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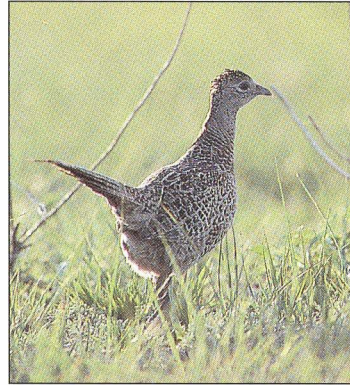
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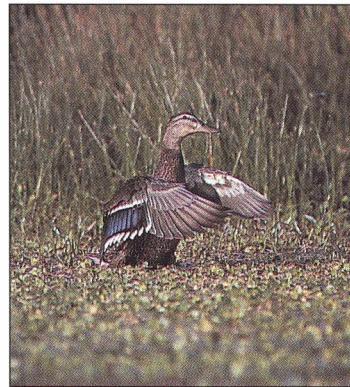
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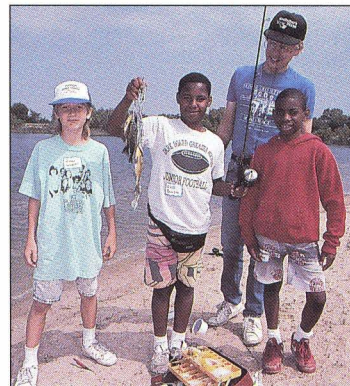
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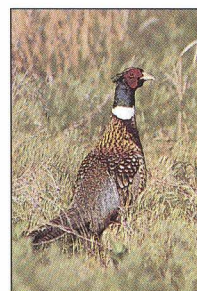
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About the Covers: A rooster pheasant flaunts its colors to attract a mate. Mike Blair filmed the bird with a 600mm lens, f/11, @ 1/250. **Back Cover:** When the magic of fishing captures a child, it's likely a lifelong relationship with the outdoors will begin. Mike Blair captured the moment with a 55mm lens, f/11, @ 1/125.

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Editorial Creed: To promote the conservation and wise use of our natural resources, to instill an understanding of our responsibilities to the land.

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THE BUCK STOPS HERE



Attitude Adjustment Needed

If you saw a thief breaking into your neighbor's house, would you even hesitate to call the police? I doubt it. So, why do so many who witness a wildlife-related violation fail to report it? There seems to be a serious apathy here for wildlife-related laws, even though, to most of us, our wildlife resources are much more precious than our neighbor's belongings.

We need to take a long look at our attitudes toward wildlife-related laws. Why do so many take them lightly? Perhaps it's a feeling of helplessness: "Well, that one deer won't make any difference," or "There's nothing I can do about it. The warden is probably miles from here."

I hope it's the general feeling that witnessed violations are isolated events, rather than a blatant lack of caring. I'm sure many have thought that the poachers they've seen or heard about are just a few individuals committing isolated crimes. But I think that misconception would be shattered if we could see all of the wildlife crimes committed. Unfortunately, few poachers are actually caught and few are reported. The real number of wildlife violations is staggering and they are taking a drastic toll on our resources.

So, why do we perceive wildlife-related violations differently from other illegal activities? When someone buys deer permits for his whole family, grandmas, aunts, you name it, then fills them all, that's thievery. He's actually stealing a permit and hunting opportunity away from an honest sportsman. When someone kills too many quail, or over limit of ducks only to leave the highest point bird in the marsh, that's stealing (not to mention wanton waste). When someone jumps out of the truck, runs out into a weedy draw without permission and shoots a pheasant, he's trespassing. A double crime is committed because not only are these actions illegal and damaging to the resource, but they also portray hunters just the way anti-hunting groups prefer: unscrupulous, poaching, beer drinking slobs who kill everything they see. By turning our heads away from wildlife crimes, we're actually damaging the entire hunting and outdoor tradition, while allowing the very resources we love to be raped.

Consider a well-respected individual who would never think of stealing even a pack of gum from the drug store. Why, then, would that same man keep a short bass, or shoot one too many pheasants? Wildlife laws aren't taken seriously—until someone gets caught. That same well-respected individual is outraged to get a citation for a wildlife violation, especially if he didn't intentionally violate or was ignorant of the law. But if he was doing 35 mph in a school zone and gets stopped, he expects to



Dana Eastes illustration

Turn in poachers, polluters, unsafe boaters, and public land vandals.


get a ticket, even if he failed to notice the speed limit sign.

I don't care to hear the old argument that hunting and fishing are over-regulated, that it's just too complicated to keep up with the laws. Hogwash. Laws are in place for a reason, and any sportsman with good intentions has a responsibility to keep abreast with all of the laws. Let's face it, if we treat wildlife laws like speed limits and try to get away with violations whenever we think the odds are low of getting caught, one of two things will happen: We will succeed in sufficiently depleting certain resources so that we will no longer be able to, or want to, pursue them, or, we will set the non-participating majority against us to the point that our outdoor privileges will be taken away by public opinion.

It's time to start practicing what we preach. If hunters are the No. 1 wildlife conservationists, then we need to police our own ranks. Know the laws and abide by them. And report all violations witnessed. It's almost too easy. Pick up the phone, dial 1-800-228-4263. That's Outdoor Alert (used to be called Operation Game Thief), and you can make an anonymous report. Every bit of information helps. Descriptions of persons involved, names, vehicle descriptions and tag numbers can often lead to citations even if the CO isn't able to catch the poachers red-handed. No more excuses. No more justifications. It's time to take care of this situation ourselves before someone else decides to step in and take care of it for us.

Mike Mill





A Pheasant Odyssey

by Randy Rodgers
wildlife research biologist
Hays

photos by Mike Blair

Since introduced in Kansas in 1906, the ring-necked pheasant has adapted well. But each day of each passing season brings new challenges as the pheasant struggles to survive and perpetuate the species.

The hen pheasant sat virtually motionless, save her almost imperceptible breathing and an occasional blink of her eyelids. In the nest beneath, eggs had pipped, and the chicks were struggling from the confines of their shells.

Miracles of physics, the eggs withstand the full weight of the hen, despite the relative thinness of their shells. Yet, the chicks' feeble tapping from within eventually causes a fracture. Still, the task of hatching is an exhausting, nearly herculean effort for the emerging chicks.

The hen, too, has struggled against long odds to reach this day. She endured the severe conditions of winter and, at the threshold of spring, narrowly escaped the talons of a great horned owl trying to feed its own young.

April had been kinder. She spent much of it in the company of two other hens, one also in its first spring and the second a year older. They, like herself, had been attracted by the brash behavior and brilliant plumage of the rooster that established his breeding territory in the corner of the wheat field. Irresistible hormonal drives triggered by increasingly longer days had stimulated her to mate and mobilized her physiology for the intense energy demands of egg production. She had chosen a place in a thin fenceline for her first-ever nest and laid an egg on the third of May. The next day she inconspicuously returned to deposit a second egg and repeated this daily for another week, each time carefully concealing the nest before leaving.

But the sparse fenceline proved a poor nest site. Sometime during the night, a skunk using the fenceline as a travel lane had discovered the unattended nest. The next morning, nothing but crumpled egg shells remained. Unable to instantly turn off the egg-laying process, she abandoned her tenth and eleventh eggs.

By the middle of the month, she had picked a new nest site 40 yards into the rapidly growing field of winter wheat and well away from the dangerous fenceline. Nest materials were scarce, but bits of straw and the drying lower leaves of the wheat proved just enough.

The few days that had passed since the first nest was lost provided time



In April, a cock pheasant displays bold color and careless antics to attract a hen. Defending a territory against other males, the bird will usually breed with several hens.

for the hen to feed and rebuild depleted energy reserves in preparation for another round of egg laying. This time, she would complete a clutch of 10 eggs—fewer than the average of 12, but a good number considering this was her second attempt.

Early in incubation, the embryos could easily endure moderate temperature fluctuations. This afforded the hen some modest opportunities to leave the nest for feeding. Later, as the developing embryos grew less tolerant of temperature change, it was imperative that she put in long, grinding hours on the eggs. Her faithfulness to incubation correspondingly intensified and was interrupted only by occasional turning of the eggs and short, almost frenzied feeding forays: desperate attempts to maintain her stamina. Her mission required the persistence to stay on the nest through drenching rains and sometimes extreme heat. She, like other pheasant hens, had sacrificed much of her own strength and body weight by the end of the 23-day incubation.

But now, as her eggs hatch beneath her, she will wait patiently, not

risking any unnecessary movement which might attract the acute vision of the red-tailed hawk that hunts the area. Even if a coyote were to wander frighteningly close, she would sit, frozen in a gamble that weighs risking her own life against almost certain loss of her clutch should she take flight to safety.

Ironically, this same intense faithfulness to late-stage nests often leads to the demise of hen pheasants. Hay fields, particularly alfalfa, are very attractive to nesting pheasants but are deadly traps. The timing of alfalfa cutting, unfortunately, finds many hens in the latter stages of incubation. Conditioned by millennia of predator avoidance, the hen's innate response to a nearby disturbance is to hold tightly on the nest. But haying machines are not predators and will not pass by harmlessly; they take everything in their path. All active nests are destroyed and the most attentive hens often wait too long to flush from their nests, losing their lives to the fast-moving sickle bar.

This nest, though, was in winter wheat: far less attractive for nest construction, but difficult for predators



Inset photo by Gene Brehm

The hen searches for suitable nesting cover before beginning the egg-laying process. An egg is laid daily until the clutch is complete (usually 12 eggs) before incubation begins.

to search and, most important, generally undisturbed by man's machinery during the nesting season. The hen came through incubation with no mishaps. Most of the chicks have emerged now, but they must dry out and gain strength. She will brood them through the night.

Sensing the morning sun's warmth, downy chicks poke their heads from beneath the hen. Carefully, she lifts herself from the nest and clucks softly, signalling the chicks to follow. She must move them, for the wheat has matured and its dry stems harbor none of the insects they need to survive. Nine chicks follow the sound of her clucking as she slowly leaves behind the place where she invested so much effort. As she moves away, a fading life remains in the one unhatched egg. This chick, too weak to break free, is doomed to expire within the once-protective shell, now turned prison. The hen cannot wait. She must focus her attention on the healthy chicks . . . nature grants no favors to the weak.

By late afternoon, the tiny caravan reaches the edge of the field and moves into a strip of fast-growing sunflowers and kochia. Here, the hen can pause in the concealing shade. But the chicks instinctively begin pursuing the small leafhoppers and grasshoppers that abound here. The hen is watchful, but not concerned . . . this is why she has led

them here. Insects will be a staple diet for their first four weeks of life. From them, the chicks will obtain the protein, minerals, energy, and most of the moisture they need for rapid growth. Here, for a while, the hen and chicks can feed and rest. The open growth of the weeds lets them move about freely at ground level, while sheltered from the elements and the eyes of the red-tailed hawk by the leafy canopy overhead. This place, only 12 feet wide, is a miniature paradise for the young brood.

It is a roadside.

Only three days after reaching the roadside, the hen is alerted to distant, yet disturbing activity on the far side of the field. Human voices eventually give way to the groan of an enormous machine. Somehow, from her earliest experiences, this seems familiar. The sound moves away at first, then stabilizes and gradually builds. The thing is moving toward her . . . and her brood. As it nears, she utters a rapid series of low, staccato notes which warn the chicks to



Randy Rodgers photo

After 23 days of incubation, the eggs begin to hatch. At this time, the hen is susceptible to predators, staying on the nest even during very close encounters.



Soon after the chicks hatch, the hen must move them to an area with lush green weed growth. The weeds provide cover and the insects the chicks need for rapid growth.

hide and remain absolutely still. The combine passes within a few feet, but the chicks are safe. Repeated approaches of the combine keep the hen on edge for several hours. But each pass is a bit farther away, and the brood gradually resumes normal activity. This was the chicks' first experience with their mother's alarm call. It will not be the last.

Wheat harvest passed quickly, leaving behind a landscape transformed. For nearly two weeks, the weedy roadside has been a refuge. The chicks have grown at an astonishing rate with the abundant food supply. But the availability of insects was suddenly declining. The growing shoots of the sunflower and kochia had become strangely contorted and the leaves were beginning to yellow. The plants that had so effectively sheltered the chicks and served up an insect banquet were dying. The hen and her brood could not know the reason.

A few days earlier, a slow-moving truck passed along their roadside, and they felt a fine mist sift down through the green canopy. Under the pretense of noxious weed control, all the roadsides in this county were being sprayed with herbicide. But in this stretch, there was no bindweed, no musk thistle, no noxious weeds of

any kind. The herbicide had been ubiquitously sprayed to fulfill the mandate of men whose sterile vision of good management is of "clean" land harboring no weeds. A hen pheasant could not know or debate this vision. She only sensed that her chicks were hungry and she would have to move them from the oasis that had been their home.

Since harvest, some weeds had appeared in the wheat stubble. The cover here was far inferior to that they had known in the weedy roadside, but the growing weeds supported modest insect numbers. The chicks would have to forage longer each day and over a much wider area to find enough food, but here, at least, they had a chance to survive . . . and weed growth was improving the cover every day. The hen led her nine chicks back into the field where their young lives had begun.

In times past, the stubble field had been left untouched between wheat harvest and the next spring. Back then, weed growth transformed it into lush pheasant habitat. And the farmer was not much concerned about the weeds. He knew that moisture taken by the growing weeds was precious in this dry country. But he also knew that the loss was usually more than compensated for by the

snow the weeds caught and held in winter.

Just a few years back, though, farmers in this area saw their wheat yields reduced by a disease called wheat streak mosaic. The crop disease experts from the university sounded a warning drumbeat that volunteer wheat must be destroyed to prevent the disease from carrying over into the next crop. Farmers, already pressed by tough economic times, were worried by the worst-case scenarios they were hearing. Many responded by discing their wheat stubble after harvest, often without even checking for volunteer. Somehow in the drumbeat, the snow-catching, soil-saving advantages of untilled stubble were forgotten. Years of agronomic research that conclusively proved that post-harvest discing would cut future yields, somehow, was being ignored. Never mind that the extra tillage would thin the farmers' pocketbooks even more . . . the mosaic drumbeat was too strong. In this area, it somehow became a social responsibility to disc your stubble. Otherwise, what would the neighbors think?

This farmer too had succumbed. Only a week after re-entering the field, the hen and her brood again heard the foreboding sound of heavy farm machinery. Scattered only 20 feet from the same fenceline where the hen lost her first clutch, the chicks instantly froze at the sound of their mother's warning call. She began to flutter, feigning injury in a frantic but futile attempt to alter the path of the fast approaching tractor. But the machine was not diverted from the course that was taking it straight for the hiding chicks. The roar became too much and six panic-stricken chicks struggled into the air, a skill they had possessed for only a week. The short flight to the fenceline proved to be their salvation.

Their three siblings were not so lucky. Opting to sit tight, each was swallowed up by the rows of discs that churned their world into unsurvivable chaos. High up in the cab of the machine, the farmer smiled to have watched the six chicks fly to safety . . . he could not have seen the three now buried in his wake.

As the tractor gradually worked farther out into the field and her

sense of danger passed, the hen called together the remainder of her brood. Once again, the brood must move if they are to survive.

They travel down the thin fence-line, fortunate that the red-tailed hawk is not overhead. The hawk is preoccupied with the mice exposed by the tillage. Eventually, the brood enters an adjoining pasture. Here, they find adequate numbers of insects, but the chicks must work hard to catch them. The dense grasses at ground level form a maze of barriers to the movements of the three-week-old chicks. The pasture provides just enough food for the brood, but the hen is uneasy here. There is only patchy overhead cover to conceal them. After two days, they enter a green line on the far side of the pasture: a wide fencerow lined with weeds. This will be their new headquarters.

The fencerow divides the pasture from another field where, this year, milo is growing. Over the next three weeks, the chicks continue their growth and gradually become less dependent on the hen. They forage over a wider area using both the pasture and the growing milo, but seldom wander far from the security of the weedy fencerow. By 6 weeks of age, the chicks' diet had shifted to predominantly include seeds and green leafy matter. Insects are still important food sources, but now



In August, the young pheasants are becoming independent. Her rearing and teaching duties complete, the hen eventually wanders away, leaving the brood on its own.

more as a supplement.

The bond between brood and hen had grown weak by early August. She had begun her annual molt and the added physiological stress was taxing the hen's strength. She could no longer stand vigilant over the chicks and, at the same time, find enough food and rest to grow new feathers and rebuild her depleted stamina. One day she simply wandered away from the brood and never returned. But the chicks had grown independent, having already learned many valuable lessons from their mother. Her job was done.

Though the weedy fencerow was

still the focus of the brood's activities, the chicks foraged with increasing frequency in the milo. It had formed a relatively closed canopy and they often used its shade and open understory to escape the mid-summer heat. But every action in the agricultural landscape carries a real, if difficult to measure, risk to the brood. On this day, the risk of being in the milo was high.

Two days before, the farmer who rented this land had checked the milo for greenbugs, aphids that sometimes reach such prodigious numbers as to significantly reduce the crop's yield. What he saw con-



Man's actions all have an effect on the pheasants' world. Agriculture, so necessary to the brood's survival, can also be deadly. Some pesticides, such as parathion, can seriously sicken or even kill exposed birds.

cerned him . . . there were lots of greenbugs in the milo. What he did not see was that many of the greenbugs were dead: minuscule mummies killed from within.

Tiny parasitic wasps were active throughout the field using their ovipositors to inject one egg into every greenbug they could handle. Any greenbug so stabbed was destined to become incubator and nourishment for the larval wasp that would soon grow within. Had the farmer noticed the wasps' work, he might have realized that they were controlling the greenbug population for him. What's more, ladybugs, moving out from the weedy fencerow, were feeding voraciously on the aphids, providing even greater control on that side of the field. But the farmer had been conditioned to one response when he saw greenbugs . . . spray 'em! The call to the local crop-duster had already been made.

The morning was clear and calm and the brood had scattered into the milo, each chick keeping loose contact with the others. The quiet was shattered by a deafening roar that passed as quickly as it came. Then it returned, again and again, droning only a few feet overhead. With each pass, the plane moved a bit farther into the field trailing a fine spray which filtered slowly down around the brood.

With each breath, the chicks pulled the vapor into their lungs. Every step was on soil dampened by the mist. The droplets of dew the chicks so often sipped had also assimilated the stuff. And as tainted insects dropped from the canopy, they were captured and eaten with ease.

The poison the chicks breathed, swallowed, and absorbed through their skin was indiscriminate . . . killing the beneficial wasps and ladybugs as well as the greenbugs. It was parathion, one of the most toxic compounds ever concocted. Parathion was originally developed for the grizzly purpose of chemical warfare and was a poison so lethal that the Polish laced their wells with it as they fled the Nazi blitzkrieg at the outset of World War II. Now, half a century later, parathion is a routinely applied crop insecticide because it's a little less expensive than safer but still effective substitutes like



The young that survive the first three months stay together. As they become more mobile, they seek the best habitat, often unworked wheat stubble with heavy weed growth.

malathion.

Sickness was overtaking the chicks. Instinctively, they moved toward the heavy cover of the fencerow where they would feel more secure, not comprehending why they felt ill. The chick farthest out in the milo had taken a heavy dose as the poisonous shroud had drifted a bit from its intended path. This bird, a young female, was becoming disoriented and losing control of her muscles as she struggled to reach the fencerow. The poison was blocking the function of an enzyme critical to neural transmission. Her nerves were firing uncontrollably and she slipped into relentless convulsions. Her involuntary systems suffered the same response and she lost respiratory control. Within minutes, it was over. She had suffocated . . . unable to draw a lifegiving breath.

Five chicks reached the fencerow and there they stayed. All were sickened, to varying degrees, by the parathion, and two experienced tremors, symptomatic of milder poisoning than was suffered by the now-dead female. By late afternoon, most were recovering and the brood attempted to resume foraging. But it was difficult for one male to keep up with his siblings. He had not fully regained muscular control and his senses remained dulled by the lingering effects of the parathion. He stood, apparently oblivious to the silhouette in the sky that sent the other four chicks scrambling back to the fencerow. For a few more moments, the sun illuminated his bewilderment.

In an instant, sharp talons penetrated his back, dug in and punctured his lung. The struggle was brief as

the red-tailed hawk easily subdued its meal. But even this raptor would pay a price. As it plucked the lifeless pheasant, the hawk too was exposed to parathion still present on its prey's feathers. The redtail would soar again tomorrow, but this night would be filled with sickness.

Late summer was easier for the four survivors. Cover conditions were the best they had been all year, sharply diminishing the chance of being spotted by the redtail. The days were getting a little shorter, making the afternoon heat more bearable. Food was abundant.

Color differences between the two males and their sisters had become apparent by the time they reached ten weeks. Still, it would be nearly two months before they attained full adult plumage.

The young pheasants had become strong fliers giving them the mobility to seek out the best available habitat. One day, their world widened enough to encompass the property of an old farmer who had worked his land for over 40 years. Here, they would find wheat stubble that had grown thick with sunflowers, some 4 feet tall. It was perfect . . . so much so that they found themselves in the company of dozens of other pheasants. Here, all could feed, loaf, and grow with relative impunity from talons, teeth, and sickle bars.

Neighbors often chided the old farmer. They joked that he grew the best crop of weeds in the county. He was not rich, but he had made a good living by keeping his costs down and working hard. The bank didn't own his farm . . . or him. Times weren't easy and the sales pitches that always

promised higher yields and more profit were sometimes tempting. But he had seen plenty of seasons come and go and had come to believe that working with nature was better than trying to beat her into submission. Besides, there was more to harvest from his fields than dollars. He had grandsons and a favorite granddaughter who loved to hunt.

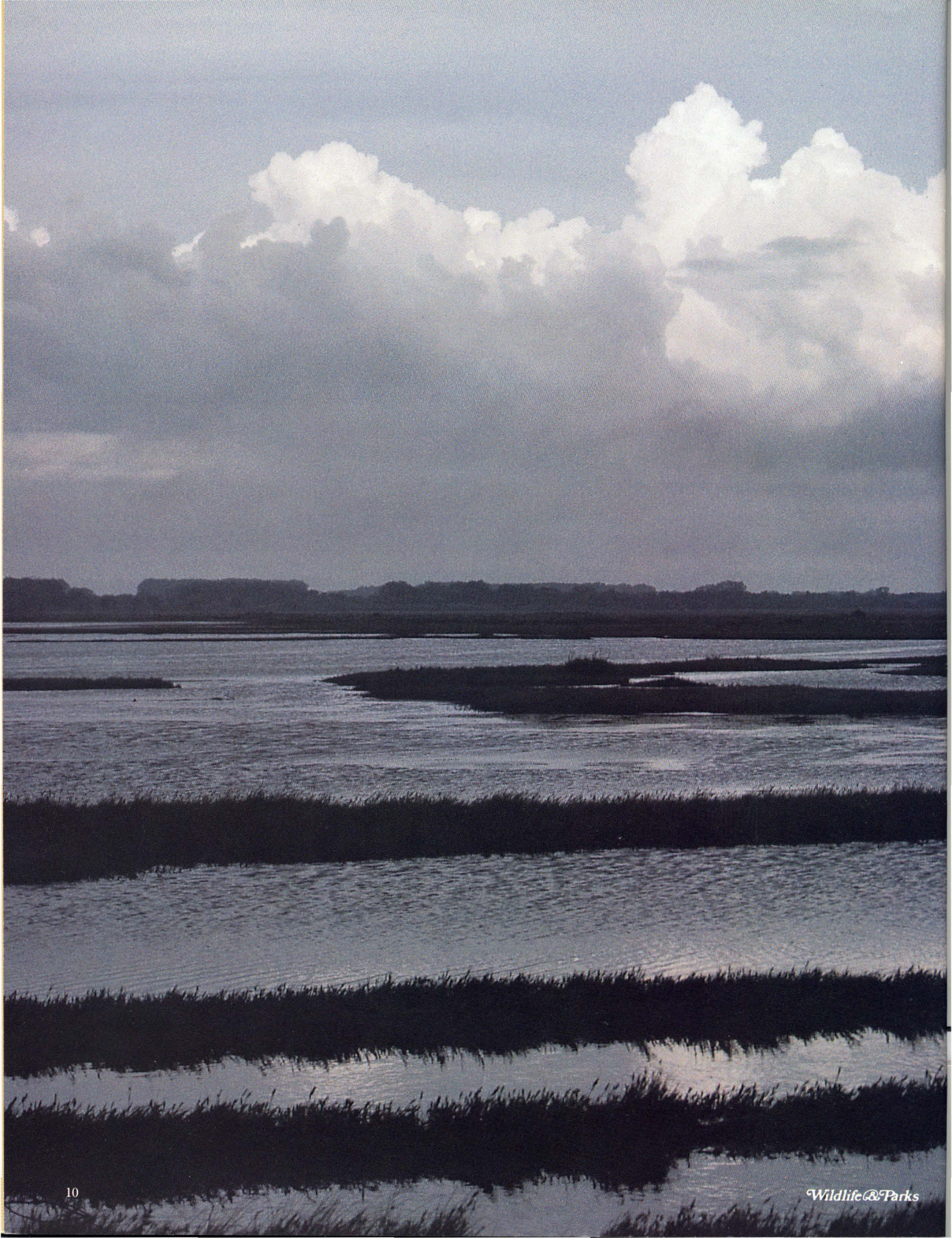
Each fall, they came to visit their grandparents and the farm. Tradition dictated that Granddad would take the youngsters out Thanksgiving morning. He would drop them at one end of a weedy stubble field and drive to the other to block at least one of the pheasants' escape routes. While he waited for the kids, and maybe a shot at a passing rooster, there were always goldfinches to watch. Their antics in extracting seeds from the wild sunflower heads never ceased to entertain.

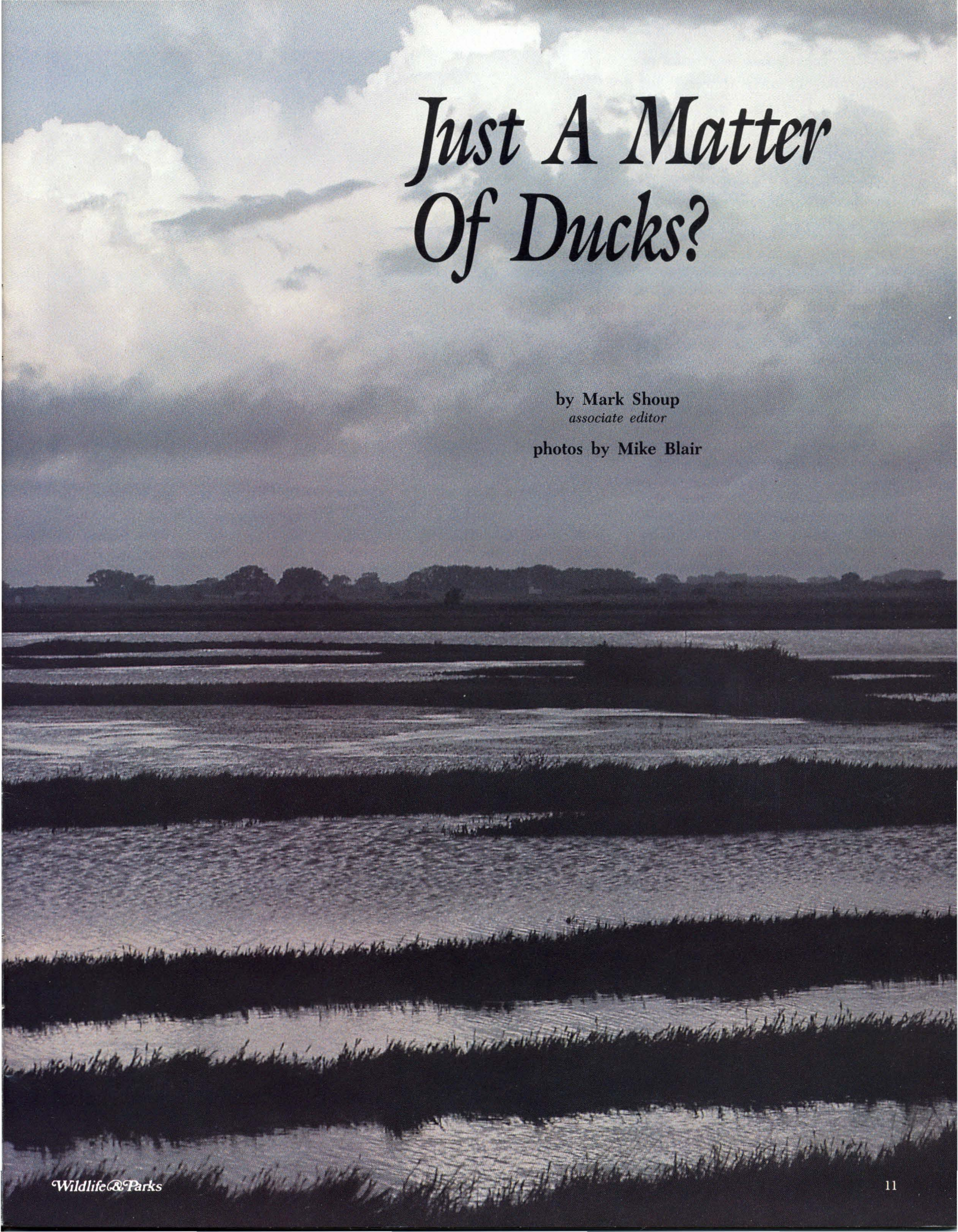
By the time the hunters had progressed three-quarters of the way to the truck, the old farmer had watched several hens and a couple of roosters sneak out the side of the field. At the field's end, less wily birds exploded from the cover. A half-dozen shots were fired and the eldest boy grinned from ear to ear as he retrieved his feathered trophy. But none, possible save Granddad, beamed brighter than his granddaughter who had cleanly bagged her first ringneck . . . a bird that had come to her via an odyssey from nest to roadside, from pasture to fencerow, and finally, to this weedy stubble field.

Around the Thanksgiving table, talk of supposed shooting prowess and tomorrow's hunt would rival the requisite compliments to the cooks. The harvest had been bountiful. Young cousins had eagerly learned of the intimacy between wild sunflowers and wild pheasants and each anticipated the next lesson. It was an indelible lesson that, with each passing year, fewer young hunters would be so lucky to learn.

But the old farmer was, at least for now, keeping the tradition alive. Come spring, the pheasants that wintered in his fields would spread across the landscape. They were his annual gift to the neighbors . . . pheasants that would grace their land too, if given a chance. ♡







Just A Matter Of Ducks?

by Mark Shoup
associate editor

photos by Mike Blair

Water + cattails + ducks = wetlands. If only it was that simple. Wetland regulation and identification has become a complicated issue. And as more wetlands are lost, those remaining become more valuable, and the controversy rages on.

In a 1988 article for *Sports Afield* magazine, President George Bush made this comment concerning wetland conservation: "My position on wetlands is straight forward: all existing wetlands, no matter how small, should be preserved."

In a speech before Ducks Unlimited's 6th International Waterfowl Symposium in 1989, the President said that "It's time to stand the history of wetlands destruction on its head. From this year forward, anyone who tries to drain the swamp is going to be up to his ears in alligators." He went on to make the following promise: "You may remember my pledge, that our national goal would be no net loss of wetlands."

Since President Bush made his well-publicized "no net loss" promise, the United States has lost close to 1 million acres of wetlands. The question now is how, and if, the President's promise will become policy. Policy concerning wetlands conservation—and even identification—has become one of the most hotly contested environmental issues in the country. On Aug. 9 the President himself proposed new rules governing wetland development, stirring the cauldron of controversy. One of the key policy changes proposed by the Administration was that areas considered wetlands must have standing water for 15 days or saturation to the surface for 21 days during the growing season. Under rules adopted in 1989, areas are considered wetlands if water is within 18 inches of the surface for seven days in the growing season.

Although the President's proposal set well with agriculture and development groups, virtually every state conservation agency and environmental group in the country was up in arms. Many federal officials were



Wetlands are often at odds with agriculture and development practices. Worthless at first glance, wetlands are actually invaluable ecosystems.

also upset. Experts with the U.S. Army Corps of Engineers (Corps), the Environmental Protection Agency (EPA) and the U.S. Fish and Wildlife Service (USFWS)—three of the four agencies charged with wetland protection—opposed the changes. (The Department of Agriculture's Soil Conservation Service [SCS] is the fourth agency.)

Leading the opposition within the federal government was EPA chief William Reilly. According to the Associated Press, Reilly said that "not only would the proposal wipe out millions of acres of wetlands, but it appears too time-consuming for officials to determine what qualifies as a wetland."

In August, an inter-agency review team consisting of officials from the Corps, the EPA, the Kansas Department of Wildlife and Parks, the SCS and the USFWS estimated that 30 percent of playa lakes, 80 percent of wetlands associated with floodplains around reservoirs and at least 10 percent of all other wetlands in Kansas would no longer be considered wetlands. (Almost half of the state's original wetlands have already been destroyed.) According to the National Wildlife Federation, the change would mean that "some of the nation's most productive duck facto-

ries—like the Dakota's prairie pot-holes—would be dropped from protection and opened to developers."

The issues are complicated. On the one hand, we have wetland protection, period. Those who oppose wetland protection argue that the government already regulates private property rights too much and that wetland protection is another infringement on these rights. Those who favor wetlands protection note that 53 percent of the original wetlands in the contiguous United States (48 percent in Kansas) have already been lost. Further destruction, they claim, will do irreparable damage to a broad range of natural resources.

The argument is also about wetland identification, further complicating the matter. For most people, a wetland shouldn't be so hard to identify. It has water and cattails and ducks. A typical marsh. Unfortunately, even if everyone agreed to protect areas so described—and not everyone does—wetlands are not so easily identified. In 1987 and 1988, the Soil Conservation Service, which was responsible for identifying wetlands for Food Security Act purposes, made its wetland determinations in Kansas. In Gray County, they found no wetlands, yet an earlier survey by

the Fish and Wildlife Service found 1,963 wetlands in Gray County. A subsequent review of 28 sites in the region by officials from the national SCS office, the Kansas SCS office and the Department of Wildlife and Parks also revealed mixed opinions. The national SCS team called 19 of the sites wetlands. Previously, the Kansas SCS team had called only one site a wetland.

Obviously, wetland identification is a difficult task, even for those trained in biology, soils and hydrology, but one thing seems clear—science, not politics, should define wetlands.

Understanding the value of wetlands may be an easier task. To better understand the issue, we need to look at how wetlands function. Then we can further explore the debate over their importance.

Wetlands are among the world's most productive ecosystems. In Kansas, there are a number of wetland types, such as floodplain oxbow lakes, rainwater drainage basins, playa lakes (clay-based, circular depressions with no external drainage), springs and saline or freshwater marshes.

According to Department biologists, Kansas wetlands provide crucial waterfowl wintering areas for more

than 27 percent of the Central Flyway's mallards and 10 percent of its Canada geese. Migrating waterfowl in the Central Flyway depend upon Kansas wetlands for fuel to complete their flights to summer breeding grounds and to successfully nest once they get there. Seasonal wetlands such as the playa lakes in southwestern Kansas may only hold water for a week or two each year, but when they do, they explode with invertebrates, essential sources of protein for migrating waterfowl. Interestingly, small, scattered wetlands do more to provide waterfowl with energy recharge and courtship opportunities than large bodies of water.

In addition, 19 of Kansas' 46 threatened or endangered species, including the bald eagle, eskimo curlew, least tern, peregrine falcon, whooping crane and piping plover, are dependent on these wetlands. Perhaps most startling, about half of the Western Hemisphere's shorebirds depend upon Kansas wetlands as a resting spot during migration. Nationally, 28 percent of all wildlife viewing occurs on wetlands. In Kansas, the figure is likely much higher.

Wetlands play a critical role in re-

ducing stream and groundwater pollution. They filter suspended solids and transform potential pollutants into harmless or even beneficial compounds. Among the most common drinking water contaminants in Kansas are nitrates. Bacteria that live on marsh bottoms convert nitrates into nitrogen, an inert gas. Wetland algae remove nitrates from water and hold them in organic matter. In one study, nitrates entering a marsh were almost completely eliminated after only five days. Other contaminants are also filtered or purified by wetlands. This can be particularly beneficial when the wetland is associated with an underground aquifer or other drinking water supply.

Wetlands also control flooding of streams by storing water during heavy rainfall and slowly releasing it downstream. The subsequent reduction in the velocity of flood waters reduces erosion and causes floodwaters to release beneficial sediments on farmland. In a limited but closely-related function, wetlands help recharge groundwater supplies through infiltration and percolation of surface water.

If wetlands do all this, you say, why would anyone object to their



Identifying wetlands is difficult and the guidelines complicated and controversial. Some critical wetlands may only be "wet" two weeks each year.





common snapping turtle



great plains toad



raccoon



red-winged blackbird

More than just duck habitat, wetlands support a broad spectrum of wild creatures. A few are pictured at left.

protection? Sometimes the answer is simple: wetlands stand in the way of agricultural, industrial or real estate development. Often, however, it's more complicated than this. Landowners may oppose attempts by conservation agencies to purchase wetlands or legislation protecting wetlands for a number of reasons.

If an agency is attempting to purchase a wetland, neighboring landowners may see this as unfair competition with private enterprise. The average tract of land sells two or three times in a lifetime, but if a state or federal agency purchases the land, the neighbor will never have the opportunity to buy it himself. Landowners may also fear limitations on use of pesticides, increased liability insurance, and loss of property value or water rights if the government buys neighboring land.

When state agencies offer to buy land, as the Department of Wildlife and Parks has recently done in the playa lakes and McPherson wetlands areas, landowners are sometimes led

to believe the government is plotting massive purchases, and accusations from land-grabbing to communism fly. Although Department policy is to purchase land only from willing sellers, the rumors still persist. This was clearly illustrated last summer when the Department announced plans to acquire 800 acres of playa lakes over a 5-year period.

"We had some farmers out there who were led to believe we were going to buy as much as 30 square miles of property," says Joe Kramer, director of the Department's Fisheries and Wildlife Division. "Obviously, that kind of acquisition is way outside our goals, as well as our means."

One of the biggest misconceptions, however, is that if land is classified as a wetland, it is taken from the landowner without just compensation. This is simply not the case. The landowner still owns the land, can continue to grow crops on it and controls who may or may not use the land. The government is simply saying that the land has benefits other than as cropland, just as towns and cities zone certain property.

In fact, landowners are limited in only two ways if land they own is determined to be a wetland. Under



Shorebirds are heavily dependent on Kansas wetlands during migration. Dry depressions can explode with life after spring rains, providing critical nutrients to far-traveling birds.



Ducks against people? While ducks are often mentioned in the wetlands argument, their need for wetlands is only a fraction of the land's value. A wetland's function of flood control, water purifier and ground aquifer recharger make it more important to man than to ducks.

Section 404 of the Clean Water Act, the land cannot be filled without a permit from the Corps of Engineers. In addition, the Swampbuster provisions of the Food, Agriculture, Conservation and Trade Act (the current Farm Bill, also known as the FACT Act) may deny subsidies and farm program benefits to producers who alter wetlands in certain ways to make commodity crop production possible. It is important to note, however, that Swampbuster does not flatly prevent farmers from farming wetlands. Under the law, a wetland may farmed if it is not drained or filled and woody vegetation is not destroyed. Prosecution of Swampbuster

also appears difficult. As of September 1991, only three violations—totalling \$1,500 in fines—had been prosecuted in Kansas. Nationwide, only a handful of Swampbuster cases have been prosecuted.

Often, wetlands are more a benefit than some landowners may realize. With help from a state conservation agency, wetlands can be managed to improve water quality and to control flooding. Increased wildlife habitat may even increase property values in many people's minds. In urban areas, wetlands such as Wichita's Cadillac Lake (on north Maize Road) have provided flood control and filtration of water recharging the Equus

Beds—the major source of drinking water for the city. Unfortunately, development has all but destroyed Cadillac Lake's flood-control capability, and the entire wetland will most likely be covered with housing developments in the future.

Wetlands elsewhere in Kansas and across the nation continue to be destroyed at an alarming rate. Conversion of wetlands to cropland is the principal source of wetland loss in Kansas, but there are other causes. In central and western Kansas, dewatering of aquifers through irrigation robs wetlands of water. Flood control structures and stream channel modifications drain wetlands adjacent



Kansas wetlands are also important to threatened and endangered wildlife such as the bald eagle, least tern, prairie falcon and these whooping cranes. The white pelicans below are just one of the more than 300 species of birds seen in or around Kansas wetlands.

to streams or alter stream flow into wetlands. To a lesser extent, modern farming practices such as terracing reduce runoff to wetlands, and urban development has destroyed wetlands directly.

What can and is being done? The most visible, broad-based effort stems from the North American Wetlands Conservation Act of 1989, which authorized federal assistance to the North American Waterfowl Management Plan. The North American Plan began in Canada in 1986 and was joined by federal wildlife agencies in Mexico and the U.S. in 1988. According to a recent progress report, the North American Plan "joins together the efforts of public and private conservation groups by using the international funding techniques and wetland restoration and management practices pioneered by Ducks Unlimited in the 1930s. A partnership of state, federal, provincial, territorial and private organizations, the Plan is dedicated to protecting millions of acres of waterfowl habitat and restoring populations of ducks to their 1970s levels." The Plan raised and spent \$240 million in its first five years and hopes to raise \$120 an-



nually for the next 10 years in order to accomplish its goals.

A balanced effort, the North American Plan's implementation board in the U.S. includes American Farmland Trust, Ducks Unlimited, the International Association of Fish and Wildlife Agencies, the Izaak Walton League, the National Association of Conservation Districts, the National Audubon Society, the National Rifle Association and The Nature Conservancy, among others.


The North American Plan is comprised of a number of "joint ventures," one of which is a five-state plan, called the Playa Lakes Joint Venture, designed to protect playa lakes. The Kansas Department of Wildlife and Parks has joined with conservation agencies in Colorado, New Mexico, Oklahoma and Texas to accomplish this goal. The program will use acquisition, easements and enhancements to accommodate waterfowl and other wildlife wintering in, migrating through and breeding in the Playa Lake Region.

A variety of other financial and technical assistance programs is available to Kansas landowners to restore, enhance and manage wetlands. The

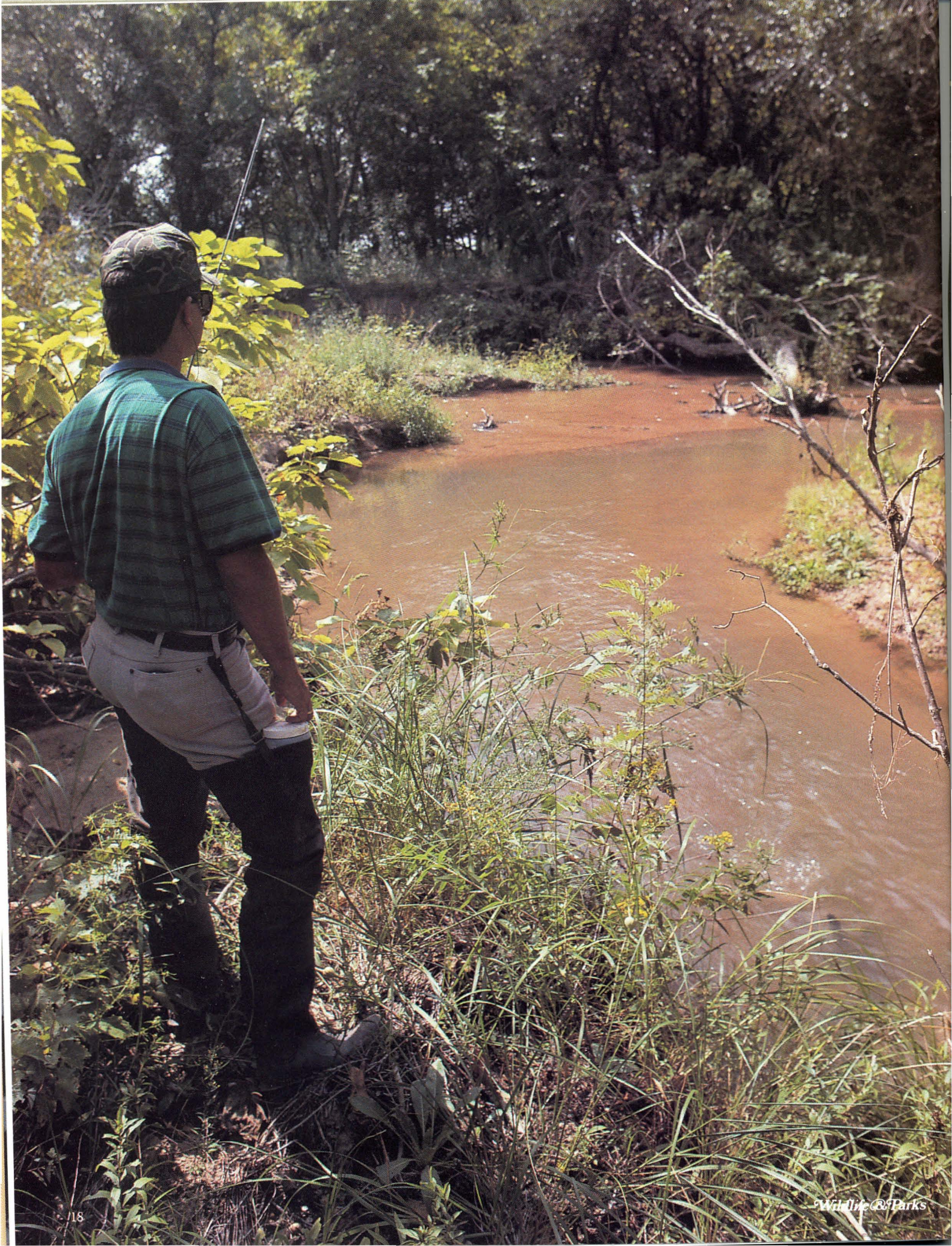
Department administers the Wildlife Habitat Improvement Program (WHIP), which includes wetland protection. Other state agencies are also involved in wetland protection programs. The Farmers Home Administration also has a Conservation Easement Program in Kansas. One section of this program allows delinquent borrowers to exchange debt for conservation easements on their land. The State Conservation Commission is in charge of the Riparian and Wetland Protection Program, a voluntary program designed to improve management of these areas. Other available cost-share programs include the Agricultural Conservation Program and the Agricultural Water Quality Program administered by the Agricultural Stabilization and Conservation Service. Unfortunately, these programs often lack funding.

All too often, outcry over the decline of certain species is seen as unreasonable, an effort by reactionary environmentalists to put the needs of birds or animals before the needs of man. The decline of the spotted owl in the Northway and ducks in the Central Flyway have both been viewed in this light.

But it's not an issue of ducks versus people. The decline of duck numbers is Mother Nature's way of telling us something bigger is wrong with the environment, something of our doing. As it concerns ducks, that something is the destruction of waterfowl habitat, but the damage runs deeper. Those who wish to protect wetlands want to protect more than ducks. They want to protect streams and drinking water and a myriad of other species dependent upon wetlands. Like many landowners, these conservationists see land ownership not only as a right, but as a responsibility. They also recognize it as a transitory thing. Future generations of humans—as well as ducks, terns, cranes and eagles—will need wetlands as much as they'll need aquifers to keep the midwest liveable.

The controversy, of course, will continue. The overzealous on both sides will alienate each other and in response, misconstrue the facts. Hopefully, the listeners will find common ground. May some of it be wet. 





Reading A River Right

by Mike Miller
editor

photos by Mike Blair

You don't need to be psychic to predict where fish live in prairie streams. All it takes is basic knowledge and some practice on the water.

I'll never forget my first lesson in river fishing. It was early April and a friend was taking me on my first white bass spawning run. His father had fished the Smoky Hill River above Kanopolis Reservoir the weekend before and reported the run had started.

I figured to catch fish, no problem. I had caught whites below a low-water dam and considered myself an adequate jig fisherman. But as we dodged trees, sliding down the dirt bank to the Smoky Hill, my enthusiasm plummeted. There wasn't any water more than a foot deep in sight. Wide and shallow, the river flowed lazily along, its clear water showing the sand bottom throughout. "If there are any whites up here, we'll be able to see them," I said dejectedly. Kurt just snickered at my ignorance and told me to look for deep water along the banks, "like where

that old tree is laying over. The fish are here."

I walked to the opposite bank and began half-heartedly casting my yellow marabou jig into a shallow stretch of current. Then I heard Kurt chuckle "Alright!" I turned to see his pole bowed double as he wrestled a 1½-pound white out of the current.

My attitude changed in a hurry.

My river and stream fishing to that point had consisted of small prairie streams with little depth change. I simply looked for the deepest holes, cast out a gob of worms or liver and waited for a bullhead or channel cat to bite. The Smokey Hill, on the other hand, is wide and shallow with water depth changes from 3 feet to 2 inches within a 5-yard stretch. Unless you choose your fishing spots carefully, you'll spend a lot of time fishing unproductive water.

Kurt's first bit of advice about the downed tree holds true. But that's an obvious deep-water hole. Any obstruction in the main current of a sandy-bottomed stream will create a hole below it. There are many other, more subtle, depth changes in a river that require some practice and effort to locate. Once you learn where to look, your fishing will improve immediately. And there's real satisfaction in the challenge of reading a river, aside from the obvious fish benefits.

There are several basic principles that will help you find river fish. First, you need to understand the main



A prairie stream meanders through alternating depths; some holding fish, some fishless. Reading a river tells you where the fish are.

current channel and how fish relate to it. Take, for example, a section of a typical Kansas stream from one bank to the other. Within that width, one bank will probably have deeper water, and there are varied depths and currents all the way across. For day-time fishing, you want to fish the deeper water. Fish associate with the deeper water for several reasons, most obviously because of the safe shelter it provides. The stronger current also carries more food to waiting fish. But fighting current burns valuable energy, so fish look for breaks within that current. The fish must associate with this deep water and at the

same time find some bit of refuge from the main brunt of the current. Within a stretch of water that holds fish, there will be very specific places where the fish concentrate.

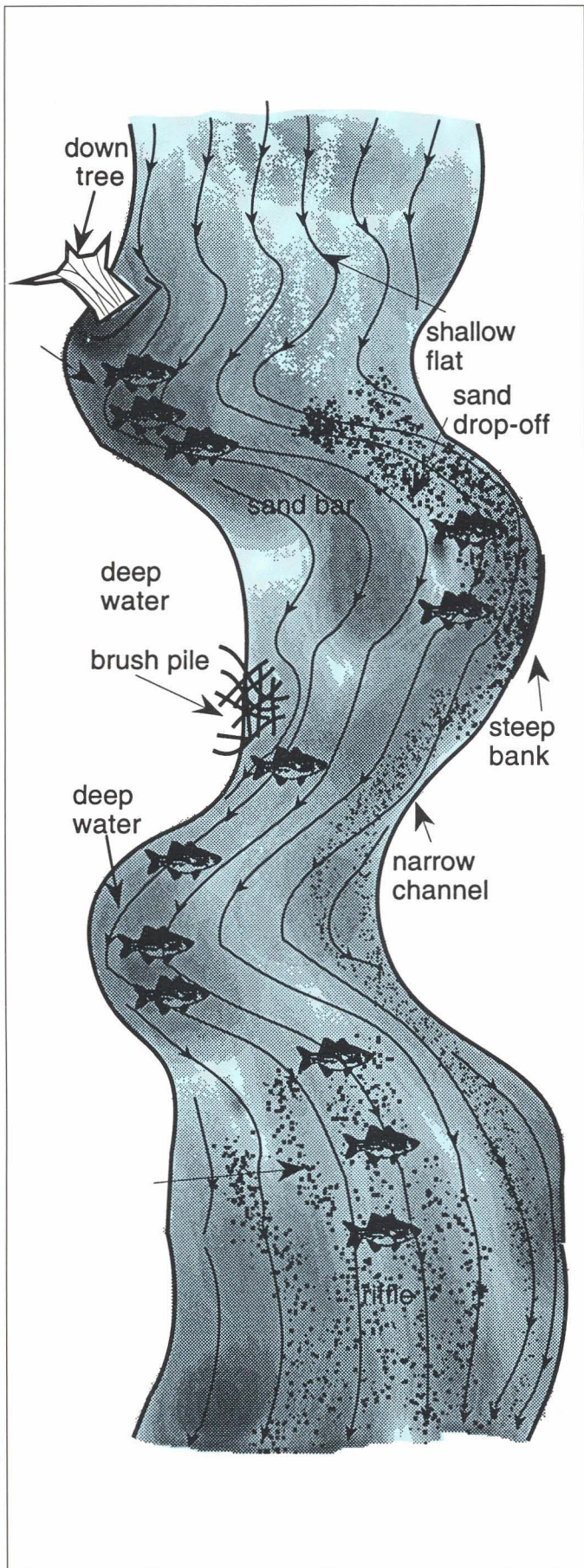
Begin reading the water by studying the stream bed and banks. Typical prairie streams meander back and forth, and at each of these bends there is potential for fish-holding water. Of course, not all bends will have productive water. Look for a narrow bend, where the water rushes together. The force of a narrow channel can erode a deep hole, and this concentration of current will deliver lots of food to waiting fish. Within that fast-water channel, look for breaks caused by rocks, brush, undercut banks, or any other abnormality. These breaks are where the fish will lay much of the time.

In very shallow streams, most fish-holding water will be close to the bank. And the best water will usually have some submerged brush. The brush diverts current enough to deepen the hole while providing cover that fish are attracted to. For channel cats you can dip a smelly bait just up current from likely looking holes and let the scent bring fish to your bait. For white bass and crappie, doodlesocking can be effective. Carefully wade as close to the structure as possible without disturbing the water. Then drop the jig straight down through an opening in the brush, bounce it a few times then hold it still for several seconds. Keep moving the jig from pocket to pocket. An 8-foot flyrod with a spinning reel attached can a big advantage in this type of fishing.

Man-made obstructions can also provide good fishing



Brushpiles are always good places to fish, as long as they are in the main current. Just about all species of river fish can be caught in brushpile holes, from channel catfish to white bass. Try to get the bait or lure into the thickest cover.



Dana Eastes graphic



A riffle is identified by the boiling surface of the water, created by the uneven bottom and strong current. Riffles are good areas to fish, especially at night.

holes. Look especially for low-water dams, bridge pylons, low-water crossings, railroad trestles and any other solid object that diverts current. The swirling water carves out a depression downstream, sometimes, depending on the strength of the current, the hole can be quite deep. At any rate, all the right ingredients are there, deep shelter, fast water and the obstruction can provide the break in the current.

Steep banks, tight bends and fallen brush are several keys that signal potential fish-holding water. Generally, straight stretches of river produce few deep areas. Wade through these quickly, but always check out any unusual structure that might interfere with current flow, or if the channel is narrowed down significantly. Polarized sunglasses can also provide an advantage, allowing the angler to see beneath the surface and spot subtle changes in stream-bottom contour.

One exception to finding fish in deep holes are riffles. These fast-moving stretches of current are usually located near a deep hole and provide many sport fish with an ideal feeding area. Channel cats typically move out into a riffle during periods of low light. The fast water and rough bottom provide ideal feeding grounds, holding many aquatic insect larvae and minnows. White bass can also be caught in deeper riffles as they migrate upstream. Fishing techniques are similar to drifting deep holes except that the entire stretch may hold fish. However, there are usually rocks or bottom contours that break the current slightly that will hold the majority of fish.

Sandy-bottomed streams also have subtle drop-offs. The current may rush around a bend, over a shallow sand bar, then drop off to deep water before it hits the opposite bank. When the water's clear, it's easy to see these drop-offs, and they can really hold white bass as well as other stream fish.

After you identify a good hole, fish it thoroughly. You want to cover as much of the deep water as possible. Sometimes, there will be a deep pocket where fish will hold that you can't see. If you don't accidentally drift a lure through the pocket, you'll never know the fish are there. As a rule, I like to wade and fish into the bank.

Wading upstream, start fishing right along the bank first. You want the lure to move with the current, but not right on top and not settling on the bottom. By varying the speed of retrieve and the angle of your rod, you can maneuver the lure to different parts of the current. The accuracy of your cast will also allow you to work certain parts of the hole.

On another trip to the Smoky Hill, Kurt had found a hole with whites holding in it. He had caught several when Kelly and I eased carefully up to the hole, downstream from Kurt. As we cast, we watched Kurt miss two strikes and then catch a fish on three successive casts, all while neither of us had a hit. Finally, Kurt offered the place he was standing to Kelly. "Cast right up against that snag," he said. Sure enough, Kelly caught a fish on that cast. We took turns casting to the same spot until the fish moved out or turned off. In that particular hole, it required a pinpoint cast to get the jig down to the only pocket where the fish were holding. Casting to the rest of the water was useless.

Fishing these holes is most efficiently done by drifting a lure through them. The size and weight of the lure is decided by the depth of the hole and speed of current. Drifting a spinner or jig correctly in current requires a little practice as well as knowledge of the water. Try to predict where fish will lay by either spotting underwater pockets, or watching the water's surface boil as a result of the bottom contours. Then cast the lure far enough

upstream so that it will drift to the spot just off the bottom. If my jig has settled to the bottom too quickly, I'll raise the rod tip slightly then let it resettle with the current. This jiggling action might also trigger strikes. A spinner rides the water differently, and you can regulate the depth it runs by the speed of the retrieve. Work a jig strictly with the current.

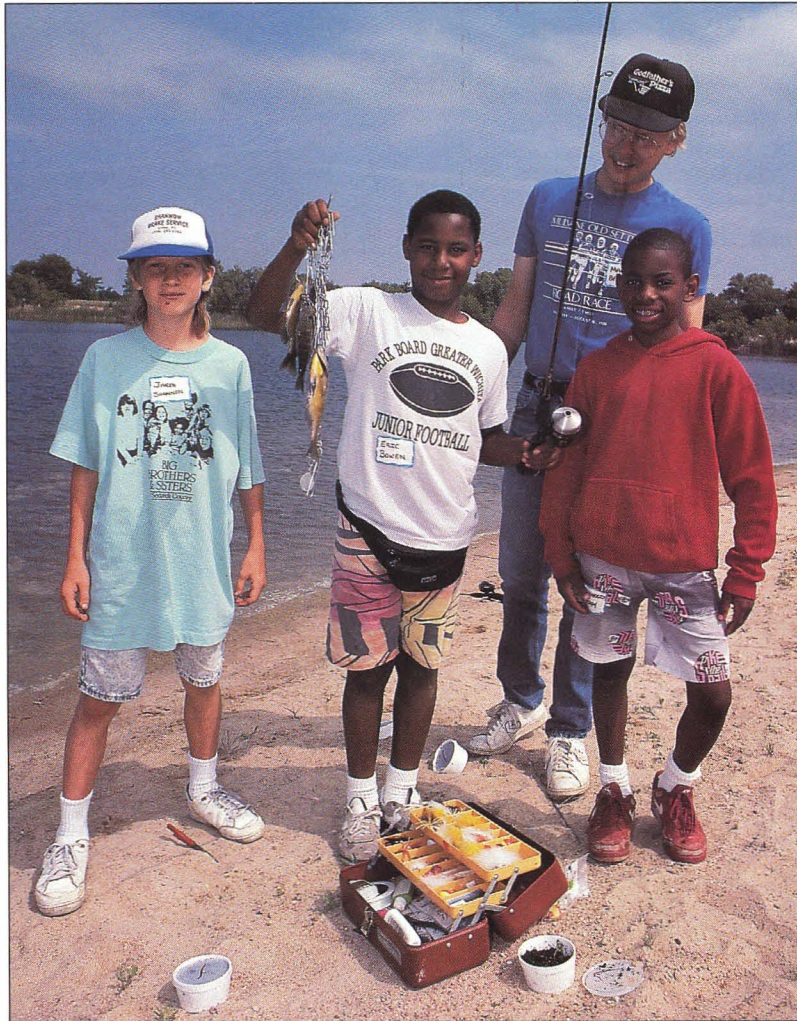
Ideally, I like to cast quartering upstream. In moderate current, I let the jig settle so that it's drifting just a few inches from the bottom. Keeping the line as tight as possible, I raise and lower the rod tip so that the jig bounces along at the same speed as the current. I'll reach the rod tip toward the jig as it reaches the end of the drift, keeping it in the deep water as long as possible. As with all jig fishing, watching the line will show you more strikes. The line will twitch, or the drifting jig may simply stop. In slower current, a bobber may be the best way to drift the jig through desired water.

Effective stream fishing is more like hunting than fishing. Keep moving, looking for the right ingredients of water depth, current and obstacles and you'll find more fish. Fish in shallow, clear streams are easily spooked, so wade cautiously and stay as far from the deep water as possible. When you locate a good hole, then correctly identify where the fish are holding and catch them, stream fishing is really fun. 🎣



Start reading the river by looking at the stream bed and the banks. Look for deep water with some kind of obstruction along the outside bank of a bend or through a narrow stretch of fast current.

WANTED:



KIDS WHO LOVE TO FISH BUT DON'T KNOW IT YET!

by Marc Murrell
wildlife information representative, Valley Center

photos by Mike Blair

Kids and fishing are a natural combination, but some urban youngsters will never wet a line. Fishing clinics like the one held in Wichita last summer may change that.

I stood and watched the incredible scene before me. More than 100 kids having the time of their lives learning to fish. To my left, a stocky 5-year-old was cranking in his first fish as fast as he could turn the reel handle, his tongue clenched between his teeth. Luckily for the small largemouth bass, it came to a halt at the first rod eyelet. If the fish had been any smaller, the excited youngster might have cranked it through every eyelet on the pole. On my right, a little freckle-faced girl with big blue eyes and blond hair squealed and shrieked as she saw her bobber disappear from the surface of the water. Seconds later she landed her prize as she jumped around in frenzied excitement like the sand was burning her feet. With a toothless smile reaching each ear, she ran the 5-inch bluegill to me for assistance in removing the hook. With that done, the triumphant new angler went to release her first catch, dropping it every time it squirmed. The bluegill was patient as she tenderly cleaned the sand off by wiping the fish on her pants before finally dropping it in the water. It was gratifying to think that many of these kids might enjoy fishing for years to come because of this day.

These scenes were repeated many times at Wildlife and Parks' first Big Brothers/Big Sisters Fishing Clinic in Wichita last May. The clinic was part of plan to curb sliding Kansas fishing license sales. It hasn't been a drastic drop, but to an agency that is primarily funded through license and permit sales, it causes concern. Fewer licenses sold means less money and that means an inevitable reduction in services. Natural resources, including the fisheries, will feel the effect eventually.



The fishing clinic introduced youngsters to fishing who might never have fished otherwise. Whether or not this young girl fishes later in life because of this day, we'll never know, but at least she knows the magic of fishing.

It's possible that one reason for the decline in license sales is the trend toward urbanization. People are moving out of rural areas where fishing was part of growing up. Another factor may be the high number of single-parent families, most of which are mothers. Since girls are not traditionally exposed to fishing as youngsters, many mothers are not familiar enough with it to teach their own children. And the demands of raising a family along with the variety of other demands on city-dwellers' spare time leave little time for fishing

and learning to fish.

Fortunately, fishing is a natural activity for kids, and most who get a chance to try it love it. Those youngsters who find out how much fun fishing is might eventually grow into license buyers and might also influence others to fish. So, the benefits of this program are long term.

Clinic organizers selected 50 youngsters who had Big Brothers and Big Sisters and 50 of the 700 youngsters on the waiting list for a Big Brother or Big Sister. The unmatched kids were paired with a volunteer from the community. More than 100 kids showed up to fish and

about 15 volunteers participated.

The clinic began at 10 a.m. by dividing kids into three groups and rotating these groups through a series of 20-minute programs. Wildlife and Parks personnel talked to the kids about rules and regulations, safety, fishing ethics, equipment and fisheries management. Keeping their attention with the pond in view was difficult as anticipation mounted.

Young anglers without equipment were given a pole and tackle and each was supplied nightcrawlers for bait. For most, this was a new experience and they were understandably excited. The person handing out rods and reels didn't have enough arms to distribute them fast enough. When the signal to begin fishing was given, kids scattered in every direction like a flushed covey of quail.

Cooperative fish allowed nearly all of the anglers to catch fish. Most of the learning youngsters caught five or six fish, but the more savvy landed as many as 20. Bluegill and bass were common catches along with an oc-

casional channel catfish and crappie. During a break in the fishing frenzy, a lunch of hot dogs, chips, pop and cookies was served.

Participants were introduced to catch-and-release fishing during the education portion of the day and were asked to release all largemouth bass caught. A Polaroid photo was taken of fish before release and given to each angler for a souvenir of the day.

For those interested, bluegill, crappie and channel cat caught were cleaned and packaged so they could take home a meal of fresh fish. Most, however, chose to release all their fish. No youngster left empty-handed though. Through the generosity of sponsors such as the Coleman Company, Eagle Claw Corporation, Berkley, Dupont/Stren, Wal Mart and Mineral Springs Lure Company, each young angler was given a grab bag of fishing literature and products.

Thanks to volunteers, donors and Big Brothers/Big Sisters of Sedgwick County, this first event was a tre-

mendous success. Riding on this wave of optimism, the effort will be expanded in 1992 with similar events in Hutchinson, Topeka, Manhattan, Salina and Kansas City.

The responsibility for promoting and passing on the tradition of fishing lies not only with organizations like Wildlife and Parks, but with all of us who enjoy the outdoors. Teaching youngsters about the outdoor resources will ensure that future generations will appreciate and conserve them wisely. There are nearly 200,000 Kansas anglers between the ages of 16 and 65. If each would take a niece, nephew, little brother or sister or neighbor the next time they went fishing, more kids would be introduced to the sport in one year than Wildlife and Parks will reach in 20 years. And, as the volunteers from last year's clinic will attest, the children are not the only ones who benefit. Many who taught the first-time anglers and watched the excitement on their faces felt the greatest reward went to the teachers. ♡



The 100 participants were divided into groups, and Department staff taught fishing basics as well as fish identification, fisheries management principles, ethics and conservation. Organizers wanted the youngsters to get a complete fishing experience.

gallery

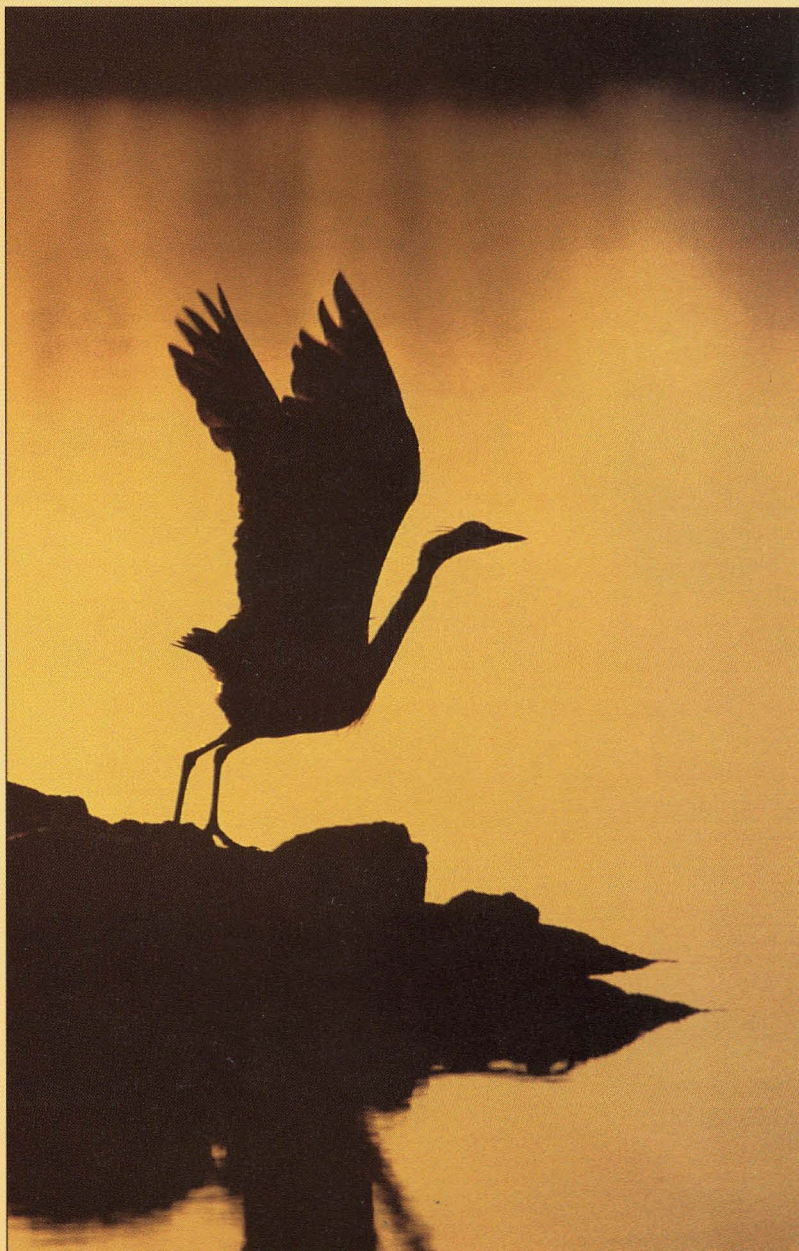
by Mike Blair

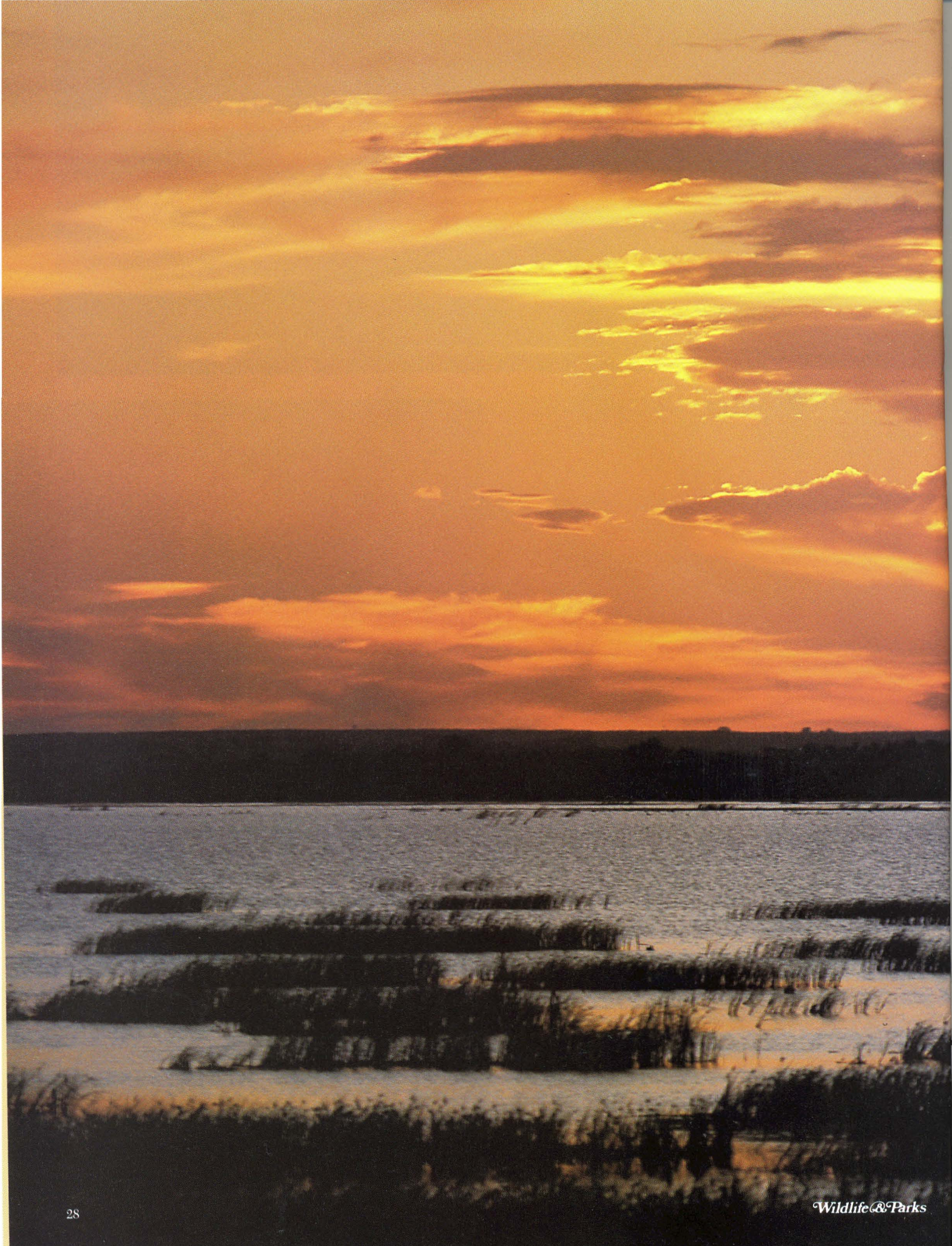
Silhouettes





Above: pronghorn, 600mm lens, f/11, @ 1/1,000 sec. **Below left:** lesser prairie chicken, 600mm lens, f/5.6, @ 1/500 sec. **Below center:** prairie cone flower, 200mm lens, f/4, @ 1/500 sec. **Below right:** great blue heron, 600mm lens, f/4, @ 1/500 sec.







Cheyenne Bottoms Renovation

by Karl Grover

area manager, Cheyenne Bottoms Wildlife Area

photos by Mike Blair

The future of the 19,000-acre wetland called Cheyenne Bottoms is much brighter thanks to the renovation project, now in its final stages.

For those of you not familiar with the planned renovation work at Cheyenne Bottoms Wildlife Area, a brief overview is in order. With the decline in water available to one of our most important ecosystems, efforts are needed to ensure that what water is received is used efficiently. To achieve this goal, the Kansas Department of Wildlife and Parks (KDWP) contracted an engineering firm to analyze the water budget, existing design, management objectives and physical condition of the wildlife area. From this analysis, as well as information gathered by other agencies, a renovation plan was developed. The time frame to implement the entire recommended plan is approximately 10 years and will cost about \$16-18 million. The overall goal of the renovation is to improve the water handling efficiency. This will make the water go farther in achieving the goal of providing at least some wetland habitat during drought years and providing a diversity of habitats during wet years.

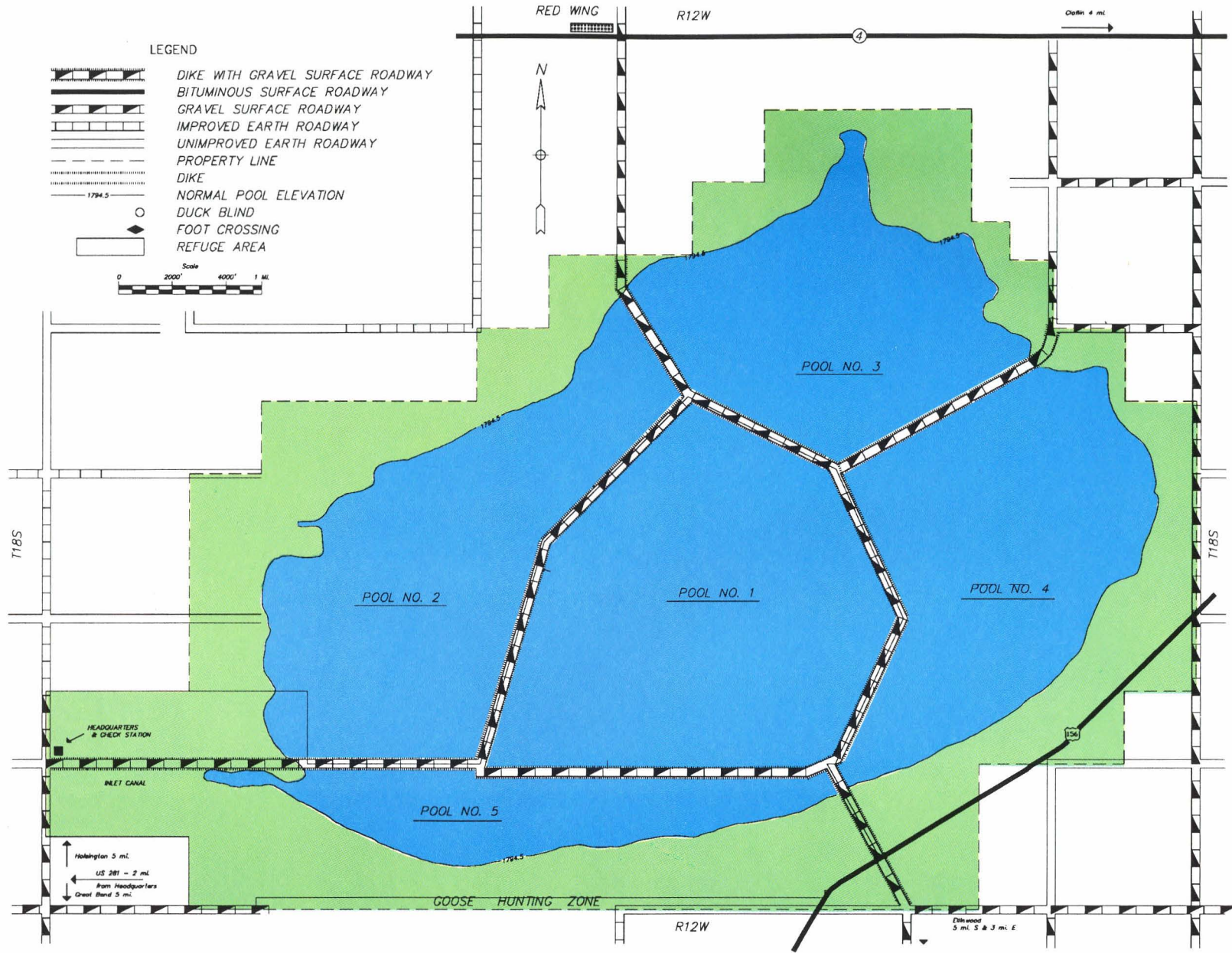
The Plan

The overall renovation project is divided into stages. Stage 1 was the initial hydrology study and evaluation of the current situation at Cheyenne Bottoms. Stage 2 included improvements to the inlet canal, construction

of flood water distribution structures and the placement of flow gaging stations on the inlet and outlet canals. Final inspection and acceptance of Stage 2 was done in the fall of 1991. The inlet canal improvements consisted of replacing double tubes with a single larger tube. This allows more efficient passage of the diverted water, since the smaller tubes often become blocked with tumble weeds or other debris. The flood water distribution structures allow quicker distribution of flood water, reducing the potential of flooding adjacent private property. Gauging stations will allow accurate measurement of water diverted from the Arkansas River and Wet Walnut Creek, as required. Final calibration of the gaging stations will be done when water again flows through the inlet canal.

Stages 3 and 4 were initiated last summer. These stages include the construction of a dike to subdivide pool 1 into two pools (pools 1A and 1B), placement of rip-rap on the new dike, construction of water control hubs, inlet canal extension dike, inlet canal bridge replacement and the modification of three existing water control structures. KDWP has enough funds from the state and federal governments, as well as private contributions, to complete all of these projects except a portion of the rip-rap placement. On Sept. 17, the

CHEYENNE BOTTOMS



This is a map of Cheyenne Bottoms Wildlife Area before renovation. It is for reference only.

Wetlands Conservation Council, a federal funds distribution committee, approved a grant request for \$2.5 million. These additional funds allow for the completion of the rip-rap placement on the new dike and the construction of at least one pump station. Plans for a mitigation marsh, which is needed to replace wetland acres lost due to the construction of the dikes in Pool 1, have been developed and construction on the main pool of this marsh will begin early in 1992. Funding for the construction of the mitigation marsh is coming from Ducks Unlimited.

The remaining stages include the placement of two more pump stations, subdividing Pools 1B, 3 and 4, level ditching and the raising of the existing dike around Pool 1A which is now a new water storage pool.

Project Objectives

Subdividing Pool 1 provides a primary storage pool (Pool 1A) that has a reduced surface area relative to the volume of water stored. This reduces evaporation. To increase the capacity

of this storage pool, the existing dikes will be raised and the new dikes will be built to allow water storage to a depth of 6 feet, as opposed to the current 5 feet in Pool 1. Subdividing Pools 1B, 3 and 4 will make the perimeter pools smaller and easier to manipulate and require less water to flood. This will increase the potential to provide at least some wetland habitat during dry periods. All of the new dikes must have rock, or rip-rap, placed on them to prevent wave action erosion. This is the most expensive effort of the renovation.

The inlet canal extension dike is needed to allow water obtained through the inlet system to have direct access to the primary storage pool (1A). This dike must also be rip-rapped on the outside to prevent erosion.

The water control hubs, located at the ends of the Pool 1 cross-dike and the inlet canal extension, will provide the means to regulate water transfer between pools and canals using gravity flow. These new hubs are similar

to the existing hub located near the observation tower on the east side of the area but will have stations installed within the dikes to allow transfer of water between any pools adjacent to the hub.

Since the storage depth will be 6 feet, one foot higher than the present Pool 1, modifications to the existing inlet canal are necessary. Any low sites on the dikes of the inlet canal must be raised so water flowing through the inlet system into Pool 1A will not spill out of the canal. Also, the bridge across the inlet canal at the office had to be replaced since the higher water levels would inundate it. Similarly, the existing water control structures at the east end of the existing inlet canal required modifications to accommodate the higher water levels.

Level ditches are intended to provide limited habitat during dry periods and to help fight the silt accumulation that leads to cattail expansion and degradation of the habitat. Level ditches will also provide



Goals of the Cheyenne Bottoms renovation are to handle the water received more efficiently so that even during drought years, some wetland habitat will be available. Construction will allow better movement of water between pools.

corridors for duck broods when moving from the upland nesting areas to the brood rearing areas in the interior of the pools.

The three pump stations will provide the long-needed ability to independently manage the pools, allowing managers to move water from any pool to any other pool, either directly or through pool 1A. Currently, water level management in some perimeter pools can only be accomplished with gravity flow. For example, if water needs to be pumped from Pool 2 to Pool 1, it must first be routed through Pool 3. Thus, in this situation, water management of Pool 2 will influence the management of Pool 3.

Funding

We anticipate the State Water Plan monies will continue to be available in the future for renovation projects, and funding from DU continues to play a big role. With financial support also coming from Audubon chapters, corporations and individuals, and the Nature Conservancy acquiring property adjacent to the state-owned land, the future of the basin is looking brighter. All of these contributions are matchable by federal funds, such as those from the North American Wetland Conservation Act, so the loss of \$1 from any of them will ultimately result in the loss of \$2. The support of everyone is essential if the project is to be completed.

The funding for the project through stage 4 can be generalized as follows: Wildlife Fee Fund, \$70,000; State General Fund, \$1.6 million; State Water Plan, \$2.5 million; U.S. Fish and Wildlife Service matching funds, \$1.6 million; Wetlands Conservation Council matching grant, \$2.5 million; private organizations and individuals, \$200,000.

Why?

Why is such an effort being made to renovate Cheyenne Bottoms? The most important is the Department's commitment to the wildlife resource. Fifty-three percent of the wetlands in the lower 48 states, including 48 percent of Kansas' wetlands, have been destroyed since the 1780s. As a result, the remaining wetlands are more essential than ever to ducks and other waterbirds that depend on



Ultimately, with deep water storage and better water moving abilities, a variety of habitats will be available to accommodate many species of wetland wildlife.

them during the nesting and migratory periods. The original development of Cheyenne Bottoms' inlet system in the 1940s and 1950s depended on supplemental water from the Arkansas River and Wet Walnut Creek to reduce the possibility of going dry. Diverted water made the area a more reliable wetland for wildlife and recreation, such as hunting and birdwatching. Since the 1960s, however, flows of the Arkansas River and Wet Walnut have significantly decreased. The current renovation effort is directed at making the water the area does receive go a little further in meeting the needs of wildlife.

Another reason for the renovation is the national recognition placed on Cheyenne Bottoms due to its use by threatened and endangered species such as the bald eagle, peregrine falcon, least tern and whooping crane. These species, along with 10 species of fish, eight amphibians, 19 mammals and 324 other bird species attract 35,000 human visitors annually.

Whether they come to birdwatch or hunt, they spend approximately \$2.8 million in Kansas to enjoy Cheyenne Bottoms.

Cheyenne Bottoms also shares values that are found in all wetlands, but are often forgotten. For example, wetlands help maintain water quality, contribute to groundwater recharge and help in flood control by holding flood waters for slow release. Cheyenne Bottoms is also important for scientific study and can be used by people of all ages to learn about biology, geology and other sciences. An average of eight tours and/or programs are given each month by Cheyenne Bottoms staff. Most are presented to schools and civic organizations.

The value of Cheyenne Bottoms far exceeds the money being spent. Without this continued commitment, not only would the wildlife resource suffer, but our society would be poorer for the loss. ♡

WILD CURRENTS

letters

Edited by Mark Shoup

Hog Wild

Editor:

A local Garnett citizen has written of the early history of the settlement of Anderson County, starting in 1855, right after the Indians were driven from this area. In one account, three of the local people were hunting in the northeast part of the county when their dogs jumped a big wild boar. The dogs were getting badly torn up by the boar's 3-inch tusks, but it was finally shot and killed.

Now, I know that in the 1800s wild boars were imported from Europe and turned loose in the hills of North Carolina or Tennessee to be hunted on private estates. Finally, they escaped and ran wild and are still hunted in those areas.

I know that the Spaniards brought horses that began the wild herds of our west. I know that they also brought cattle that developed into the longhorns of the southwest. They brought hogs, too. Today, wild hogs can be found in Arkansas, and they are hunted in the Mississippi River bottoms.

I am curious, however, how there happened to be a wild boar in Anderson County in 1855.

Kenneth G. Knouse
Garnett

Dear Mr. Knouse:

The wild boar, a shaggy cousin of the domestic pig, was first introduced to this country in 1893, when 50 were released in the Blue Mountains of New Hampshire. In 1910 and 1912, more were released on a preserve along the North Carolina-Tennessee border. In the 1920s, wild boars were released near Monterey and on Santa Cruz Island, Ca.

According to the Audubon Society Field Guide to North American Mammals, pure-blooded strains of these animals can only be found in the Carolina/Tennessee and California areas. Wild swine found elsewhere in the U.S. are either hybrids or feral

descendants of domestic hogs.

If the incident you describe happened prior to 1893, it is doubtful the animal encountered was truly a wild boar. The most likely case is that it was a feral hog. Feral hogs can grow tusks after several generations in the wild. --Shoup

Bird Lover

Editor:

I cherish your magazine, your articles and Mike Blair's pictures. I especially appreciated his explanation of his photography in the May/June 1991 issue (Page 2). I also appreciate his time in getting the pictures. I have stood on a step ladder for many half-hours to photograph a robin feeding her young. Receiving a nice picture is worth the time.

I grew up on a farm that had much timber along the creek. My dad taught me much about wildlife. He liked to hunt and trap. I trapped muskrat when I was in high school.

Now I live in town and enjoy feeding songbirds in winter. They like the abundant supply of persimmons in my backyard.

I don't appreciate squirrels because I had one come down my chimney one year. Squirrels are also pests at my bird feeders, but I do make myself appreciate your squirrel articles and pictures.

Dorothy Kratzer
Alma

Predator Symbiosis

Editor:

I've been an avid bird hunter and watcher for over 20 years. While quail hunting in Nemaha County last December, a strange thing happened.

Hawks and owls are nearly always seen while hunting. I enjoy seeing them and admire their skill and grace. Last December was no exception; however, my encounter was more personal than I'd ever experienced.

A Cooper's hawk flew over at tree-top level several times as my bird dog, Wilber, zig-zagged through the milo. As we turned up a tree line, the hawk reappeared. It was perched in a tree 50 yards ahead. We continued along the trees. I watched the bird, expecting it to fly

at any moment. It didn't. The hawk cranked its head and kept a steady gaze on us as we passed beneath its tree and continued hunting along the tree line.

Then it flew directly past us to another tree 100 yards down the line. Again, it waited and watched us pass. This happened three more times before we located our first covey. When the quail busted, I glimpsed the hawk in hot pursuit.

I directed Wilber to where several quail had flown. A bird flushed wild, and the hawk dove at the single. It was apparently successful because it did not rejoin us for the remainder of "our" hunt.

While at first this hawk's behavior seemed eerie, it soon occurred to me that this bird had hunted with humans before. It "allowed" us to do the flushing for two hours as it patiently watched for an opportunity. Wilbur and I took home only three quail, but it was an experience that beats a limit of birds any day.

Bob Foreman
Harrisonville, Missouri

Protection Easements

Editor:

Would you print the procedure for establishing a trust like the folks from Derby did to protect their land from destruction by sewer development.

Richard L. Hartman
Wichita

Dear Mr. Hartman:

Those wishing to protect their land from future development may be eligible to sign a natural area protection easement with the Kansas Department of Wildlife and Parks. For more information, contact the Office of the Secretary, 900 Jackson Street, Suite 502, Topeka, KS 66612-1220, (913) 296-2281. (See "Ease Into Easements" in "Issues," Page 38.) --Shoup

Nonresident Preference

Editor:

I agree with the ideas expressed in "A Place To Hunt" (KANSAS WILDLIFE AND

PARKS, Nov/Dec 1991, Page 30) although I rarely see these ideas used. many people have hunted our land. In comparing Kansas hunters to those from outside Kansas, I'll take the out-of-state hunter anytime.

In my experience, nonresident hunters are more courteous and believe hunting is a privilege, and I have yet to find one who is not a good sportsman. They take the time to ask permission and observe landowner rights, and I always know how many are in the party and when they will hunt. The majority of Kansas hunters I meet don't ask permission until confronted in the field. Too often, the attitude, "I pay taxes and should be able to hunt anywhere I want," is expressed. If permission is obtained, they show up with a small army, then follow a covey of quail until all the birds are shot. I've heard them brag about how many birds they shot but never picked up.

"Hunting for wounded game is too much like work," they say. If they get bored, anything is fair game. I can honestly say that none of my property has been damaged by out-of-state hunters.

I'm not saying that all Kansas hunters are poor sportsmen and are disrespectful of landowner rights. There are Kansas hunters who have good outdoor ethics and truly believe hunting is a privilege. Of the two groups of Kansas hunters who hunted this year, one is welcome back. I never want to see the other group again.

John D. Drew
Great Bend

Dear Mr. Drew:

Over the years, I have talked to literally hundreds of nonresident hunters, and few have expressed difficulty getting permission to hunt in Kansas.

The only thing that bothers me about your letter is your generalization that out-of-state hunters are better than residents. I'm not doubting your experiences, but keep in mind that we have three times the number of residents in the field as nonresidents. That ratio increases the odds that you'll encounter unethical residents.

As with any large, diverse group of humans, a small percentage will be the bad ones you have known. I know many resident hunters who cherish their privilege to hunt on private land and treat landowners

and the land every bit as graciously -- if not more so -- as nonresidents. In my experience, the good ones outnumber the bad, but we all remember the bad experiences more vividly. Perhaps printing your letter will send a message to the thoughtless jerks who have ruined your image of Kansas hunters.

--Miller

Maintain Access

Editor:

I am concerned about the significant increase in landowners refusing to allow the general public to hunt on their property. Please understand that I am not accusing either party of being at fault, but it is evident that if this trend continues, hunting as we know it will become history. With each passing season, more and more landowners are commercializing hunting or totally denying access to their land.

If these actions persist, hunting will soon be only for the wealthy, and wildlife populations will no longer be controlled by prudent methods and will be only another commodity maintained for its monetary value.

I am a farm boy turned city dweller and can testify to the ill feelings being generated by the existing situation. These ill feelings are not being instigated by purely unsociable landowners or slob killers ("slob" should never be associated with the word "hunter") but are caused by how each party views the problem.

The landowner's view may be derived from the fact that he or she has watched the local media state how much revenue the opening of a particular season will generate for local merchants. However, in the current depressed economy, the landowner will receive little compensation for what food and shelter he provides wildlife. Therefore, the landowner decides that if the general public wants to hunt, they will have to pay.

The public's view may be derived from the fact that they have paid hard-earned money for licenses, equipment and lodging but are still denied access to productive wildlife habitat. If the general public is denied access or is charged a fee, they start to believe that wildlife is being subjected to individual ownership.

I know that there are public lands for hunting, but in all reality, hunting on these properties can be quite discouraging due to an overabundance of hunters and a scarcity of

game.

I strongly believe that a more equitable relationship must be established between landowners and the general public. If the commercialization of wildlife escalates, those of us who are not affluent will lose a true heritage.

Brent Hurst
Wichita

Mysterious Sticks

Editor:

On a recent quail hunt in southeast Kansas, I came across some mounds of loose sticks that were piled under hedge trees. The sticks were mounded up about 2-3 feet high, and these mounds were quite common in a 2-acre area. The mounds were most often at the base of fairly mature hedge trees, and there were tunnels going into the mounds at various points all along the perimeter of these piles. Around the mounds, the areas were completely cleared of loose sticks.

The area was alive with owls, so we figured the piles were made by some type of rat. Can you help us out? We are very curious about this.

My hunting companion and I have both enjoyed the woods for 25 years. Neither of us had seen such mounds before although we had never been in that particular area (Bourbon Co. north of Ft. Scott), either.

Gary Keller
Springhill

Dear Mr. Keller:

The mounds you saw were likely made by eastern woodrats, which look like overgrown deer mice. They are found in most of the eastern two-thirds of Kansas.

The eastern woodrat often builds its home in osage orange groves or other wooded areas. It eats mostly green vegetation but also likes fruit, fungi, nuts and seeds.

Owls, weasels, snakes and other predators help keep their numbers in check.

Woodrats are also known as pack rats because they have the habit of collecting all manner of shiny objects. They have even been known to put down a stick they were carrying in favor of some fairer object. --
Shoup

Welcome to Kansas

"Welcome to Kansas. We're conducting a wildlife check station. Have you been hunting or fishing?" The officer hands me a letter and a state map. The patch on the arm of her jacket says "Kansas Wildlife and Parks" and has a buffalo on it. The letter tells me that Kansas Wildlife and Parks regrets the inconvenience, but this is the best way to get a handle on "unlawful transportation of wildlife through Kansas." It looks like everyone gets to stop. I have been hunting.

From noon on Wednesday, October 23, 1991 through noon on Saturday the 26th, the roadside park eight miles west of Goodland was transformed. Yellow tape declaring "Sheriff Line...Do Not Cross!" separated the semi-truck area from passenger car parking. The truck area, divided into nine check lanes by orange barrels and numbered signs, crawled with enforcement personnel from a surprising mix of regions both near and far: Colorado, Utah, New Mexico, Wyoming, Texas, North Dakota and others. In all, 150 state and federal officers, inspectors and forensic specialists attended a Kansas first: all eastbound traffic on Interstate 70 -- except for semi-trucks and buses -- was diverted into the rest area.

A small crew of two or three officers at the end of the off-ramp asked the first -- and most crucial -- question: Have you been hunting or fishing? Hunters or anglers veered right, into the truck area turned inspection station. Others steered left and enjoyed the Kansas Information Center's free coffee. Many travelers, with restrooms visited and coffee in hand, spent a few minutes taking in the action just on the other side of that yellow tape.

She directs me to Check Lane 4. I've been hunting elk in Colorado. This year was unusual; I was successful. I've heard of poachers getting nabbed at lanes like this before, and don't feel sorry for them. Hunters everywhere are branded by some groups as an evil, destructive force because of the few people who choose to ignore the regs, and treat the outdoors like their personal larder and trophy room. I pull into Lane 4, where there are four officers waiting. One approaches. There's a buffalo on his arm patch, too.

"Hello, sir. We're conducting a wildlife inspection. You've been hunting or fishing?"

Yes. Elk. In Colorado. It's in back.

"Would you mind letting us take a look? We need to see your license as well, please."

I get out, open the back, and one of the officers climbs in. I hand my license to the one who spoke, and the other two inspectors start unfolding a green plastic tarp on the ground behind my truck. A few seconds later, I hear the duct tape come off my styrofoam cooler, and the elk meat I had wrapped just yesterday is laid out on the tarp.

The inspection starts.

At each station, licenses and tags were compared with any game the individual happened to have. For some game -- elk for instance -- evidence of sex must be attached. Even after processing, carcass tags, licenses and permits must be kept, and any meat accepted as a gift must be accompanied by a donation certificate. While final figures have yet to be compiled, quite a few violations seemed to be illegal possession of game: the individual had the meat, but no license or tag.

The inspectors help me re-load my truck. One offers a roll of duct tape to re-seal the cooler bearing my first elk meat in four years. My tags, license and permit match the game meat, and I have left a single testicle attached to the carcass. After re-fitting my tent into the last nook of space left free in the truck bed, I crawl out of the truck and look straight into the lens of a video camera.

The officers are poking a flashlight under a motor-home, sorting through the numerous outer storage compartments, and apparently writing a ticket for the driver. No tags for his moose. Claims it belongs to a friend who flew back to Virginia. The wildlife officer nods and keeps writing.

More than 6,500 vehicles passed through the roadside park. A little more than 1,000 were diverted into the wildlife inspection area. Those 1,000 cars contained 2,200 hunters and anglers. More than 180 citations were issued, for a violation rate of about 8%. One and a half tons of meat were seized, some of which is destined for auction or donation to charity (depending on decisions made in the courts).

Smaller checks can be counted on throughout the state during hunting seasons. Some people will be found in violation of the law (whether through intent or carelessness), and some will have done everything perfectly.

"Thanks for putting up with us. You're all

set to go." The officer hands me my paperwork and double-checks the tailgate on my truck. Back in the driver's seat, I pull out from the inspection lane. I've lost ten minutes from my day. The motor-home owner in the next lane is being led back to a series of trailers, ticket in hand, flanked by a pair of wildlife inspectors. His meat is loaded onto a flatbed and hauled off toward what appears to be a semi-trailer. I feel pretty good. Maybe I'll try for a moose next year. --Chris Havel, wildlife information representative, Hays

Whooper Shooters Busted

According to officials with the U.S. Fish and Wildlife Service, Billy Dale Inman and Curtis Collier Sayers of Marble Falls, Texas, were sentenced in late October and early November for killing an endangered whooping crane near Bend, Texas, last April.

Inman, who pleaded guilty to the shooting, was sentenced to serve 60 days in a federal correctional facility, pay a \$10,000 fine, complete 200 hours of community service and remain on probation for five years. Sayers, who pleaded guilty to aiding in the killing, was sentenced to serve 20 days in a federal facility, pay a \$2,000 fine, complete 200 hours community service and remain on probation for three years.

The two men were also ordered to pay the State of Texas \$8,100 in damages.

The female whooper was one of five birds beginning the long journey to nesting grounds in northern Canada. It was one of only 33 breeding females in an estimated wild population of 140 whooping cranes. The killing is considered particularly serious because in the winter of 1990-1991 only 9 whooper chicks were hatched, largely due to drought. This was the first year since 1980 that the population had declined.

On a positive note, the two men were caught because a concerned citizen saw the birds, heard shooting and reported the incident to her local conservation officer. She also received a \$7,500 reward from the U.S. Fish and Wildlife Service.

Wildlife officials throughout the Central Flyway urge outdoorsmen not to disturb these large, white birds. If such illegal activity is observed in Kansas, call Outdoor Alert, 1-800-228-4263. --Shoup

Ease Into Easements

There is increased concern across the country about the impact of human activities on the environment. An interesting and exciting tool that has been under-utilized in controlling and managing development on private property is the conservation easement.

A conservation easement is a legal agreement that a property owner makes to restrict and control development that may take place on his or her property. The restrictions on each easement are tailored to the particular property and to the interests and wishes of the property owner.

To understand the easement concept, it is helpful to think of owning land as holding a bundle of rights. A landowner may sell or give away the whole bundle, or just one of those rights, depending on the owner's interest. For example, these rights may include the right to construct buildings of a certain type, to subdivide the land in a certain manner, to restrict access, to harvest timber or to mine certain minerals.

If a property owner wants to give away or sell certain rights while retaining others, he or she grants an easement to an appropriate third party. The details of the restrictions are contained in the easement document. If the objective is to preserve a pristine natural area, the easement may not only prohibit all construction but may also prohibit any activities that would alter the land's natural condition. Even the most restrictive easements often permit landowners to continue traditional land uses.

Easements are a voluntary mechanism by which a property owner controls what can happen to the property in the future. People grant conservation easements to protect their land or historic property from inappropriate development while retaining private ownership. By granting a conservation easement in perpetuity, the owner is assured that the resource is protected, no matter who the future owners might be.

Forests, wetlands, farms and ranches, threatened and endangered species habitats, scenic areas and historic areas are all candidates for conservation easements. Any owner of property may grant the easement.

If the property is mortgaged, the owner must obtain an agreement from the lender. If an easement donor wishes to claim tax ben-

Wind Breakthrough

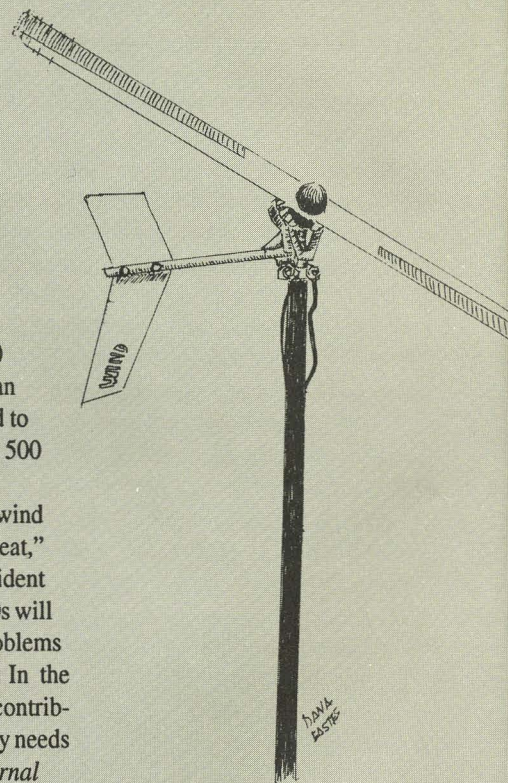
The startling advances in solar energy technology are being matched blow for blow by renewable resource number two -- wind power.

By 1993, Midwestern "wind farms" may put wind power on par with coal, the cheapest traditional energy source. If air pollution and other environmental costs are taken into account, the wind power project proposed by Iowa-Illinois Gas and Electric and U.S. Windpower Inc. would provide cheaper electricity than coal or any other fossil fuel.

The cost for wind turbines has plummeted over the last decade, energy experts say, and the new machines are almost 10 times more efficient than 1981 models. According to the Department of Energy, 16 states have wind-energy potential equal to or greater than California's, including Iowa, where the \$200-million joint project is expected to be built on agricultural land.

California is currently the only state to extensively use wind power, producing some 1,500 megawatts -- enough for a city the size of San Francisco. The Midwestern turbines are expected to produce 250 megawatts, then expand to produce 500 megawatts after five years.

"It's clear we're approaching the point where wind will be the energy resource that others have to beat," said Alexander Ellis, U.S. Windpower's vice president of marketing. The company predicts that the 1990s will be a transition period for energy use, as the problems associated with fossil fuels continue to grow. In the search for cleaner energy, experts say wind may contribute as much as 10 percent of the nation's electricity needs by 2010. --*The Leader, from the Wall Street Journal*



efits for the gift, the easement must be donated or sold for less than fair market value to a public agency or to a conservation organization that qualifies as a public charity under the Internal Revenue Code. Any property owner considering granting an easement should make certain that the organization that holds the easement has the resources to carry out that responsibility.

If you are interested in further information on conservation easements, contact the Kansas Department of Wildlife and Parks' Office of the Secretary (913) 296-2281 or the Kansas Field Office of the Nature Conservancy (913) 272-5115. --*Gary K. Hulett, Hays Daily New*

Pollution Euphemism

The Natural Resources Defense Council (NRDC) hopes to convey to the public the damage that nonpoint source pollution is do-

ing by renaming it "poison run-off."

"Some scientists rankle at the term," says Diane Cameron, environmental engineer for NRDC's Clean Water Program. "They ask how we know that it's poison without analysis."

"Well, that's silly. 'Nonpoint source pollution' tells you what it ain't," Cameron says. "Even if people take the time to think about it, they still don't grasp a vivid picture. 'Poison run-off' is vivid -- and accurate. 'Poison' means harmful or destructive, and that is what nonpoint source pollution is."

"People living in degraded watersheds latch onto the term real fast. It's more real to them than 'nonpoint source pollution.'"

During testimony this past summer in support of a stronger Clean Water Act, Cameron reminded the Senate Committee on Environment and Public Works just how real that

poison from lawns, fields, forest and parking lots can be.

"Polluted run-off and seepage, from all land uses, cause more water quality problems -- loss of fishable, swimmable, drinkable, ecologically sound water bodies -- than all other pollution sources in the United States," she said, citing 1988 statistics from the states that show the severity of the problem.

Agricultural, logging and urban run-off were cited as the major causes of pollution for 77 percent of rivers and streams not healthy enough to support fishing and swimming and 86 percent of lakes that were similarly poisoned. --*Anglers For Clean Water's "Living Waters"*

Overgrowth

Exponential growth is a concept that helps us understand how any quantity growing at a

constant rate will eventually double in size. Exponential growth is expressed in the following equation:

Doubling time = $70 \div$ rate of growth

The current annual growth rate of 1.1 percent in this country, for example, means that U.S. population will double in 64 years (70 divided by 1.1). The following French riddle, which illustrates the concept of exponential growth, also appeared in the 1972 classic, *Limits To Growth*. Suppose you own a pond on which a water lily is growing. The lily plant doubles in size each day. If the lily were allowed to grow unchecked, it would completely cover the pond in 30 days, choking off the other forms of life in the water. For a long time, the lily plant seems small, and so you decide not to worry about cutting it back until it covers half the pond. On what day will that be?

On the 29th day, of course. You have one day to save the pond." --*Carrying Capacity Network*

Conservation vs Anti's

Animal rights organizations have challenged the proposed culling of feral goats on San Clemente Island, in spite of evidence that goats overgrazing the island have caused the disappearance of 48 indigenous species of flora and endangered six plant and animal species.

Similarly, animal rights proponents have sued over the U.S. Fish and Wildlife Service's program to trap and kill non-native red fox preying on endangered bird species -- the least tern and the lightfooted clapper rail -- at the Seal Beach National Wildlife Refuge. --*Fish and Wildlife Service Reference Service Newsletter*

Invaders Mussel In

On Sept. 10, 1991, workers conducting a routine inspection of lift gates at Lock and Dam 26 just north of St. Louis found 21 exotic zebra mussels attached to the surface of the gate. The next day, they found 16 more.

The zebra mussel escaped from its homeland in the Black and Caspian seas in the 1700s. Introduced into western Europe, it hitched a ride across the Atlantic in the ballast tanks of ships and entered the St. Lawrence Seaway. From there, it reached Lake Michigan in only five years. Its larvae stowed away in boat motors and bilges to make the jump from Lake Michigan to the Illinois River system, and authorities have been expecting this appearance downstream in the Mississippi River.

If the zebra mussel invasion in Missouri follows the pattern observed elsewhere, the creature's population in the Mississippi will peak in 1-2 years. For the zebra mussel, "peak" population is thousands per square foot, covering every inch of solid surface down to 45 feet.

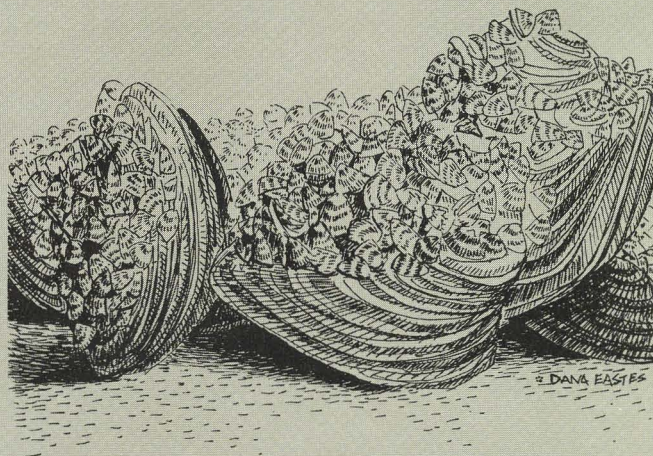
"Zebra mussels can create tremendous problems," says Al Buchanan, a fisheries research biologist with the Missouri Department of Conservation. "They attach to anything solid, including water intakes of power generating plants and municipal water systems. They can accumulate 6 inches deep, severely reducing the flow of water. They're probably going to cost cities and utilities millions of dollars."

Because of their sheer numbers (females can produce 10,000 eggs per season), zebra mussels can smother native freshwater mussel beds. Other wildlife are vulnerable, too. Zebra mussels are filter feeders, gleaning tiny particles of organic food from the surrounding water. Some observers

fear they will deplete the supply of food available to shad, paddlefish and other native species. Add the cost of damage to boats, motors, docks and other marine equipment, and you have a very expensive scenario.

Unlike larvae of most freshwater mussels, young zebra mussels don't attach to fish or other hosts prior to adulthood. Consequently, they can easily spread anywhere that water currents, wildlife or human activities take them. One of the zebra mussel's most effective means of dispersion is the same one that got it to North America -- travelling in bilge water of boats. --*Missouri Department of Conservation Release*

Note: Recreational boaters who visit Missouri can help prevent the spread of zebra mussels to Kansas. All water should be removed from boats before they are moved from one body of water to another. Zebra mussel larvae are so small they can live in a teaspoon of water, so live wells, pumping systems, bilges and engine cooling systems should be flushed with hot tap water. Boat bodies and all equipment that comes in contact with the water should be cleaned before moving. --*Shoup*





Talkin' Turkey

Many spring turkey hunters have already obtained their permits. For these hunters, and for those who still plan to purchase a permit, it is time to do more than anxiously await the April 15 season opening. It's time to talk turkey.

Turkey calling is an art. It takes hours just to become competent. Novices need to begin practicing early if they hope to attract more than curious looks from woodland squirrels this spring. Even hunters who have done well with their calls in previous years may find they've become a bit rusty.

A difficult decision, however, is which call to buy. There are three basic calls preferred by most hunters -- the box, the peg-and-slate and the diaphragm. Perhaps the easiest to use is the box call. Novices can quickly learn a few basic calls with this device. The peg-and-slate call is another old standby. It is a bit more difficult to use than the box call, but with practice the caller can produce excellent turkey imitations on this call. The disadvantage of both the box call and the peg and slate is that they are hand-held, which can inhibit movement in a hunting situation.

Diaphragm calls can solve this problem and create the widest variety and highest qual-

ity sounds of all calls. Diaphragms are more difficult to use, but the convenience of having one's hands free may be well worth the extra practice for many hunters.

All of these calls are available from local sporting goods stores, as is the other essential element in learning to call -- a practice tape. Novice callers should purchase one of

these, along with a call, a couple of months before the season begins. Practicing whenever possible rapidly builds confidence. For those who choose a diaphragm call, a good time to practice is while driving to and from work. For the sake of domestic tranquility, box and peg-and-slate callers will probably have to be more discreet. --Shoup

Final Turkey Touches

Calling skills honed, shotguns patterned and birds located, most good spring turkey hunters have done their homework and are prepared to take on one of the wariest of game. Still, the work is not over. Hunters must take a few extra steps to increase their chances of bagging one of these sharp-eyed, nervous birds.

Assuming that the hunter has properly scouted and knows where turkeys roost, camouflage is the next step. A wide variety of camouflage gear is available on today's market, and this can make the choice seem difficult. However, most types are adequate if the hunter chooses camouflage patterns that most closely match the natural surroundings of the hunt. Shirt, pants, gloves and head net or face paint are essential. Many hunters even use camouflage tape or paint on their shotguns.

The next step is the actual setting up. The hunter should be hidden and in place at least 20 minutes before the first turkey gobbles; that's pitch dark. Get as close as possible to the roost -- within 100 yards if possible -- and try to set up close to where you think they will fly down.

A decoy can pay off in open areas. Place the decoy at a known distance (25 yards is a good rule of thumb), and use this as a gauge. Also, place the decoy so the turkey has to go past you to get to the decoy. This will help bring the turkey within shotgun range. The type of decoy doesn't make too much difference, but those hunters using public areas may want to consider a silhouette decoy for safety. A silhouette faced away from the hidden hunter is safest because it only presents a turkey image to hunters with lines of fire outside the hidden hunter's position.

Once the hunter is in place, patience is the final element. Don't call too loudly or too frequently. Once the bird moves your direction, cease calling. Finally, wait for a close, clear shot. A bird should be within 30 yards, preferably closer, before a shot is taken.

One last element of turkey hunting should never be forgotten -- safety. Kansas has an excellent turkey hunting safety record, but this should not be taken for granted. Keeping one simple fact in mind should prevent all accidents: you must be able to see a turkey's beard before you shoot. Positive identification is the key. In addition, take only good, clear shots, never walk through the woods yelping and never gobble. These steps should lead to a safe, successful hunt.

The 1991 spring turkey season runs April 15-May 10. Applications are available at Department of Wildlife and Parks offices, license vendors and county clerk offices throughout the state. Unit 2 unlimited permits will be available through May 8 at the Department's five regional offices, the Office of the Secretary in Topeka, offices in Kansas City and Emporia, and the 20 state parks that sell hunt-on-your-own-land permits.

The general resident fee is \$20.50, the nonresident fee is \$30.50 and the resident hunt-on-your-own-land permit is \$10.50. For more information, write the Kansas Department of Wildlife and Parks, RR 2, Box 54A, Pratt, KS 67124. --Shoup

Spring Whites

Pound for pound, the white bass is one of the sportiest fish in Kansas. It takes artificial lures more readily than most any other fish, gets big enough to interest most anglers, is extremely abundant, is usually easy to find and, when it comes to sheer torque on the end of a rod -- well, few fish can match it.

The white bass is probably most vulnerable to fishermen just before and during its spawning run. [This usually occurs in late March or early April, depending on weather. Water temperature needs to rise into the mid-fifties to begin the run.] Finding the school is the only real problem. If the bass have moved into the river, they can be taken with jigs, spinners, spoons or live minnows. Many fishermen wade after the whites during the run, but anglers on the bank can do well, too. Ultralight spinning tackle works well in these situations, allowing the angler to work small crappie jigs with light line. Try fishing the pools just below riffles by drifting a jig with the current or retrieving it across the head of the pool. Undercut banks and small brush piles and log jams can also produce fish when conditions are right, but fishing heavy cover can be expensive with ultralight -- use medium spinning gear and heavier line in the brush.

At the height of the run, a fisherman may be able to fill his stringer without stirring from the spot where he made his first cast.

If the fish aren't in the river, they may be staging in the upper end of the reservoir. For this, a boat and fish finder are handy although white bass anglers on some reservoirs do well from the bank. Some whites spawn in the reservoir on dams and rocky points where bank fishing can be excellent. --Tom Bowman, fisheries biologist, Wakefield

New Limits

In an effort to improve the quality of fishing at reservoirs and state fishing lakes, the Kansas Department of Wildlife and Parks has initiated a number of length and creel limits the past few years. Foremost in many angler's minds are the limits for walleye and crappie, two of the more popular species.

Two types of limits affect anglers -- daily creel limits and length limits. A daily creel limit is the number of fish of a given species

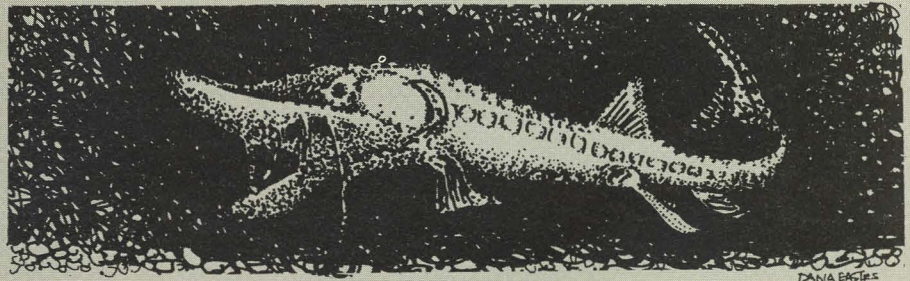
Rare Catch

Larry Rohrer knew he had something unusual last August when he checked his trammel net set in the Missouri River near Wathena, Kansas. Rohrer, a licensed commercial fisherman, had been alerted to the possibility of protected species of fish in the river. A check of the prehistoric looking fish in the net indicated that he had collected a rare pallid sturgeon.

The pallid sturgeon has always been a rare fish and was not identified as a distinct species until 1905. Rohrer's find was the first record of a pallid sturgeon in Kansas since 1982 and only the second since 1952. District fisheries biologist Roger Wolfe of Atchison investigated the report and confirmed that the fish was a pallid sturgeon.

Sturgeons are a primitive and widely distributed group of fishes that superficially resemble sharks. They are well adapted to large, silt-laden rivers with swift currents. Sturgeons have reduced eyes and tough skin with bony plates to compensate for the abrasive action of waterborne sand and mud.

Sturgeons are represented in Kansas by lake, shovelnose and pallid sturgeons. The lake sturgeon is a large fish with a conical snout and is known from stray individuals that enter the



Missouri river system from northern rivers. The smaller and more common shovelnose has been taken from the Kansas River and some of its larger tributaries while the pallid is restricted to the Missouri River, occasionally entering the Kansas River system in times of flood. The shovelnose and pallid sturgeon both have a flattened snout and are distinguished primarily by the size and placement of four fleshy protrusions called barbels in front of the mouth. The barbels in the shovelnose are equal in size and in a line while the pallid sturgeon has two center barbels further forward and about half as long as the outer pair.

The pallid sturgeon was recently added to the federal List of Endangered Species by the U. S. Fish and Wildlife Service. The fish has declined due to alteration of river channels by flood control and navigation projects, pollution, and over-fishing.

There was interest in the mature fish, which measured 44.5 inches in length, as a brood fish for a captive breeding program. Rohrer, however, insisted that the fish had survived in the river for many years and should be allowed to continue doing so. He returned the fish to its natural environment near the point of its capture. --Marty Burke, Region 2 wildlife information representative

that may be taken in one day. A length limit defines the size of fish that may be taken. For instance, if a lake has a 15-inch minimum length limit on black bass (largemouth, smallmouth and spotted bass), black bass smaller than 15 inches must be returned to the water immediately. If a lake has a slot length limit, fish within the slot must length must be returned. For instance, if a lake has a 12-15-inch slot length limit on black bass, black bass 12-15 inches long must returned to the water; black bass smaller or larger than 12-15 inches may be kept.

Anglers are reminded that the statewide daily creel limit of 50 crappie remains in effect. In addition, a 10-inch length limit is in effect for crappie taken from Melvern, Perry and Pomona reservoirs.

For walleye anglers, the daily creel limit is five, but length limits are set on a lake-by-lake basis. New for 1992 are walleye length limits at Kanopolis (15-inch minimum) and Marion (18-inch minimum) reservoirs. Other walleye length limits have been carried over from last year. These limits are posted at each lake and are listed in the 1992 Kansas Fishing Guide.

Black bass, another popular species, also has a statewide daily creel limit of five. The exception to this is at Saline State Fishing Lake (SFL) where the daily creel limit is one largemouth bass. (Saline also has an 18-inch minimum on largemouth.) As with walleye, black bass length limits are set on a lake-by-lake basis. Lakes with new black bass length limits in 1992 include Kingman SFL (18-inch minimum) and McPherson SFL (14-18-inch slot length limit). All black bass limits are also posted and listed in the 1992 fishing guide.

The channel catfish has seldom been subjected to length limits although the statewide daily creel limit is 10. (The exceptions are Logan and Saline state fishing lakes where the daily creel for channels is 2.) Last year, however, the Department began a four-lake experiment to determine the benefits of channel catfish length limits. By order of Department Secretary Jack Lacey, a 16-inch length limit for channel cats has been established at Cowley, Montgomery, Neosho and Pottawatomie II state fishing lakes.

A study of catfish stocking, growth and harvest in these four lakes has shown that fish are harvested before a significant number can grow larger. Catfish stocked in the fall of 1989 virtually disappeared from these lakes during the summer of 1991.

Stocking more fish is apparently not the answer, say Department biologists.

"Stocking more fish may increase the time a year's stocking will stay in the lake," says Department aquatic researcher Tom Mosher, "but studies show that stocking too many fish results in much slower growth and a much less satisfying fishery."

The newly-enacted length limit should increase the size of fish available to Kansas anglers. If so, the limit may be extended.

"This length limit is temporary," says Mosher. "We'll study it for three years to determine how well both catfish and anglers respond. At the end of the study, we'll decide whether to continue the length limits, and if they may help other lakes."

Other length and creel limits have been established. For more detail, check Page 6 of the 1992 Kansas Fishing Guide -- available free of charge, from all Department of Wildlife and Parks offices and anywhere fishing licenses are sold. --*Shoup*

UNDER CURRENTS

ENCROACHING COTTONWOODS



BY MARK SHOUP

It was zero outside, and I was eating a garden fresh tomato. Winter had blasted in early. "The tomato plants are done for," I grumbled. It would be a winter for battling nature, a winter rich with conflicting elements that simultaneously defined the man I worked for.

He was a small town physician who kept a half section of natural grassland south of the Arkansas River. Doc was a dreamer, not a rancher, but years of family practice had tempered his idealism and left edges of crustiness and impatience, qualities punctuated by unexpected jabs at man and nature alike.

"Most people extol the virtues of early rising," Doc remarked as we drove to the ranch my first day of work. "There are a lot of boring people in the world." He didn't mince words.

The ranch was Doc's outlet. Except for twenty acres of alfalfa, he kept the land natural—prairie grasses, plum thickets and a few encroaching cottonwoods grew as they would. If his neighbors had turned to corn, so what? This ranch was a sanctuary, for soul and creation. But the pragmatist in Doc was determined to make cattle pay the rent on his dream.

Not satisfied with Herefords or Angus, the good doctor kept the only herd of belted Galloways in the state, some 30 head. Twice daily, I'd break hay bales near the corral and at strategic points across the half section. Often, I broke ice before cranking up the windmill. I filled quail feeders, too.

After some patient coaching from a local cattleman, I also learned to tell when a pregnant cow approached labor.

In February, they began to calve.

Two came without assistance, and I marveled at their hardiness. My perspective would change. A heifer delivered a stillborn calf before I could get to her. It would be days before I'd find the remains, nothing more than bones and hide. The coyotes kept things tidy.

Reality had settled in; inexperience would soon catch up with me.

One morning, I frantically searched the half section for a missing heifer and found her down, a stillborn calf halfway emerged. Fortunately, I was able to pull the calf and get the heifer up. Steam rising from the scene, we hobbled back to the corral. The calf would feed the coyotes. I hoped the heifer would live.

After the heifer was corralled, fed and watered, I drove to town. Doc was free that afternoon, and we returned to check on the heifer. She was doing fine, so we decided to take a spin around the property, which Doc loved to do. We drove by the place where the heifer had lain, but we didn't speak. Not much had changed, but steam no longer rose. We drove on and drifted into conversation that had nothing to do with cattle.

I spotted a bald eagle, not uncommon in winter when the Arkansas still flowed and was fishable. Doc caught some quail bobbing through a plum thicket. His face lit up as he pointed them out. Then we drove to the highest hill and just enjoyed the view. The pasture was accented with the wildness of cottonwoods, thickets and winter. In the distance, a coyote hunted along a fence line, occasionally pouncing on some invisible prey. "Man, I love this place," Doc sighed.

Then he began to complain about magpies. "Nest robbers!" he grumbled. "Worse on quail than coyotes." For Doc, quail were welcome tenants.

Coyotes and magpies were cat burglars. Still, he did nothing to rid himself of either. Doc only grumbled, like a man who's lost his garden to an early winter.

Band Mysteries

Bird banding has been around since Roman emperors marked their falcons. In modern times, researchers and volunteers annually band 600,000 birds.

Some amazing bird mysteries have been solved with bird-band data. For instance, how long can a bird live in the wild? A red-winged blackbird banded in New York was found 14 years later in North Carolina. A black duck banded on Cape Cod was taken by a hunter 17 years later. The record is a herring gull nestling banded on the coast of Maine in 1930 that was found dead along the northern shore of Lake Michigan in 1966.

Banded birds have helped explain the migration routes of various species. The long-range migration path of the Arctic tern was unraveled with information from band returns. This bird nests near the Arctic Circle and winters on the islands near Antarctica, a round trip of 25,000 miles.

It takes a tremendous banding effort on nongame birds to get any information in return. In a span of 40 years, more than 226,000 white-crowned sparrows have been banded. Of that number, only 198 bands have been recovered.

However, when waterfowl are banded, the return rate is greatly increased by cooperative hunters. These returns provide the information base used to calculate survival, monitor migration, determine harvest rates and delineate the distribution of various duck and goose species.

Once a band is in the pocket of a hunter or possibly found on a bird carried to the back porch by a pet cat, the crucial step in the success of banding efforts is at hand. The information needs to be fed to a computer to put the find on record. Although the band may be sent through the mail,

the information may also be sent on paper. This method allows waterfowlers and others to keep their bands as mementos while supplying valuable data about a wildlife resource. -- Edwin J. Miller, nongame biologist, *Independence*

Owl and Pussycat

The janitor of the Doyle Elementary School in Chalfont, Pa., witnessed some bizarre bird behavior on Nov.

16, 1990. About 6 p.m. his hysterical cat bolted through the open door of the school with an owl firmly attached to its back. The owl, identified by a local bird watcher as a saw-whet, was removed from the cat, found to be in fine health and released, presumably none the worse for its wild ride.

The cat was not seriously hurt although one can only imagine the paranoia created.

Saw-whet owls are known to be aggres-

sive hunters and have been reported to tackle prey larger than themselves on occasion. An attack on a domestic cat, however, a fierce predator, probably represents the triumph of enthusiasm over judgement. The incident was detailed in the October-December 1990 issue of *Pennsylvania Birds*. No mention was made of the effect on the cat's owner. --*Bird Watcher's Digest*

The Right Seed

One of the latest government surveys shows some 37 million Americans spend \$1.1 billion yearly on birdseed.

Al Geis has spent years studying bird foods to determine if birds like what humans feed them. He discovered that commercial packages are not favorites with many backyard birds. Here are some interesting conclusions from his study:

-- Chickadees are more attracted to black oil-type sunflower seeds than to large black-striped ones.

-- White proso millet is a favorite of ground-feeding birds. Doves can't get enough.

-- Niger or thistle seed is a great favorite of goldfinches.

Ingredients not liked by birds and considered a waste of money included peanut hearts, oat grouts and milo.

Geis recommends the following specific seed mixes to attract different species.

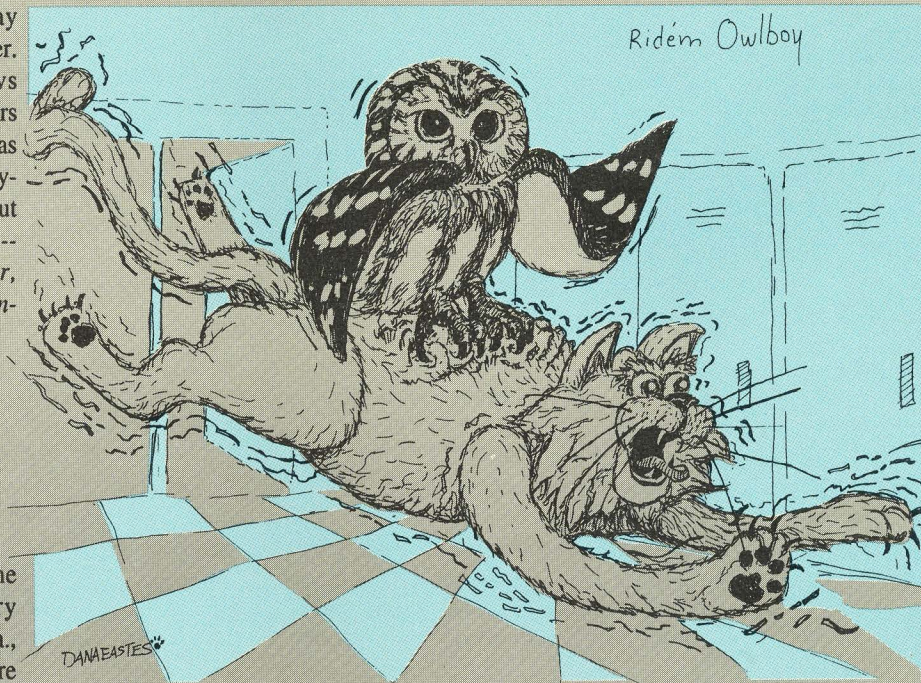
1. For perch-feeding birds, he recommends black oil sunflower seeds. He feels that they attract the most number of birds and the greatest variety. (Perch-feeding birds include chickadees, titmice and finches.)

2. White proso millet attracts the greatest number of ground-feeding birds. This includes juncos, sparrows and doves. You can use these seeds on low platform feeders just as well.

3. Niger seeds attract goldfinches, pine siskins and house finches. Other birds don't compete with them for these seeds since they don't like them.

4. Suet is the number one item used in attracting woodpeckers.

Geis's report was published in 1980 and became the most popular piece ever published by the U.S. Fish and Wildlife Service. --*Wildlife Health News*



Antelope Lane

Thanks to a project sponsored by the Wichita and Kansas City chapters of Safari Club International, travellers on I-35 between Wichita and Emporia now have a chance to observe pronghorn antelope roaming the Flint Hills. Last January, 50 antelope were trapped by officials from the Kansas Department of Wildlife and Parks and the Colorado Division of Wildlife 15 miles southwest of Lamar, Colo. The pronghorns were then released in Chase County and can often be seen close to the cattle pens near Bazaar.

Each of the antelope released was ear-tagged, inoculated for parasites and given a tranquilizer. Blood samples were also taken to record genetic lineage and to test for diseases such as brucellosis. Twenty-five were radio-collared to enable scientists to monitor movements, mortality and fawning sites. The radio collars, tags and inoculation and testing equipment were provided by the Safari Club chapters.

Antelope were once abundant in the western two-thirds of Kansas. However, by the early 1960s, it was estimated that less than 40 animals remained. That was when the Forestry, Fish and Game Commission (now the Department of Wildlife and Parks) launched a reintroduction program.

The current population of Kansas pronghorn antelope is approximately 1,500. This latest effort by the two states signals a renewed commitment to reestablish these unique creatures in Kansas. More antelope were trapped and transported to the Cimarron National Grasslands last year, and 85 more were trapped and transplanted to the two areas in February. --Shoup



Coast Guard Boating Fee

The Kansas Department of Wildlife and Parks reminds boaters of a U. S. Coast Guard regulation effective July 1, 1991, that requires owners of recreational boats longer than 16 feet to pay an annual fee to use the Missouri and Kansas rivers in Kansas, and various other waters throughout the country. The Omnibus Budget Reconciliation Act of 1990 requires the fee through 1995.

The annual boating fee is for users of the Kansas River from the Missouri River to the dam at Lawrence, and on parts of the Missouri that border Kansas.

Four fee categories have been established: boats more than 16 feet but less than 20 feet, \$25; boats at least 20 feet but less than 27 feet, \$35; boats at least 27 feet but less than 40 feet, \$50; boats 40 feet and longer, \$100. Recre-

ation fee decals must be displayed clearly within 6 inches of the vessel's registration number.

Exceptions have been made for public vessels, manually-powered boats, vessel tenders or life boats, house boats normally anchored, vessels owned by nonprofit organizations, and rescue vehicles.

For application forms and more information on the U.S. Recreational Vessel Fee (RVF), write U.S. RVF, P.O. Box 740169, Atlanta, GA 30321-0169, or phone 1-800-848-2100. Payment can be made using Visa or MasterCard. --Shoup

Songbird Bundles Offered

The Kansas Department of Wildlife and Parks and the Kansas State Extension Forestry have a ready solution to the problem of

dwindling urban wildlife habitat -- plant trees and shrubs for songbirds.

For \$12, a "songbird bundle" of 20 trees and shrubs is offered as part of the Kansas Conservation Tree Planting Program. The Department partially finances the songbird project through taxpayer contributions to the Nongame Wildlife Tax Checkoff, or Chickadee Checkoff, appearing on Kansas state income tax forms.

Bill Loucks, the K-State forester charged with the job of obtaining and distributing more than a million trees each year, labels the songbird bundles ideal for backyard situations.

"They create a small island of plants of varying heights," says Loucks. "The bundle is designed to provide year-round cover and food for late summer, fall and winter."

Each bundle contains five Nanking cherry, which grows rapidly and provides food early in the summer; three redcedar, often considered the best wildlife plant because of its long-term food and shelter provisions; three autumn olive, a shrub with attractive cardinal berries in the fall; five Peking cotoneaster, with attractive foliage and dark berries; and four golden current, for early summer food.

Planting a songbird bundle makes a yard more attractive, improves property values and provides essential habitat for birds, squirrels and other wildlife. Contact your local K-State Extension agent for order forms, which list songbird bundles as well as other trees and shrubs for use in conservation plantings. --Shoup

Fishing and the Environment

Fishing and the Environment: Fun Facts is a publication that addresses the needs of our nation's youth regarding fishing and environmental awareness. Published by Anglers for Clean Water, the nonprofit arm of Bass Anglers Sportsmen Society, this 30-page booklet contains an exciting arrangement of puzzles and activities that are not only fun, but carry an important environmental message. The booklet is available for \$1 from Anglers For Clean Water Inc., P.O. Box 17900, Montgomery, AL 36141-0900, (205) 272-9530. --Shoup

by Dana Eastes & Mark Shoup



(For you
and your
teacher)

OWLS

A SCHOOLYARD LABORATORY

How would you like to build a wildlife laboratory right outside your school doors? Many Kansas schools have done just that. They have established Outdoor Wildlife Learning Sites, called OWLS, right on their school grounds or nearby.

Kids who go to these schools have a real advantage when it comes to learning about native Kansas wildlife and the plant communities, called habitat, where they make their homes.

Just what is an OWLS? It's an outdoor environmental/wildlife learning laboratory. OWLS always contain one or more habitat areas. This habitat is designed to attract native Kansas wildlife and to allow you -- the student -- to learn more about them first hand.

In fact, students and their teachers actually build the OWLS, with help from a Wildlife and Parks biologist. They plant trees and shrubs for birds, rabbits, and squirrels. Native prairie and wetlands can also be established, but this isn't all.

There are many other exciting projects you can create: feeding sta-

tions for birds, squirrels, and other animals; butterfly and hummingbird gardens; nesting areas for songbirds, geese, and small mammals; trails; and ponds or wetlands with plants that attract ducks, shorebirds, muskrats, and many other species.

On your customized area, you can also have special projects such as weather stations, animal track areas, and bird nesting boxes. You can even bury a time capsule to be dug up years later.

Sound great? Wish you had an OWLS at your school? Well, you can have one now and get everyone excited about wildlife. Any grade school, intermediate school, high school, special education school, or college can apply for an OWLS grant through the Kansas Department of Wildlife and Parks.

Of course, you've got to talk to your teacher or school administrator. They are the ones who must apply for the grant. If they aren't sure about the idea, tell them studies show that

"hands-on activities greatly enhance a student's ability to understand and remember concepts and facts."

To receive guidelines and a grant application, have your teacher write OWLS, Kansas Department of Wildlife and Parks, RR2, Box 54A, Pratt, KS 67124. Once you receive an application, you will be directed to a Wildlife and Parks biologist in your area who will help you develop a plan.

School never looked better than today. With an OWLS, it can really be a hoot!

Here is an project that is part of the OWLS program.

Butterfly and Hummingbird Gardens

Butterflies are attracted to plants because they are nectar sources or because they are host plants for egg laying. Certain wildflowers, cultivated flowers, trees, shrubs, and vines are particularly attractive nectar sources and should make up most of the butterfly feature planting. *Butterflies and Moths of Missouri*, by Richard and Joan Heitzman, lists host plants and additional nectar species. A drinking basin can be made using shallow sloping sides or a series of partially submerged flat rocks for perches.

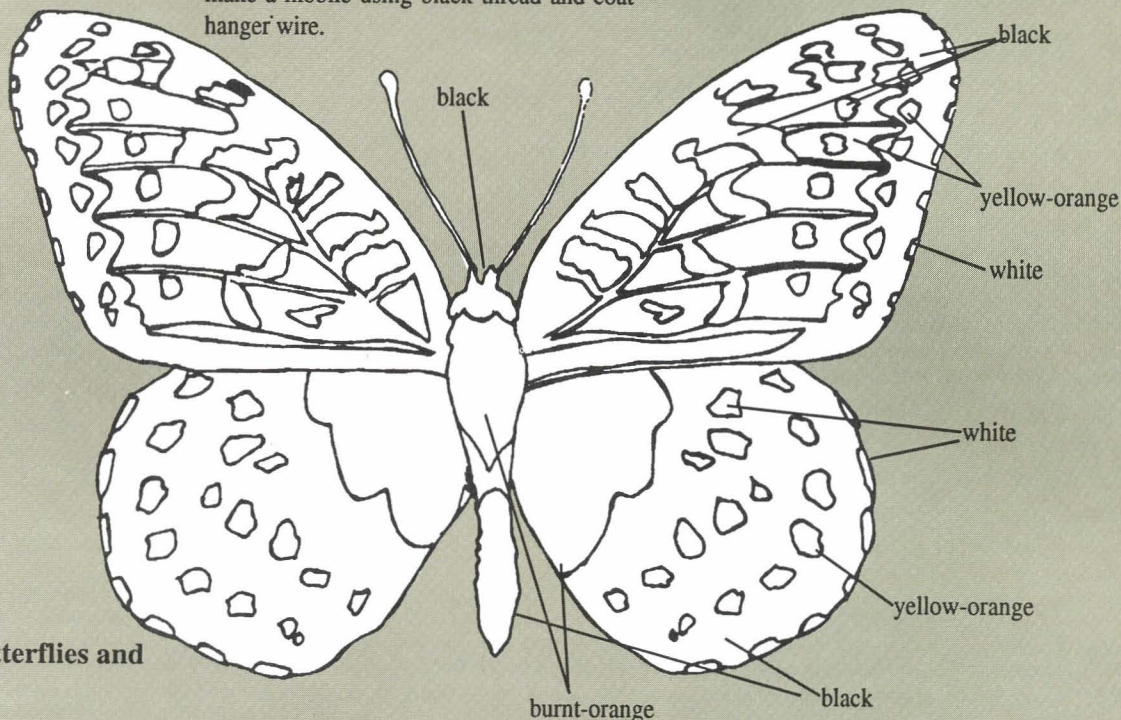
Shrubs, Trees and Vines that Attract butterflies and hummingbirds

- Black haw
- Blueberry
- Blue spirea
- Buckeye
- Bush honeysuckle
- Butterfly bush
- Buttonbush
- Clematis
- Climbing honeysuckle
- Dewberry
- Farkleberry
- Hawthorn
- Huckleberry
- Lilac
- New Jersey tea
- Pear
- Privet
- Redbud
- Smooth sumac
- Spice Bush
- Spirea
- Wild crab
- Wild Gooseberry
- Wild plum

(Just for you)

Paint or color the regal fritillary butterfly and ruby-throated hummingbird. Bird and butterfly books will help you determine color patterns. **Another option:** Copy and paint several butterflies and hummingbirds and make a mobile using black thread and coat hanger wire.

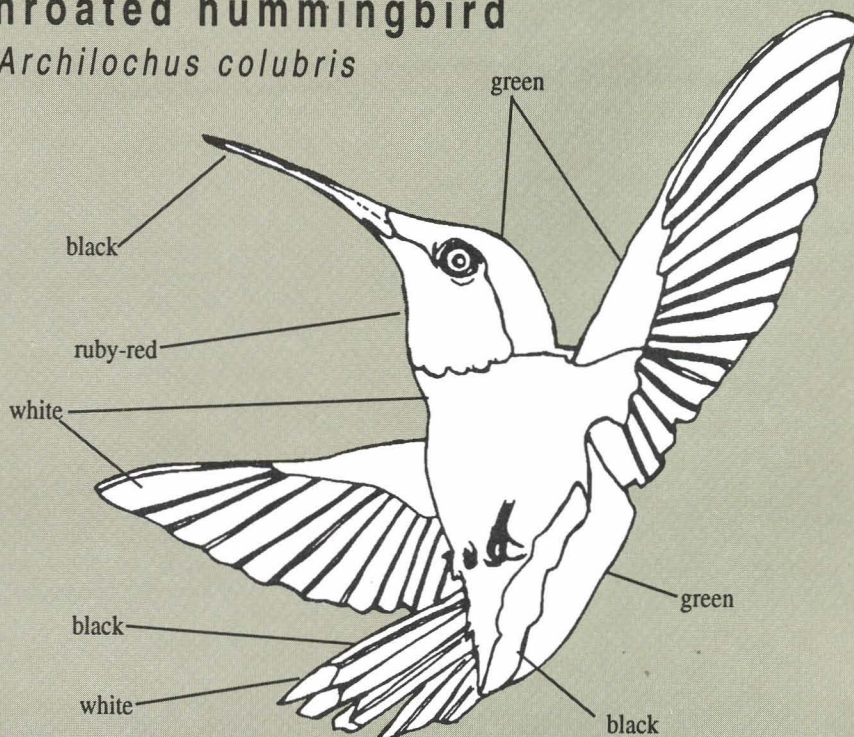
regal fritillary
Speyeria idalia (Drury)



Forbs that Attract butterflies and hummingbirds

- Aster
- Blazing star
- Brown-eyed susan
- Butterfly weed
- Calendula
- Common daylily
- Cosmos
- Dogbane
- Golden alyssum
- Goldenrod sp.
- Honesty
- Hyssop
- Impatiens
- Joe-pye weed
- Lavender
- Marigolds
- Meadowsweet
- New Jersey tea
- Partridge pea
- Perennial daisies
- Red clover
- Salvia
- Sedum
- Thistles
- Thyme
- Yarrow
- Zinnia

ruby-throated hummingbird
Archilochus colubris





The Longest Yards

It was 4:45 a.m. when the alarm interrupted my deep sleep. I hit the snooze button and laid there half awake wondering if I should go turkey hunting. I had tried to put a tom to bed the evening before, but heard nothing but pheasants and crows. Today's forecast was rain, and the season was only five days old, I reasoned. But I finally decided I wouldn't melt if it rained and I couldn't get my turkey lying in bed, so I rolled out, grabbed my gear and stumbled out the door.

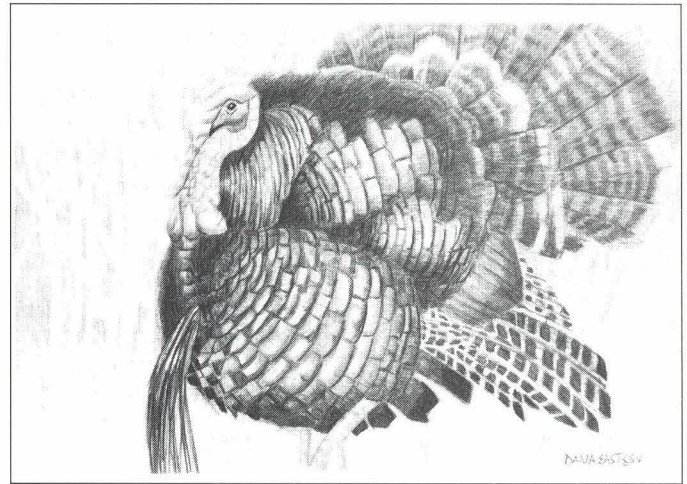
I arrived at the creek bottom 30 minutes before shooting time—no rain yet, so I let out an owl call trying to shock a roosted gobbler into revealing its location from the dark timber. Several verses of owl talk failed to produce a gobble, and after 20 minutes passed without a turkey sound, my hopes began to fade. Just as I got into the truck to try another spot, I heard a faint gobble. I drove toward the middle of my hunting area and hooted . . . nothing. I sped to the south boundary and tried again. This time, the owl call elicited a gobble from the area I had just left. I returned, grabbed my gun and decoy and hurried toward the timber. It was getting light.

The turkey gobbled as I walked, and my heart started thumping. I was heading in the right direction. I quickly set my decoy in a plowed field along the river and sat down just inside the trees. A few soft yelps from my diaphragm call and the tom hammered back, sounding like its hormones were in high gear. A few minutes later, I yelped again and got the same response. I decided to quit calling and let the tom hunt my decoy.

The bird gobbled several more times before launching from its roost. The morning air whistled through its wings as the gobbler sailed overhead. My heart was in overdrive as I raised my gun to ready position. But the huge bird sailed, and sailed and sailed . . . finally landing 150 yards out in the field. The tom's feet barely hit the dirt before it was strutting and gobbling.

This was only my third turkey season, so I was still new to the sport. I had read countless turkey hunting articles and listened to as many stories, many which described a bird coming to the decoy on a dead run. This bird seemed to believe, "patience is a virtue."

As the first rays of sunlight filtered through the trees, the cocky gobbler strutted in tight semi-circles, pausing only to gobble its fiery-red head off in response to my most seductive yelps. It would look toward my decoy to measure its new love's reaction after each display. A glance in all directions to check for danger, and then more strutting.



Dana Eastes illustration

The bird was slowly coming my way but seemed light-years away. Should I call more? What if someone stops on the road and spooks the tom? Can it see me shaking? How long can I hold this position without cramping? My mind raced.

Over the next hour, the deliberate tom gobbled at least 150 times and never took more than three steps at a time in my direction. My arms began to cramp, and my legs had that stinging, falling asleep feeling. I wondered how much damage I could do to myself if I had to chase a flopping turkey with both legs numbly snoozing.

Major tom was now facing me at 30 yards and closing. The beard drug the ground as the big bird inched closer in full display. It turned to the decoy strutting and spitting, apparently annoyed by this new lover's lack of interest. I slowly turned toward the bird and couldn't wait any longer before I thought my heart might leave my body. The shot echoed through the quiet river bottom and my prize lay still 16 yards away.

I ran to the bird and admired the long beard, curving spurs and majestic tail fan. I was sad and thankful. Sad to think the bird's thundering gobbles would echo through the river bottom no more and thankful for one of the most exciting outdoor experiences I have ever had. The memory will last a lifetime.

