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PRIVATE LAND, PUBLIC TRUST

There's been some minor unpleasantness over in Wilson County recently. A small group of farmers is upset with the way the state's deer permits are issued. The way the farmers see it, they provide food and cover for the deer on their land and ought to be able to shoot one of them without paying for the privilege. Until they get free permits and "a little more consideration" from the Fish and Game Commission, they've vowed to keep hunters from town off their land.

Their action brings up a couple of interesting points. The first is whether they have really raised any deer or not. Deer and most other wildlife in Kansas do, in fact, depend on the food and cover that exists on private land, but it's stretching things a long way to imply that many landowners actually *provide* this habitat. There are a few farmers around who care enough about the wild residents on their property to consciously set aside a piece of cover, but such men are rare. On most farms, habitat and the wildlife it supports are accidental leftovers of agri-business. It's a shame that we can't recognize those few landowners who manage for wildlife as well as profit. Unfortunately, there is no way to pick them out of the majority, and if we did chances are that most of them wouldn't really care about the

cost of their permits. Compared to the efforts they make for wildlife in their everyday business, a few dollars for a deer tag just don't amount to much.

A second point raised by the Wilson County faction is far more important than the first. These landowners are essentially saying they own the deer on their land. The law says differently.

The laws that define wildlife ownership in the U.S. are in sharp contrast to the legal framework defining such matters in the Old World. In Europe, a man takes title to everything when he buys a piece of land — soil, water, timber, grouse, and red deer. Maybe it's not too surprising that fugitives from that system, many of them former poachers on the great European manors, reserved wildlife for the public.

The concept of public wildlife on private land leads to a rat's nest of complications. While our forefathers kept game animals for the entire citizenry, they failed to recognize the link between wildlife and the land. As a result, they made no laws that provided for conservation of habitat. The private landowner was left to play host to a menagerie he did not own.

In spite of the difficulties of the system, however, it is a reminder of the stake we all hold in the land. Of all the resources on the continent, the unparalleled fertility

of our topsoil may turn out to be the most unique and valuable. The American farmer may hold title to the ground, but the productivity of that ground is a national treasure he shouldn't control by himself. The urban ninety-eight percent of us depend on his stewardship, and the only real barometer we have of the quality of his work is wildlife. What he accomplishes in the long-term interest of the land also benefits the living things on the land, human as well as non-human.

Nothing in the Kansas Annotated Statutes requires the farmer to take his stewardship seriously. As the owner of the dirt, he can rape or nurture as he sees fit, but I'd like to think that most farmers are on the land for reasons other than making a profit. We've heard talk recently about the importance of agriculture to the strength of the nation and the starving masses of the world. Hopefully, that rhetoric reflects the farmer's moral commitment to his trade. If it does, we may be able to convince a few more farmers that healthy land and healthy wildlife go hand in hand. Caring for both is part of the commitment of farming.

We have more than enough landowners. What we need are a few more land holders — people who recognize that control of the land carries with it a public trust.

Kansas Pheasants: going down, going up, going nowhere

Randy Rodgers

"Flushed from Cover—Ringneck Pheasants" by Owen Gromme, courtesy of the artist and Wild Wings Gallery, Lake City, MN 55041

When I first began gathering information for this article, I thought it would be a fairly simple task. All I was going to do was lay out where changes in Kansas pheasant populations have occurred over the last fifteen to twenty years and briefly explain why. But, I soon realized that there was no simple "why" which could be applied to all Kansas pheasant populations. Each region has its own set of why's, some of which aren't fully clear even to biologists. What is clear is that our pheasant populations have undergone dramatic, often drastic change since the early sixties. These changes were probably occurring even before that, but we can't say for sure since we only began to follow our pheasant population trends in 1963.

The map shown (pages 6 and 7) gives an illustration of what has happened to our pheasants. In general, it shows that populations have declined in the west, but





are increasing in parts of northcentral and northeastern Kansas.

Sherman and Brown counties provide a good example of the opposite extremes of change in our pheasant populations. Sherman County, which borders Colorado, probably held the highest pheasant densities anywhere in Kansas in the early sixties, but it now ranks fairly low, having registered more than a ninety percent drop in pheasant numbers. In the northeast, on the other hand, Brown County has shown increases—more than 400 percent. In the early sixties, Sherman County had a pheasant density that was about thirty times that of Brown County. Today, Brown County probably harbors double the pheasant density found in Sherman County! To be sure, northeastern Kansas can't be considered our best pheasant range, but some of it is getting pretty darn good.

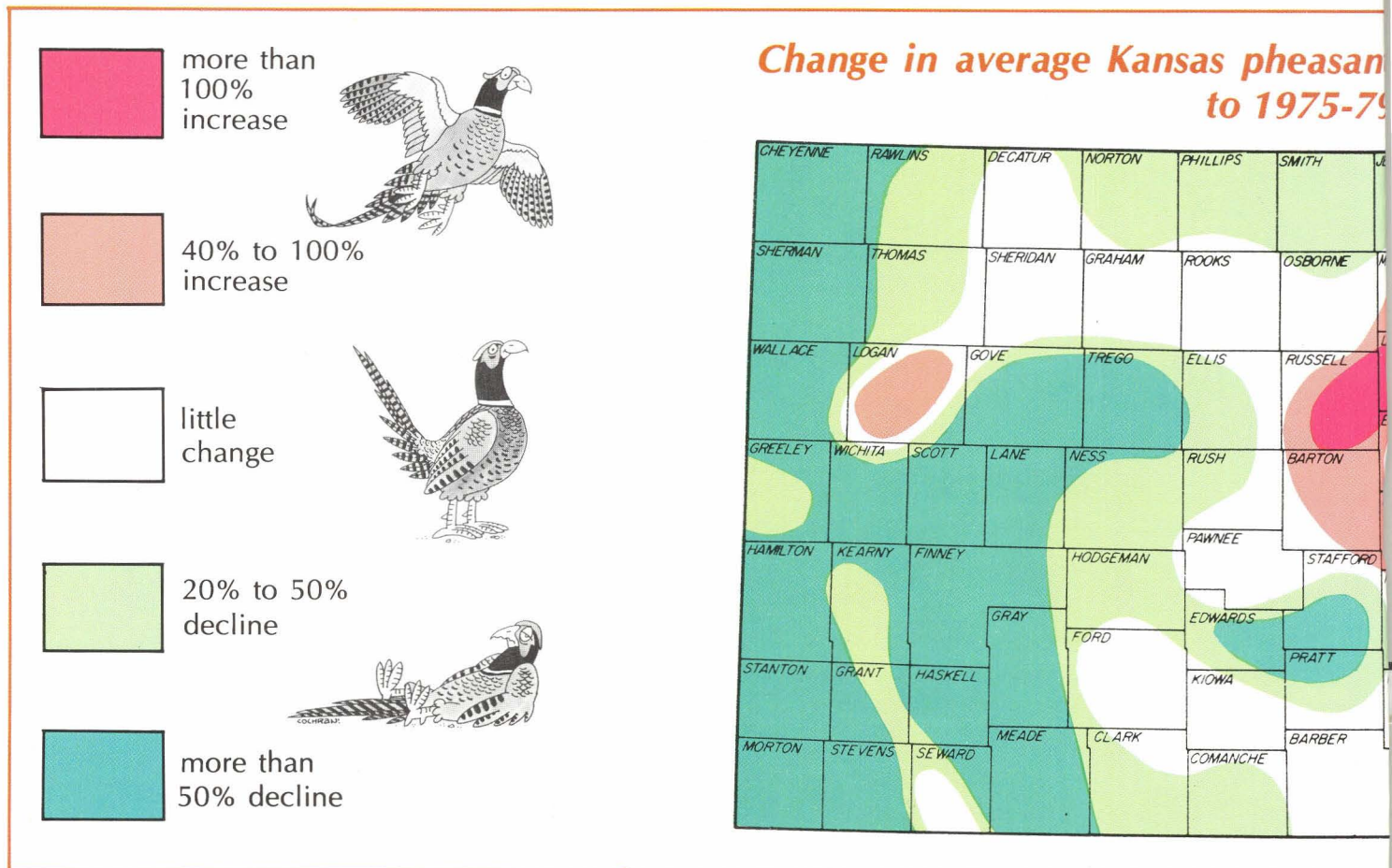
Just why are these changes occurring? For the most part, it's tied to agriculture. Pheasants are more dependent on man than any other Kansas gamebird. About eighty-five to ninety percent of a pheasant's diet is composed of wheat, milo, corn, or other cereal grains produced by man. Bobwhite quail and prairie chickens make use of these grains, but they can get along on other food sources. Pheasants can't. So, it's the presence of farms that makes an area livable for pheasants. Unfortunately, as we shall see, too much of a good

thing is no longer good. Let's take a look at the different parts of Kansas and see what's happened to the pheasants.

Western Kansas: GOING DOWN

As a wildlife biologist, I can't help getting depressed when I look at the figures for western Kansas. In a full seventeen counties, pheasant populations have declined by more than fifty percent since the mid sixties. Another eight counties are very nearly this bad. When you consider how many pheasants there were in the west in the fifties and early sixties, the loss is staggering.

Nowhere else in Kansas is it so clear what has happened to the pheasants. Agriculture has become too big and too intense. It seems ironic that the very feature which once permitted pheasants to thrive is the same element which has led to their demise. But, this is what has happened in the west. A pheasant's need for agriculture is, in a way, like a man's need for water. If he doesn't get enough he dies of thirst; if he gets too much, he drowns. So it is that our western pheasant populations are drowning in agriculture: not because of the crops themselves, but because crop fields and cropping practices are gobbling up other things they need in order to survive.



The loss of Soil Bank lands in the late fifties and early sixties dealt a devastating blow to pheasant populations here and all across the nation. These fields provided undisturbed cover for the critical periods of nesting and brood rearing. But, the loss of the Soil Bank program has been followed by a series of factors detrimental to this bird and other wildlife, and they have led to a continued decline.

A short time back, I had the opportunity to examine some photos of western Kansas which were taken by the LANDSAT earth resources satellite. I was amazed at the tremendous size of the fields. Some fields were as much as a mile wide and two or three miles long! Pheasants, like all living organisms, do best when all their life requirements can be found in a relatively small area. They cannot be expected to move miles to find food and then miles back to find cover any more than we can be expected to eat only in California and sleep only in New York. The number of places which provide all of a pheasant's needs in a fairly small area decreases tremendously when field sizes become so large. As the number of these areas declines, so go the pheasants.

The move toward clean farming which is so prevalent is a critical factor in the loss of our western Kansas pheasants. Weedy fencerows and field corners have all but disappeared in many areas and only the road ditch

is left to provide nesting habitat. In some areas, even the roadsides are being turned by the plow, all for the sake of a little more wheat. Often, ditches are burned in fall, leaving nothing for a hen to conceal her nest in the following spring.

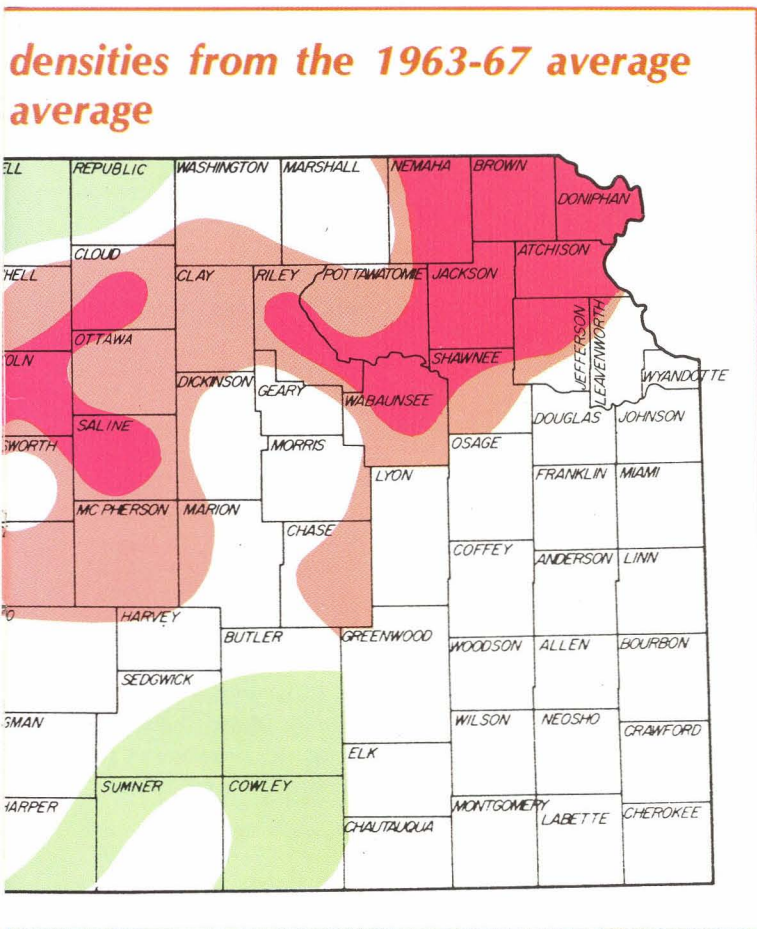
The nesting drive is so strong in hen pheasants that they will build nests in the relatively poor cover of wheat stubble or even green wheat when forced there by a shortage of better cover. Spring plowing has always made stubble nesting risky, but changes in tillage practices have made this more treacherous than ever. Today's powerful tractors make it possible to pull gangs of implements that extend well to either side of the tractor and to pull them faster than ever before. At least in the past, the tractor may have frightened the hen from her nest before the disc destroyed it. Now a tight-sitting hen may watch the tractor pass alongside only to be swallowed up along with the nest.

In the early sixties, the popular use of undercutters (also known as sweeps or V-blades) reduced this problem somewhat. This implement slides under the surface of the ground, cutting the roots of weeds thus preserving soil moisture and leaving the stubble on the surface where it can prevent soil erosion. It also allows some nests to survive with the stubble sufficiently intact that the hen will return. In the late sixties, a rotary hoe attachment became common on undercutters and can be found on most units in use today. Unfortunately, there is no chance of a nest surviving a pass with these "improved" undercutters. Likewise, no nest will survive an offset disc which has become the most popular and universally used farm implement.

Probably the most noticeable change in the western Kansas landscape has been the tremendous expansion of irrigation. Corn is the main product of Kansas irrigation and it's a good pheasant food. This would seem beneficial, but it really isn't since food has probably never limited pheasants here. Corn is useless for nesting, only of modest value as brood habitat and marginal as winter cover. It's useless for cover if it's cut for silage. The fairly common practice of fall plowing eliminates even the waste kernels which fall to the ground.

Irrigation in the west has more than doubled the production of alfalfa which is well known as an "ecological trap." Alfalfa attracts the pheasant hen by providing excellent nesting cover, but the nests are nearly always destroyed before hatching when the alfalfa is cut.

The impact of the heavy use of agricultural chemicals on pheasant populations is not completely known. Some insecticides are potentially toxic to pheasants, but deaths through direct exposure are not thought to be common. We do hear an occasional report of this in Kansas. Herbicides affect pheasants indirectly by killing the weeds which otherwise might have provided good cover.





"Gentle Touch" by Francis Golden, courtesy of the artist and Wild Wings Gallery, Lake City, MN 55041

When you consider all these problems affecting pheasants, one has to wonder why Logan County shows up as an island of increases in the midst of a group of counties which show strong declines in pheasant abundance. Several factors at least partially explain this. In the early sixties, about thirty-two percent of the farmland in counties around Logan County was cropped in any single year. This was probably almost ideal as these counties held excellent pheasant populations. The same figure for Logan County was twenty-seven percent. Today, this figure is about forty percent in the surrounding counties and thirty-one percent in Logan County. It appears that Logan County went from an agricultural intensity that was less than ideal for pheasants to an intensity which is about right today. The other counties went from "about right" to "too much." Logan County is also relatively free of irrigation and has actually shown a slight decrease in alfalfa acreage. The other counties are heavily irrigated and alfalfa has more than doubled.

Another interested "island" is found in Edwards, Pratt, and Stafford counties. Here the situation is reversed from that just described. This area shows about a fifty percent decline, while nearly surrounded by counties which have maintained their pheasant populations. The decline has occurred in a region of sandy soils and good groundwater supplies which has led to a sharp increase in irrigation. Agriculture has intensified substantially here and alfalfa, in particular, has increased by about ten percent since the early sixties.

Northcentral and Northeast: GOING UP

When the western Kansas pheasant figures become too depressing, I turn my thoughts eastward to lift my spirits. Much of northcentral Kansas has shown a marked increase in pheasant numbers since the mid-sixties. In fact, pheasant populations in Cloud, Lincoln, Russell, and Saline counties have at least doubled in that time. However, these changes shouldn't be misunderstood. These four counties held populations which were lower than surrounding counties in the mid-sixties and have advanced to about equal status with their neighbors today.

The reasons for this increase are less obvious than those which have caused the decline in the west. It's generally felt that pheasant increases in northcentral Kansas are due not so much to an intensification as a "spreading out" of farming. New crop fields are appearing in areas that once were blocks of solid rangeland. This encroachment is opening up new areas to pheasants by providing a suitable food source where once there was none.

Unfortunately, this increase in pheasants is not without cost. The spreading of crop fields into rangeland, while benefitting pheasants, may eventually

come at the expense of the greater prairie chicken. As more native grassland comes under the plow, prairie species will decline in numbers. This tradeoff has fostered the common misconception that pheasants and prairie chickens cannot co-exist because pheasants "push out" the chickens. Actually, there is very little direct competition between these species. The fact that prairie chickens do not survive well in good pheasant habitat, and vice versa, is the real reason they're seldom found together. Another plus for pheasants in northcentral Kansas is a twenty percent decline in alfalfa acreage over the last fifteen to twenty years. Nevertheless, the increase in pheasants here is probably not due to substantially greater numbers of pheasants per unit of habitat. Rather, it is the result of increases in the amount of suitable pheasant habitat.

Northeast Kansas is, to me, the most interesting part of the state relative to pheasant populations. In much of this area, pheasants are characterized not by a doubling, but by a tripling or a quadrupling in numbers. The increasing trend here apparently maintained momentum right on through the seventies. In 1971, about 76,000 pheasants were harvested in northeast Kansas; only seventeen percent of the Kansas total. However, twenty-two percent of the state's 1978 pheasant harvest was taken in the northeast—a total of 192,000 cocks! Part of this harvest may have been due to heavier hunting pressure, but it was largely the result of more birds.

The dramatic increase of pheasants in northeast Kansas is not as easily explained as the changes in western and northcentral Kansas. Agricultural changes, such as a forty percent decline in alfalfa acreage and a ten percent increase in crop acreage, may have helped northeast Kansas pheasants somewhat. Unfortunately, the increase in crops was probably more detrimental to bobwhite quail than beneficial to pheasants due to the loss of woody areas on which bobwhite are much more dependent. Nevertheless, I find it difficult to explain northeast pheasant increases solely on the basis of agricultural statistics.

There are several other areas in the Midwest which seem to be showing similar growth. Pheasant populations in southcentral Illinois have increased from a sparse scattering twenty years ago to good numbers today. The same has occurred in southern Iowa and northwest Missouri. The primary factor which seems to tie these pheasant populations together with northeast Kansas is that they all occur near the southern edge of the ringneck's range in North America. They are also all quite difficult to explain in terms of land use changes. Though it's mostly speculation, I think the growth in our northeast pheasant populations may be due mostly to changes in the pheasants themselves.

When you consider the amount of habitat available in the northeast, it appears that pheasant populations have never attained the potential density that the re-

gion looks as if it could support. Some factor or series of factors apparently prevented the explosive population growth experienced in many areas when pheasants were first introduced. We really don't know just what these factors are, but whatever they may be, it seems that pheasants are gradually adapting to them, thus allowing their numbers to grow. The possibility that they may not be fully adapted to some parts of their range shouldn't be too surprising. Pheasants are, after all, native to Asia and are relative newcomers to this continent.

Southeast: GOING NOWHERE

Though there are several examples of marginal pheasant populations in the Midwest which have shown substantial growth, there has been relatively little actual expansion of pheasant range into previously unoccupied areas. This is also true of Kansas. Some areas in the Flint Hills, such as Chase and Wabaunsee counties, had darn few, if any, pheasants twenty years ago but now support small populations. Nevertheless, the numbers in these counties are hardly what you would call impressive. It is possible that some further expansion into east-central Kansas may occur as pheasants gradually penetrate the "ecological barrier" created by the extensive rangelands of the Flint Hills, but this is uncertain.

What is fairly certain is that southeast Kansas is never likely to have a self-sustaining pheasant population. Several attempts have been made to establish ringnecks in the southeast, but each has met with total failure. People have speculated widely about this problem. Some of their ideas are a bit out in left field. However, there are several promising theories which have scientific backing.

Wildlife researchers have studied the question of why pheasants occur in some areas and not in others for many years, but definite answers have been elusive. Their ideas fall basically into three categories: land use, weather, and soil minerals. Admittedly, that doesn't narrow it down much, but it gets more interesting when you look closer.

Land use practices in southeast Kansas have been suggested as an explanation for the absence of pheasants. Probably the primary factor along these lines is the general lack of crop residue left in the fields following harvest. Wheat stubble is usually turned under soon after the combine leaves, thereby eliminating any chance that a hen pheasant could use it for brood rearing habitat. Similarly, the waste grain on which pheasants depend is made completely inaccessible by fall plowing, a common practice in the southeast. It has also been shown statistically that pheasants do not do well where a substantial amount of an area is in woodlands. The exact reason for this relationship has never been well established. While these factors are





courtesy of artist John Wilson and Wild Wings Gallery, Lake City, MN 55041

detrimental to pheasants, these birds have failed on southeast Kansas lands specifically managed for wildlife. So, it seems unlikely that land use is a significant factor preventing pheasants from establishing in the southeast.

Some people feel that higher rainfall may be important in preventing pheasants from establishing in southeast Kansas. It's been suggested that relatively frequent exposure of eggs to precipitation may kill them. It's also known that very young chicks are susceptible to chilling and death when they become wet. Certainly, hail and flooding can have severe impacts on pheasants though these normally affect only limited areas. Is rainfall the reason there are no pheasants in southeast Kansas? We can't be sure, but I doubt it. I find it difficult to imagine how rainfall could be so devastating to pheasants and not affect the thriving bobwhite population in the southeast. If there were any differences in this respect, one might expect the larger pheasant chicks to be more tolerant of chilling than bobwhite chicks.

Could temperature have anything to do with it? Southeast Kansas is generally the warmest part of the state. This holds during the nesting season when, for example, Chanute averages about four degrees warmer than Hays. In this case, there is some solid scientific information available.

In the late Forties, Ralph Yeatter, a biologist with the Illinois Natural History Survey, began to look at the effects of temperature on pheasant eggs. Based on clues he gained from field research, he suggested that warm temperatures during the egg laying period (when the hen is seldom at the nest) might reduce the hatchability of the eggs. Noting that bobwhites thrive further south, Yeatter conducted a series of experiments using both ringneck and bobwhite eggs. The eggs were subjected to temperatures between 73 and 88 degrees Fahrenheit for nine hours a day so as to simulate what actually occurs during egg laying. He found that these temperatures greatly reduced the hatchability of pheasant eggs, but had no effect on bobwhite eggs. It seemed he had learned something which explained why pheasants didn't succeed in southern Illinois even where land use was essentially the same as in Illinois' best pheasant ranges.

Though these results seemed to provide an answer, they don't account for the fact that good pheasant populations have established in warm places like extreme southern California or, for that matter, southwestern Kansas. But, Yeatter had an answer for this. He speculated that the ancestors of Illinois pheasants were of northern origin, whereas California pheasants were descendants of southern Asiatic populations and, therefore, more tolerant of warm temperatures. Since the North American pheasant population consists of a hodgepodge of races from all over Asia, this seemed entirely possible. So Yeatter tested eggs from Califor-

nia pheasants and found they were indeed more tolerant of high preincubation temperatures.

It's understandable that many people in Illinois felt the problem was solved and that all they need do to establish pheasants in southern Illinois was release California stock. This was done in 1956 and 1957. In the first year after release things looked promising. However, these populations eventually disappeared or dwindled to very low numbers and it became evident that high temperatures alone were not the reason that pheasants failed to survive in southern Illinois. This doesn't rule out that this may be a factor in southeast Kansas.

At about the same time Ralph Yeatter was conducting his experiments, a U.S. Fish and Wildlife Service biologist by the name of Fred Dale began following up another theory. He was examining an idea that had been suggested about twenty years earlier by the prominent conservationist, Aldo Leopold. Leopold had noted that the distribution of pheasants east of the Great Plains was generally restricted to regions which had been covered by the Wisconsin glacier about 10,000 years ago. He suggested some factor such as calcium which is critical to pheasants may have been deposited by the glacier. Encouraged by the apparent relationship and the fact that pheasants were thriving on the calcium rich soils of the plains states, Dale began experiments to demonstrate the importance of calcium to pheasants. This he succeeded in doing, particularly in regard to the need for calcium during egg production.

Dale's findings, however, didn't satisfy many biologists who pointed out that similar species such as prairie chickens and bobwhite also have a high calcium requirement, but have done well in areas where pheasants had failed. Dale explained this enigma by noting the food habits of pheasants. As I mentioned earlier, a pheasant's diet consists of eighty-five to ninety-five percent cereal grain. These grains are notoriously low in calcium. The diets of prairie chickens and bobwhites, on the other hand, include a large amount of forb seeds and green leafy matter which are both high in calcium. It's been demonstrated by studies in Missouri and South Dakota that pheasants can obtain only a small fraction of their calcium requirements in the foods they eat. Obviously, they must supplement their diet with some other source. This is exactly what they do by eating calcium-containing grit, particularly limestone. So, Dale's ideas remained intact and were even bolstered by this new evidence.

How could this possible calcium-pheasant relationship apply to southeast Kansas? Indeed, the soils of this area are quite low in calcium. In fact, the eastern Kansas pheasant situations bears considerable similarity to that in southern Illinois where the pheasant range is confined almost exclusively to the area that was once covered by the Wisconsin glacier. The soils

in northeast Kansas would probably be similar to those in the southeast were it not for the fact that much of northeast Kansas was once covered by the Kansan glacier. Due to this glaciation, northeast Kansas soils are notably higher in calcium than in the southeast. Nevertheless, they are still relatively calcium poor compared to soils of central and western Kansas.

The whole calcium theory seemed to fit until the early sixties. At that time, it was found by wildlife researchers in Illinois, Minnesota, and Missouri that pheasants are capable of specifically selecting grit which is high in calcium. They were found to be so adept at this that they could fully satisfy their calcium requirements from soils that were fairly poor in this mineral. Even during the egg production and chick growth periods, times when calcium requirements are high, no deficiency of calcium could be shown in pheasants taken from areas of calcium poor soil. This evidence appeared to disprove Dale's ideas and showed that a calcium deficiency was not the key to pheasant distribution.

But, the link between glaciated soils and pheasant distribution in Illinois was too strong to be left alone for long. In the mid-Sixties, William Anderson, also of the Illinois Natural History Survey, began to look more closely at the composition of Illinois soils. He conducted a series of tests which eventually examined soil concentrations of sixty-eight different elements ranging from aluminum to zinc. After all this laborious work, a new lead surfaced. Anderson found that concentrations of barium were many times higher in the soils from poor pheasant range as compared to soils from good pheasant range in Illinois. Not only did the soils from poor range have more barium, but so did the pheasants!

So what? Well, the "what" may be linked to the fact that certain barium compounds are highly toxic. In other words, Anderson suggested that pheasants in southern Illinois may actually be poisoned by the very soil they live on. And if they are not directly killed, they may be weakened enough that they are more susceptible to predators and disease.

But there still is a missing link in this idea. If barium is poisoning pheasants, why isn't it poisoning other birds? With a few more bits of information, the theory comes full cycle and winds up again linked to calcium. Research in physiology and nutrition has uncovered the fact that sufficient calcium in the diet can actually block the uptake of many trace elements like barium into the body. Birds like bobwhite and prairie chicken avoid any potential barium poisoning because their diet is normally high in calcium.

Still, why wouldn't the calcium that pheasants selectively take up in grit prevent poisoning? The answer is that it would if pheasants deliberately picked up calcium all year long. But, they don't. Pheasants only selectively pick up calcium grit when they have a high

requirement for it during chick growth and egg laying. Once pheasant chicks become full grown in late summer or early fall, their selection for calcium diminishes and the grit they pick up is merely for grinding food in the gizzard. With the calcium intake reduced, they then become susceptible to potential barium poisoning. Credence is lent to this theory by the fact pheasants from the poor Illinois range suffer an unusually high death rate at the same time the barium poisoning would be most likely to occur.

It's very tempting to accept this theory, but it really remains to be proven. It may be that this or a similar relationship is the problem in southeast Kansas. Ongoing research may someday provide the answers. There's a good chance that a combination of factors involving land use, weather, and soil composition are acting together to prevent the spread of pheasants into this part of the state. Whatever the case, it's not likely wild pheasants will inhabit southeast Kansas in the foreseeable future.

Kansas' Pheasant Future

Whenever you start speculating about the future of most anything, you're treading on thin ice. But, I've developed a habit of sticking my neck out, and I just couldn't resist doing it again.

As I see it, the prospects for the future of Kansas pheasants rest mainly on three factors: a growing human demand for food, a shortage of fuel, and dropping water tables.

If increasing demand for food leads to still more agricultural intensification, there is little doubt that overall pheasant populations will continue to decline, particularly in western Kansas. Even in the northcentral part of the state, where expansion of agriculture appears to have benefitted pheasants, further intensification of farming will probably make it only a matter of time before these ringnecks go the way of their western relatives.

The rapidly rising price of fuel will probably be of benefit to pheasants and other wildlife in the near future. Farmers are already finding that it's not worthwhile to disc under their wheat stubble in the summer or fall. The fuel needed to make this extra (and possibly unnecessary) pass over the field has become too costly. Pheasants use wheat stubble to satisfy several of their life requirements in western Kansas. Many farmers are looking more seriously at minimum tillage practices which leave crop residue on the soil surface nearly constantly. Unfortunately, minimum tillage generally involves heavy use of herbicides.

On the negative side, the energy crunch may have some serious detrimental effects on pheasants. If the demand for gasohol becomes high enough, the production of alcohol from grain will mean even more and larger fields. Alcohol production from crop residue

may encourage farmers to leave virtually nothing in the field for wildlife.

As the water table continues to drop in much of our west, it may force an abandonment of irrigation as we see it today. Many informed people expect a return to dryland farming to begin in as little as ten years. The high price of fuel to run irrigation pumps may even hasten this change. I think a return to dryland farming will be beneficial to pheasants, but it will most certainly have a major effect on the western Kansas economy.

I do like to speculate now and then. However, the mixed influences of these varied factors make it foolhardy to actually predict whether our pheasant populations *will* go up or down in western and central Kansas.

Northeast Kansas seems to hold the most promise for more pheasants. If there really is a process of gradual adaptation by pheasants to conditions in the northeast, then the increase we have thus far seen may continue into the future. How far into the future and to what density will northeast ringnecks increase? I wouldn't touch those questions with a ten-foot pole!

Randy Rodgers is the biologist in charge of Kansas pheasant management. He drew the information in this article from the Commission's long-term rural mail carrier survey, made four times each year in cooperation with Postal Service employees who volunteer their efforts.

Owen Gromme is one of America's best-known wildlife artists, known especially for his renderings of birds. He won the federal duck stamp competition in 1945, was selected as the Ducks Unlimited artist of the year in 1978, and also designed Wisconsin's first state duck stamp in that year. A new wing of the Milwaukee Public Museum was recently named after Mr. Gromme.

Francis Golden's watercolors have been featured in OUTDOOR LIFE, SPORTS AFIELD, SPORTS ILLUSTRATED, and AUDUBON. His expert touch with watercolor, one of the most difficult of all media, reflects not only his talent and long years of effort but formal training at the Museum School of Fine Arts in Boston. Golden makes watercolors look effortless which is the hallmark of an expert craftsman and a requirement for an accomplished artist.

John Wilson's ruddy ducks grace this year's federal duck stamp. A native South Dakotan, Wilson has not only had first-hand contact with waterfowl but has developed a close acquaintanceship with the ringneck pheasant. His knowledge of the bird shows in his painting; he has won two of the last three South Dakota pheasant stamp competitions.

The prairies of Kansas are dying.

The process began slowly in the early to mid-1800s as market hunters, Santa Fe Trail traders, and cavalry detachments began wresting the prairie from the Indians. The first symptom of catastrophic change was the destruction of the horizon-to-horizon herds of bison which were such an integral part of the prairie. This was followed in short order by the destruction of the Indians and their cultures by starvation, disease, and bloodshed. Once those obstacles were cleared, destruction of the plant, animal, and soil communities of the grasslands could begin in earnest. Wagon train loads of "sodbusters" came west after the rich humus built by the native sod and skinned the prairie in order to grow an assortment of crops and livestock.

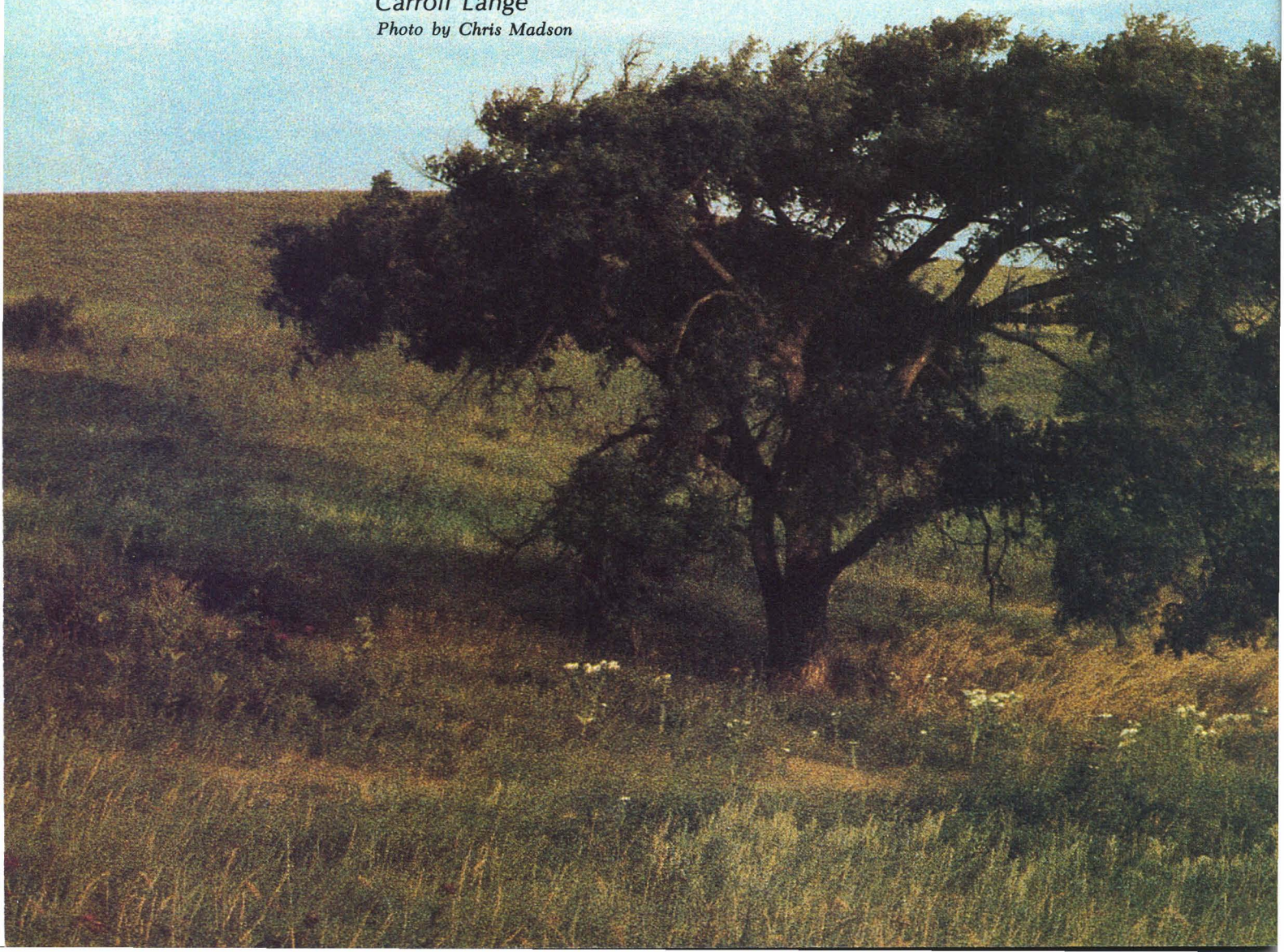
All that remains today of the grass which extended from the Mississippi River to the foothills of the Rockies and from central Canada to the Gulf Coast of

Texas are a few small remnants which until recently were unprofitable or impossible to till. And even these last scraps aren't out of danger. Some prairies which were not considered farmable as late as World War II are now being plowed under as advances in agronomic technology occur. Though many marginal cropfields have been successfully planted back to mixtures of prairie grasses, nobody has yet figured out how to re-establish prairies with complete communities of all the native grasses and forbs. Many fields not farmed since the Dust Bowl days of the thirties are still plainly distinguishable from unbroken prairies on high altitude aerial photographs, even though they haven't been tilled in nearly fifty years. Left to itself, the prairie can recover, but the process may take centuries. Unfortunately, we know so little about the complexity of native grasslands that there isn't much we can do to speed the recovery.

Passing of the Prairie

Carroll Lange

Photo by Chris Madson



Many prairie remnants, though they haven't yet been broken out for farming or destroyed for other purposes, suffer other abuses—overgrazing, overuse or misuse of herbicides, or lack of management altogether.

We have done quite well at producing abundant crops from the artificial environment which we created when we broke out the prairie, in spite of soil erosion, harsh winters, droughts, and the wholesale infestations of crop-eating insects and plant diseases we have encouraged with mile after mile of single crop monocultures. We have developed a whole array of mechanical "soil conservation practices" to control erosion and invented agricultural chemicals, without which, according to the chemical company's television ad, "life itself would be impossible." We haven't done so well at managing the prairie so that it produces for us and still maintains itself.

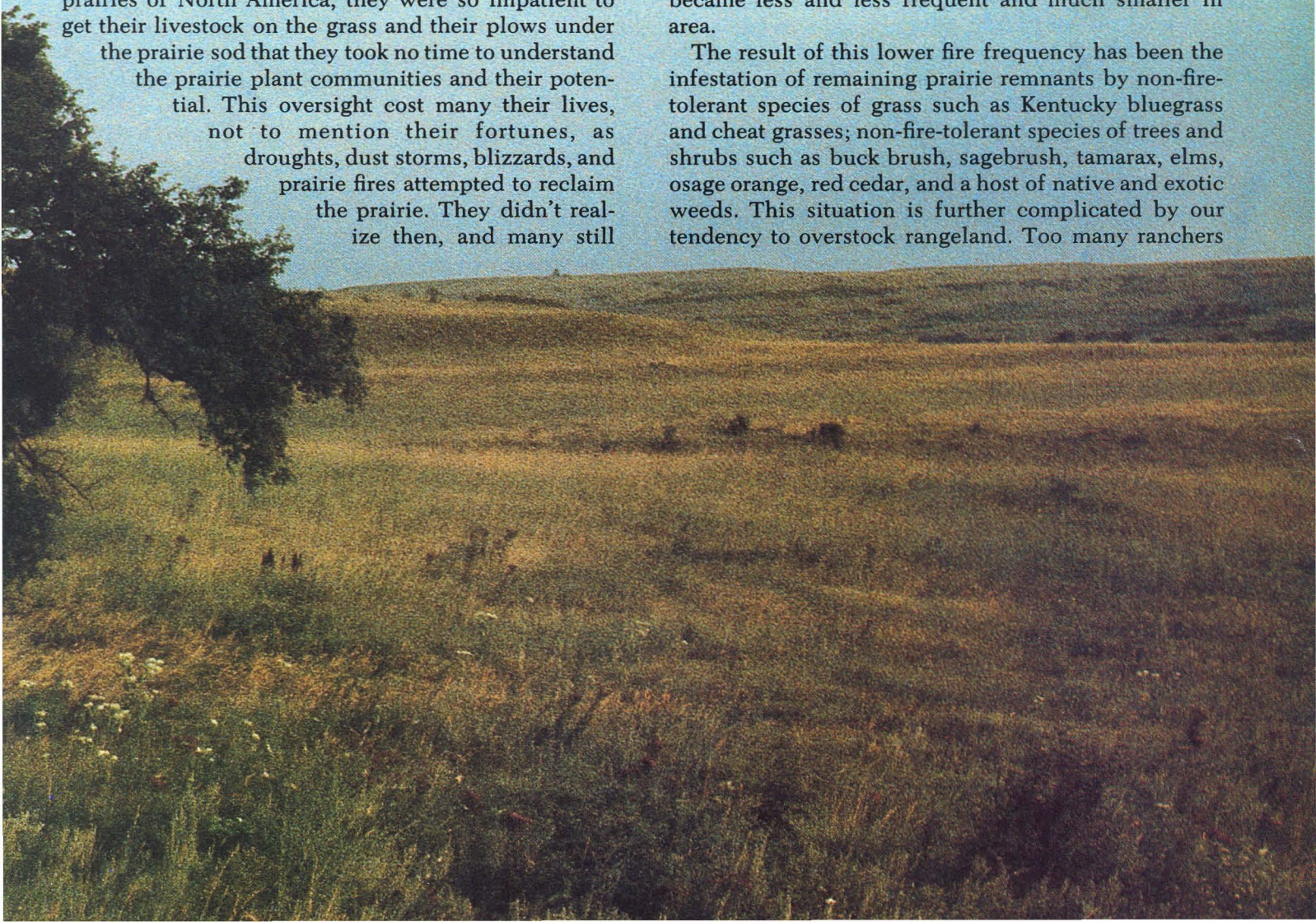
We've always had difficulty understanding organic cause and effect in things which we haven't built ourselves. This is especially true of the prairie ecosystem. Deserts have been created the world over through attempts by man to exploit grassland ecosystems by replacing native wild grazing animals with domestic livestock and nature's controls with his own artificial management practices.

When the first ranchers and farmers arrived on the prairies of North America, they were so impatient to get their livestock on the grass and their plows under the prairie sod that they took no time to understand the prairie plant communities and their potential. This oversight cost many their lives, not to mention their fortunes, as droughts, dust storms, blizzards, and prairie fires attempted to reclaim the prairie. They didn't realize then, and many still

don't, that practically everything they did upset the natural workings of the prairie.

Until recently, no one knew that "raging prairie fires" were a benefit on the grasslands. It wasn't understood that prairie plants and wildlife not only tolerate frequent burning of their environment, but need it and thrive on it. The prairie and its wildlife evolved under a regime of fairly frequent burning that maintained a brush- and tree-free environment. All those early farmers and ranchers understood was that prairie fires burned down houses, barns, and haystacks, destroyed crops, and otherwise wreaked mayhem and destruction across the landscape. Quite naturally, they arrived at the conclusion that all fires except those in a fireplace or cookstove were destructive and had to be prevented. Even if they didn't actively suppress fire, they built roads and tilled fields, creating unnatural firebreaks which prevented the remaining prairie remnants from burning as often as nature intended. Before the prairie was broken up into cropland, the only natural fire breaks were creeks and heavily grazed but ever changing travel routes of large bison herds. Fires burned for weeks and spread over millions of acres before being extinguished by rain or snow. As more and more roads were built and more and more prairies converted to cropland, naturally occurring prairie fires became less and less frequent and much smaller in area.

The result of this lower fire frequency has been the infestation of remaining prairie remnants by non-fire-tolerant species of grass such as Kentucky bluegrass and cheat grasses; non-fire-tolerant species of trees and shrubs such as buck brush, sagebrush, tamarax, elms, osage orange, red cedar, and a host of native and exotic weeds. This situation is further complicated by our tendency to overstock rangeland. Too many ranchers



count their wealth in terms of livestock numbers (1,000-cow ranch) rather than in terms of the potential of their rangelands to produce livestock forage. They don't seem to realize that, "livestock is to the rancher what a combine is to the farmer, nothing more than a method of harvest."

With the advent of a large and prospering agricultural chemical industry we have applied the same short-term, high-yield management to our prairie rangeland that we invented for our crop fields. The reasoning goes this way: "Chemicals kill weeds in croplands; they will kill weeds in rangelands." Since World War II, millions of acres of prairie rangeland have been sprayed on a regular basis for weed and brush control. The problem with that idea is, in applying chemicals to crops, only one species of plant, the crop, is being protected from a host of weed and insect species in a totally artificial environment. The chemical's only requirement is that it will kill everything but the crop. Killing of anything other than the crop or the man applying the spray is either beneficial or insignificant, as the reasoning goes.

In applying chemicals to prairie rangelands, a wide variety of native prairie plants are to be protected from several species of weeds and brush. No chemical yet developed knows the difference between a desirable native forb which belongs in the prairie plant community and an infestation of weeds which do not, or between a natural palatable species of native perennial grass which belongs and a species of exotic annual grass which does not.

We haven't yet realized that by spraying weeds and brush we're only treating the symptoms of rangeland problems, not the cause which usually is overgrazing and/or withholding of fire. When grazing pressure is reduced to the capacity of the prairie plants to sustain it and still maintain their own vigor, and controlled burning is applied as a substitute for the natural wild-fires which once swept the prairies, weeds and brush are no longer a problem.

Usually when chemical applications fail to eradicate weeds and brush and at the same time improve the pasture (and they often do fail), the next alternative is to disc, plow, chain, or somehow destroy not only the violating weeds, brush and trees, but the whole plant community so that it can be reseeded to an exotic perennial range grass. In drier rangelands of the western prairies, where sagebrush is the dominant rangeland "problem," this land conversion is generally to crested wheatgrass tame pasture. In wetter, more humid areas where the chief woody invaders are osage orange, post oak, blackjack, elm or red cedar, conversion is generally to smooth brome or Kentucky tall fescue. In either case, the result is the same. The natural system is destroyed and replaced with an artificial grassland that is easier to understand.

In several counties of southeast Kansas where large


acres of tallgrass prairie have been converted to tame fescue pasture, landowners and sportsmen alike are complaining about declining greater prairie chicken populations and requesting shorter hunting seasons or no seasons at all in order to increase the remaining remnant flocks. They don't seem to understand that those small flocks of prairie chickens are all that can survive on the small remnants of tallgrass prairie remaining in that area and that hunting has nothing at all to do with their low chicken populations. Tame fescue pastures are not prairie chicken habitat. It's the same old knee-jerk reaction to a problem caused by interference with a native system. The cry is always for treating the symptom rather than the problem.

Many prairie remnants such as the Gyp Hills of southcentral Kansas, Dakota sandstone prairie of central and north central Kansas and the Flint Hills of eastern Kansas will probably never be farmed because of steep slopes, shallow soils, or lack of water, but they are threatened with exploitation nonetheless. They are being suburbanized and economically developed at an alarming rate. Around all of the urban centers in these areas, ten-acre country home estate sites, twenty-acre pony farms, and industrial-utility-commercial sites, which range upward from forty acres to thousands of acres, are being taken with no notice of the prairie's demise. The settlers and developers are moving in on what remains of the prairie in everything from old mobile homes to half-million-dollar mansions. Everywhere the white pipeline of the rural water district and the highline of the rural electrical co-operative go, houses spring up. Every day, it gets harder to find an uninterrupted stretch of pristine prairie skyline.

The saddest part of this whole commentary is that we haven't seen fit to even attempt to reclaim prairie. We apply millions of dollars to "developing" prairie, not a penny to saving it. The first homesites in wide open expanses of prairie may indeed be beautiful and rustic; the first commercial enterprises may not be too overwhelming—a few highlines, oil wells and their associated tank, an occasional dam. But when a hilltop cannot be found that is free from these cancers then the real prairie will be gone. In its place will be countless monuments to the heavy, insensitive, uncaring hand of man. I find it difficult to believe that this is what was intended when we came to this place, blessed by the Creator: "Be fruitful and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and the fowl of the air, and over every living thing that moveth upon the earth." Surely the gift brought with it a responsibility, to the land, to ourselves.

District game biologist Carroll Lange trained in wildlife and range management at Kansas State University. He is stationed at Winfield where he has had a chance to see prairie conversion in the southern Flint Hills at close range.

the YELLOW Pages



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LETTERS to the editor

QUALITY HUNT

After reading for several years of the fantastic waterfowling one can experience on Maryland's eastern shore or on the rice fields of Texas, where sportsmen are awed at the sight of four species of geese in the air at one time, I had to write you.

My dad, a few friends, and myself hunt Elk City Reservoir in southeast Kansas where we never miss a weekend. It's a lake that produces some excellent public shooting on ducks and geese. On Christmas Eve last year a friend of mine and I bagged a limit of snows and blues, including one Ross' goose (the first one I've ever seen) plus a Canada and a whitefronted goose. We then watched as hundreds more passed over our heads at a scant twenty yards. It was truly the hunt of a lifetime and dragging our boat across the ice with five species of geese in it had us smiling all the way.

I would never leave the state (unlike the "Transplanted Kansan" in your last issue) to find hunting elsewhere, when such quality hunting on a variety of game awaits each and every sportsman right here in Kansas.

Keep up the great work on your magazine.

James Estes
Caney

SALUTE TO KANSAS

I just had to drop you this line to let you know how much some old Arkansas boys appreciate Kansas hospitality.

For twelve years now there have been four hunters from Wynne, Ark. and one from Baton Rouge, La. coming up to hunt pheasant for a week. We have made many close friends and delight in seeing such signs as "Hunters Welcome" and "Hunters By Permission." When you think of the revenues from licenses, shells, food, and lodging that just we five bring to your state, you would think that more states would consider using your style of hospitality.

Thank you very much, Kansas, and if you happen to see some country-looking folks with Arkansas auto tags, stop by and say hello. We sure enjoy your magazine, too.

James Billings
Wynne, Arkansas

COMPLAINT

Enclosed is a check for renewal of our KANSAS WILDLIFE subscription. We really do enjoy the beautiful pictures and the articles on fish, birds, and other wildlife. I also enjoy the wildflower and weed identification articles.

I do have a complaint. I don't like the way the Fish and Game Commission has of duplicating a fishing license.

This spring during the peak of the fishing season, I misplaced my license. Not wanting to miss out on the crappie run, I went to the place I had bought my license, thinking I might be able to get a duplicate there. I was told I must write the Fish and Game Commission. This I did, but was upset when I received the long form, saying I had to have the county clerk sign an affidavit. I also had to have a notary public seal and pay a \$3.00 fee. I didn't object to the fee but we live 25 miles from our county seat, and the license would get pretty expensive by the time I'd make the trip to Alma. In fact, it would be much cheaper to buy a new one. Even getting a duplicate driver's license isn't nearly this complicated. It seems to me there should be a better way to handle it.

By the way, I keep each issue of KANSAS WILDLIFE for reference. Sometimes I want to check on information, or even need to settle an argument.

Vida Zimmerman
Alta Vista

You may have been saved much time and trouble if the vendor from whom you purchased the license had directed you to the county clerk first. Since county clerks are the ones who distribute licenses to vendors, they would normally have a record of your license purchase. County clerks also have duplicate license application forms which, after being filled out, can be mailed to our Pratt office with the

\$3.00 fee. The duplicate license is then mailed to you. Thanks for your comments.

ILLEGAL HOOK?

I liked the article on the Neosho River (July-August issue) and thought the pictures were real good. Had my 64th birthday recently so figure I've hunted and fished for 63-1/2 years (my old man started me early). Just had a thought on the picture of the spoonbill fisherman (page 6 of the same issue). Isn't the hook shown in that picture illegal in Kansas?

Rex Sterling
Yates Center

The hook shown was illegal in Kansas before a regulation change two years ago legalized the use of any size treble hook.

FOND MEMORIES

Here's my check for a two-year subscription. I am an ex-Kansan living in Los Angeles. I spent the first 24 years of my 80 on the Arkansas River south of Oxford. Many happy hours I have spent fishing and hunting along the river.

When I left Kansas in 1924 no one ever saw a deer, prairie chicken, or wild turkey anyplace. It does my heart good to know the efforts of your organization, the good work of your wardens, and sensible judges riding herd on poachers are giving wild game and fish more than a fighting chance for survival.

My brother in Oxford sent me some earlier copies of your magazine. It pleases me to know that my cousins and nephews living in Kansas will have some productive hunts and fishing trips to look forward to.

Lowell Roseberry
Los Angeles, Cal.

VOLUNTEER PATROL?

Here is my renewal subscription for three years of KANSAS

WILDLIFE. You have the finest magazine money can buy. Keep it up.

In your July-August issue, Robert Cox's ideas in his letter to the editor are great, but I feel he should have gone further. Could it be possible to have voluntary auxiliary Fish and Game representatives? I know a number of sportsmen with a certain amount of training who would volunteer their services to help patrol Perry or Clinton or other lakes in their respective areas. Their primary duties could be to check hunting and fishing licenses, creel or bag limits and sizes, boating certifications, administer first aid, and issue citations and/or make arrests. This is one approach I feel would help the Kansas Fish and Game Commission.

Fred Wiedermann
Merriam

We appreciate the thought behind your idea but Kansas law does not permit non-law enforcement personnel to serve as auxiliary game protectors. Concerned sportsmen can help, however, by notifying Fish and Game of violations they witness. Arrests of violators are often the result of citizen complaints.

LIKES KANSAS

I'm writing in regards to the controversy which has appeared in this column the last couple of issues comparing KANSAS WILDLIFE to THE MISSOURI CONSERVATIONIST.

I live in Missouri and receive THE CONSERVATIONIST free, which I won't pay for. I pay to receive KANSAS WILDLIFE and I am more than happy to do so. I also hunt the Cheyenne Bottoms where you can hunt free, whereas in Missouri you have to pay to hunt the public waterfowl areas. I would rather pay for a good magazine and get good free hunting than get a lousy free magazine and lousy pay hunting.

Steve Patchin
Raytown, MO

DISAPPOINTED

Thank you for a very interesting and informative magazine. The photography is outstanding.

We have fished and camped at Douglas State Fishing Lake ever since it opened and are very disappointed with the conditions now. I realize it is only a small lake and does not compare with Clinton, Pomona, or Melvern but it has given many hours of pleasure to a lot of people. Now the lake is full of weeds so you cannot fish from the bank. The bank has so many weeds you do not dare get far from your camper door. There are no trash cans.

Why, after spending money to build a nice small lake for fishing is it being allowed to be left by the wayside and not cared for. I am sure no one would object to a small fee for camping and fishing if the area was kept up.

As things stand now, there are less and less campers and fishermen each week. Should this lovely little lake be allowed to die from lack of care?

Mrs. Ed Treas
Gardner

Douglas SFL was drawn down last winter so Fish and Game workers could eradicate some of the underwater vegetation problems the lake had been experiencing in recent years. While the water level was low, smartweed sprang up along the exposed lakebed. Now that the lake has refilled, that smartweed growth is largely inundated and will disappear in time. Northeast regional fisheries supervisor Steve Hawks expects users of the lake will be heartened by what they see on their first outing to Douglas SFL next spring. Trash cans have been removed from state fishing lakes throughout the state in the past two years, reflecting budget constraints on operations and maintenance costs.

COMPLIMENT

Am enclosing my renewal for your superb magazine. I have subscribed to many magazines over the years but can't think of even one that I enjoy more than KANSAS WILDLIFE. Keep up the good work.

Carol D. Bemiss
Hutchinson

WORTH SEEING

After reading your article in

an earlier issue on the Red Hills, we decided to stop and see them on vacation. They were worth seeing. We also enjoyed your exhibit hall very much.

Mr. and Mrs. Jim Erpelding
De Kalb, MO

DOUBT DISPELLER

I'm renewing my subscription for three years. As a lifelong resident of Kansas before moving to California, and an avid wildlife

enthusiast, the magazine is like getting a piece of Kansas in the mail each issue. It makes it easy to point out to doubting Californians that Kansas isn't just a barren flatland. After completing my four years of medical school here in San Francisco I would not be surprised to find that my wife and I are drawn back to the Sunflower State and its unique beauty for a lifetime. Keep up the good work.

Bill Myers
San Francisco, Cal.

GUEST SPEAKER

THE RESPONSIBLE HUNTER

By John Madson

Dad must have worried a lot about me.

He grew up with a hard-nosed work ethic that was long on responsibility and mighty short on fun, while I grew up with the simple goal of doing as much hunting and fishing as possible. The two outlooks didn't seem to mix very well although I suppose Dad and I did agree on one point: that hunting and fishing meant avoiding work and responsibility.

Today, over forty years later, I know we were both wrong. To get the kind of hunting I prize the most means a lot of work and responsibility.

Dad and I both knew that the more responsibility people accept in their work and community, the more successful they're likely to be. But it was years before I realized the same thing is true of hunting. The responsible hunter is the most successful, the most respected, and has the most fun. Look at it in terms of basic shooting skill, to begin with.

That kind of hunter does everything he can to shoot well. He abhors crippling game. In this day and age, though, no one can get enough shooting at actual game to become as skillful as possible. Getting to know your gun and ammunition and their limitations, and how to shoot safely and surely, means a lot of off-season work with bulls'-eyes, clay birds, or just tin cans. The responsible hunter works at his shooting. He takes pride and interest in shooting as well as possible, and devotes a lot of pleasant off-season time to it.

Now, carry this a step further.

Just being a good shot isn't enough for the hunter who'd rather miss game than cripple and waste it. He

must be in a good position to use his shooting skill. This means either going to within good shooting range of game, or drawing it to within good shooting range. In the first case, the hunter learns to stalk, read game signs, and find how cover and the lay of the land relate to game movements. The second case means knowing how to lure game with decoys and game calls. In either case, the responsible hunter puts himself within adequate shooting range of the game and is good enough with gun or bow to make the shot count. Again, as in off-season shooting, the arts of decoy-making and game calling can be ends in themselves.

There's no surer sign of responsibility than using a trained hunting dog. A good bird dog puts the hunter in better shooting position on upland game birds, and a good retriever greatly reduces the loss of birds that are wounded or dropped in heavy cover. And can there be any doubt of a rabbit hunter's dedication if he supports a couple of little beagles? Accepting the responsibility of training and supporting a gun dog not only pays tangible dividends in more birds bagged, but deepens the whole enjoyment of hunting.

A strong sense of responsibility can go a long way in meeting the main problems of hunting today: 1) dwindling game habitat, 2) lack of good places to hunt, and 3) hunting's tarnished image.

Much of the game range we've made or saved during the past fifty years has been the doing of hunters—responsible hunters. They created and supported professional game management and research, fish and wildlife agencies, and fought the politics and economics that would have wrecked those efforts and devoured some of our best remaining gamelands. Those hunters didn't do this out of sore

conscience for what had been destroyed, but with a sense of value for what was left—and a sense of responsibility for it.

Since a responsible hunter invests a lot of time and effort in what he does, he intends to get some returns on that investment. That means having good places to hunt. And because he is accountable for his actions, he doesn't steal his hunting places. He borrows them, with permission. This is partly a matter of ingrained respect for himself and the landowner, but like most of his other efforts it has a spinoff of increased enjoyment. The responsible hunter just doesn't enjoy being where he's not wanted. On the other hand, the irresponsible hunter doesn't care. The surest sign of a slob hunter is a lack of respect for himself, others, and the game he hunts. Refusing to accept the responsibilities of hunting, he tarnishes the image of all hunters.

There's nothing new in the concept of hunter responsibility. Primitive hunters were often held accountable for their actions and lived with hunting taboos and responsibilities whose infractions were swiftly punished.

Among the plains Indians, for example, buffalo hunting was often a carefully planned effort that depended on timing and cooperation. When Sioux buffalo hunters rode out of camp they were often preceded by a small squad of Dog Soldiers or other military police. If any hunter crowded past them in his eagerness to get to the buffalo first, he would be knocked off his horse. Punishment for violating the rules of a hunt could be severe: the hunter might be

fined a horse or other equipment, beaten, or even exiled. He felt the weight of his band's disapproval for showing a lack of responsibility that might have endangered lives and the success of the hunt.

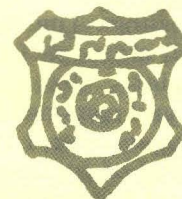
Dr. Doug Clarke, the Canadian biologist, was once shown an old Eskimo who had been blinded by his fellow hunters for being deliberately cruel while killing a caribou. Unnecessary cruelty was a fearful breach of responsibility for it insulted the animal's spirit with profound disrespect and jeopardized future hunting.

In such examples, irresponsible men had betrayed the faith and confidence of their fellow hunters. Their selfishness had shown contempt for society, the hunt, and the game, and was harshly punished. The continued success of the hunt depended on the control of such men then—and still does.

Our concepts of responsibility began to develop far beyond human memory when man was emerging as a full-time hunter. He had to cooperate in packs and bands—he was too weak and poorly armed to operate alone. Such cooperation led to hunting societies, ritual, and a growing sense of responsibility to companions and the spirit of the hunt.

All this was far advanced before farming began about 10,000 years ago. Hunters had a keen sense of responsibility long before the first farmer ever broke ground. Since Dad wasn't a hunter, he never knew that. It wouldn't have made a lot of difference if he had. But he might have worried about me a little less—and I might have gotten out hunting a little more. (Reprinted courtesy Winchester Conservation Department)

It's The Law



Two Manhattan men were ordered to pay fines and costs of \$240 each after pleading guilty in Riley County District Court to vandalism charges. Chris Espinoza and Ferlin Waters were cited for damaging bathrooms at Pillsbury Crossing, a popular Fish and Game fishing and picnicking spot near Manhattan. The pair was apprehended after a phone tip to law officials. They were placed on probation and ordered to pay restitution to Fish and Game for the damages.

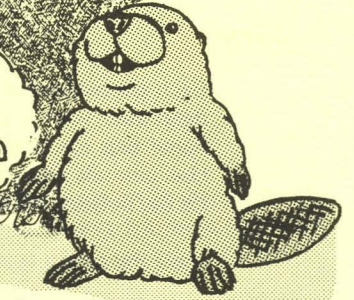
Elsewhere:

—A Montgomery County District Court judge fined two men \$600 each on deer poaching charges. Danny J. Gillman, Independence, and Max A. Hedges, Sedan, were issued citations by Game Protector Dennis Knuth after a tip from an informant.

—Fourteen northcentral Kansas residents paid a total of \$700 in fines and court costs for hand fishing a stream in Marshall County. Game Protector Wallace Ferrell issued citations to: Kevin W. Deters, Leif D. Weyer, Eric D. Weyer, Dennis D. Ice, Randy A. Elliott, Doug P. Elliott, Danny J. Hasenkamp, and Melvin N. Schmitz, all of Centralia; Todd A. Surdez and Greg E. Chadwick, Vermillion; Jim E. Haug and Brian G. Winkler, Coming; Mark L. Strathman and Steve A. Steinlage, Goff. Each paid a \$40 fine and \$10 court costs in Marshall County District Court.

NATURE'S NOTEBOOK

by
Joyce
Harmon



Wildlife-Education Coordinator
KANSAS FISH & GAME COMMISSION

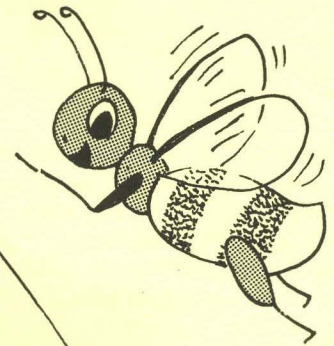
**HEY, Moms and Dads, Grandmas, Grandpas, Babysitters,
Aunts and Uncles!**

THESE ACTIVITIES AREN'T JUST FOR TEACHERS AND GROUP LEADERS.
YOU CAN USE THEM WITH YOUR KIDS –
AND MAYBE SOME OF THE NEIGHBORHOOD CHILDREN.

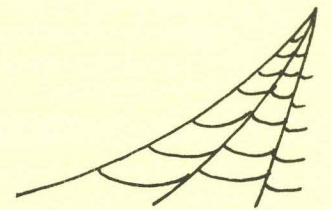
THE FORMAT IS INTENDED TO BE EASY TO FOLLOW.
THE LESSONS TAKE LITTLE BACKGROUND OR EQUIPMENT.
WE HOPE YOU WILL FIND THESE PAGES OF USE.
PLEASE FEEL FREE TO SUGGEST IMPROVEMENTS.

I'VE TRIED TO PROVIDE ACTIVITIES THAT WILL BE USEFUL FOR
A RANGE OF AGES AND GROUP SIZES. YOU CAN ADAPT THESE TO MEET THE NEEDS
OF YOUR PARTICIPANTS.

GOOD LUCK and HAVE FUN exploring Kansas wildlife!



FOOD WEB GAME



Ideas to discover:

1. Animals are on different levels. Those animals that eat plants or their seeds are first level animals. Those animals that eat other animals are second level animals.
2. Plants use the sun's energy, soil, and moisture to make food.
3. Animals, plants, sun, soil, air, and water make up a food web. People are a part of this web. A food web or chain is the transfer of energy through plants to first level animals, and from first level animals to second level animals.

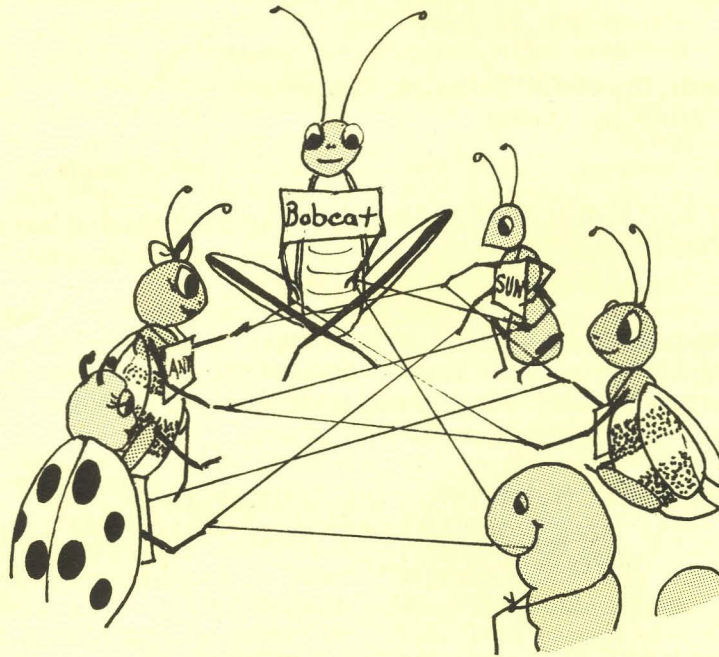
What you'll need:

One large ball of yarn or string, enough 5x7 index cards (or equivalent sized tag board) for each participant to have one.

Activity:

Each participant wears a name tag of a plant, animal or element (air, sun, water, or soil). The name tags can be decorated with a picture of the plant, animal or element to aid preschool or lower elementary children. The name tags are made from 5x7 cards and can easily be worn if a piece of yarn is attached to go around the neck. Use animals and plants found in your area; some suggestions are: fish, cricket, snake, mosquito, owl, bluejay, turtle, bobcat, mushroom, trees, poison ivy, dandelion, etc.

Have the group form a circle close enough together so that they can read the other name tags.



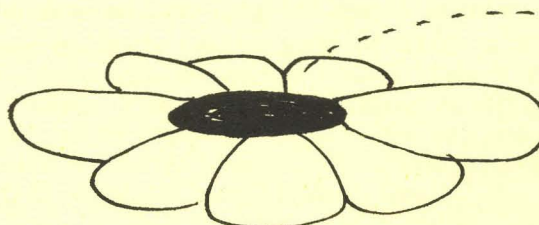
The person labeled "SUN" begins the game. He or she hangs onto the end of the yarn and passes the ball of yarn on to any other player who has a direct need for the sun. The player who receives the ball of yarn looks around the circle for a player he needs in order to survive, or, a player who depends on him for survival. He holds onto the strand of yarn and passes the ball to that next player. For example: the "SUN" could pass the yarn to the "GRASS", and the "GRASS" in turn pass the yarn to the "RABBIT", and the "RABBIT" pass it to the "COYOTE". As the game progresses, discuss the relationships between the members of the web. Try to get all players involved and discuss why the elements and lower level organisms seem to have more yarn in their hands (therefore needing to have more organisms at that level than the upper levels.)

Before enthusiasm wanes, discuss what impact people have on the food web. How does draining a marsh or pond, fire, disease, restoring habitats, hunting, and fishing affect the food web? Of course, we have some positive and negative impacts and the group might consider what they can do to keep the food web in a healthy state.

If you have a smaller group, you might approach this activity in the following manner:

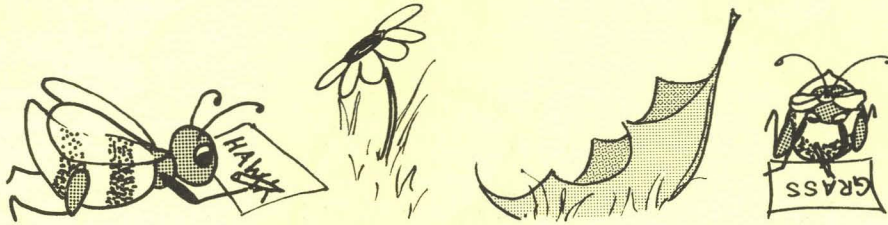
Sit down with your child or children and cut out or draw pictures of the animals and plants you put on the cards, talking about them as you go. Arrange the cards face up on the floor or a large table. You could connect the cards into a food web or chain by using a paper punch and attaching cards together with yarn. Or, with a large piece of paper underneath the cards you can connect the interacting cards with a pencil or crayon. Try using a different color of crayon for each chain formed.

The source of this activity is unknown. However, there are several similar activities that deal with the same concepts. For a fun change of pace you might try the following activity with a small group:

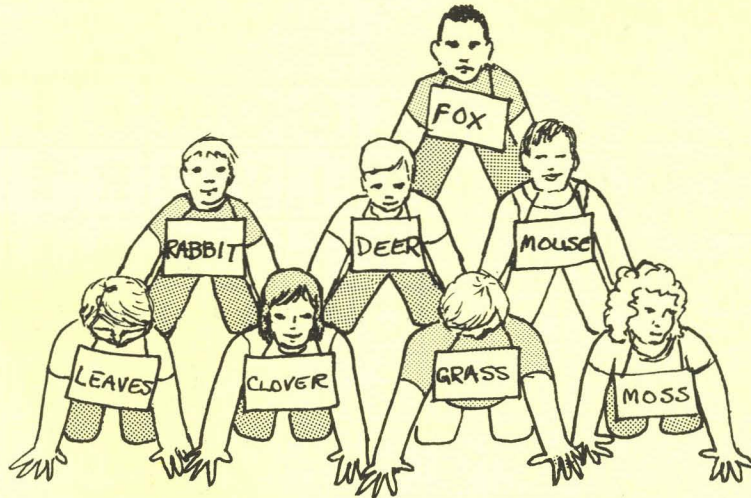


PYRAMID OF LIFE

You'll need six or more children who are seven years or older, and a small clearing. Have each child secretly write the name of a plant or animal that lives in the area. The players are going to build a pyramid, but don't tell them that until you've collected the papers.



Generate background information by asking questions like: "From what source does the earth get its energy?" (Answer: The Sun) "What form of life is the first to use that energy?" (Answer: Plants) Now the fun begins when you start to build the pyramid and the plants realize their fate. "The plants will be on the bottom of the pyramid because all animals depend on them directly or indirectly for food. The plants kneel down on all fours, close together in a line. Now, as I read off the animals from the slips of paper, tell me whether they are plant-eaters or meat-eaters. All the plant-eaters (herbivores) stand in a line behind the plants. All the meat-eaters (carnivores) stand in a line behind the herbivores."

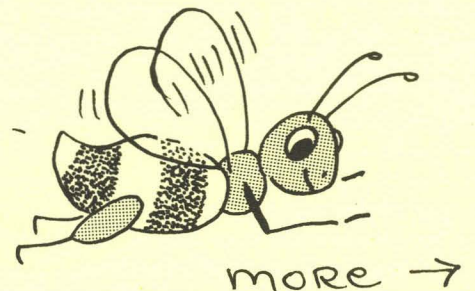


There will nearly always be more children in the upper level groups than in the supporting plant groups; it's a lot more fun to be a bobcat or coyote than it is to be a dandelion or a muskrat. With so many on top and so few for a base, it will be very difficult to build a stable pyramid. Some of the predators will have to change their position. Challenge the children to reconstruct a pyramid that will support all its members. The larger children can become plants and any omnivores (animals that eat both plants and animals) can be herbivores or placed wherever needed. The higher up on the food chain, the fewer the number of animals there are. Demonstrate the importance of plants by pretending to pull one of them out of the pyramid.

(Source: SHARING NATURE WITH CHILDREN by Joseph Bharat Cornell, Ananada Publications, 1979.)

Terms that may be introduced:

HERBIVORE
CARNIVORE
OMNIVORE
FOOD WEB/FOOD CHAIN



This bird has words on his feathers.

Circle each word you find
in the puzzle
then color that feather.

How many can
you find?



R	A	C	C	O	O	N	E	E	R	T	A
C	A	R	N	I	V	O	R	E	N	P	R
H	E	R	B	I	V	O	R	E	B	A	E
A	E	R	O	V	I	N	M	O	C	D	E
I	D	W	E	P	F	N	U	D	W	A	D
N	L	G	H	Y	O	A	I	S	O	I	L
D	J	M	N	R	E	T	A	W	R	T	B
U	O	R	I	A	P	U	N	R	M	I	V
C	K	V	O	M	Q	R	T	S	R	U	W
K	N	L	E	I	B	E	W	D	O	O	F
E	M	A	G	D	N	A	H	S	I	F	X

(HINT: Look up and down, forward and backward, and diagonally.)

— SHORT — STUFF

GATORS RECLASSIFIED — The alligator is no longer a threatened species in Louisiana. The alligator's legal status in Louisiana has been changed from "threatened" to a less restrictive category under the Endangered Species Act. The change was the result of 17 years of work by state and federal officials to bring the alligator back from the brink of extinction.

SEA TREATY URGED — The National Wildlife Federation has asked President Reagan to push for the "urgently needed" international Law of the Sea treaty "as rapidly as possible." After seven years of twice-yearly meetings, the treaty was expected to be signed late in 1981. Last April, however, the Reagan Administration announced it would delay final action on the treaty until next year. A few mining conglomerates sought to delay the treaty, which is designed to regulate fishing and mining of strategic minerals from the ocean bottoms, as well as covering environmental, military, and legal aspects of the sea. Some 150 nations are involved in the proposed agreement.

RADIO ROUNDUP — A matchbox-sized radio transmitter led U. S. Fish and Wildlife Service investigators to the burial site of the bald eagle to which the transmitter was attached. The federal lawmen launched an inquiry after the transmitter's signal led them to the lone eagle's burial site on a 50-acre island in Oregon's Snake River. An Oregon rancher confessed to the eagle killing and was ordered to pay a \$2,500 fine under a settlement with the U. S. Attorney's office. The transmitter-fitted bird was part of a cooperative project to study eagle migration patterns.

HABITAT LEASING OKAY — Federal acquisition of habitat vital to the millions of migratory ducks which breed in North Dakota every year can continue as a result of a recent U. S. Court of Appeals decision. The court decided in favor of the U. S. Fish and Wildlife Service, which had sued the state of North Dakota in 1980, charging that bills passed by the state legislature in 1977 violated federal statutes protecting migratory birds. Specifically, the decision allows the Fish and Wildlife Service to acquire prairie pothole habitat in North Dakota, thus protecting it from further agricultural development.

LAST CHANCE? — Biologists have begun trapping California condors as the start of a "last ditch" captive breeding and research program designed to save the endangered birds. Two of the birds will be captured and fitted with radio transmitters, then released and

carefully monitored. Technicians hope to capture as many as nine of the condors, and three of those would be retained in captivity as breeding stock. Fewer than 20 of the giant vultures are thought to remain in the rugged mountainous terrain 70 miles north of Los Angeles.

CAROLINA CHECKS OFF — South Carolina has joined the growing list of states that have enacted income tax checkoff legislation to support nongame conservation programs. The new South Carolina law is set up so that state taxpayers may donate \$1, \$3, \$5, or \$10 (on a joint return) either from their refund or as an "out-of-pocket" donation added to their tax payment.

GUN BAN DRAWS SUIT — The National Rifle Association, acting in conjunction with four residents of Morton Grove, Ill., has filed a lawsuit in the Circuit Court of Cook County challenging the validity of the recently passed Morton Grove ordinance which would ban the private possession of handguns in the northern Illinois town. The Morton Grove law, which sparked similar anti-handgun legislation in other Chicago suburbs, was the nation's first out-and-out handgun ban affecting private citizens. It provides that no person in the community of 25,000 shall possess any handgun unless the gun has been rendered permanently inoperable. The suit maintains that the law is invalid because it violates provisions of the Illinois State Constitution which guarantees individual citizens in the state the right to keep and bear arms.

BOWHUNTING BUCKS — A survey by the Fred Bear Sports Club estimates that U. S. bowhunters last year spent \$1.37 billion in pursuit of their sport. The expenditures include hunting equipment, transportation costs, clothing, food, licenses, lost wages, and all other bowhunting-associated expenses. The average bowhunter, according to estimates based on a survey of several thousand hunters, spends over \$1,000 annually on all bowhunting-related purchases. The biggest expenses an archer incurs, however, aren't necessarily in bows and arrows and related equipment; it's wages lost during those days a bowhunter spends up a tree, and gasoline costs getting to and from the hunting woods. Since 80 percent of all bowhunters also gun hunt, the same survey surmised that bowhunters spend an additional \$164 million on gun hunting, or an average of just under \$500 annually per hunter.

SPEAKING OF NRA — Membership in the National Rifle Association has topped two million. The latest membership count showed 2,008,011 individual dues-paying members, doubling the membership in just three years. NRA Executive Vice President Harlon Carter called the jump "a reflection of the public's support for the goals and objectives of the NRA."

ACROSS KANSAS

UPLAND BIRD PROSPECTS ENCOURAGING FOR 1981

Hunters can expect a workout during the 1981 upland bird hunting season. Generous rains throughout the summer have raised a dense growth of cover throughout much of the state. Although pheasant, quail, and prairie chicken populations are generally stable or increasing, the dense cover means hunters may have to work harder to encounter game.

Last year's pheasant season produced the second highest harvest in Kansas' history—972,000 cocks. The prospects for the 1981-82 season appear comparable. Last year's pheasant season was restrained somewhat by uncharacteristically warm and dry weather throughout much of the season. It's impossible to predict what the weather will be like for this season but the lush cover in the state this year could have the same effect on pheasant hunter's success as the unique weather of last year.

Surveys conducted during the spring and summer of this year indicate pheasant populations are essentially unchanged or up in some regions, from last year. The lush vegetation in road ditches, fence rows, and fields should enhance survival of this year's crop of birds.

The July pheasant population index was reported down slightly in the southwest and northcentral regions. Increases were registered in all other regions. The July count in much of the northwest was the highest recorded for any region since the annual survey was begun in 1962.

The prospects for quail hunting are encouraging. Biologists report quail are making a fine recovery from the low numbers experienced after the winter of 1978-79. Last year the number of quail hunters afield was down considerably from the long-term average. Biologists attribute much of that lower hunter pressure to the concern of some sportsmen that quail numbers were still recovering from the 1978-79 winter. But mild winter weather and a generally good production season the past year should restore the number of quail hunters afield to their usual levels.

Quail hunters should find better quail numbers this fall. The mid-summer 1981 rural mail carriers survey index was substantially higher than in 1980, with large increases noted for all areas in the major bobwhite range of eastern Kansas. The northeast region recorded the biggest increase. The Flint Hills, southcentral, northcentral, and southeast regions also showed substantial gains. Bobwhite numbers in the west were essentially unchanged from 1980. Generally, it should be a year in which sportsmen find some quail everywhere and many quail in areas with good habitat.

Rangewide, the 1981 greater prairie chicken index is about 20 percent below 1980. In the Flint Hills, where the bulk of the population exists, no change was recorded from last year. Greater chicken populations prior to 1981 had been increasing for ten years, and still are above the 10-year average. Last year's harvest was 51,000 birds, by far the largest prairie chicken harvest in the nation. Lesser prairie chicken numbers in southwest Kansas appear to be unchanged from last year, although some localized areas are plagued by replacement of grasslands with irrigated croplands.

* * *

CARP DERBY DRAWS SUMMER FUNSEEKERS

Those Norton folks sure know how to have a good time. Every April, they sponsor a Spring Fishing Contest at Sebelius Reservoir. Last fall, they introduced the annual Longest Pheasant Tailfeather Contest. This summer, they trotted out a new attraction—the Western Kansas Carp Derby.

The sponsor of the event—Norton Area Chamber of Commerce's lake promotion committee—reports the event was so well received that it, too, will become an annual occurrence.

For two days during the hottest part of the summer, some 80 anglers buzzed around Sebelius Reservoir in two-person fishing teams. At final weigh-in, the winning team (Kennis Mann and Bill Hixon of Norton) laid out a catch of 150 carp averaging two pounds apiece. The pair pocketed \$100 and prizes for their efforts. Total catch by all contestants fell just short of a ton: 1,875 pounds.

When the fishing was done, more than 400 hungry fishermen and onlookers lined up for carp fritters, carp patties, smoked carp, baked beans, chips, tea, and beer. It must have been tasty; plans already are being drawn for the 1982 Western Kansas Carp Derby.

* * *

ACROSS KANSAS

BUFFALO AUCTION PLANNED NOV. 18

The Kansas Fish & Game Commission will conduct its annual buffalo auction at Maxwell Refuge Nov. 18. About 56 head from Fish & Game's Garden City and Maxwell herds will be sold, beginning at 11 a.m. at the refuge corrals. Animals to be sold include: 21 bull calves, 10 yearling bulls, one two-year bull, 11 heifer calves, five yearling heifers, five adult cows, and three two-year cows. Several adult animals from Fort Riley Military Reservation may also be consigned at a later date.

Terms of the sale are cash or personal check accompanied by notarized authorization from the issuing bank. Buffalo over one year old will be brucellosis tested and accompanied with a health certificate. Buyers must pick up buffalo the day of the sale or make arrangements with the refuge manager prior to the sale. Buyers are advised to cover stock racks and trailers since buffalo haul better in darkened compartments.

For more information, contact Verl Warner, Refuge Manager, Rt. 1 Box 26, Canton, KS 67428 or call Fish and Game offices in Newton, Pratt, or Garden City.

The Maxwell Refuge corrals are located in McPherson County, seven miles north and one-and-one-half miles west of Canton or five miles south and one-and-one-half miles west of Roxbury.



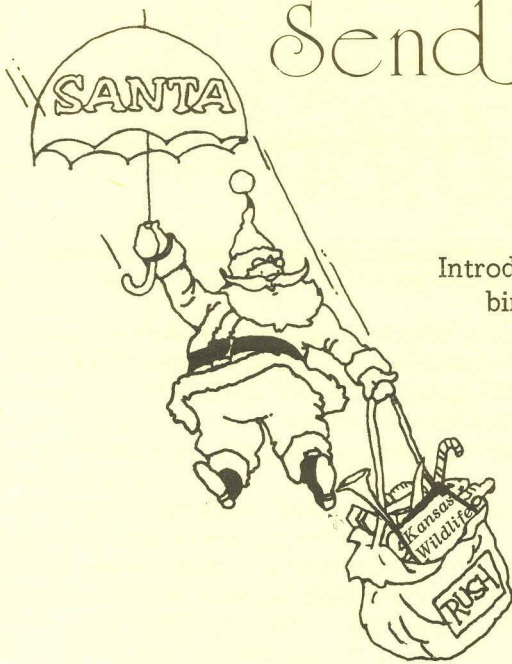
* * *

BASS ANGLERS, WILDTRUST BACK HATCHERY DEVELOPMENT

Kansas bass fishermen have contributed more than \$3,200 in the past two months to Fish and Game for hatchery development. Some \$1,750 of that total was given to the commission through a memorial fund established for Wesley and Frank Kluckner, two members of Wichita Bassmasters, who died in auto accidents this year. The memorial funds were generated by contributions from bass clubs, individuals, and fishing tournament winnings. Kansas Bassmasters, through individual contributions from club members, raised another \$1,000. The Kansas Bass Chapter Federation added another \$500.

The funds were earmarked for use only in hatchery development. The money will be administered through WILDTRUST, a Fish and Game program through which interested persons can contribute money, lands, equipment, and other items for use in fish and wildlife conservation projects in Kansas.

"The contributions from the Kluckner memorial and bass fishermen around the state is a good example of how WILDTRUST works," said Don Dick, coordinator of the Fish and Game program. "The funds were dedicated for use only in hatchery development, not just for black bass but for all fish, and that's exactly how we'll use it."




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(Six Times A Year)

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This Christmas, give the gift of Kansas wildlife . . . to a friend.

KANSAS WILDLIFE



The Shooting Preserve Alternative

Chris Madson

He was in his mid-thirties, in good shape for a business man with a spring in his step that showed he was used to walking. Unlike most of the guests, he had brought his own gun, a clean, well-worn Model 12 he had obviously gotten comfortable with over years of bird hunting. He had come prepared to shoot, and I could tell by the way he looked the place over that he was also prepared to be unimpressed with the shooting preserve hunt we were about to show him.

The guests at Nilo Farms, Winchester's demonstration shooting preserve near Brighton, Illinois, represent the entire spectrum of the sporting public. Far too often, the shooters don't know the difference between a 12-gauge muzzle and the operating parts of an Ozark outhouse, but every so often, a really serious hunter shows up and, like the man we were about to take out,



he's nearly always ready to be disappointed. Because of his attitude, this doubter, like most of the skeptics before him, just happened to draw Lou Johnson as dog handler for the afternoon.

From September to March, Lou spends six days a week working dogs and guiding hunters at Nilo. On his day off, he usually goes quail hunting in the limestone hills above the Illinois River. He's a hunter's hunter, a dead shot, immune to fatigue, ready to keep after them until the dog or the sun fails him. Lou noticed the hunter with the Model 12 in the group of guests, and he nudged me with an elbow.

"We're gonna have a *good* hunt today."

We drove out to Course 1, uncased the shotguns, and turned out a little springer spaniel who sat vibrating on the edge of the first milo patch while the hunter and his

two companions got organized. When they were lined up, Lou turned the dog into the cover.

There were eighteen pheasants on the course, now fully recovered after their release an hour earlier, and the springer wasn't ten minutes into the patch before she started into that whirlwind hustle that showed she was working scent. The milo was planted thick especially to hold pheasants, but no one had informed the pheasant of that. While the hunters were watching the dog, Lou was watching up ahead and caught the flicker as the rooster slipped to the edge of the cover and started to run.

"Quick, quick, move up, he's running! On the left; on the left!"

The seventy-five yard sprint winded the two casual shooters in the group. The bird flushed wild about twenty yards out, taking a sharp left angle that left the man with the Model 12 out of the shooting. Six shots later, the alibis started.

"Sun in your eyes, fellas?" inquired the Model 12 shooter. He was enjoying the raving of the other two so much that he failed to notice the dog still working hot in the milo just behind him. The second rooster got a fifteen-yard head start on the right, and Model 12 never really got his feet set, or at least, so he said. The needling came from the other side of the milo for awhile.

The usual route on Course 1 involved a good three-mile walk through heavy cover, but of course, we didn't go by the usual route this day. The birds we flushed on the high, flat cropland all drifted into deep ravines nearby where they joined the escapees from earlier releases, and we followed them down into eroded gullies full of greenbrier, blackberry, and scrub elm where they either ran or flushed into a screen of branches like ruffed grouse. Then it was back to the high ground for more of the planted birds and down again to the ravines. Along about five o'clock, Lou called a halt, a little concerned that we might leave at least two of our guests permanently at the bottom of one of those fiendish breaks. My boots had suddenly gotten heavy; our second springer was settling into grandma gear, and I got the impression that even Mr. Model 12 had lost a little of his spring.

Not much was said on the way back to the station wagon, but when the guns were cased and the two other shooters had climbed gratefully into the back seat, the man with the Model 12 slipped around to the back of the car and shook Lou's hand.

"That was a *hell* of a hunt," he said and smiled.

As he walked away, Lou caught my eye and grinned. Another Johnson convert.

The shooting preserve concept is nothing new. In its broadest sense, it was already an ancient institution when Henry the VIII coined the term "shooting preserve" in 1536. The upper crust of nearly every society

since the Egyptian pharaohs has claimed hunting rights on certain tracts of productive wildlife habitat. One of the biggest beefs the Sheriff of Nottingham had against Robin Hood was his poaching in the King's forest. The European shooting preserve has always been a place for the privileged few, and that stigma of privilege is part of what gives shooting preserves a bad name among many American hunters today. To be sure, we have our upper echelon of hunters who use and enjoy preserves, but the mainstream of the American hunting public likes its hunting "free."

I've never been sure what "free" hunting is. It's a concept that grew up with the republic, I guess, one of the rights a free man inherited with his citizenship. The fact is that, even on the frontier, there wasn't much hunting that could be called "free." A man didn't have to be wealthy to hunt in nineteenth century America (though it helped), but he did have to be willing to travel. The closer he got to the real cream of the shooting, the greater risk he took of donating his hair for a Comanche or Sioux lodgepole decoration.

Late in the last century, a few men enjoyed unparalleled waterfowl hunting, but they earned everything they got. Few modern duck hunters would bother going out if they were forced to row a boatful of solid-body canvasback blocks three or four miles up the Missouri or Mississippi to a likely looking backwater. Many of the waterfowlers who hunted Currituck, the Chesapeake, or the Great Lakes gambled their lives for a good day's shoot in heavy weather. Some of them lost.

I sure don't remember a good hunt in my career that

came easy. I've never had much money to spend on my hunting, so I've been forced to spend a lot of time and effort to make up for the deficiency. The hours I've spent studying maps, driving gravel roads, knocking on doors, or waiting at the office on a state waterfowl area at three o'clock in the morning—even at minimum wage, that much gainful employment could have earned me a place on the board at Exxon by now.

Among my circle of friends, shoestring hunts aren't all that unusual, but in the hunting public as a whole, they are becoming less and less common. The average pheasant shooter driving west this November 13 will have motel reservations for the weekend, let's say \$26 for two nights, a share in the gasoline for the trip, roughly \$15, and enough cash for three days of restaurant fare, probably somewhere in the neighborhood of \$50. If he keeps a dog, scouts the country ahead of time, or does anything else to take some of the gamble out of his opening day hunt, he may easily spend ten times this minimum \$91 investment, and if he happens to be a nonresident, the ante will be higher yet. The currency may be time, effort, or cold cash, but a hunter will pay dearly for his hunting one way or another. By comparison, the average cost for a pheasant hunt on a Kansas shooting preserve runs about \$95 for eight ringnecks, no gamble, no long drive, no irate landowners. So why do so many hunters avoid shooting preserves?

Many feel they are too artificial, and there may be an element of truth to that. The stock in trade of a shooting preserve is essentially show business, the creation of an illusion, and there is probably as much variation



John Madson

in the quality of shooting preserve show biz as there is in the quality of Hollywood movies. Where the job of illusion making is done properly, the hunt is every bit as real and, if anything, more satisfying than the "real thing."

Thousands of experienced hunters have tried upland birds at Nilo, and they agree almost to a man that they wouldn't have known they were on a shooting preserve if they hadn't driven past the sign at the front gate. The surroundings aren't particularly well-manicured. They have the look of good cover, a combination of crops, native grass, brushy draws, and mature timber that would catch any hunter's eye. The area actually raises a lot of its own game, though not in sufficient numbers to support a season of hunting. The penned birds that sustain the shooting through the fall and winter are kept out of sight. As far as the hunters are concerned, the pheasants, chukars, quail, and hungarian partridge on the place were hatched wild in a nearby shelterbelt.

Many hunters are suspicious of the quality of these pen-reared birds, and if there is anything that separates a really well-run preserve from its competition, it's the way the birds perform in the field. Nilo's pheasant pens are large enough to give the birds room to fly and keep in shape; the birds are fed enough but not so much that they are sluggish, and they are bought from breeders who take pride in their stock. Many game farm pheasants now carry a strain of smaller Korean stock that makes them even more explosive on the rise than the purebred Chinese variety. In fact, these birds have gotten so hot that they are causing problems for some shooting preserve operators. The guests have

trouble hitting them.

Quail can be a problem on commercial areas. They are some of the most easily tamed game birds and are difficult to raise and ship. In addition, even the best pen-reared bobwhite may not perform well in bad weather. They offer the ultimate test to a shooting preserve operator. Many preserves have begun to use the more adaptable chukar partridge instead of quail. Huns also offer a good alternative to bobwhite. Both chukars and huns seem to resist domestication better than quail, will fly well in rain or wet snow, and hold well to a pointing dog.

This last detail is important. One of the greatest pleasures in store for an upland bird hunter who takes the plunge on most shooting preserves is dog work. The Nilo kennel has yielded a couple of national champion springers and five national field trial Labradors, far more than most controlled shooting areas, but nearly any reputable preserve that has dogs can probably show the average shooter a caliber of dog work he's not used to. There's no black magic to their success, really. Many of them have their dogs professionally trained, but more important, they give their dogs more exposure to game birds in a season than most dogs get in a lifetime. That much hunting will hone the talents of any dog.

The key to having a good shooting preserve hunt is finding a good shooting preserve. Preserves come in two broad types, membership operations and public areas where hunters pay by the day or by the bird. The kind of area you pick depends on what is available in your area and how much you're willing to spend. While the Nilo hunt is about as fine an upland shoot as any hunter could ask for, there are preserves across the country and in Kansas that offer a more gilt-edged experience. Most top-flight shooting areas are placing their emphasis on the sport and esthetics of their hunt. Few charge on a per-bird basis; they feel it's up to the hunter to get the birds he wants in the bag. They are in the business of showing him healthy, wild birds, good cover, and attractive surroundings. I recently talked with the owner of a new 2500-acre shooting preserve in southeastern Kansas who told me how he felt about his operation.

"All my life, I've wanted to have a place that was managed solely for upland birds, the perfect hunting area. Now I've got it. All I need is 300 other people who share that dream." That kind of feeling is common among shooting preserve people. They're in the business because they love the hunt, not because they want to make a killing.

So, if you have any reservations about the quality of a shooting preserve hunt, here's a suggestion. Find an operator who takes pride in his set-up, saunter up to him and say, "I'm a red-hot pheasant hunter, and I don't think you can show me a hunt I can't handle."

Don't be surprised if he gives you the Lou Johnson treatment.



John Madson



Flight

Bob Mathews

For all our pride as humans in our Saturn boosters and lunar orbiters, we still can't claim equal flight status with birds. We can buy a ticket to a seat in a jetliner that can fling us to the other side of the globe in a matter of hours but still watch birds in envy and fascination. Centuries ago, those human emotions inspired a belief that we could conquer the air but it was the human qualities of perseverance and resourcefulness that ultimately got us off the ground.

Our first attempts at flight were mechanized imitations of birds, with mechanical wings that flapped. If it

Photo by Steve Maslowski



works for the birds, reasoned the early tinkerers, it should work for us. But it didn't.

Trial and error eventually refined the solutions to the problems imposed by flight. It was only after we were able to get, and keep, our flying machines in the air that we began to get an inkling of how birds do it. By equipping ourselves to fly we learned how birds fly, rather than the other way around. What we finally found was the right combination of basic flight tools—wings, propellers, ailerons, rudders—which had always existed in birds but lay beyond our visual perception.

Slow-motion cinematography and high-speed still photography finally allowed us to see and analyze—at split-second intervals—the aerodynamic principles illustrated in the flight of birds. When a bird flaps its wings, there's a lot more going on than simple observation tells us. Propellers, wings, ailerons, and rudders all are at work.

Understanding the flight of birds is made easier by first having an understanding of basic aerodynamic principles. A bird's wing provides lift by adhering to the same principles affecting aircraft wings.

The air pressure on the wing of an airplane parked in a hangar is equal on every surface. But when the leading edge of that wing is moved through the air, pressures begin to vary at different parts of the wing. A properly shaped wing, be it bird's or airplane's, is slightly arched on its upper surface, with an underside

that is flat. The air stream traveling over the curved upper surface must travel farther, and therefore faster, than air passing over the flat underside of the wing. The result: downward pressure on the wing is reduced while upward pressure, or lift, is maintained or increased. By tilting the wing, varying degrees of lift can be attained, at least up to the point where the angle of tilt results in a stall.

Most birds rely on the inner wing—from shoulder to wrist—for the lift requirements of flight. A bird's outer wing is equivalent to an airplane's propeller, but instead of rotating in a single direction around a fixed pivot a bird's propellers go through a more involved, semicircular motion.

The path of a bird's wingtip on the downstroke is downward and forward. Contrary to popular notion, the bird is not pushing downward to support itself in the air and backward to propel itself forward.

As the wing is pushed down the tips of the primary feathers—the bird's propellers—are pushed out almost at right angles with the rest of the wing. Each feather also is being twisted into the shape of an airplane propeller, the result of differentials in air pressure on the vanes on either side of the quill. The front vane of a primary feather is much narrower than the rear vane. This difference creates the torque that causes each feather to twist into the shape of a propeller. The degree of twist in each feather varies along the feather's length, from a small amount of twist at the



Photo by Steve Maslowski

base of the quill to much twist at the more flexible tip of the feather.

In easy flight, only the tips of the feathers twist to become propellers. But during takeoffs, and when pressed, a bird beats its wings more vigorously, causing the whole outer section of the wing to be twisted by the increased pressure into one big propeller.

The path of the bird's wingtip on the upstroke is upward and backward. The inner wing, continuing its role as the equivalent of an airplane's fixed wing, maintains lift. In smaller birds the wing does little or no propelling on the upstroke. The wing is partly folded against the body and the primaries of the outer wing twist open, venetian-blind style, so that the rising wing meets a minimum of air resistance. Larger birds, with slower wing action and greater body inertia to overcome, need to gain some propulsion on both up and downstrokes. They maintain propulsion on the upstroke by twisting the arm backward so the primary feathers now push against the air with their upper surfaces to drive the bird forward.

Although birds have just a few primary feathers, usually somewhere from six to twelve on each wing, they are grounded without them. That's why clipped primaries render a bird flightless. One researcher even found that he could remove half of a dove's secondary feathers—those covering the inner wing—without seriously hampering flight performance; clipping just a small portion of the tips of the primaries, on the other

hand, grounded the birds.

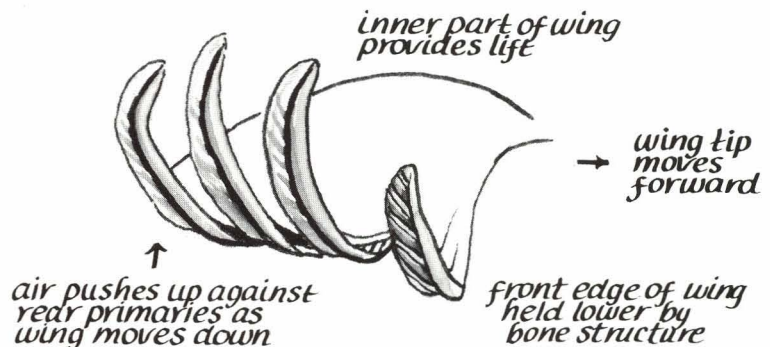
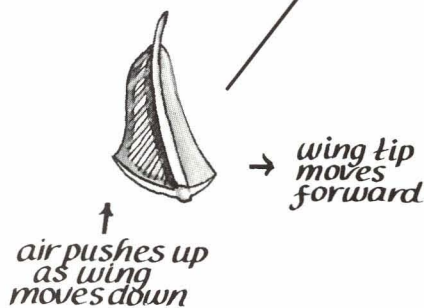
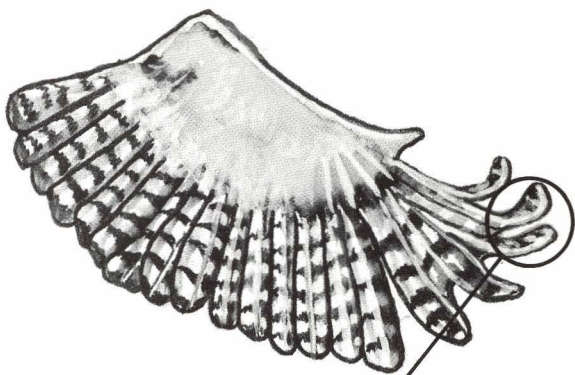
Besides having wings for lift and primary feathers for propulsion, most birds possess some specialized equipment to meet the varying needs of flight. Tail feathers serve as rudder and brake. They also supplement wing surface for takeoffs, landings, and hovering.

The alula—a small group of feathers at the leading edge of the wrist—is the bird's auxiliary airfoil. It's a mechanism that is reserved mainly for takeoffs and landings. The bird can control the alula independently of the rest of the wing. By moving alula feathers up, down, or forward, the bird creates a small, supplementary wing surface traveling in the same plane as the main wing behind it. The extra wing surface increases the lifting capabilities of the wing. In cruising flight, the alula lies flat along the leading edge of the wing.

While most birds are the equivalent of a conventional, propeller-driven airplane, there are some exceptions. A hovering hummingbird more nearly resembles a helicopter. Its body is held more nearly vertical, so that the plane of the wingbeat is horizontal. Each stroke of its wings is a power stroke, as the wing rotates before the start of each stroke to an angle that provides optimum lift. The fact that a hummingbird, despite its size, is a powerful flier shows in the size of its breast muscles, which account for as much as one-third of its total weight.

Some of the larger birds have difficulty flying under

As the photograph on the previous page and the drawing at left show, the primary feathers on the end of the wing twist as the wing is forced down. The wider rear vane of the primary (lower left) bends up more than the forward vane. As a result, the primary takes the form of a propeller blade. The forward drive generated by the primaries pulls the wing tip forward until it is even with the bird's head at the bottom of the wing stroke. The rest of the body is pulled along by the wing tips. The sketch below shows that the whole wing tip bends in the same way as a single primary. The primaries that trail behind the wing are bent up by air pressure because they are not supported by bone like the leading edge of the wing. The wing can be twisted so that the propelling primaries pull the bird up like a helicopter blade or even backward. (Drawings by Daisy Baughman.)



their own muscle power. Despite their formidable size, their flight muscles are proportionately smaller than those of most smaller birds. Many of the larger birds make up for that shortcoming by using the energy in the atmosphere to power their travels. Watching a hawk, eagle, vulture, pelican, or stork soar on motionless wings is one of the most enthralling sights in the natural world.

To watch a soaring bird actually gain altitude while wheeling in wide circles is an illusion; the bird is actually gliding downward but riding on a current of air that is rising faster than the bird is descending.

On the plains, a common form of upward air movement put to work by soaring birds is a thermal—a rising column of air formed by uneven heating of the earth's surface. Bare ground collects heat faster than water or forested areas. As a result, the air above a plowed field will rise faster than air above adjacent water or vegetation-covered ground.

In mountainous areas and the oceans, soaring birds rely more on obstruction currents—rising air caused by the deflection upward of ground-level winds. As wind currents encounter obstacles—ships, mountains, buildings—they form updrafts that soaring birds put to their advantage.

On the open seas, where thermals and obstruction currents are unreliable, another form of atmospheric energy exists that powers the flight of soaring birds like albatrosses. Steady trade winds blowing across the

surface of the ocean are slowed by friction against the waves, while wind currents passing higher overhead are traveling unimpeded and, therefore, faster. The albatross begins the soaring cycle by traveling sharply downward with the wind at its back. As it nears the surface of the water it changes directions and heads back into the wind. The momentum of its sharp descent is applied in a slingshot effect that powers its ascent back up into the faster-moving air where the bird wheels around and, with the strong winds at its back, resumes the cycle.

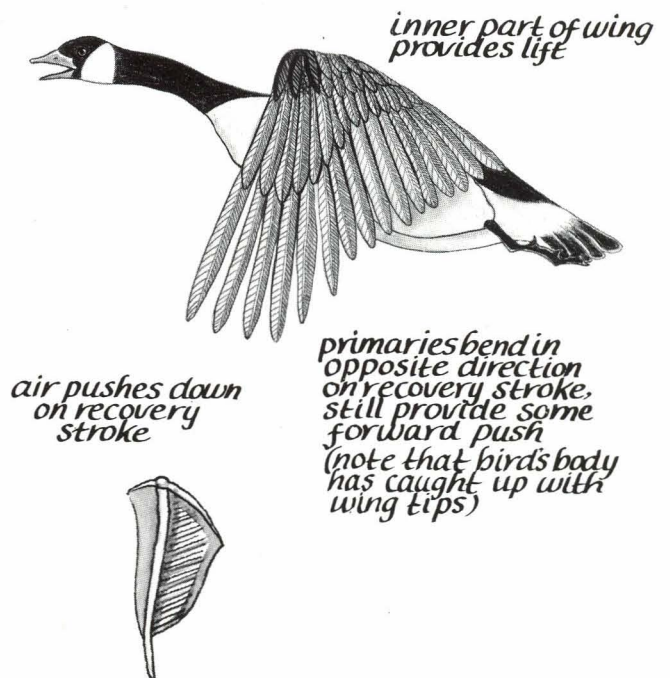
Generally, soaring birds are weaker fliers than their cousins who rely on flapping flight. But their weight is an advantage in soaring and gliding; once in the air, a heavier bird's momentum will carry it through erratic air currents without loss of stability or control.

Whether they travel by flapping or gliding, all birds share a common theme in physical structure: high power and low weight.

Keeping weight to a minimum is reflected in the bird skeleton, which is extremely light, yet very strong and elastic. Many of their bones are hollow, reducing weight without sacrificing strength. Some birds actually carry more weight in feathers than bones.

There are numerous other internal features that serve to reduce weight. Having a gizzard eliminates the need for teeth and the accompanying heavy jaws and jaw muscles. A short, efficient digestive system minimizes weight. The feet and tarsi contain no fleshy muscles,

The Canada geese on the opposite page show all phases of wing downstroke and recovery. Although the birds are moving slightly away from the camera, it is still possible to see the twisting of primaries and the forward movement of the wingtip on the downstroke. The drawing below shows the wing tips almost even with the tip of the goose's bill with the primaries splayed and twisted by the air they are pushing through. On the recovery stroke (right), the wing tips move back and up. Notice that the rear vanes of the primaries bend downward in this recovery phase, pushing against the air and providing some forward propulsion even on the upbeat. The inner wings remain extended until the last possible instant of the upbeat so that they can continue to provide lift. (Drawings by Daisy Baughman.)



only rough tendons with a limited nerve and vascular supply. The lack of sweat glands and urinary bladder adds further weight savings. Reproductive glands, with their capacity to atrophy during nonbreeding season, are kept to a minimum in both males and females. Feathers provide a body covering unparalleled in lightness, durability, insulation, and streamlining properties. Air sacs filling the body cavity and hollow bones add to a bird's buoyancy. Some soaring birds have air sacs extending all the way into their toes.

The "high power" requirements of flight are primarily met by the high-speed metabolism of all birds. A bird's heart is large, powerful, and rapid-beating, ranging up to a maximum of over 1,000 beats per minute in some of the smaller birds. Blood pressure and body temperature are the highest of any vertebrates. Body temperatures of many of the passerine species average around 112 degrees Fahrenheit.

A bird's respiratory system is a model of efficiency. In most birds, several pairs of air sacs are connected by tubes to the lungs. The air sacs enhance the work of the lungs by allowing a more complete exchange of fresh air than the respiratory system of other creatures. In comparison to the respiratory system of mammals, for example, a bird's lungs and air sacs are more completely voided of stale air during exhalation. That allows a more oxygen-rich mixture of air to bathe the lungs when a fresh supply is inhaled.

The digestive system of birds, like their circulatory

and respiratory systems, works rapidly and efficiently. Foods are utilized more quickly and completely than in other animals. A shrike can digest a mouse in three hours. Young cedar waxwings excrete the seeds of berries within twenty minutes after swallowing them.

The foods that fuel birds are high-energy fare—seeds, fruits, worms, insects, fish, rodents. Those high energy foods, together with a bird's capacity to extract that energy quickly and efficiently, go a long way toward meeting the energy requirements of flight. Fittingly, flight confers on birds a unique advantage in meeting their needs. If the food supply in their own neck of the woods is inadequate they have the mobility to transport themselves quickly to another area where the pickings are better.

Their physical structure is the epitome of functional simplicity; every component of a bird's makeup contributes in some way to flying. Our technological advances of the past few decades have enabled us to unravel much of the mystery of bird flight, but we're no less inclined to stand transfixed at the sight of a hawk circling on the wind. Maybe that's because we still see bird flight for what it always has been and always will be to the human eye: a marvelous illusion.

Artist Daisy Baughman comes to Kansas by way of Oregon. Her ink-and-pencil drawings were adapted from a variety of photographic studies of birds in flight, combining the most revealing parts of each photo to describe the fundamental processes at work.

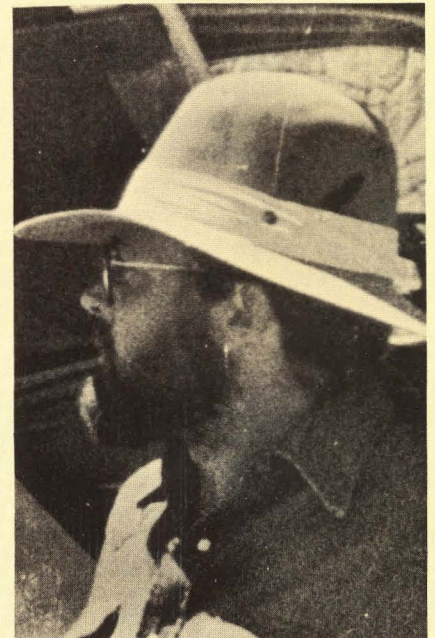
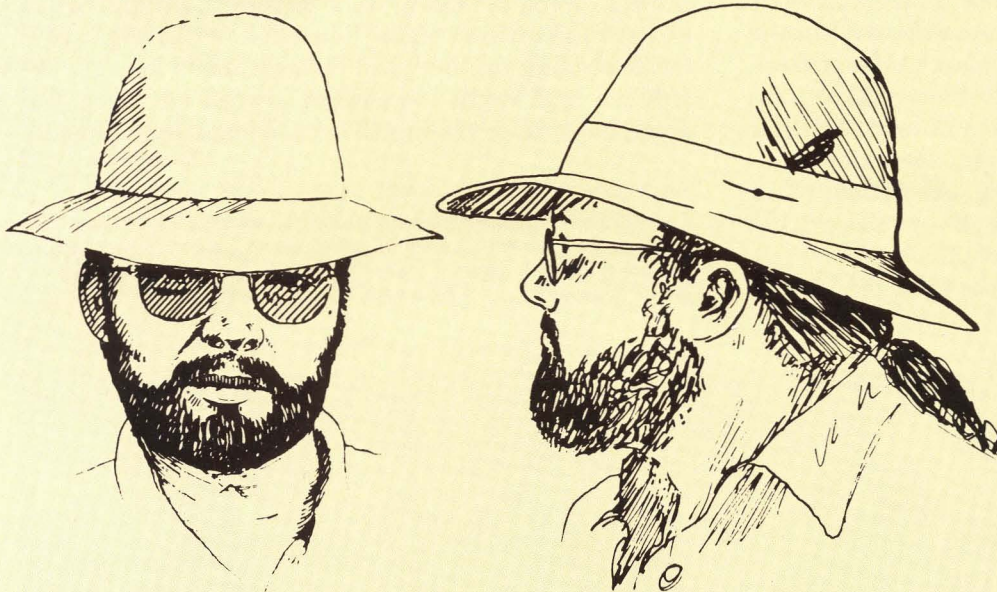


Chris Madson

WANTED

for the first-degree murder of two Idaho Fish and Game enforcement officers, January, 1981

DALLAS, CLAUDE LAFAYETTE, JR.



Date of Birth: 3-11-50
Place of Birth: Winchester, Virginia
5' 10", 180 lbs.
Brown Hair (long, wears ponytail), Brown Eyes.
Full Beard, Wears Glasses.
N.C.I.C. Entry No. W247288563
S.S. No. 270-49-0296
F.B.I. No. 208406 MI
N.C.I.C. F.P.C. 12AA0807041652061308
No known scars or marks.

Fish and Game Violators: A Closer Look

Frank NeSmith

When most people think of a poacher, an image of an unkempt, liquor swilling, backwoods type comes to mind. While this sort of person may more often violate fish and game laws, a hillbilly image is by no means a prerequisite for being a poacher. A lot of people who habitually violate fish and game laws are very ordinary-looking people, which makes definite profiles of poachers almost impossible to rely upon.

However, there are two main categories of fish and game violators. There are those who intend to violate, where all actions are premeditated from the start. The other group unintentionally violates by misunderstanding or being unaware of the law. The latter usually neglect to find out what the rules are or they listen to people who mislead them. Carelessness is the key trait of this type of violator.

Intentional violators are the hardest to apprehend, simply because they plan every move in advance. On the other hand, the inadvertent violation is usually the easiest to detect, because the person in error doesn't realize he is breaking the law, so he makes no attempt to hide it.

Opportunity and spur-of-the-moment decisions can make an intentional violator out of some people who, if they had time to think about it, would not commit such an act. A good example is the man driving to work early in the morning with a high-powered rifle available in the pickup's rack. Suddenly, a big buck jumps across the highway and stops before entering the woods. The man stops his vehicle, eases the rifle out of the rack, and sights in on the deer. He only intends to "sight him in" but the sudden temptation is too much and he drops the buck in its tracks. Only now does he realize the gravity of what he has done. Even though no one is around, and the road is deserted, the man's fear of being caught overwhelms him and he flees. This man is not a hard core deer poacher, yet his spur-of-the-moment actions wasted a fine game animal. The man knew it was against the law to shoot a deer out of season, and ordinarily he wouldn't. However, opportunity, temptation, and all of the other circumstances were just right, and the result was a dead deer.

In contrast, a hard-core deer poacher seldom kills a deer unless everything is in his favor. He takes few chances, plays all the odds, and usually picks and chooses his own time. This makes the professional deer poacher difficult to catch in the actual act of taking

a deer. Most arrests for deer poaching and other serious violations result from tip offs by individuals who provide enough information for an officer to make an arrest.

Such tips are often anonymous, and some even come from friends or relatives of the poacher, or even persons actually involved in the violations they report. A good case in point is a personal experience this writer had while working as a game protector in northeast Kansas. A neighboring officer contacted me to assist in apprehending some illegal fish seiners. The game protector had received a tip from a member of a bunch that was planning to seine fish from a local creek. The informant wanted the operation shut down, yet he was part of it. Should he participate, he was told, he would be arrested along with everyone else.

Five game protectors, including myself, staked out the creek that afternoon, and we did apprehend the illegal seiners. There were about a dozen in the group and, sure enough, there was our informant right in the middle of them. He was arrested and charged along with the rest. He preferred this to the recriminations he would surely have suffered had his friends found out that he had tipped us off. Even though he was a participating member, the informant strongly felt that some action had to be taken to stop the group's activities.

Intentional violators seldom worry about game protectors apprehending them, since they go to great pains to insure that the officer's trail doesn't cross theirs. A favorite trick of local poachers is to drive by the officer's residence and see if his vehicle is there. Better yet, a phone call to his residence asking for fish and game "information" is a good way to establish that the officer isn't out on the prowl. Still another ruse is to call the officer and falsely report a fish or game violation in the opposite end of the county from where the violator wants to operate. This sends the officer on a wild goose chase, and keeps him occupied.

All fish and game officers have been subjected to such tricks and are wise to them. In fact, the officers are quite innovative in developing their own methods to counteract and circumvent these efforts of deceit.

Even though this game is serious, and the wildlife resource dear to the heart of every wildlife officer, sometimes a particular violator will establish a unique rivalry with a game protector that may go on for years.

This often becomes a contest where outwitting each other becomes the overriding motivation on the part of both participants. This constant duel can sometimes breed a mutual respect between the two antagonists.

Don Clarke, game protector at Yates Center, related such a rivalry that he shared with a violator who once frequented the Toronto Reservoir area. Don had numerous complaints on this man, often alleging that he used illegal methods to take over limits of channel catfish. One morning, Don and another game protector teamed up and finally caught him not only for taking catfish illegally, but also for using Toronto Reservoir as an open air restroom. That was several years ago, and this particular violator has since grown too old to be active. Don tells me that, in a way, he misses the old fellow and the challenge of continually trying to catch him.

While some violators are viewed with a grudging respect like this one, there are others who game protectors despise. This type sees all game and fish laws as unnecessary evils, and views conservation officers as something less than human. By their very actions, morals, and behavior, these people are despicable to the game and fish officer. Probably the big difference in the way this type is viewed, is that their contempt of authority is felt and reflected by the officer himself. Also, because their hatred of game protectors is very evident, the officer views this type of individual as a personal danger.

There are good reasons to correlate such attitudes with dangerous behavior. A man who has spent most of his life outside the law while hunting and fishing admitted in a recent interview that he would kill *anyone* (officer or not) that he found stealing or taking his fishing nets or equipment. Most people are appalled at the idea of someone getting killed over a "bird or fish," but violent crimes with little provocation have always been evident in our society. Add to this the fact that conservation officers usually work along streams, and in the country and backwoods areas where a violent act is not readily detectable, and the stage is set to tempt this certain element to resort to violence. In fact, in some communities, a common story follows the vein of how the "game warden will get shot if he messes around here." Although usually viewed as barroom or liquor talk, a smart officer will always keep these things in mind and stay alert.

A recent incident at Perry Reservoir in northeast Kansas verifies this. In September of 1979 during the early teal season, state game protector Ray Beisel was assaulted by an intoxicated duck hunter as Ray attempted to write the man a ticket for shooting after sundown. The hunter grabbed his loaded shotgun and threatened to shoot the officer, whereupon Ray grabbed the shotgun and struggled with the hunter to keep the muzzle pointed away from himself. Another nearby game protector, Frank Hendricks, came to Beisel's assistance, and they succeeded in wrestling the shot-



gun from the hunter. The hunter subsequently drew a heavy fine and jail sentence for his actions. Although alcohol was a contributing factor in this incident, the bottom line remains that a deadly assault was perpetrated upon a fish and game officer over a minor violation.

Some violations can be humorous. One of my favorites happened to me while I was working the Missouri River with game protector Dave Hoffman. We were working upstream by boat on the Kansas side at Atchison. Several fishermen were situated along the bank underneath the Atchison bridge, and we put in to shore several yards below them. While I held the boat against the strong current of the Missouri, Dave went to check the fishermen. As he was checking licenses and creels, a party of three rafts was launched from a couple of hundred yards further upstream. As they came drifting past Hoffman, he asked them to hold up their life jackets. Upon producing their preservers, they were one short of having the required number. Hoffman again asked them to produce it. The retort was that it was "down underneath the beer." Dave then requested the rafters to come into shore for inspection. In answer, the loudmouth of the group snapped, "If you want to see the xxxx thing, you'll just have to come on out here and get it you xxxx xxxx game warden!!" Dave calmly turned in my direction and yelled, "Frank, we need to go out and check that yellow raft in the middle." It was only then that the belligerent rafter saw me standing there in full uniform holding to the painter of a boat that was very capable indeed of going out and getting the raft. His facial expression clearly said, "I'll be go to hell," which he echoed verbally along with an unprintable or two a couple of seconds later, when he got his voice back. At this time, the whole party started paddling furiously in our direction and came to shore without further argument.

We gave the loudmouthed one a ticket for insufficient life jackets, which usually carried a minimum on first offenses in Atchison county. However, in this particular case, the boater gave us a fictitious name and address. We finally had to trace him down through informants and serve a warrant on him. Ultimately, he paid a total of \$187 for what started out as a five-dollar fine.

Apparently the deterrent effect on this particular individual probably wasn't very great, since he and several members of his family were arrested the next fall for spotlighting.

Deterring violations, however, is a main function of wildlife law enforcement. If enforcement is apparent, the majority of the population tends to adhere to the law more closely. Without evident enforcement, the laws aren't followed as carefully. At either end of the sporting spectrum are the narrow bands of the ultra-good and the ultra-bad. The ultra-good will never break a law and often even impose further restrictions upon themselves. The ultra-bad won't stop violating

even if it were possible to arrest them every day.

Since the intentional violator can come from any walk of life, it is very hard to really categorize them unless a specific major offense is looked at. A recent study of spotlight poachers in Michigan revealed a summation of spotlight hunters that most conservation officers agree with. That profile of spotlight hunters came up with these conclusions:

—Spotlight hunting can happen at any time of the night, any night of the week. However it is more *likely* to occur after midnight, and more *likely* on Friday and Saturday nights than any other day of the week.

—Most spotlight hunters have an educational level of less than high school.

—Spotlight hunters usually hunt in groups of two or more.

—There is a seventy-five percent probability that spotlight hunters have consumed some form of alcohol before engaging in their illegal activity.

—Most, but not all, spotlight hunters are from the low, low-middle income groups.

All of the spotlight hunters I've dealt with, more or less, conform to this profile. However, we're talking here of a specific type of intentional violation that is abhorred by most sportsmen. So this peer pressure could be a factor in keeping the profile of this particular type of violator narrow.

It is harder to draw a social profile on other violations that seem to be more acceptable to the public. For example, consider the prominent lawyer from an urban city cited for taking over limits of walleye by using two stringers on his boat, one conveniently out of sight at the stern, and the other prominently displayed up front. Probably, this individual couldn't be forced to spotlight hunt or poach a deer, but an overlimit of walleye was not a serious violation as far as he and his friends were concerned.

Whether violations occur through carelessness or intentionally, they do occur. In 1979, there were a total of 4,585 fish, game, and boating arrests with total fines of \$133,880.23. So, fish and game officers are kept quite busy not only deterring violations but apprehending the violators as well. Game protectors cannot distinguish intentional acts from the unintentional, since the hardcore violator often tells a better story than the person who has been careless. The officers strive to be fair, and try to treat everyone equally, while using good judgment and common sense.

The hard-core violator will never be put completely out of business, but fish and game officers are dedicated to keep the level of poaching as low as possible. As long as these officers have the support and help of the state's good sportsmen and public, the fish and wildlife resource of Kansas will be protected and conserved for present and future generations to enjoy.

Law Enforcement Chief Frank NeSmith is a native Georgian who served five years as a game protector in northeast Kansas before moving to Pratt. In addition to his law enforcement training, Frank holds a B.S. in zoology.

