork. He drills the trough with a quarter-inch bit and files the anvil smooth.

After he snips the reed from a sheet of .015 mylar, all parts of the call are completed, but it's far from finished. Assembly can be the longest part, because Don will adjust and tune his anvils and reeds for hours, demanding every nuance of quality they can muster. If they don't satisfy his critical ear, he throws them out, even though they sound better than most commercial calls. Better just isn't good enough for a perfectionist.

When a call passes inspection, Don finishes it to a mirror gloss with three coats of gun stock finishing laquer. When this shine is combined with some of the incredibly beautiful woods Don uses, such as future wood, osage orange that has been soaking in swamp muck for decades, or French walnut, the results are almost too pretty to take into a duck blind. But pretty is as pretty does, and the Dennis calls do pretty well indeed. Don has used them at the World Championships in Stuttgart four times, placing fifth twice. And that, he says, probably reflected on his calling skills more than his call. Others have used Dennis calls to win regional and state contests. But calls that please human judges don't necessarily satisfy ducks. For serious waterfowlers, a call must produce on the marsh. Don's do. He uses them in the Mound City, Missouri, area where he's been waterfowling since 1947. He hunts flooded fields within two miles of Swan Lake National Wildlife Refuge. Ducks there are hunted hard and have heard nearly every call on the shelves, but

Dennis's still fool them. As a result, they've become popular as raffle items and prizes at Ducks Unlimited banquets in the Kansas City area. Word-of-mouth advertising has pushed demand so high that Don has begun making a cherry wood "plain jane" model in his Independence, Missouri, shop to appease the clamor for more. At less than \$20, it may be the best buy in the business. But even if you'd fork out the big bucks for an ebony or genuine ivory barreled call, it wouldn't guarantee you ducks. "No matter how good a call sounds," Don said, "it still boils down to knowing when to call and when to shut up. Too many people call too loud, scaring the birds just when they're coming in."

And when a Dennis call is tempting them, they're usually coming in.

I know a duck hunting fanatic who also collects waterfowl calls. Just a part-time hobby to keep him insane until the season opens. Kind of a sideline to his decoy and shotgun collecting. With a little arm twisting (just mention the words blow or quack), he'll show you his duck calls. Dozens of them from custom and commercial makers across the Midwest. Each does something different from the others, and this guy knows what and how. But press him, really nail him down, and he'll fess up. He only needs one call in the duck blind. That little, chunky one in the corner wrapped in black electricians tape. That will do it all. Pull mallards in like they were on a string. He calls it the Pettibon Sweet Talker.

The little hamlet of Deerfield, Missouri, just over the Kansas line, is home of the Pettibon waterfowl manufacturing company, G. A. "Bog" Pettibon president, accountant, salesman, craftsman and janitor. I don't know what the G. A. stands for, but Bog (pronounced with a long o) must be a code acronym for old swamp rat waterfowl fanatic. Bog, who recently wrestled a heart attack and won, lives and breathes



he said. Is it any different? "Well, yah. They say it's more flexible in cold weather. It's not supposed to crack as easy, you see."

When Bog selects a sound piece of wood for a barrel, one without checks or cracks, he bores an 11/16 inch hole through it and slips it onto the lathe where he quickly shaves it into form, squaring the ends and burning the neck collar with a steel cable. After a rough sanding with 220 and 400 grit, he cuts his thin marker grooves and burns them in with steel wire. Unlike Dennis, Bog doesn't carefully measure where his identification cuts will lie. After all, this is his creation, a reflection of his temperament and whim at the time he makes it. A spin with 600 grit is the final standing.

If a purchaser has specified a rugged hunting call, Bog rubs raw bee's wax onto it and drives it into the pores with a propane torch. This, he said, is the best, most practical waterproofing. When it cools, he buffs it to a rich, deep gloss, burns the ends with steel wool and stamps his name into the edge. He fills the punched letters with white paint, seals the bore with spray lacquer and turns his attention to the insert.

*When Pettibon finally wrenched this block of walnut off his drill press, he shaped it into one of his famous Sweet Talkers (smaller call, next page.) Before the call leaves his shop, its purchaser will have to stop in to blow it. The old master will watch through the plastic test barrel and adjust the reed to the caller's style. Bog says the angle cut on the bottom of the anvil funnels air over the reed to cushion it from vibrating too high or fast and breaking.*

hunting and singlehandedly makes the Pettibon Sweet Talker as well as a larger, louder duck call.

Like Don Dennis, Pettibon sticks to tradition, using wood for all portions of his calls but the reeds, which are the popular mylar. He'll occasionally use hard rubber, but it is difficult to get. His two personal calls have each type of reed and, although he must blow them differently, he doesn't notice much difference in their quality. "I might be getting some sheet acrylic to try,"



Bog likes hard wood for inserts, especially osage orange or bois d'arc (wood of the bow) as it is called in the south. "Get a post that's been sunk in the water and mud for 20 years and it's as good as gold," he claims. The muck turns the wood dark green. One of Bog's calls made from this material sold at a wildlife art show last year for \$220.00. The other one he has, his personal call, has been lusted after to the tune of \$200.00. It's not for sale.

Before Pettibon cuts the anvil, he studies the wood so as to cut it on the edge of the grain. Then he can finish it smooth without fear of it "fuzzing up" and making the tone flat. A smooth, hard sounding board is essential for sharp tone. Instead of using a jig to shape it, Bog goes freehand, filing carefully and using his craftsman's eye.

A unique engineering innovation is his air break, a slant cut back from the tip of the anvil on its bottom. According to Bog, this feature fun-

nels air up above the reed where it acts as a cushion, preventing the reed from vibrating too high and breaking contact with the sounding board, resulting in a squeal.

When the anvil is proportioned properly, it is done, for Bog believes any chemical finish coat kills the pure tone. He does lacquer the keg, but he leaves light tool marks where it jams into the barrel so that the two pieces stick better. "Don't ever pound the pieces together," he admonished me as I feigned just that action. "Here, give it a slight twist like this."

Since the Sweet Talker is designed for just that—whispering sweet nothings to birds working close—Bog drills just a small bore through the keg. His larger, long-range calls get bigger bores to let more sound out. Everything about the Sweet Talker is small. It's only 4½ inches long so it "tucks away in your shirt pocket like this, see." He takes it out while his eyes are glued to an imaginary flock crossing the shop ceiling. "You hear what I'm saying?" The call's insert is 1¼ inches long compared to 1⅝ inches for the big call. The reed is shorter, so the call can easily be overblown. "My little Sweet Talker is for dyed in the wool experienced duck hunters only," Bog explained.

Before his custom calls leave the shop, Bog tunes them, but only while the buyer is blowing. In other words, you don't receive a Pettibon custom call in the mail. You make the pilgrimage to Deerfield to be fitted. At \$50 and up, it's only fair to get optimum performance. (Bog does build and mail a \$35 call tuned by him, but he instructs buyers not to "screw 'em up poking at the insides with knives and pliers.")

The old craftsman takes advantage of plastics to tune his customers' inserts. He puts them into a clear acrylic barrel, and while the buyer blows, the master watches the reed vibrate, seeing if it flattens against the sounding board or breaks because it's too light. A short, narrow reed breaks under less air pressure

than a longer, wider one, but the bigger reed also lowers a call's pitch. "The first thing everybody does when you give them a call is try to blow the guts out of it," Pettibon said. "That's the way they want 'em for these contests, but that isn't the way to call ducks. You gotta have control. You hear what I'm saying now?" He gives me a call he's just put together. I try not to dislodge its innards as I blow. He laughs gleefully. "See. See. I told you. You gotta talk to 'em, not yell. Easy like this . . ." And he takes the call and blows perfect duck through it.

Others have blown good duck through Pettibons. Three people placed in the top fifteen with it at the World Championships in Stuttgart last year. One fellow won the U. S. Open in Memphis, Tennessee. According to some, that's a tougher competition than Stuttgart.

Bog made his first call in 1933. He wanted to do it as a shop project in school, but it wasn't a book shelf or similar approved item, so his teacher wouldn't let him. He begged permission to use a shop owner's tools after school. The result was a crude device that only his school chums heard until 1936 when an old duck hunter took him to flooded timber to see what he could do. Unfortunately, the codger staggered to the blind with a pint of whiskey in his hand, and poor Bog was unwittingly carrying another in the bottom of the decoy sack. "By the time we were set up and it was light enough to shoot, this old drunk was slumped in the corner. He didn't move. I didn't know what to do, so I figured the hunt was ruined. But then some ducks flew over; the drunk raised up one eye and said 'Give um five.' So I blew five quacks and danged if they didn't turn. 'Give um three' he said. So I blew three more and woosh, they set right in. Right in the decoys. Without even looking up, the old man asked 'Well, arnch ya gonna kill any?' So I raised up and killed two. That was the first flock I ever called, and I've been doin' it ever since."

And doing it very well. □





# the yellow pages

Edited by Ron Spomer

## WRITING READERS

### RIVER VIEWS

I live south of Offerle along the Arkansas River. I am writing to you out of my concern for this dying stream. It sure seems a shame to see what is happening and nothing can be done about it.

I was raised on the farm where I live now. It joins the river. I have spent many hours fishing and hunting along the river, and more hours just enjoying the river itself. I suppose I have more sentimental attachment to it than most. I think it would be terrible to see it dry up and have the trees all die like it is farther west.

The pictures enclosed show what is happening. The two where there is no water are

adjacent to an irrigation system. The two where there is water are about one-half mile upstream, away from any close irrigation. The other pictures speak for themselves.

Larry L. Leith  
Offerle

*Mr. Leith's excellent color prints, which couldn't be reproduced here, showed the cracked mud of a dried river bottom, dotted with the carcasses of several large catfish, one of the more graphic reminders of what we lose when we lose a river. What no picture can show are the missing legions of songbirds that depend on a watered and wooded river valley for food and shelter. It can't show the beaver, mink, raccoon, deer and turkeys that drift away, hoping to find alternative housing but coming up empty. The Fish and Game Commission does what it can*

*to protect wildlife interests in Kansas, but only an educated and aroused public can prevent the destruction of public resources. Spread the word, notify your elected officials. Do we want more irrigated corn or do we want the Arkansas River? It's our Kansas.*

### FAMILY TIES?

I have been catching several fish at Milford which are called "goldeneye." But, I know little about them. I am aware that others have caught them, so I don't think this is anything unusual. They were returned to the lake.

I would like to know what family the fish belong to, if they are good to eat and if they are legal to possess. Any other information you can provide will also be appreciated.

Robert Brown  
Salina

*The goldeye, Hiodon alosoides, is the only member of the mooneye family in Kansas. It has always been present in the Missouri River system, and probably spawns over rocky bottoms in early spring. These fish take a variety of baits and lures, striking hard and often leaping dramatically from the water. Other times, they "drag in" like so much dead weight. Under natural conditions, they eat insects and small fishes.*

*The state record, taken from Milford just this October, stands at two pounds four ounces. The only recognized world record is a one-pound eight-ounce fish. Apparently, no one registers their goldeyes for world records. If you want to (there are several line classes open), write National Freshwater Fishing Hall of Fame, Box 33, Hall of Fame Drive, Hayward, Wisconsin 54843.*

*You can catch and keep all the goldeyes you want in Kansas. Some consider the meat too soft to be edible, but others have devised recipes and smoking techniques that transform this fish into a gourmet delight.*

### EXPERIENCE SPEAKS

I don't think the hunter/farmer situation will ever be solved to the satisfaction of all. Speaking for myself, in 45 years of hunting, I have been more than pleased with my overall treatment.

Pat Welch  
Wichita

## PETTIBON DIES



The ponds and backwaters along the Kansas-Missouri border will be an emptier place this fall. "Bog" Pettibon lost his second battle with a heart attack.

Bog lived in Deerfield, Missouri, which is a few miles east of Fort Scott, Kansas. It was there that he manufactured duck calls in a small work shed behind his house. You can read about that in "Build a Better Duck Call" in this issue.

If Bog could have picked his time and place to say goodbye to this earth, he probably would have plunked down in a November duck blind and talked one last time

to a flock of greenheads dropping in, orange feet waving goodbye. As it was, he settled for second best, dying at his workbench while manufacturing a call.

In addition to his renown as a call maker, Bog was admired for his humor and storytelling. He was respected as a conservationist, donating time, money and duck calls to such organizations as Ducks Unlimited. Hundreds of friends will miss Bog, and even a few crafty, feathered veterans of the wetlands will listen in vain for that convincing duck talk only Bog could blow.

# MUSSER AND WILLIS DONATE ART

## BEAUTY AND THE BEASTS

Nationally-known wildlife artist Wayne Willis and the family of the late Judge Don Musser, Pittsburg, recently made a beautiful joint donation to the Kansas Fish and Game Commission's WILDTRUST program.

The Musser family contributed a cash sum as a memorial, instructing that it be used to commission an original painting of bobwhite quail, Judge Musser's favorite game bird. When Wichita artist Willis heard about the project, he offered to donate his time and talent over and above the Musser donation.

The finished art, a two-foot by three-foot oil of a flying covey valued at \$8,000, was unveiled September 26 at the National Hunting and Fishing Day Wildlife Art Exhibit in Wichita. It is currently on display at Fish and Game headquarters in Pratt.

A formal dedication ceremony is planned for the future at Pittsburg, after which the painting will be displayed at the Judicial Center there. Eventually, limited edition, signed and numbered prints of the original work will be presented to concerned persons who donate \$100 or more to the WILDTRUST program. Anyone interested in donating to WILDTRUST should contact Jan Royston, Fish and Game, Rt. 2 Box 54A, Pratt, KS 67124. Phone (316) 672-5911.



# SORENSEN ART ON LOAN

Carol Sorenson started painting at an early age in rural Iowa where wildlife was a common sight. During hours of creative drawing and painting, Carol taught herself many of the innovative techniques she now uses to

create animal portraits that seem to have personalities of their own. Her skillful use of light and shadow produces a realistic, sculptured image.

Carol's subjects are familiar to most Americans, for they are the animals that often

share our parks and farmlands. Years of living near cottontails, deer, raccoons, and ducks have made them appropriate models for Sorenson's eye. She compliments her personal knowledge with thorough research.

Carol studied drawing at Missouri Western College and has painted under the direction of several well-known artists. She has won several competitions in the Midwest, including first place at the North Kansas City Art Show and honorable mention in the Missouri Duck Stamp competition. Her work is sold through galleries in Missouri and Colorado and represented in collections throughout the nation.

For the next few weeks, her art will be on display at Fish & Game's headquarters, the Medical Arts Clinic, the



First National Bank, the Peoples Bank, and R & R Tank Manufacturing Company headquarters, all located in Pratt. Originals and prints from \$6 and up can be obtained by contacting Jan Royston, Kansas Fish and Game, Rt. 2 Box 54A, Pratt, KS 67124.



## TURKEY STAMP



Wildlife art collectors and turkey aficionados can buy the seventh National Wild Turkey Federation limited edition stamp for \$5 from that organization's Wild Turkey Research Center, Edgefield, S. C. 29824-0530. Only 50,000 stamps will be issued. The 1976 stamp now commands three times its original price.

Proceeds fund wild turkey research and education programs nationwide. The 30,000-member federation gives grants to biologists and game managers and helps educate turkey hunters.

## ENDANGERED SPECIES STAMP

Duck stamps, turkey stamps, ruffed grouse stamps—now there's even an Endangered Species Stamp.

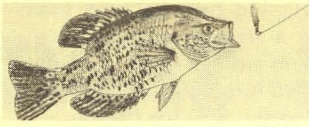
Proceeds from sales of the stamp will promote research into endangered wildlife.

Stamps cost \$5 each. Limited edition prints sell for \$115. Les Kouba is the artist. For more information, write National Endangered Species Society, Box 1116, McCormick, S. C. 29835.



# CRAPPIE FOR THE PAN

## FISHING



Slow and steady wins the race, and in the waning months of the year, it also catches crappies.

According to the better crappie catchers, autumn fishing can be almost as productive as the well-known spring flurry. But you have to fish slow and easy to be successful. Light lines (2- to 4-pound test) should be mated to sensitive rods and tiny baits. Jigs weighing 1/32 or even 1/64 of an ounce are the more productive artificial lures, while one-inch minnows steal the live bait show. Hang them from light wire hooks.

The idea is to fool the crappies into thinking they're getting a free lunch with no strings attached.

Fortunately, the best fishing usually peaks in the middle of those glorious, warm sunny days. Apparently, the warming water stimulates the fish, which spend their time schooled ten to twenty feet deep near structure. Underwater brushpiles are favorite hangouts, as are vertical ledges or banks and flooded islands or other "humps" surrounded by deeper water. Both black and white crappies seem to relate to "up and down" structure this time of year. Depending on temperature and oxygen content, they'll rise and fall to find their comfort range while staying within striking distance of prey hiding out in rocks and brush. At the same

time, they like to have protection of their own from larger predators.

One weathered angler on Cedar Bluff Reservoir breaks the "warm and sunny" rule to dramatic effect by landing crappies about as fast as he can rebait and cast when a cold front is moving in. He claims the best action comes early when the fresh north wind stirs the water and "riles things up down there." Once the weather has set in, the success tapers off, and when skies clear out, it seems as if the fish have, too. But after a day or two of settled weather, the pleasant, midday fishing warms up again.

So, don't push the boat into winter storage just yet. Take it out to a sunken brushpile. Then start a fire under the frying pan.

—RS

## PUBLIC LAND GIVEAWAY

Just as conservationists were congratulating themselves for smothering the Sagebrush Rebellion, another, even more dangerous threat to the future of federal lands arose. According to a report from the Wildlife Management Institute which will appear in December's **OUTDOOR LIFE**, the new scheme is called "privatization," an effort by the Reagan administration to balance the nation's books by selling off vast tracts of our national forests, grasslands, and Bureau of Land Management holdings.

Federal officials are apparently waiting for recommendations from the President's Federal Property Review Board before announcing what they plan to sell. USDA Secretary

Block has said that 15 to 18 million acres will get "intensive study" and that the overall review will cover about 144 million acres. Kansas' 108,000-acre Cimarron National Grasslands will be a primate candidate for sale. Administration spokesmen defend the program by pointing out that the proceeds will be used to help pay off the national debt. They add that the land will be more efficiently used under private ownership than it ever was under federal management. Neither statement holds any water.

The current national debt is more than \$1 trillion. The interest on that debt will amount to \$113.2 billion in 1983 alone. The revenue from the five-year privatization sale will earn

about \$17 billion. Too bad we don't have a few hundred million more acres to sell off.

As for the efficiency of private land management—many of our national forests in the Midwest and nearly all the national grasslands were bought during the Thirties from landowners who had devastated the soil and could no longer wring a living from it. Federal land managers in the West have been under heavy pressure to allow more grazing on BLM and national forest holdings, and they have fought a losing enforcement battle with many ranchers who insist on overstocking federal range. The administration may call that kind of land use "efficiency"—to most conservationists, it looks more like land rape.

—CM

# CITIZEN ACTION NABS POACHERS

## THE LAW



The price of meat can really climb when a concerned citizen calls the police.

Recently, a caller tipped off Russell Deputy Sheriff Larry Draffen about some illegal deer hunting by a crew of railroad workers near Paradise, Kansas.

Investigation by him, other area sheriffs, and Game Protectors Val Haworth and Arch Moberly, uncovered two deer in the ice car of a Union Pacific Railroad work crew. Crew foreman Bryce Wright admitted shooting the deer along Paradise Creek south of Natoma in Osborne County.

District Magistrate Judge Shirley Henderson, Osborne, found Wright guilty of killing deer out of season and hunting without a license. His total bill rang up at \$1200, plus \$19 court costs. Pretty expensive meat, especially when you consider he didn't even get to eat it.

### PHOTOGRAPHER NABS POACHERS

Ronald L. Shannon wasn't smiling when he learned he was candid on camera. An anonymous photographer took pictures of Shannon and his two sons hand fishing in the Arkansas River Sept. 12. Then he left to summon the sheriff, who notified Game Protectors Jeff Gayer and Dean Deutsch. The officers found Shannon along the river in Reno County, three catfish in tow. The

processed film later showed the man in the water, catching fish, hanging them on a stringer and carrying them along shore. The judge fined him \$50 for fishing illegally, \$50 for fishing without a license and \$19 court costs.

### TURKEYS TAKE TURKEYS

They missed the quail they shot at, but they sprinkled pellets on an archery deer hunter, who chased them down to chew them out. That's when he saw the two illegally-killed turkeys in their vehicle. The two 17-year-old boys left in a hurry, but the hunter got their license and reported it to the sheriff, who turned the information over to Game Protector Jeff Gayer.

The birds were cleaned and in the sink by the time the

arrest was made, but that's the closest the boys got to eating them. Their illegal hunt cost them \$319 each. They were lucky. It could have been higher if they'd hit the quail.

### WRONG TIME TO SHOOT DEER

Cuong Bui went deer hunting in Stafford County. Only he didn't have a deer permit. And he purchased his license without first getting his required Hunter Safety Certificate. And he killed the deer with an illegal weapon, a .22 rimfire rifle. And the deer season wasn't open that July 30. And it cost him \$388.

# JACK FROST NIPPING AT YOUR...

## NATURE



Autumn. That invigorating season that quickens the pulse. There is a sense of urgency in the air. Wild animals eat like AWOL Weight Watchers, layering fat reserves that will fuel them through the lean months. People hang storm windows and pull on sweaters. Frogs and turtles burrow deep into insulating pond mud, and furbearers grow thick, warm coats. Yet, in the midst of all this overdressing, trees "take it all off" at a glorious pace.

They do it in the style of a Vegas stripper, coloring

themselves in crimson, orange, yellow, bronze and glittering gold before letting their leaves slip brazenly to the ground. It's a pageant that earns the applause of the most callous among us. The question is, how do they do it? How does a green leaf suddenly turn red?

Myth has it that Jack Frost gambols through the woodlands, decorating wildly with a rich palette of paints. Unfortunately, scientists have never been able to catch this seasonal artist in the act, so they've uncovered more pragmatic explanations for chameleon fall foliage.

Those stunning yellows are not so much a creation as an unmasking. A corky ring (abscission layer) begins growing around a leaf's stem in late summer, gradually choking off the flow of sap. This impedes the

manufacture of chlorophyll, revealing xanthophyll and carotene, yellow pigments that have been present all the time. They are not readily decayed by sun or heat, so they persist until the abscission layer becomes so brittle that it breaks, tumbling the leaf to the ground where bacteria begin breaking it down.

Cottonwoods, ashes and silver maples are some of the well-known yellow beacons of the October landscape.

Red autumn colors almost justify the stories about Jack Frost, for cold temperatures help create them.

Anthocyanin is the red pigment produced in leaves when warm, sunny days stimulate them to manufacture sugar. Frosty night temperatures restrict the transfer of this plant food to other parts of the tree. As

the sugar content of the leaf climbs, more and more anthocyanin pigment is made, and red overpowers any green or yellow that may be present. Red maples, buckeyes, sumacs and various red oaks become brilliant scarlet sculptures when October runs to sunny days and crisp nights.

Various shades of yellow and red result from combinations of pigments. Brown leaves, like those of the bur oak, simply die on the branch without coloring. Coniferous trees (evergreens) hang on to their needles (leaves) for more than one season and shed them throughout the year. Their dark green bulk adds a crisp contrast to the blazing riot of colors Jack Frost paints...or slightly influences.

# Nature's Notebook

by Joyce Harmon

Wildlife Education Coordinator  
Kansas Fish and Game Commission

## NIGHT STALKERS

Which Kansas animal hibernates during the cold winter to save energy, catches flying insects in total darkness and sleeps hanging upside down? The bat, of course. That spooky night flier of the vampire movies.

Over the years bats have developed a poor image. Stories are told about them flying into little girls' hair, spreading tuberculosis, sucking blood and giving everybody rabies. Hollywood depicts them as Count Dracula in disguise and messengers of witches. These fairy tales aren't believed by all people. The Chinese saw bats as symbols of good luck, long life, wealth and virtue. Central American Mayan Indians worshipped these flying mammals as gods. Modern scientists know that bats are radar-equipped to play a unique and beneficial role in nature.

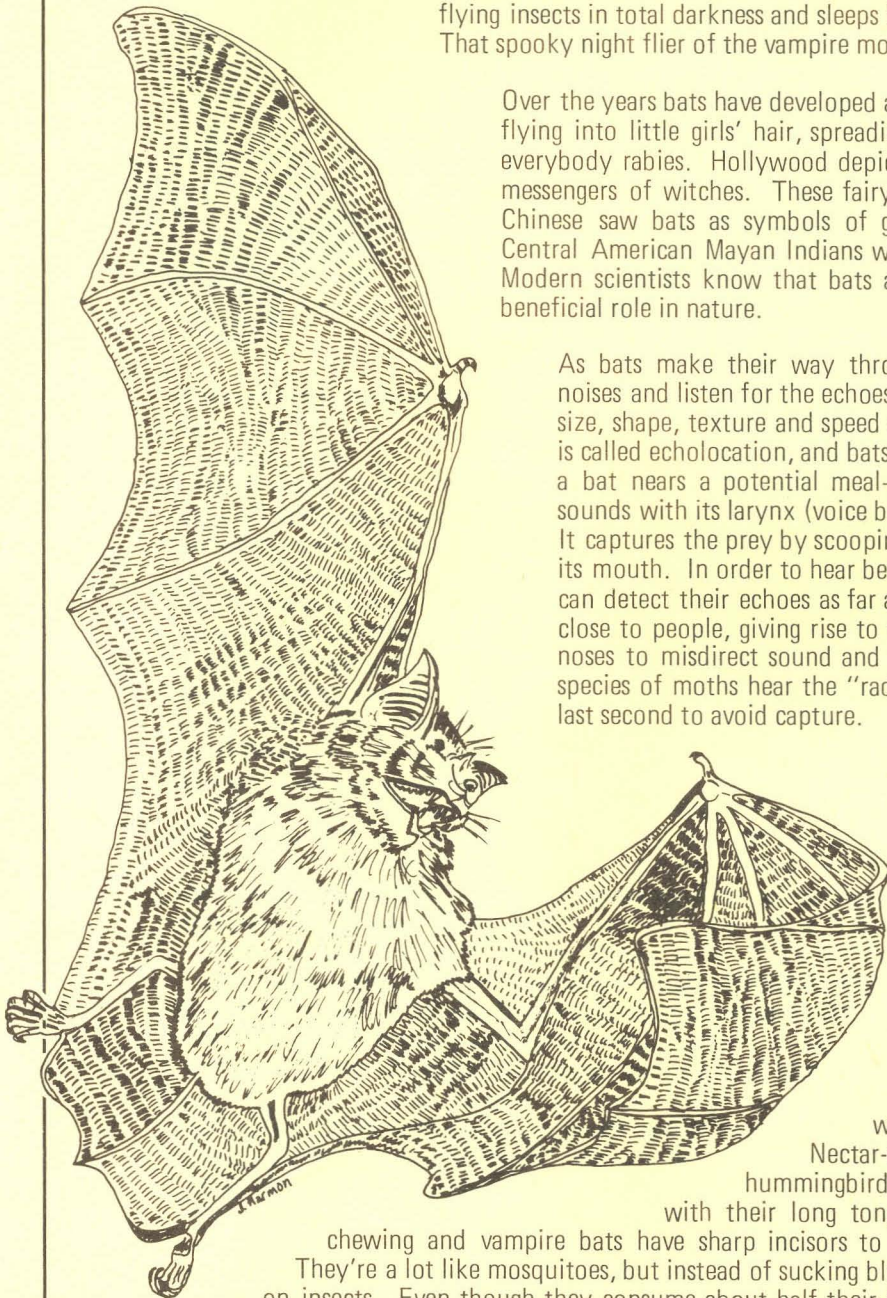
As bats make their way through the night, they emit high-pitched noises and listen for the echoes. From them they can hear the location, size, shape, texture and speed of moving objects. This important talent is called echolocation, and bats depend on it to earn their dinner. When a bat nears a potential meal—a moth, for instance—it speeds up the sounds with its larynx (voice box) and picks up more echo information. It captures the prey by scooping it up with its wings and pushing it into its mouth. In order to hear better, most bats have oversized ears. They can detect their echoes as far as six feet. Bats may often dart at insects close to people, giving rise to the "hair tangle" stories. Some use their noses to misdirect sound and confuse insects trying to escape. A few species of moths hear the "radar" and dart to and fro, dropping at the last second to avoid capture.

There are about 850 different species of bats in the world. Thirty-nine of those live in the United States, and fourteen occur in Kansas. Warmer parts of the world, especially the tropics, have the greatest variety of bats. While those living in Kansas eat insects, others specialize in such foods as fruit, fish, mice, flower nectar and yes, even blood.

Fish-eating bats swoop over the water and catch minnows in their talons.

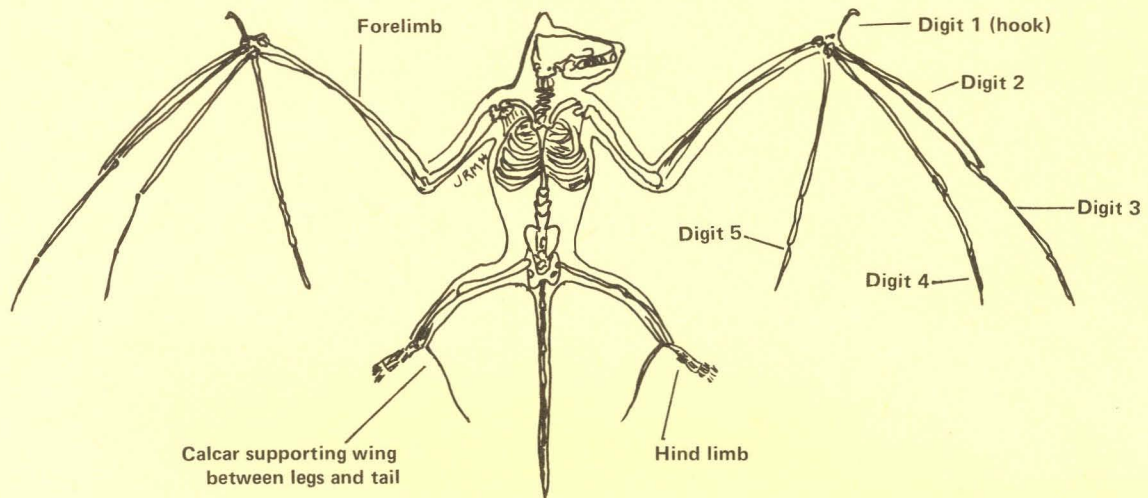
Nectar-eaters are the equivalent of night-flying hummingbirds, lapping the sweet juices from flowers with their long tongues. Fruit bats have wide molars for

chewing and vampire bats have sharp incisors to painlessly puncture their victim's skin. They're a lot like mosquitoes, but instead of sucking blood, they lap it up. All Kansas bats feed on insects. Even though they consume about half their body weight in beetles, moths and bugs each night, many people still think they are dangerous, filthy animals riddled with diseases and parasites. In reality, bats spend a good deal of time grooming to keep themselves, especially their wings, clean and in perfect flying condition. Bat parasites are no worse than those in dogs, cats or birds, and almost none of



them are harmful to humans. In contrast, the chemicals some people use to kill bats are very dangerous to human health.

It is true that bats can become a nuisance in buildings where they frequently roost during daylight hours, but there are better ways to remove them than poisoning. A practical approach is to block entry points under eaves, near chimneys and attic vents with fine mesh screen or weatherstripping. Do this just after dark when the critters are out feeding or in late fall when they are hibernating elsewhere. Some species hibernate in attics. Be sure you don't lock any in.



A bat's skeleton looks remarkably like a human's, having five bones in the wing comparable to our fingers. They are hollow, to make flying easier. The first digit, or thumb, is a claw used like a hook to grab and cling to bark, rock and other perches. The other four support a thin, rubbery membrane stretched between them to form the wing. It is attached to the leg and continues to the tail. A special bone called a calcar supports the outside edge of the wing between the legs and tail. Bat skulls are like bird skulls; they are "honeycombed" to keep them light. In fact, bats take the place of birds as the night shift insect patrol.

Like all mammals, bats are warm-blooded (body temperature remains constant except during hibernation) and nurse their young. Even though young bats can use echolocation to find food when they're just two weeks old, they take milk from their mothers for at least two more months while they perfect their hunting skills. Female bats can tell their young from others by sound and smell. Most bats care for their own young, but a few species that live in colonies care for any hungry youngster.

The phrase "blind as a bat" is left over from the day when people thought bats couldn't see. Actually, they can in daylight, but not as well as most diurnal (daytime) animals. Since bats are active at night, they function much better with ears than eyes.

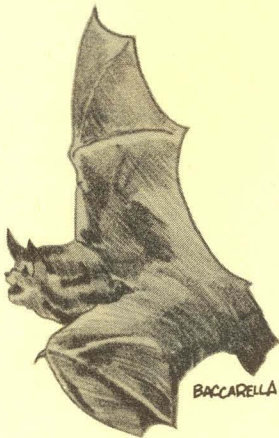
Bats in northern climates like ours hibernate during winter to conserve energy. Their insect food supply is gone, so they find caves and other crannies that stay warm enough so they don't freeze, yet cold enough so their stored body fat will not be used up too soon. Some species hibernate in large groups to conserve body moisture and possibly heat. At these times bats are sensitive to disturbance, and the slightest intrusion from people can cause them to stir and lose precious energy reserves. If too much is lost, thousands of the insectivorous mammals can die before spring. Several hibernation caves (hibernaculae) have been fenced off to protect threatened or endangered bats from curious people. In Kansas, the gray bat is listed as endangered.

Other Kansas bats are: little brown cave, Keen's, small-footed, silver-haired, eastern pipistrelle, big brown, red, hoary, evening, Townsend's big-eared, pallid, and Brazilian free-tailed. They range in weight from three grams for the small-footed up to 35 grams for the hoary. Besides humans, they are preyed upon by owls, raccoons, snakes and bluejays. Average life span varies from species to species, but can be from two to thirty years, an abnormally long time for a small animal in the wild.

Some spring or summer evening when the sky is still light, watch for nature's radar-equipped, flying insect control. Then see if you can find their daytime roosting sites. Some like to hang from tree branches and look like withered leaves. Others prefer to cling to rafters in barns and buildings or crevices in cliffs and caves. Enjoy studying them, and don't worry about them tangling your hair. Any creature that can hear a moth won't have any trouble avoiding us.

To appreciate the varied and fascinating behavior of bats even more, or at least to reduce fear of them, try the following activities:

**HIBERNATION HUDDLE**—While hibernating, bats gather in groups and clump their bodies close together. They rotate positions, so that each has a chance to be snug in the center. Children can imitate hibernating bats by huddling close together and trying to wiggle their way into the center of the group with their eyes closed and hands at their sides. Stop periodically for them to see how they have progressed.

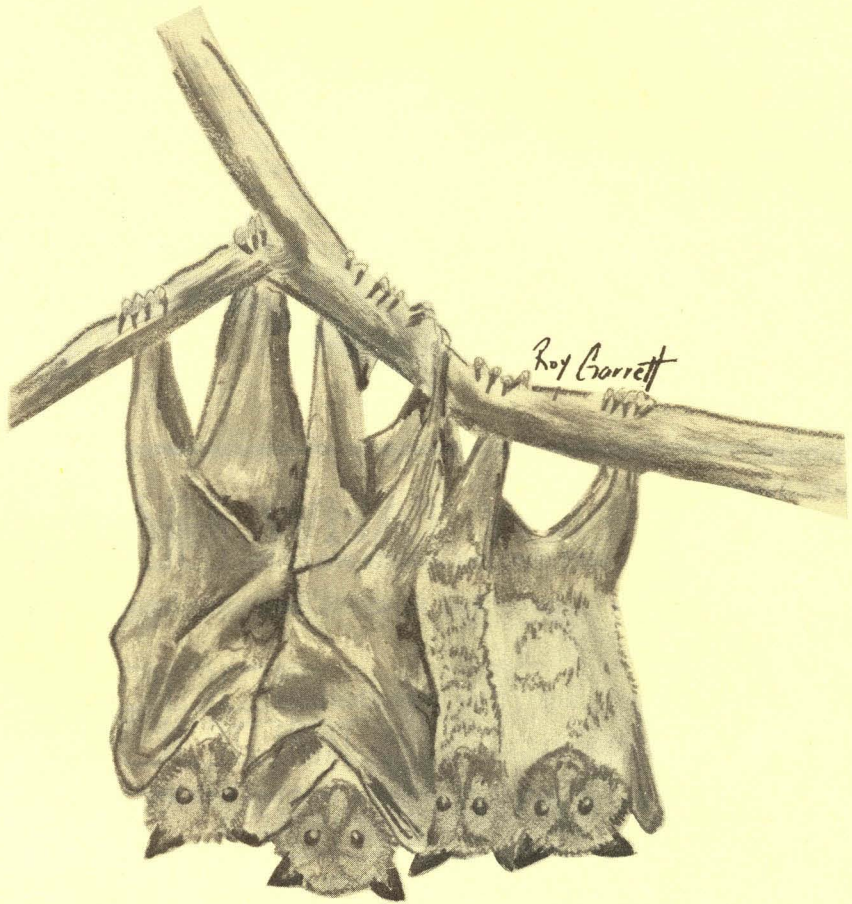


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**THE BAT**  
by Ogden Nash

*Myself, I rather like the bat,  
It's not a mouse, it's not a rat.  
It has no feathers, yet has wings,  
It's quite inaudible when it sings.  
It zigzags through the evening air  
And never lands on ladies' hair,  
A fact of which men spend their  
lives  
Attempting to convince their wives.*

---



**CAVE MAZE**—Construct a "cave" from chairs, tables, and dishes. Children work their way around the obstacles while blindfolded. Locate what you think are good roosting locations. Bats return to the same roosts year after year.

**EASY ECHOLOCATION**—One participant produces a faint sound just loud enough to hear from a short distance. The others, blindfolded and disoriented, try to find their way to the sound.

**THE JURY IS OUT ON BATS**—Hold a hearing of the case, "Little brown vs. the people of Kansas." Judge, jury and lawyers are selected. Each side presents its case to be determined by judge and jury. Specify instances such as disturbance of hibernacula (hibernating habitat) or indiscriminate killing. Judgment is based on the arguments. See if compromises can be made such as blocking bat entryways in homes but replacing the lost habitat by constructing bat towers.

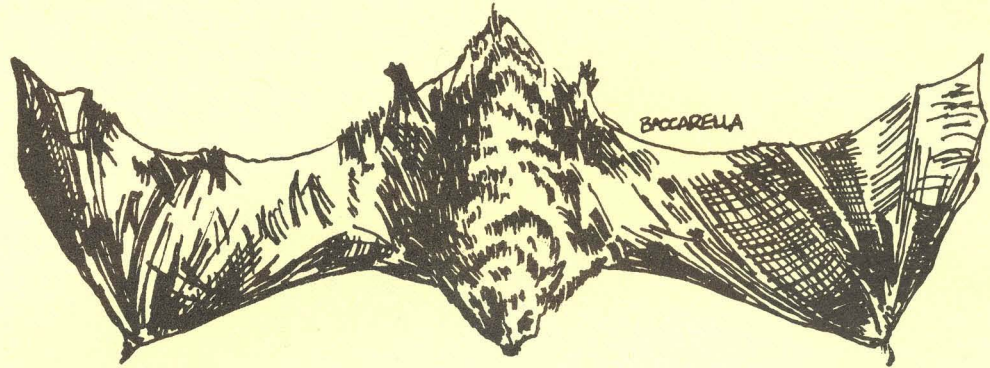
**BAT MOBILE**—Mobiles have been made of nearly everything else; why not one of bat drawings? Some research on Kansas species would provide background for the drawings of a variety of bats in different poses.

**READING ADVENTURES**—Read stories and poems about bats and other nocturnal animals. Then try your hand at writing your own.

# Bat Review

Directions: Choose from the list below to complete each sentence. If all of the answers are correct, the letters in the shaded boxes will form the mystery word.

- hibernacula
- roost
- nocturnal
- guano
- endangered
- predators
- mammals
- anatomy
- calcar
- warm-blooded
- vampire bats
- wing
- digits
- colonies
- insectivores



1. Animals such as bats that eat insects are called
2. Bats have a special bone that supports their wing between their hind foot and tail called a
3. The places where bats winter are called
4. Bats may live alone or in
5. Bats belong to the group of animals that has hair and nurses its young. Members of this group are called
6. Animals such as bats maintain a fairly constant body temperature. These animals are called
7. Bats and other animals that are active at night are
8. Bats that feed on blood from cows and horses are called
9. Animals that prey on other animals for food are
10. Bats, humans and several other animals have five
11. Bat droppings are called
12. The parts or structure of animals, including skeletons, is called

## Mystery Word

describes the ability to locate objects by sound.





# A SQUIRRELING YOU COULD GO

## HUNTING



Autumn is the busy season for Kansas hunters. The waterfowl are migrating. Pheasants, quail, and prairie chickens are legal game. Deer steal the attention of archers and riflemen alike. With all the excitement, there isn't much free time to spend in the woods sneaking after squirrels. But for sheer hunting pleasure there should be.

A coterie of dedicated squirrelin' men keep the bushytails hopping in southeast Kansas, but hunting pressure diminishes to almost nothing further north and west. That's difficult to understand, because squirrel hunting offers everything a shotgunner or rifleman could want: a generous bag limit, a long season, abundant game, easy access to that game, little competition and fine sport. More than once, squirrels have been referred to as the whitetails of the treetops. Taking one requires all the stalking, hiding, waiting and shooting skills of the deer hunter.

Fox squirrels are common to abundant in open woods, shelterbelts, hedgerows, and riparian woodlands across the state. They adapt well to agriculture and can often be found living in just one or two isolated old cottonwoods near a farmyard grain supply. Foxes are our biggest squirrels, weighing in at about 2½ pounds. They spend a surprising amount of time on the ground and don't hesitate to climb *down* a tree to run away from pursuers.

Gray squirrels are more arboreal than the foxes and prefer more expansive forests

for their living quarters. Because of this, they are limited to the eastern counties. Slightly smaller than fox squirrels, grays are more nervous and alert, but they still fall for many of the popular hunting tricks.

Perhaps the most common hunting technique is the slow, stroll-and-look approach. For optimum results, this should entail more looking than strolling. On rainy days, or when there is no noisy litter on the ground, it can be quite effective, especially when two persons do it at once. One hunter should

enter the woods fifty to 100 yards ahead of the other. Squirrels shifting around trees to avoid the first man slip right into the sights of the second.

Anyone who has located a good nut tree or other food source should try stand hunting. Wear camouflaged clothing, sit quietly and let the game do the walking.

A .22 rifle with a telescopic sight is a delightful squirreling piece. It is quiet, inexpensive to shoot and effective. Limit yourself to head shots and you'll get clean kills and clean meat. The .22 short cartridge

is then all the firepower necessary. Shotgunners should use heavy loads of six or four shot.

Dress squirrels by slicing through the skin all the way around the mid-section. Grab each half of the hide and pull it off the carcass like a sock. Do this when the animals are still warm and it will be as easy as it's going to get. Squirrel meat is mild, comparable to chicken but with a delicious flavor of its own. Try it in a variety of recipes, including that old standby, fried squirrel. Mmmmm good.

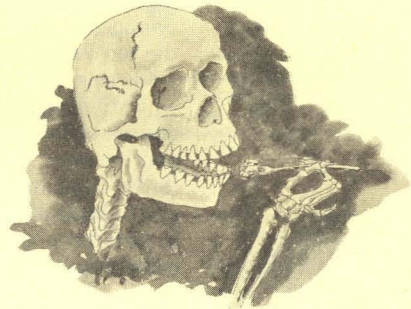
—RS

## YOU ARE WHAT YOU EAT

The results from the second annual Montana pesticide hunt are in, and for the second straight year, most of the animals tested were contaminated.

The 1981 cutworm outbreak that triggered widespread aerial spraying of endrin in eastern Montana did not recur this spring, but the Montana Fish, Wildlife, and Parks Department decided to look for pesticides in their wildlife nonetheless. And they found plenty. Spring samples of 26 puddle ducks showed an average of .28 parts per million (ppm). One duck carried 2.98 ppm. The Environmental Protection Agency has set a "health action level" of .3 ppm for endrin concentration in domestic fowl.

Concentrations of other pesticides were even more alarming. Heptachlor epoxide—an average of 2.19 ppm in the 26 ducks, a maximum of 33.6 ppm in one



bird, and an EPA health action level of .3 ppm. PCBs—an average of 1.98 ppm, a peak of 50.1 ppm in one bird, and a health action level of 3.0 ppm. Mirex—an average of .29 ppm, a peak of 6.01 ppm in one bird, and a health action level of .1 ppm. And DDT, banned in the U.S. since 1972—an average of 4.66 ppm, a high of 30.4 ppm in one bird, and a health action level of 5.0 ppm.

Since all these pesticides tend to concentrate in fatty tissues, health officials in Montana—and Kansas—have recommended that Central Flyway duck hunters skin

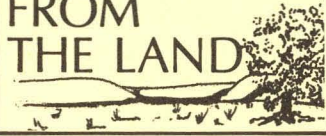
their birds to get rid of the fat under the skin. The birds should be cooked on a grate to allow the fatty drippings to leave the meat, and pregnant women and nursing mothers should avoid eating wild ducks since even small amounts of these pesticides may damage unborn babies and will concentrate in mother's milk.

Few biologists have been surprised by the Montana findings. Ducks and all other wild things are reflections of their environment. They are what they eat. And so are we.

—CM

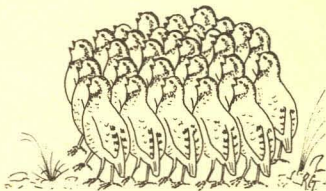
# GOURMET HUNT COOKING

## RUMBLINGS FROM THE LAND



Mother Nature may have cooked up a gourmet delight for small game hunters this year. A mild winter, wet spring and luxuriant summer--albeit a bit dry in some regions--seems to have produced a feast of pheasants, quail, prairie chickens and cottontails.

According to data submitted by rural mail carriers and compiled by Commission Small Game Biologist Roger Wells, the 1982 July pheasant population index was up 15 percent statewide from 1981. There were, of course, localized declines due to hail, floods, etc., but overall, the counts were 29 percent above the five-year average and 39 percent above the ten-year average.



Quail also responded well to the climate and breeding cover, although cold spring rains hampered nesting efforts. The rural mail carriers tallied 57 percent more bobwhites in the southeast, 40 percent more in the northcentral and 41 percent more in the Flint Hills. This does not mean there will be exactly that many more for hunters to find, but it does indicate a significant increase in the total population. All other regions showed no

statistically significant changes from 1981. Statewide, the index was up 26 percent from last year, 34 percent from the five-year average and identical to the ten-year average.

The rangewide greater prairie chicken index was essentially unchanged from last year, but is 22 percent above the five-year average and 47 percent above the ten-year average. Lesser prairie chickens, restricted to sand sage prairies fast disappearing in southcentral and southwest Kansas, were down slightly again, reflecting continued loss of their unique grassland habitats to cropland conversion.

Most folks don't worry too much about the health of the cottontail herds, but the mail carriers' annual count indicated the bunnies were 60 percent above the five-year average and 45 percent above the ten-year norm.

All this good news follows a hunting season that stretched into mid-February and included generous bag limits, indicating that weather and habitat play the big role in determining annual small game populations.

## PRESERVATIONISTS ORGANIZE IN STATE

Anti-hunters are often called preservationists, but the real preservers are taxidermists. Eighteen of them, all practicing in Kansas, gathered in Salina September 25 to organize the Kansas Association of Taxidermists (KAT).

KAT is designed to develop the taxidermy skills of its members through competition, seminars, meetings and sharing of ideas. The organization is an affiliate of the National Association of Taxidermists, which helps lobby for state

and national legislation concerning the preservation of wild animal skins.

Beginners and "old hands" are invited to join by contacting Tom Swearingen, Rt. 3, Box 105, Lawrence, KS 66044.

## BETTER THAN A GOLD WATCH

The Norton-Decatur Cooperative Electric Company has hit upon a novel way to show appreciation to its dedicated employees. In recognizing lineman Bill Wayne Ray's twenty years of service, the company eschewed the traditional watch and plaque and presented Bill with a Kansas Lifetime Fishing License. Now, instead of counting the passing hours, he'll be fishing them. At no charge.

## SWILLING MEMORIAL HUNTER SAFETY FILMS

Thanks to the James Thurman Swilling Memorial, the Kansas Hunter Safety Program has two new films to be used to educate young hunters in proper firearms safety.

The Swilling Memorial was established by the Swilling family through Fish and Game's WILDTRUST program, which enables families to create memorials expressing their continued support of a loved one's interest. Because James Swilling loved hunting and the outdoors, his family chose a memorial that is helping to instill hunter ethics, safety and appreciation of nature in Kansas youth. A fitting and perpetuating tribute to James Thurman Swilling.

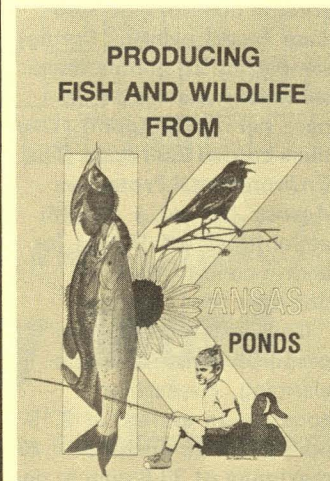
## POND MANAGEMENT BOOKLET AVAILABLE

Every Kansan who wants to get the most wildlife and the best fishing from his farm pond should read the Fish & Game Commission's new booklet, *Producing Fish and Wildlife from Kansas Ponds*.

The 56-page, color

illustrated guide covers site selection, construction, habitat planting, stocking, management and harvest. In addition to describing popular fishes and their management, the text discusses common problems such as muddy water, excess vegetation and fish kills. There's even a section on fishing techniques. In short, virtually everything a pond owner would think to ask about his water hole is answered in this booklet. Just in case the unexpected arises, there is a list of addresses and telephone numbers of agencies providing pond owner assistance.

Kansans interested in managing a pond may pick up a copy of the booklet from any Fish & Game office. Out-of-staters should send \$2.50 to Kansas Pond Booklet, Fish & Game Commission, Rt. 2 Box 54A, Pratt, KS 67124.



## WILDLIFE IN THE NEWS

If you want to find out more about Kansas' nongame wildlife, just look through your local newspaper.

The Fish & Game Commission's Nongame Wildlife Improvement Program, funded by the "Chickadee Checkoff," is providing all Kansas newspapers with camera-ready *Something Wild* columns like the one shown at right. They are created by artist and Emporia State University biology professor Dr. Robert F. Clarke, who has been sketching all his life. His combined talents give him a unique opportunity to expose all of us to the little-known wild creatures that call Kansas home. The thousands of Kansans who donate part of their tax returns by marking the nongame tax checkoff box on their tax forms make it possible to produce the continuing series.

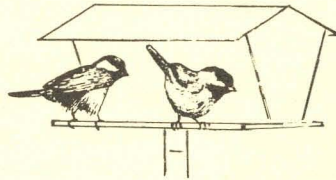
If you don't see *Something Wild* in your paper, contact the editor and let him know you'd like to. The more we know, the more we'll enjoy.

## SOMETHING WILD!

By Robert F. Clarke, Ph.D.

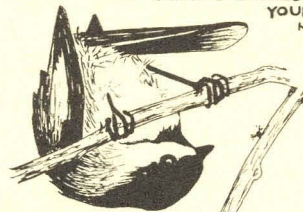
### Black-capped CHICKADEE *Parus atricapillus*

THIS HANDSOME LITTLE BLACK AND WHITE FELLOW IS A PLEASANT ADDITION TO THE BACKYARD BIRD FEEDER. ITS CONSTANT "CHICK-A-DEE-DEE" IS A FAMILIAR SOUND IN WOODLANDS AND PARKS.

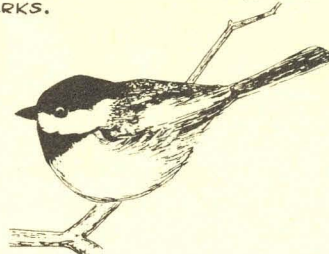


IT IS NO WONDER THAT THIS BIRD WAS CHOSEN AS THE SYMBOL FOR THE NONGAME WILDLIFE PROGRAM. THE STRIKINGLY BOLD PATTERN OF THIS FRIENDLY BIRD MAKES FOR EASY IDENTIFICATION.

IF YOU LIKE ACROBATS, THE CHICKADEE SHOULD BE YOUR FAVORITE. HE'S NEVER SETTLED, AND, WHEN FEEDING, ONE POSITION IS AS GOOD AS ANOTHER!



LACK OF WHITE ON THE WING HELPS TO IDENTIFY THE CAROLINA CHICKADEE



A contribution from the Nongame Wildlife Improvement Program  
Kansas Fish & Game Commission

## PULLING THE PLUG ON WETLANDS?

It is estimated that almost half of this nation's wetlands have been destroyed since we started settling this wild country. Forty-five million acres of the best duck, muskrat and critter-producing sloughs, marshes, hardwood swamps and prairie potholes disappeared by 1950. Since then an average of 300,000 acres have been drained or filled annually. It was once hoped the 404 permit would slow that destruction.

Section 404 of the Clean Water Act passed during the 1970's established a permit system to protect productive wetlands. Before anyone could drain or fill a stream or body of water, he had to get

a 404 permit from a government regulating agency. That way, needless destruction could be prevented through project modification or denial of a permit. Ironically, the Army Corps of Engineers, the arch-nemesis of wild water, was appointed to enforce the 404 system. Naturally, there were abuses. Some conservationists claimed the Corps handed out 404's like candy treats. Even so, it is estimated they prevented the destruction of 600,000 acres

# 404

of wetlands last year by not approving some permit requests.

Most wetlands saved by 404 were protected by project modifications rather than permit refusals. Slight changes in construction plans enabled people to complete their projects without destroying the valuable wetlands. Fewer than two percent of 404 applications were denied.

In spite of this beneficial record, the Reagan Administration believes the 404 is excessive government regulation that hampers businessmen. The Assistant Secretary of the Army has issued regulations reducing the Corps' role in wetland protection. He ordered nationwide permits allowing

unregulated development in certain wetland categories including prairie potholes, lakes and bogs of unlimited size. He has proposed further regulations that would remove 85 percent of the wetlands currently covered under 404.

## BAD NEWS FOR CONSERVATION

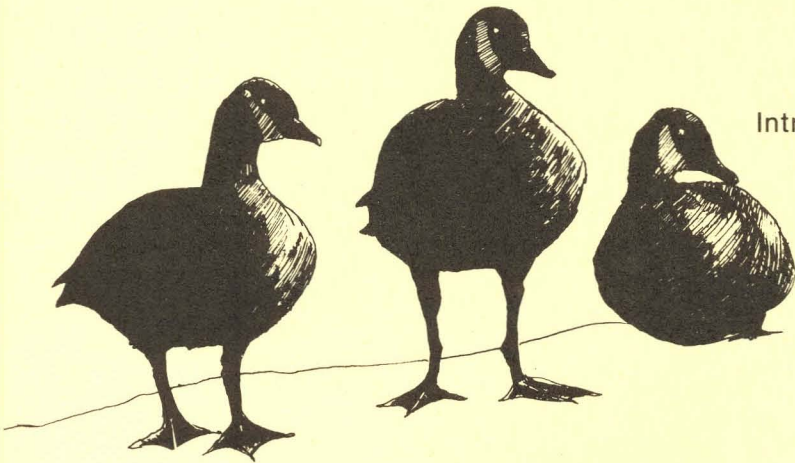
Congressional budget projections reveal that federal funding for natural resource management will drop 25 percent by 1985, the Wildlife Management Institute reports. The money available that year for resource management will be only 8 percent of the amount required to pay the annual interest on the national debt.

# Send Seasons Greetings

(Six Times A Year)

## KANSAS WILDLIFE


MAGAZINE



Introduce your friends to KANSAS WILDLIFE magazine, a bimonthly look at the rich fish and wildlife resources of the Sunflower State. Whether they live in Kansas or elsewhere, they'll appreciate the colorful photographs and art, wildlife profiles, environmental news, and much more useful information packed in every issue.

Please enclose your check for the proper amount.

Check one:  1 year, \$5     2 years, \$9     3 years, \$12.50

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# brave new world for wildlife

Chris Madson

Illustrations  
by Bruce Cochran

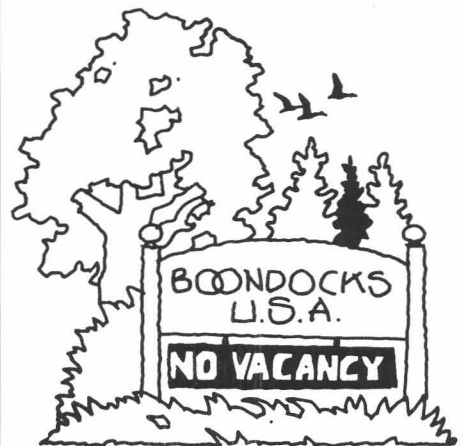
**H**e's a spare little man, white-haired and lean, tough as whang leather and weathered to just about that color. He looks as if he could still stand up to a twenty-mile pheasant hunt, but the truth is that the arthritis has slowed him down quite a bit and his upland bird days are just about over. He can still hunt ducks, though—the waterfowl marsh holds an attraction for him the years haven't dimmed. In fact, he has carried a teenage enthusiasm about most wild places into his old age, so I was more than a little surprised when he first happened to mention that he wouldn't want to change places with anyone of my generation.

"Why's that?" I asked. "You miss the twenty mallard limit?" "Oh, I don't know that I do," he replied. "Five mallards a day is more than any man needs to take home, anyway. But I'll tell you what I do miss. I miss the flocks we used to kill those limits out of." He shook his head with a smile. "You've seen flocks as big, I imagine, but not as many as we used to see. And those birds—they weren't so testy, so shot up. They didn't have to run the gauntlet the way they do now.

"But it's not just ducks. It's anything in the way of wildlife. Understand, I'm not trying to give you that 'good old days' line. I know better than most how good the good old days were. There's been a lot done in conservation since I started hunting. But I don't know that it'll be enough. I don't think I want to be around to see what it's going to be like in another twenty years."

I don't think I've ever heard a more sincere expression of pessimism, and the old man isn't alone in his opinion. Hundreds of thousands of conservationists are bracing for what they see as an

inevitable collision between wildlife, spiraling population, and the insatiable American appetite for luxury. It was this gut feeling that prompted President Carter to commission a projection of life on earth in the year 2000. The resulting report, *The Global 2000 Report*, is a dispassionate assessment of where we are headed as a species. Some of its predictions are surprisingly optimistic compared to environmentalist rhetoric; most, however confirm with numbers what conservationists have been saying for years. The trends and their potential effect on wildlife are worth considering.



## The Nursery

**M**uch has been made of the decline in American birth rate over the last twenty years. A combination of easily available family planning services, changing sex roles and expectations, and the increasing cost of child rearing have drastically reduced population growth in North America. Lucky us. We'll still have between 20 and 60 million more people in the United States than we had in 1975.

Unlike population in the U.S. and other developed countries,

populations in underdeveloped countries, already seventy-two percent of world's population, will continue to grow rapidly even with family planning and birth control. By 2000, these countries will have added between 1.9 and 2.6 billion people.

With that many folks around, there's bound to be some reshuffling. Here in the U.S., the movement of people away from the inner city is likely to continue. Cities as they exist today are dangerous and unhealthy; the country life is the life for most Americans. Meanwhile, more and more Third World residents will be trying to crash the party. The Statue of Liberty's generous invitation notwithstanding, the Rio Grande River will probably bear a disquieting resemblance to the Berlin Wall in the year 2000, not because we are trying to keep people in but because we are forced to keep people out.



## Elysian Fields

**A**ccording to the experts, the relationship between the size of the world's population and the size of its larder won't change much in the next twenty years. There aren't many acres left to be called into production anywhere in the world,

but the technological breakthroughs that have transformed American agriculture since the Forties should sustain us for a little while yet. But not without problems.

Modern American agriculture is frightfully expensive, and since it survives only with constant fixes of OPEC oil, there is little chance that the farmer's overhead will go down in the near future. According to the *Global 2000 Report*, we may well see a formidable new competitor in the world grain market in the future. Third World countries, applying Western agricultural methods and cheap labor to crop production, may turn to exporting cheap food even while their own citizens are going hungry.

Another problem is more biological than economic. Much of the Green Revolution's success has rested on genetic breakthroughs that have provided our farmers with more productive, disease-resistant crops. Many of these genetic infusions have come from unique domestic strains or from wild plants closely related to our domestic species. Unfortunately, the success of our modern hybrids is driving many older domestic strains into extinction, and the quest for more timber and farmland in undeveloped countries is rapidly eliminating wild strains. Even with genetic engineering, we may have trouble maintaining the plant-breeding pace we have set for ourselves.

Then there is the soil itself. The Soil Conservation Service regards losses of more than five tons of topsoil per acre as excessive. Their technicians estimate that current U.S. topsoil loss averages nine tons per acre, nearly twice the erosion our farmland can sustain if it is expected to continue producing crops at present levels.

Salt build-up from excessive irrigation and loss of farmland to urban sprawl also continue to cut our agricultural potential.

A few developments in agriculture may ease the pressure on our farmland. Minimum tillage saves energy, helps conserve soil moisture, and reduces erosion. It may make an important contribution to the health of land and wildlife if the herbicides it requires don't create severe problems of their own. A handful of plant geneticists and ecologists are also working on new perennial crops and associations of more than one crop in a field, both of which would drastically reduce the need for cultivation and would save diesel fuel and topsoil. For the moment, however, the chances of a change from large monocultures of annual plants are remote.

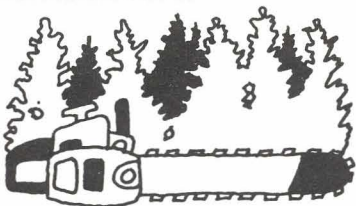


## The Mines

**T**here are two kinds of minerals: the ones we have in the U.S. and the ones we don't. Our experience with the latter variety has been hard since the 1973 OPEC oil embargo. Actually, our continent is a treasure trove of minerals, but no single continent could begin to hold enough of all the minerals we need. Some, like titanium,

chromium, and industrial diamonds, are not particularly common anywhere, and the appetite of the industrial nations for these and other scarce minerals has put a handful of Third World countries in the luxurious position of being able to name their own price for the special strategic mineral they are lucky enough to have.

The international oil situation has encouraged federal officials to consider our overall energy supply, and their analysis is surprisingly optimistic, mainly because of extensive North American coal, oil shale, and uranium reserves. We're pretty well set for iron ore, too, although we're short of many trace metals that are required to make steel. The problem is that we have been calling on all these reserves with increasing insistence over the last century. As long as we are committed to expanding the gross national product, we are bound to need more energy—the two have been consistently linked ever since our economists first dreamed up the GNP. The same can be said for raw materials like iron. Even if we don't choose to continue the spiral of luxury consumption we have been enjoying, there are those fifty million new citizens to consider. All of them will expect the same standard of living their grandparents had in the halcyon Sixties. The demand for the raw materials needed to build that standard of living will become more intense; costs will escalate, and the pressure to set aside expensive environmental restraints on strip mining and mineral processing may well override the conservation ethic.

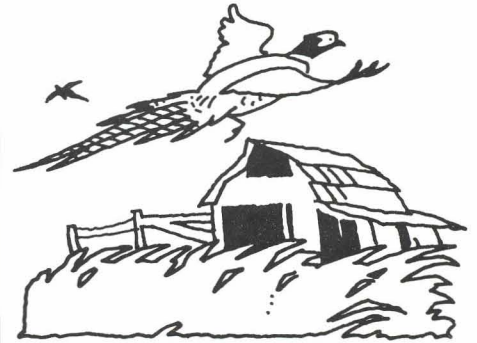


## The Forest Primeval

**T**he most frightening threats to the world's timber are surfacing in tropical countries where farmland is in great demand and in severely overpopulated regions where families fight over firewood rights. Somewhere in the 21st century, the loss of tropical forests will have serious repercussions for industrialized countries in more temperate climates. The release of the carbon tied up in these immense tracts may well affect global climate late in the next century, and the loss of thousands of species which will not survive the clearing may deprive agricultural and medical research of useful materials. The changes in our own forest over the next thirty years may be almost as profound.

The U.S. has about 500 million acres of productive forest. *The Global 2000 Report* estimates that demand for wood will increase by one or two percent per year between 1970 and 2000 and that, by the turn of the century, our current rate of forest growth will probably not meet annual demand. American forestry experts are taking a leaf (if you'll pardon the expression) from the volumes of research compiled by Green Revolution plant geneticists and working on new high-yield timber strains which, when combined with new techniques of silviculture, should boost timber yield on our forest lands. On the negative side, the same problems that have dogged the agricultural revolution—diseases, pests, increased erosion, decreased ecological diversity—are looming in the future for foresters. In fact, problems with diseases and pests may be far more serious in timber monocultures than they have been

in annual crops like corn because even the most vigorous stands of super trees will take forty to sixty years to mature, a lot of time for infections to seek out the trees and gain a foothold.



## Wildlife in the Garden

**L**ike any other twenty-year projections, a prediction of the condition of North American wildlife is uncertain at best. Still, the outline of increasing land use pressure contained in the *Global 2000 Report* has a ring of truth. If the turn-of-the-century landscape turns out to resemble the projections, it isn't too hard to guess at the condition of our wild places and the wild things that depend on them.

The most critical threat to wildlife habitat is the combination of population and level of consumption. We can congratulate ourselves on our modest population growth, but that advantage is largely offset by the size of our appetites. Adding an American to the world's population costs twice as much grain as adding a Frenchman or Briton; we also use two to three times as much energy and twice as much water as most western Europeans.

The American diet is wildly

luxurious and promises to become increasingly expensive. It takes an average of eighty gallons of gasoline to raise an acre of corn, most of which is used to finish beef cattle. We have been boosting our agricultural productivity by investing more energy in it, but the investment is no longer paying the dividends it did thirty years ago. Each additional gallon of gas we put into farming returns a smaller increase in production. The upshot is that the American farm economy may not be in any better shape in 2000 than it is now. The black ink in the farmer's ledger will be more than eaten up by the red ink of his gasoline, fertilizer, and pesticide expenditures.

If current land use is any indication, we can expect most farmers to respond to this economic pinch by trying to out-produce their neighbors, the worst possible course of action. The surpluses we will accumulate as a result will probably find no more international market in 2000 than they do now for two reasons—first, there are few foreign consumers who can afford to pay anything like parity for a bushel of wheat or corn; second, with so much talk about the use of food as a weapon, the Soviet Union and mainland China will be reluctant to place too much trust in the American grain market.

The ongoing push for farm efficiency will probably continue at the expense of shelterbelts, fencerows, marshes, and marginal land. Irrigation development, which has resulted in massive wetland drainage and aggressive irrigation ditch and reservoir construction since before 1900, will make even greater demands on our water resources. Farmers will be using an estimated 95 billion gallons of water per day by 2000, a hefty increase from the

already substantial 88 billion gallons per day they were using in 1975. Combined with increased water use in steam electric generation and manufacturing, this immense agricultural water demand will lead to even more stringent water management. We have channelized and diked our rivers into submission already; our thirst in the 21st century threatens to wipe them out altogether, leaving us with watercourses like the Arkansas River in western Kansas, nothing but dry sand and irrigated fields. The impact of such changes on river-loving fish species will be immediate and profound; the effect on land animals like deer, turkeys, raptors, and songbirds will be less apparent but nearly as severe.

The lion's share of land and water conservation is funded by the public through state and federal agencies. With so much pressure on the farming sector, conservationists can probably abandon any ideas they may have had of re-instituting a Soil-Bank-style set-aside program which would idle farmland for more than a single year. The USDA and most farmers will want the ability to move in and out of set-aside contracts from one year to the next, depending on the market. Many of the shorter term conservation programs currently available through branches of the USDA have little value for wildlife, but the federal agriculture program is still the best hope conservationists have in the Midwest's grain belt. No other program, public or private, shows any promise of bringing enough money to bear to protect rural soil, water, and wildlife habitat. Unfortunately, as the cost of food and other commodities goes up, the average American isn't likely to support the tax increases that will be necessary to support

agricultural conservation measures even at the current inadequate level. The budgets of the Soil Conservation Service and Agricultural Stabilization and Conservation Service may very well be cut when they most need to expand.

The nation's conservation budget will be strained in other sectors as well. According to the projections, we are facing a massive shift in energy sources in the near future. Coal, oil shale, and uranium, three minerals we have in abundance, will play increasing roles in our energy budget. We've been spoiled with oil. It's not only been cheap but easy to get out of the ground and fairly clean when burned in properly designed engines and furnaces. Coal, oil shale, and uranium mining, on the other hand, can do considerable damage if the mined land isn't reclaimed. Coal slurry pipelines and oil shale refineries both threaten to make large demands on an already overtaxed western water supply. Coal is also a notoriously dirty fuel. Particulates from coal degraded life and threatened health in many industrial towns through the 1930s, and coal sulfur emissions have been strongly implicated in the Northeast's acid rain debacle. Uranium energy generation is risky at the plant site and creates an almost impossible waste disposal problem.

We can compensate for most of the disadvantages of these fuels (with the possible exception of uranium) with carefully researched reclamation techniques, air scrubbers on smokestacks, and a whole spectrum of other technological band-aids, but they will all be expensive, and the bulk of the cost will be borne by the American consumer/taxpayer. In the tight economic times that appear to lie ahead, support for what many people see as



environmental foolishness may be hard to come by, especially if it is costly. Without it, we will see large tracts of land stripped of their topsoil and rendered sterile, streams either polluted with run-off from mine tailings or sucked dry by the demands of slurry pipelines, pristine wilderness lakes transformed into basins of sulfuric acid, and the air of our cities so saturated with particulates that an executive's white shirt will be dirty gray by quitting time. The loss of habitat brought about by these changes won't be overwhelming in itself, but, combined with other inroads we have made in wild places, it will perceptibly reduce numbers of all wildlife and may result in the extinction of some rarer species.

Of all the habitat types in North America, forests are the hardest to manage or regenerate simply because trees take so long to grow. Other habitats may support larger numbers of wildlife, but, on the average, woodlands support a greater variety. A forest offers more levels of vegetation and a larger number of niches as a result. Many of the animals that were specifically adapted to life in North American forests have long since disappeared along with the virgin timber they occupied; a few, like the ivory-billed woodpecker, Bachman's warbler, and fisher hang on. Hundreds of other more common species also depend on tracts of timber. Since the beginning of the new wave of environmental concern in the late Sixties, great strides have been made by foresters on both private and public lands to manage timber for the welfare of wildlife as well as trees. The demand for wood fiber in the 21st century will test our commitment to timber conservation.

The continent's forests as they are managed today do not yield enough wood to satisfy projected demand in the year 2000. Foresters are well on their way to blowing the lid off traditional timber production levels but only by creating even-age stands of genetically manipulated trees, groves without flowers or understory where the only sound is the wind in the branches. Decisions concerning forest management are among the most pressing we face since, even with super trees, foresters need to plant now for the demands of the next century.



## The Upshot

If the demographers and statisticians are right in their prognostications, North America will lose a large and vital part of its wildness in the coming decades. Some wildlife will survive in spite of us. Game birds like the pheasant and hungarian partridge, mammals like the whitetail deer, have an uncanny ability to take advantage of the modifications we make in the land. Even so, hunters of the future may well look back to the middle of the twentieth century as the real "good old days" of wildlife abundance. As for nongame, we can expect more house sparrows at our bird feeders, fewer chickadees and goldfinches; more crows along our highways, fewer ferruginous hawks and kestrels; more house cats along farm fencerows, fewer dickcissels

and upland plovers.

Having made these gloomy predictions, I'm hungry for a bright spot, and there are at least two in the *Global 2000 Report*. The first has to do with the nature of any projection. The experts who contributed to this and other studies of future environments freely admit that it's dangerous to carry current trends to their logical conclusions. People often change their minds after they've seen the consequences of earlier choices. The American public has already begun to back away from many of the insults they've dealt their environment. There are cynics who say that the environmental awareness of the Seventies was only one of many luxuries we found we could afford and that it may be one of the first we unload when times get hard. We'll see. The real question is what we consider "hard times." According to the statistics, we consume far more of everything than our counterparts in other developed countries, and that is good news. It means we've built a lot of slack into our system, most of which can be deeded over to the environment without causing a perceptible disturbance in our daily affairs.

On its surface, conservation is a magnanimous concept. We imagine ourselves caring for the land just because it is the right thing to do. Of course, there's nothing selfless about it; we need to conserve natural resources, including wildlife, for the most selfish of reasons—we need them to survive. And short of life and death, there is another good reason. Braided up in our wild places is another precious resource, the most delicate, most transient of all the riches we've found on the continent—human happiness. If we continue as we have it will be our first and most irreparable loss.



*Kansas forbs save the best for last  
pastels for fall*





Ron Spomer



Lloyd and Sylvia Brockus





# the bobwhite bounces back

Roger Wells

When temperatures drop to zero, snow piles higher than the hood of your truck, and winter winds rage across the Kansas plains, most of us are quite content to curl up by the fireplace, warm drink in hand, and watch a good Saturday football game. A man has luxurious options—wildlife doesn't. Bobwhite quail are an excellent example of a species that can be affected dramatically by a period of prolonged snow and cold. Populations can be reduced by eighty percent or more in one winter alone. However, nature has bestowed upon the species the ability to reproduce at high rates in order to exploit unfilled habitat even after what would seem to be devastating losses. How do bobwhite manage a comeback? Consider a hypothetical covey in an average eastern Kansas quail covert.

In the early winter of 1978-79, the covey, which averaged about fifteen birds in size depending upon the comings and goings of various individuals, was already made up of birds from a number of different hens'

Photo by Ron Spomer



clutches. The young had followed their own parents for the first few weeks but soon had come in contact with other families of quail with whom they mixed and exchanged. The season had been pretty good to them overall. Previous winter snows of ten inches or more had left the mother hen with few reserves, but she was able to recover nicely once the warm breezes of May stirred the land. Some of the other quail in the area had had trouble coping with the snow during the previous winter and hadn't survived. In fact, for every six birds that were around in April 1977, only five adults were present to start off the 1978 breeding season. And the cold April weather hadn't helped things, either. Some birds that had already paired were fooled by an early April warm spell and started courtship away from the main winter covey. These were

soon brought back to the fold when a wintery blast came in mid-April.

Once things really got rolling, the hens found conditions very much to their liking, and the annual miracle of reproduction went well. The prolonged hot and dry conditions of July, August and September had only meant that the young brood, with the adult hen and cock for protection, didn't have to cope with summer rain storms. The commandment "Thou shalt not get wet while cloaked in down" is well known to all young quail worthy of their wings; but that didn't seem to make much difference this summer because there just hadn't been many hard summer thunderstorms. The grass didn't grow so tall and the sunflowers that should have splashed the land with yellow in late summer were weak of bloom, but what matter is that to a little quail? The sparse growth only made it easier to follow mother.

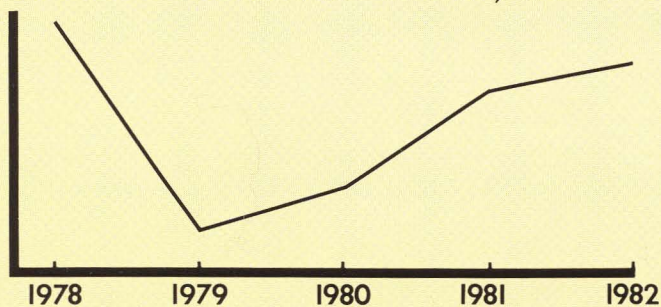
As summer turned to fall, the young



The winter of 1978-79 was disastrous for most Kansas quail. A combination of deep snow and extended cold claimed many birds, and the breeders who survived were in poor condition and did not fare well during nesting. But it takes more than one winter to keep quail down. As the graph below shows, the birds have taken advantage of mild winters, favorable springs, and unoccupied habitat to make a sustained recovery. (Photo by Lloyd and Sylvia Brockus)



October Bobwhite Index, 1978-82



and growing chicks took on the plumage of their parents and wandered along the hedgerows and fence lines of the land they had grown to know very well. Occasionally, they would meet other broods along the paths and, after a little chattering and sparring, would be on their way again, sometimes with a new partner or two from the other family.

Of the sixteen young that had hatched in mid-June, only twelve were still to be found by fall. One had lost his way in heavy grass when only three days out of the egg and had never returned to the brood. A second, ignoring the warnings of the hen, had dallied too long in an open field (probably in pursuit of some juicy insect) and had fallen prey to a swift Cooper's hawk. A third was caught by the local raccoon and the fourth, while testing its wings one day, had collided with a hedge tree and ended up with a broken neck.

Quail know little of (and couldn't care less about) governors and game commissioners and wildlife biologists, but they soon come to know well the man who comes to their land with gun in hand and dog at heel. With more quail in the country this fall than any of the past half-dozen years, there were also more hunters around than usual. But here again, the wisdom of the adult pair paid off. When the car door slammed and men started yelling at their dogs, the old birds knew that something was astir and took the covey toward better cover. As the hunters approached, the quail sat dead still hoping to elude their pursuers, but one dog was too good. Now the covey's only hope was to take the shooters by surprise with a whirr of wings. As if by secret message, the whole group sprang into the air at once, wings beating, hearts pounding, wishing to be elsewhere—and quick.

And so went the fall and start of winter. Once in a while, the covey would have to play the same game with different men and different dogs, but the outcome seldom varied. By the time all the shooting was over, there were seven birds remaining of the original brood and those had joined another bunch that lived in the same hedgerow to form the group of fifteen.

By now, far more serious matters than hunters were bothering the quail. Only a few days after the winter solstice, a storm left snow that was head high to a bobwhite.

The sparse, drought-dried vegetation that had been so welcomed the previous summer now blew down or was covered with driving snow. Not only was finding a safe place to hide a problem, but finding enough food became harder every day. The adult hen, whose mate was already gone, was getting old for a quail. Average lifespan for a bobwhite is only about eight months. She had already survived one winter in the wild—to outlive two just wasn't in the cards. She couldn't forage as well as her young progeny, and the snow and cold were draining her. She hadn't put on the stores of fat as the



chicks had because she had cared for the chicks while at the same time growing a new set of feathers in late summer. Now, as the winter dragged on and zero degree days became common, she would be the first of several to succumb to the worst winter of the century.

The death of a quail in snow and cold often comes easily. As the birds searched far and wide—even outside their own home territory—for whatever seeds or grain could be found above the snow, their energy demands went up. That became the problem. Just to keep going during the day, the birds had to feed continually. Their crops emptied every hour and a half and, just to keep warm, they had to find more food. Even those that found the pile of grain spilled from the fall harvest weren't out of the woods. They were not physically able to eat enough in one day to make up for the one-fourth increase in energy that was required to survive long, cold nights on the snow. To make up the difference, their bodies burned some of the fat that had been stored during the warm days of fall. During any other winter this "energy in reserve" would have been more than sufficient to see the birds through a few weeks of harsh weather. But this wasn't just any other winter. This was a killer. Week after longer week, the snows and cold persisted. The quail were being drawn to the bitter edge of survival. Playful flutters and flights or mock battles become things only in memory. Now was not the time to waste valuable calories going through foolish activities such as those.

Some birds of the covey, one young male in particular, seemed to be able to get more energy out of what they ate than did the other birds. Though they were also thinner than usual, their metabolism allowed them to make it through just a little better.

Others were not so lucky, like the adult hen. Now after three weeks of burning more calories per day than she could make up for by feeding, she was on the razor's edge. At less than one-half her normal body weight, she was unresponsive and weak. She had followed the covey through the long cold days and now, as evening grew near, joined the others in their usual roosting disc. Tails touching, all facing outward and in a spot where overhead obstructions to flight were minimal, the covey settled down for the night. The hen was cold and fluffed her feathers in an attempt to trap air warmed by her body. But her body had no warmth. She grew colder and colder until, at some critical moment when her body temperature dropped below the point of no return, she died, very peacefully, in her sleep.

Tens of thousands of quail would die this winter just as the old hen had. And the losses weren't confined to the adults, either. Of the covey of fifteen, which was already made up of two groups that had totaled thirty in late June, only six would live to feel the warmth of spring.

The long, long winter hung on until late April when at last the seige was over. Thin and weak from the battle, the small group of six went through the motions of courtship and mating. In a normal spring, the pairs would have been forced to secure and protect a prime nesting spot from invasion by other quail traveling through. Some of these wanderers have been known to travel several miles along the fencelines, roads, and hedgerows in search of new territory. But there was no worry about that this spring. Most quail that survived the winter had no need to search for uninhabited quarters—quality nest sites went quailless.

The hardy young male in the covey was stimulated by the lengthening days of the season. Something inside of him told him that now was the time to announce that his mate and all the land over which they could wander were his—a feifdom that no other bobwhite male could enter. But his corner post proclamations went unheard. Nowhere in ear shot was another male to be found. All others had moved on to their own prime territories on the next farm and didn't care two whits what this male was saying. So, after talking to himself for a few days, he finally settled down to business at hand—defending the hen and helping rear a family.

The hen delayed her breeding a couple of weeks in order to gain much needed weight, and only laid about eleven eggs when she finally did nest. That was one-fourth fewer than normal. Another pair on the adjacent farm had not even been this fortunate. Their clutch had been lost to a skunk walking the fencerow at night. Normally, this would not be an insurmountable problem, but this year it was because the hens just didn't have the energy reserves that it takes to reneest. As a result, that pair went broodless all summer. In fact, during the summer of 1979, there were only four

*Unlike pheasants, quail have trouble digging to food through deep snow. Without the calories from fat- and carbohydrate-rich grains and wild seeds, the birds may die of hypothermia in a matter of days. (Photo by Ron Spomer.)*





broods to be found where there had been ten the year before. With brood sizes averaging one-fourth smaller and extra adults roaming around, the local population not only was spread thin, but was made up of more old birds, too.

The fall had come and gone. There were hunters afield in 1979, but only about three-fourths the usual number. Many of them found that there just weren't enough quail to make it real fun anymore. On the average, they found only about one covey per mile of walking. Others found more coveys but let them go unshot or shot only on the covey rise. They thought the birds they left would live to spring. That was not so, however, since most of the adults died anyway and many young were lost to other causes.

The little male had reared his brood alone that summer. His mate had been lost to a predator shortly after the brood had hatched. As fall had approached and coveys began their annual shuffle to locate prime wintering sites, many birds moved into coverts which had gone completely unoccupied all spring and summer. There were less than half as many birds in the country as there had been the year before.

The winter during that January and February of 1980 was a real blessing. Snows were never prolonged or deep; temperatures were down to zero only briefly and, in general, food was plentiful. Still, only seven birds out of twenty lived to the spring. Normally, at least another pair survive. The problem was the high number of adults. When the time came in April for pairs to form and the ritual to be renewed, there were even slightly fewer birds to be found than after the bad snows. But there was one very big difference this time. All the birds that remained were in excellent condition.

Though he did not survive the winter, the little male left behind a new pair who more than met the challenge. By mid-April, the pair had broken away from their covey and had gone off to search for a suitable home of their own. Both were fat and healthy and

ready to replenish the world with quail. Other quail in the community had already started nesting by April. In fact, about ten percent had their clutches on the ground by the end of May. A few unfortunate hens lost their first clutches, but, because they were in such good condition, they had no problem reneating.

Our new pair was of the average sort and didn't start egg laying until about April 5. Within eighteen days, the hen had completed her fifteen-egg clutch which was well hidden at the base of a little blue-stem clump on the edge of the pasture.

Then came incubation. Often this is a very dangerous time for hens and eggs alike. Predators of all sorts take pleasure in dining on "eggs of quail" and it's even better when the fare is "quail *and* eggs of quail." Also at this time, if the hen has been foolish in selecting her site to nest, the area she has chosen can become what seems to her a public thoroughfare. Farm trails are little used during winter but rumble with heavy machinery through spring and summer. Eggs placed too close to the edge can quickly become scrambled.

The 1980 nesting was good to most hens. Although the numbers of adults was even lower than in 1979, the number of broods in the country almost doubled. It might have been even better, too, if a blistering heat wave hadn't set in during late June. By July, a real drought was on. Where these quail lived, there were eighteen consecutive days of temperatures over 100°. Though our hen and three-fourths of her neighbors had already hatched their broods by this time, some were still trying to reneat. The high temperatures started incubation in some eggs even while the hens were laying the clutch. Then, at night when the eggs cooled down, the new embryos died and the hens, not knowing what had happened, went on as if nothing had happened, never to hatch a full clutch. With others, the heat became so intense that developing embryos died in the egg only days away from hatching. Here again, the hen knew nothing of this and contin-

*Even in years of low quail populations, hunters have no effect on statewide quail numbers. When the birds are scarce, hunters quickly give up the season simply because the return isn't worth the effort. (Photo by Ron Spomer.)*

ued to incubate until at last she had to abandon the eggs.

The heat caused some problems for our hen and her chicks, too. In less extreme weather, they would have been content to get their daily water from the drops of dew on leaves at early morning. On these days, however, there was no setting of dew and no available water. Some birds resorted to visiting the local pond. Others had to make up their water requirements from the moisture found in their insect diet. Though none were known to die from lack of water, it must have become an inconvenience.

By fall, the country had seen the biggest explosion of bobwhites anybody could remember. It was without doubt the largest increase since biologists had started keeping tabs on them in 1966. By the time fall and early winter had rolled around, there were thirty-four birds where only ten had been found in April. But remember, those ten in April were scattered over a wide territory, and even with the increase, total numbers were well below average.

The 1980 season saw little more quail hunting pressure than had occurred in 1979. There were again about a quarter fewer hunters than in normal years. In fact, many coveys never even saw a dog or hunter all season. The rumor was out that quail were still hard to find and that was enough to keep some of the softies at home. Our pair of birds managed to bring eleven young through the dangerous period (summer and fall). By winter some of those eleven had scattered to join other far-off coveys, and the pair had, in turn, acquired some newcomers of its own.

The winter of 1980-81 proved to be a second mild one which didn't put any unusual stress on the expanding population. A week of snow cover had the birds worried for a little while, but that was soon chased away by a spell of clear, warming days. For every 100 birds that went into the winter period, forty-one lived to spring—just about average for bobwhites.

When the spring of 1981 finally arrived, there were fourteen bobwhites where ten had been the year before. The birds that made it through the winter, including a ten-month old hen from our original lineage, were in very good condition again.

In April the hen and her mate broke off from the rest of the group and started to spend more and more time on their own. There seemed to be no lack of quail in the country. The routine was typical of a good breeding season in a good quail year. The male could easily hear several other birds on his farm and the adjacent farm, and he responded vigorously. Ever vigilant, he awakened at the first signs of light in the morning to proclaim to the world, "I am here, don't you dare come

this way"—the meaning of his call being thus interpreted by the other quail in the area.

The hen found nesting conditions very much to her liking. The weather was perfect with enough rainfall to get cover growing well without drowning nests. Though this hen had no problems since she was wise in selecting her nest site, others lost their first clutches to early torrential downpours. By the second week of June, the hen had fourteen down-clad chicks running around. The male had already forgone most of his early morning challenges to would-be invaders and taken up the task of helping rear the brood. Some birds in the area already had chicks that were six to seven weeks old by the time our pair had hatched theirs. In fact, four out of ten hens had hatched their broods before the average mid-June date. During the mild, wet summer of 1981, there were newly hatched quail in the area for over thirteen weeks during spring and summer. As the summer months went by, the young quail grew rapidly on a diet of grasshoppers, beetles, other insects, and seeds. Abundant rainfall during the period resulted in a luxuriant growth of vegetation. To a young bobwhite trying to keep from being a meal for some predators, this growth was welcome. Survival of many broods was much improved with the protection of the grass and weeds.

By the time October frosts had rolled around, the young quail were fully feathered and had developed the instinct to covey. They had gone through numerous minor incidents with a variety of the predatory species that included this farm in their wanderings. Several times coyote pups had burst into the covey hoping to nab an unsuspecting bird, but it seldom worked. The watchful parents saw to that.

Bobwhite production and brood survival were so good in 1981 that a record was set for the second year in a row for overall summer increase. Where ten birds were found in April, there were thirty-eight in the fall, fifteen birds better than average. Broods and coveys were found almost anyplace they had been before the devastating snows of 1978-79. With three seasons of reproduction, the quail population was back to normal.

Last fall's quail remembered nothing of what had happened to their ancestors only three generations earlier, but something in the genes they had inherited from the survivors of those storms pushed them to prepare for winter. Feeding on an abundance of wild seeds and waste grains from domestic crops, the birds grew fat, laying in stores against the hard times ahead and looking forward to another spring when they would once again heal their wounds and fill the land with the call of quail. □

*Roger Wells is the Fish and Game Commission's small game project leader. He is in charge of interpreting data collected during five annual quail population surveys.*

*Freelance photographer Lloyd Brockus (page 28) is a frequent contributor to KANSAS WILDLIFE.*

