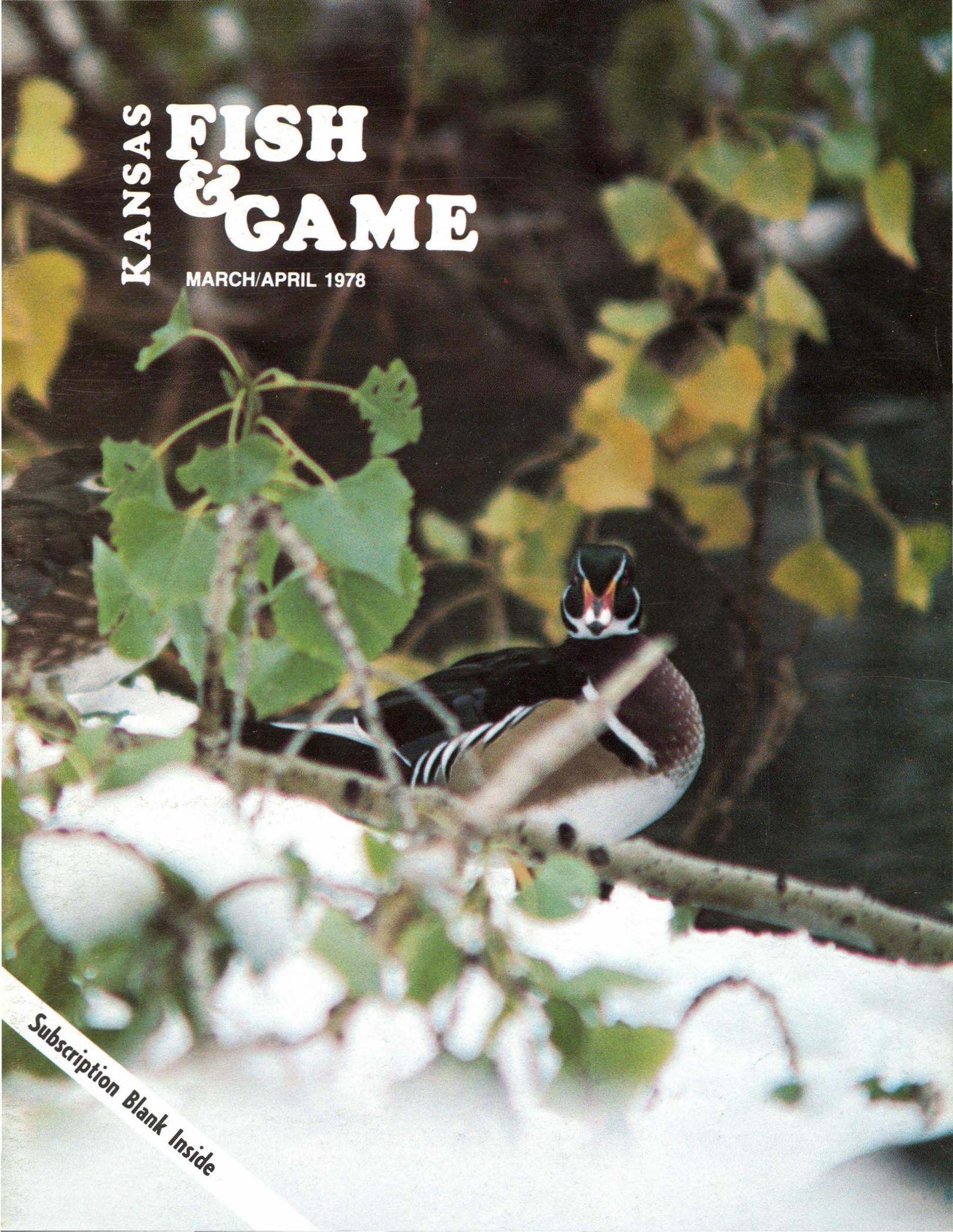


# KANSAS FISH & GAME

MARCH/APRIL 1978



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# KANSAS FISH & GAME

MARCH/APRIL 1978

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Wood Ducks and Canada geese by Ken Stiebben

# Wildlife Needs You



**National  
Wildlife Week  
MARCH 19-25, 1978**

JOIN AND SUPPORT THE  
NATIONAL WILDLIFE FEDERATION  
AND STATE AFFILIATES



Ken Stiebben

# The STR KAN

An ocean heavyweight  
the striper is settling  
Kansas reservoirs. Here  
was made

## Culture

Verl Stevens

**A** 33 pound, 12 ounce saltwater bass from a Kansas reservoir? It has the sound of a fisherman's yarn, but Carl Hooker of Wichita has the proof of his record catch hanging on his den wall. That striper, the Kansas state record, was one of 550 brought in from the Monch's Corner Fish Hatchery in South Carolina and released in Cheney Reservoir in 1967. From a fingerling to 34 pounds in eight years—not bad growth by any standards.

The introduction of stripers to Kansas began in 1965 when 80,000 fry just a few days old were introduced into Wilson Reservoir. Fry were stocked in a few other

impoundments at about the same time with little or no noticeable success. The thriving population of stripers at Wilson, however, convinced Commission biologists and culturists that a widespread striper stocking program was a great idea—if they could figure out a way to get their hands on a sufficient number of fingerlings. Trades with South Carolina and Virginia state fish hatcheries supplied some striper fry (and still do)—in 1974, Kansas hatcheries raised 100,000 fry from other states to fingerling size for stocking, a breakthrough in itself since large die-offs during rearing are common. But it was obvious that the only way to really get the

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ght like the salmon,  
into the freshwater of  
's how the introduction

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Ken Stiebber

## Management

Jay Stafford

**T**he striped bass, like the salmon, begins and ends its life in freshwater streams and spends the rest of its time in the open ocean. At least, that's the way it used to be until a group of stripers made their spring spawning run up past the just-completed gates of the Santee-Cooper Reservoir in South Carolina in the early 1950's. The gates of the reservoir were closed behind the spawning fish, so when they turned back downstream, they found that a freshwater lake was as close as they were ever likely to get to the Atlantic. Apparently, the discovery didn't bother them much. In 1954, South Carolina fisheries biologists were amazed

to find that the stripers were running on up the river to spawn, then returning to the reservoir, perfectly content to live out their lives in fresh water.

**Reports of anglers in South Carolina** and other eastern states catching twenty-pound landlocked stripers began to trickle into Kansas in the early 1960's in the middle of the reservoir building boom. The primary benefits of these reservoirs were to be flood control and water supply for irrigation, but the Fish and Game Commission also recognized their value as fishing spots. Commission biologists introduced a number of game and forage fish species into the new lakes in-

# Culture

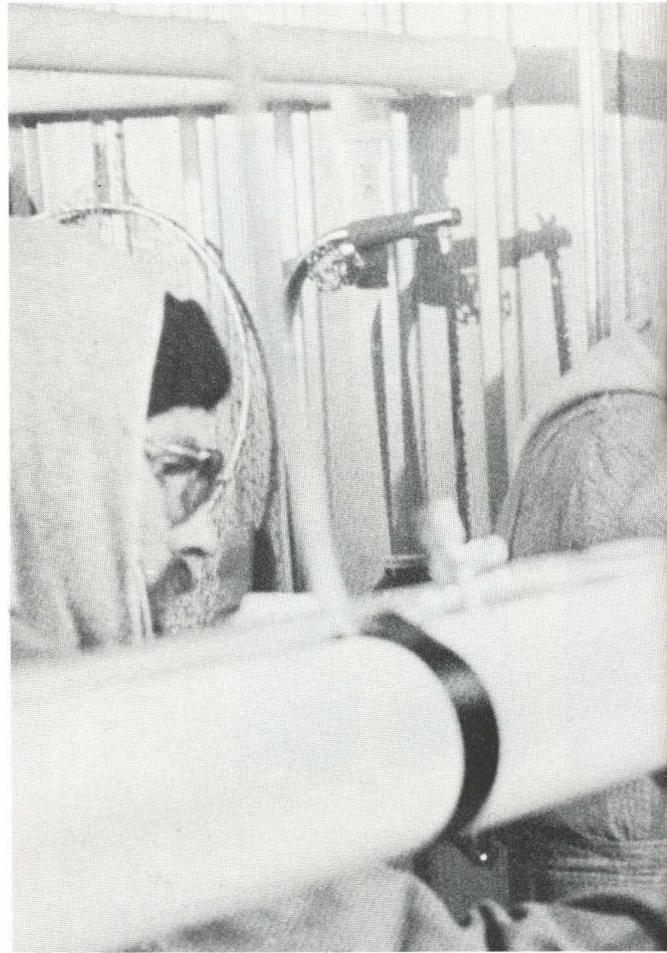
striper established was to produce them in Kansas. Several states, including Texas and Oklahoma, were satisfying some or all of their demands for fry with "home" production. Getting the striper to breed, however, was a ticklish operation.

**In their native habitat**, the big bass come up into coastal rivers from the open ocean to spawn, apparently stimulated by a spring rise in water temperature. The female releases her eggs in the river current where they are fertilized and washed back toward the sea. In order to develop properly, the eggs must remain suspended in the current for about 36 hours. If they settle to the bottom before they hatch, they die. This means that in order for the bass to reproduce successfully on the coast or in reservoirs, their spawning streams must have a good consistent flow of relatively clean water for at least sixteen and preferably up to thirty miles. The streams running into Kansas reservoirs simply don't meet those requirements.

The problem of supplying a striper with thirty miles of flowing water for breeding seems insurmountable, but it's just the kind of challenge fish culturists like to tackle. In spite of the small numbers of brood fish in Kansas reservoirs, the culturists decided to try to breed stripers at Wilson Reservoir in 1976. Wilson was chosen because test netting and stocking records showed that it probably had the greatest concentration of sexually mature striper females of any of the stocked Kansas reservoirs.

**For Kansas culturists**, the striped bass was an unknown quantity. Artificial spawning techniques for stripers are quite different from the ones used in Kansas for channel catfish, northern pike, and walleye. Many other states were using a technique that confined the real spawning to a test tube. Eggs were "milked" from the female, fertilized by sperm taken from the male, and placed in large jars until they hatched. It takes keen judgement and a lot of experience to catch the female when her eggs are ripe. Egg samples are examined under a microscope to determine the state of ripeness. If the eggs are taken just a little early or late, they can't be fertilized. All this egg testing means that the large but surprisingly delicate brood fish are frequently handled, increasing the risk of their injury or death.

**Kansas technicians decided to use another, newer method** which involves less handling of the brood fish and more closely resembles natural spawning. Both the male and female striper are placed in a fiberglass tank, six feet in diameter and thirty inches deep. A jet of water creates a circular current in the tank similar to the current in the fish's natural spawning habitat. The stripers are almost always given a hormone injection to



Ken Stiebben

induce spawning since they aren't usually ready to breed when they're captured. After the injection, the female may breed in a few hours or delay spawning for as long as three days, depending on the ripeness of her eggs and the water temperature in the tank.

With the preliminary planning and choice of methods out of the way, the hatchery crew headed for Wilson to set up tanks, pumps, a water tower, and a small tin building which would serve as an office, hatchery building, equipment storage shed, preparation room, recovery room for mothers and fathers, and a conference room where techniques were evaluated and changes proposed. After the facility had been put together, crews set their gill and trammel nets out on the reservoir to catch brood fish. The stripers can get banged up in the net; electro-fishing gear would have been a better alternative, but there just weren't enough stripers concentrated in small areas of the lake to allow the use of shockers.

**A total of 27 stripers turned up in the nets.** Seven females were injected and put in the spawning tanks, but egg fertilization was poor because there weren't



A small part of the plumbing at the Wilson striper hatchery. It's a complicated system with large storage tanks where water temperature can be adjusted and the water can be treated to kill fungi that attack eggs and fry. Biologists and technicians work day and night in shifts during the three-week spring hatching effort.

## Management

cluding the striped bass beginning in 1965. Since the first Wilson stocking, stripers have also been introduced to Cedar Bluff, Cheney, Glen Elder, Milford, Tuttle Creek, Webster and Wilson reservoirs. It was not the agency's intention to establish the striper in all Kansas waters. The striper has specific requirements for growth and survival among the most important of which is a need for clear water. The reservoirs chosen seemed to fit the striper best.

**One reason striped bass were stocked** was to provide the Kansas angler with the opportunity to catch a trophy game fish—a category the striper falls into without any question. The current Kansas record is 33 pounds, 12 ounces, caught in Cheney Reservoir in 1975. Average growth of the typical Cheney striped bass is 2 pounds by age 2, 7.4 pounds by age 4, and 25 pounds by age 8.

Fisheries biologists expect the striper's size and

# Culture

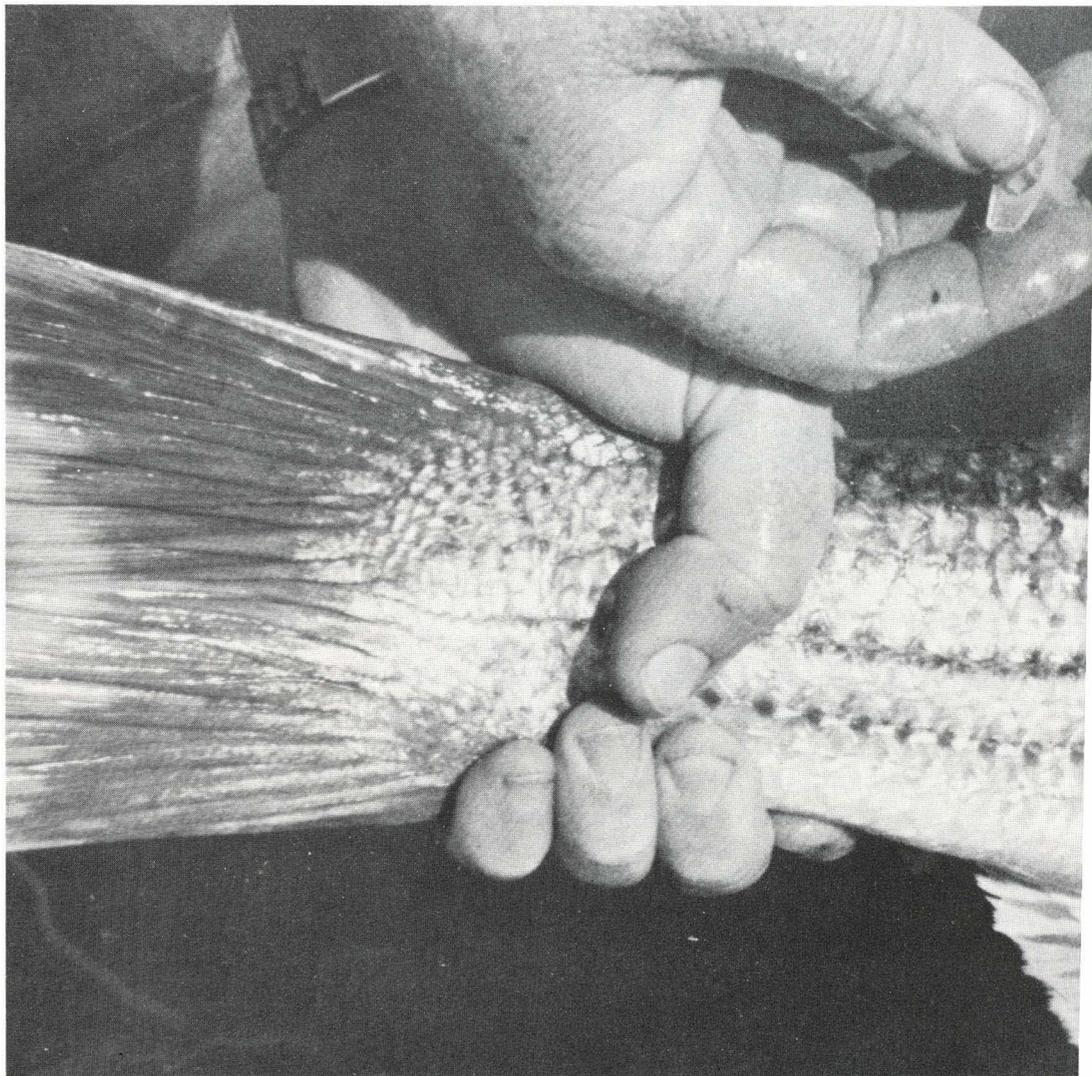
enough good quality male fish to go around. The males had been held in the hatchery while the netting crews fished for females, and the long holding period hadn't agreed with them. All the females discharged eggs, but problems with temperature control and fungus infection greatly reduced hatching success. However, even with all the problems, about 100,000 fry were released into the reservoir after a holding period of several days.

Many of the problems that reduced the success of the 1976 Wilson spawning effort were ironed out in 1977. First, and probably most important, methods were developed which increased survival of captured brood fish. Adult males were captured during walleye spawning operations at Webster Reservoir and held at the Pratt hatchery until they were needed at Wilson. As a result, they were healthier than the '76 males had been, and they were available so that the netting crews on the striper operation could concentrate on capturing

females. After the females had spawned, they were held in floating cages out in the lake until they recovered from the stress of spawning and being handled. The advances in technique and equipment resulted in the hatching of 700,000 striped bass fry, and the number would have undoubtedly been much larger if netting success had been better. Unfortunately, only 14 stripers showed up in the nets in 1977, but the technicians are on their way to solving that problem, too. Netting studies at Webster Reservoir have shown that different equipment should produce bigger catches.

**In addition to the striper fry,** the 1977 effort also produced 200,000 striper-white bass hybrids. South-eastern states have been stocking this hybrid with good success for years. The fish, known to fisheries workers as the "wiper," is extremely hardy, grows fast, is easily produced in hatchery operations, and provides some

Ken Stiebben



After the female stripers are injected with hormone and stripped of their ripe eggs, the eggs are fertilized and held in large glass cylinders where constant circulation of water reproduces the conditions found in natural spawning streams. If conditions in the cylinders are right and the eggs aren't infected with fungus, each female striper may produce as many as 120,000 fry.

# Management

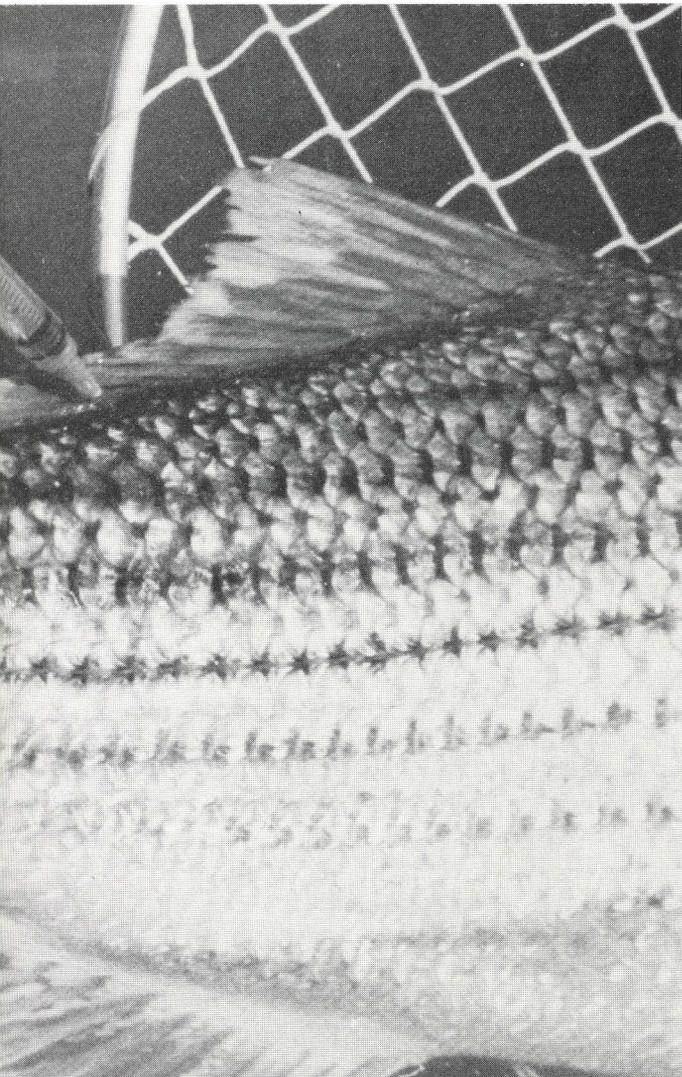
feeding habits to do more than just supply another big game fish. Gizzard shad, probably the most numerous forage fish in Kansas reservoirs, are very prolific and provide excellent food for all game fish. However, the production of shad in our fertile waters is so great that most are never taken by predator fish. The shad quickly outgrow the ability of young predator fish to take them and, at these larger sizes, may even compete with young-of-the-year sport fish for invertebrate food. For the striper, though, they're no problem. Adult striped bass can easily take shad nearly a foot in length, and the stripers work on schools of these large shad with all the voracity of white bass feeding on schools of smaller shad.

**Biologists don't expect the bass to eliminate gizzard shad.** Big shad, however, may be scarcer in a lake with a healthy striper population, and turnover in the shad population will be faster. As a result, there will be

more small shad available, providing more food for the young of other sport fish in the lake.

Of course, it is undeniably true that striped bass may also eat young sport fish, but the big bass shows a distinct preference for shad, mainly because the two share common habits. The striped bass is a pelagic species, cruising the open water of a reservoir away from shorelines where most other game fish spend their lives. The gizzard shad is also pelagic, so the paths of the two simply cross more often. A striper may occasionally take a young walleye, white bass, or largemouth, but the shad is by far its most common victim.

**In 1976,** the Fish and Game Commission's fisheries division launched a detailed study of the striper, including an intensive stocking program to evaluate the fish's impact on Kansas impoundments. Survival of the stripers stocked in each lake has varied. Releases in



Young stripers on their way to 30 pounds.

Ken Stiebben

# Culture

fine fishing. Wipers don't get quite as big as pure stripers, but at their adult weight of 18 to 25 pounds, they're still enough fish to put one heck of a bow in a spinning rod. The first load of wipers was released in Norton and Marion reservoirs, but other impoundments will probably get their share as culture techniques are refined and production increased.

In the last four years, Fish and Game Commission culturists have provided more than 1,400,000 fingerling striped bass for stocking in Cheney, Glen Elder, Milford, Tuttle Creek, Webster, and Wilson reservoirs. Most of these lakes have subsequently produced some striper fishing.

**When Kansas culture methods for stripers are perfected,** we may be able to supply stripers to other states who are interested, just as South Carolina and Virginia

helped us get our start. Since one large female can produce as many as 120,000 fry, it shouldn't take many brood fish to satisfy Kansas stocking demands once the bugs have been worked out of propagation techniques. But such a cooperative program is still down the road. Even with experienced culturists and biologists heading the program, it'll take a few more years of trial-and-error hatchery work to find the most useful techniques and best equipment. The production of striped bass in the meantime will continue to be demanding work and often extremely discouraging. Hundreds of fisheries workers will continue to spend long hours running nets, operating hatcheries, and stocking fingerlings. Is the striper worth all the trouble? Just ask the fisherman who's caught one!

# Management

Cedar Bluff, Milford, and Tuttle Creek reservoirs have had only limited success partly because of a shortage of fingerlings, partly for a variety of other reasons. From data collected so far, it appears that fingerling striped bass should be stocked heavily—at least ten fish per acre—to establish a population of adults large enough to show up either in the fisherman's creel or in biologists' test nettings. So far, there have not been enough fingerlings available to reach this stocking rate on Cedar Bluff, Glen Elder, Milford, or Tuttle Creek reservoirs. Stocking has been concentrated in Cheney, Wilson, and Webster reservoirs because these lakes seem to hold most promise for supporting large adult populations and because they're smaller, making it easier to reach the ten-fish-per-acre preferred stocking rate. These three lakes have been stocked ten fish to the acre for three years and show signs of developing good to excellent striper fishing.

**Our data collections on Kansas striped bass** also indicate that the frequent water releases from Tuttle Creek Reservoir may prevent the stripers from getting established there no matter how many fish are stocked. The striper prefers deep, relatively clear water which is most common near the dams of our Kansas reservoirs. Silt coming down river settles in the upper ends of the

lakes so that the water is clearest down by the dam. This means that, most of the time, stripers tend to be near the dam which leaves them vulnerable to being flushed out of the lake during a release of water.

Right now, the hotspots for Kansas stripers are Cheney, Glen Elder, Wilson, and Webster reservoirs. Wilson definitely leads the pack. Whether because of its slightly salty water or stable water level, this lake has produced more trophy stripers than any of the others. Although it doesn't currently hold the state striper record, it does consistently yield giants up to thirty pounds. Fishermen are beginning to get the feel of the Wilson bass and are developing their own techniques of striper fishing. For stripers over nine pounds, the best time to fish Wilson seems to be January and February, through the ice (see KANSAS FISH & GAME, January-February, 1978).

**The future of striped bass populations** in other Kansas reservoirs is looking almost as promising. As the fingerlings grow to adulthood, fish managers are hearing more and more reports of tackle-breaking fish. The opportunity now exists for fishermen in Kansas to catch that once-in-a-lifetime trophy, and the support for the program shown by the fishing public makes the effort well worthwhile.

# Set-aside 1978

This year's federal retired acres program—what it will and won't do for wildlife.



Ron Little

## Chris Madson

**T**here's an ebb and flow in the affairs of wild animals. The ebb may be the result of a decimating plague, starvation, competition among individuals, or occasionally, loss to predators. The flood tides usually come when there is empty space to fill, a surplus of food and shelter that encourages a population to expand. In undisturbed country, the causes for these booms and busts can be hard to determine; weather, food, cover, predator, disease, and the character of the animal in question are all braided together in combinations that would blow the fuses of an IBM computer. In the Midwest corn and wheat belts, however, things have been getting simpler over the last thirty years.

Complex interactions between native cover cropland, and wildlife have been short-circuited by the three-bottom plow, and the booms and busts for farmland wildlife have been set in motion instead by a single decision in the Department of Agriculture—the choice between all-out crop production and federal acreage retirement.

**The first acreage retirement started in 1956.** Times were tough. Midwestern farmers had risen to the challenge of World War II and Korea, but with the disappearance of the distorted war market for grain, nobody could figure out a way to turn the machine off. Prices were stable because of government price supports, but

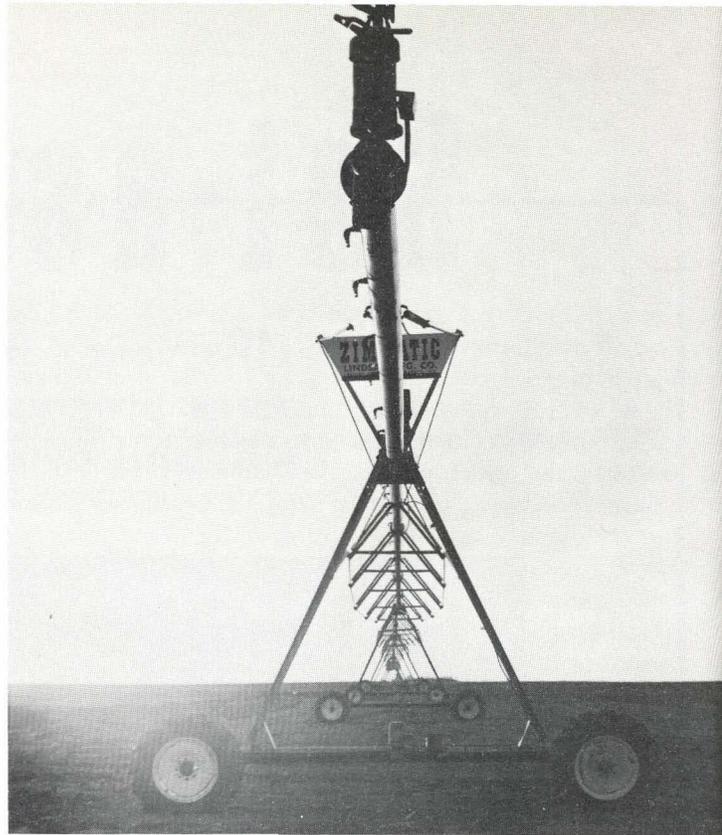
costs refused to stay put. Farmers heaped corn and wheat on the ground around groaning elevators and lost their shirts in the cost-price squeeze. The government tried to attack the problems with acreage allotments for certain farm products in 1954, but no allowance was made for the industriousness of the American farmer. Production on remaining acres hit all-time heights, and the surplus stayed. In desperation, Congress created the Soil Bank.

There were two parts to the Soil Bank, the acreage reserve, designed to reduce the number of tilled acres within the acreage allotments, and the half that interested conservationists, the conservation reserve. The conservation reserve focused on getting marginal acres out of production for long periods—in some cases, up to ten years. It provided the cash for farmers to do in a big way what state conservation departments had been struggling to get done for years—establish plots of permanent native vegetation in close association with cropland. Biologists knew this was an explosive combination nearly guaranteed to produce bumper crops of most small game, but they had never had the money to implement it on a large scale. Now the government was not only paying for long-term acreage retirement, they were even sharing the cost of cover establishment on the retired acres.

What followed was a succession of years that still brings the light to hunters' eyes. If there was ever a time that deserved the label "the good old days", the late 1950s was it. I remember waiting for sunrise at the edge of a quarter of Iowa Soil Bank ground, thick with Indian grass and edged with goldenrod, watching the pheasants trade in and out from bed to breakfast and back. That day was a pheasant shoot, not really a hunt, the kind of opening day that lured us into a season of hard walking, frostbite, and precious few tail feathers. We knew what we had in that piece of cover, too; we blessed the Soil Bank every day of the season. And after the season, in late January and on into the nesting season, there were birds that appreciated it even more.

It wasn't only wildlife and hunters that profited from the program. The parity ratio, the nationwide index that compares farmers' costs with the prices they receive for their products, had been in a steep decline after the end of the Korean War. Soil Bank stopped that fall in 1956 and more or less stabilized the farm economy. And so things proceeded into the early '60s, healthy game populations providing excellent shooting and farm prices at least keeping pace with rising costs. Then the effect of the Soil Bank faded little by little. Long-term contracts for conservation reserve lands expired, the American agricultural machine geared up, and wildlife began a long, slow slide into the '70s accompanied by farm prices except for a brief upswing in 1973 after the Soviet grain deal.

**Out on the land**, 1978 is a year in many ways like 1956. The farmer is trying to recover from last year's losses in the only way he knows how—planting more ground—and pheasant, jackrabbits, quail, and cotton-



Chris Madson



Ken Stiebben



tails are trying to figure out a way to get fat on a dust diet and breed with nothing for cover but a circle irrigator and a three-strand barb wire fence. The rumor of a new set-aside program brought a ray of hope to concerned wildlife conservationists and farmers. After months of speculation, the conservation and agriculture camps got official word from the Department of Agriculture.

The 1978 set-aside proposal is a short-term program designed to cut back wheat acreage by about twenty percent, milo and corn acreage by about ten percent. The USDA recommended that land actually tilled in one of the last three years be retired and covered by small grains, grasses, or legumes. The proposal suggested, but did not require, that the same acreage be set aside in subsequent years, if in fact the program ran more than one year. Cover plants on the set-aside were to be established no later than the normal planting time for spring crops and left until the normal time for fall plowing; in other words, set-aside cover would be at its peak in mid-summer, not in late winter and early spring when wildlife needs it most.

Originally, the program allowed no grazing on set-aside acreage and did not allow summer fallowed land to be enrolled. However, farmer reaction to the ban on grazing was so negative that the USDA decided to allow grazing on retired acres, and there are indications that summer fallow may be accepted in the set-aside program as well.

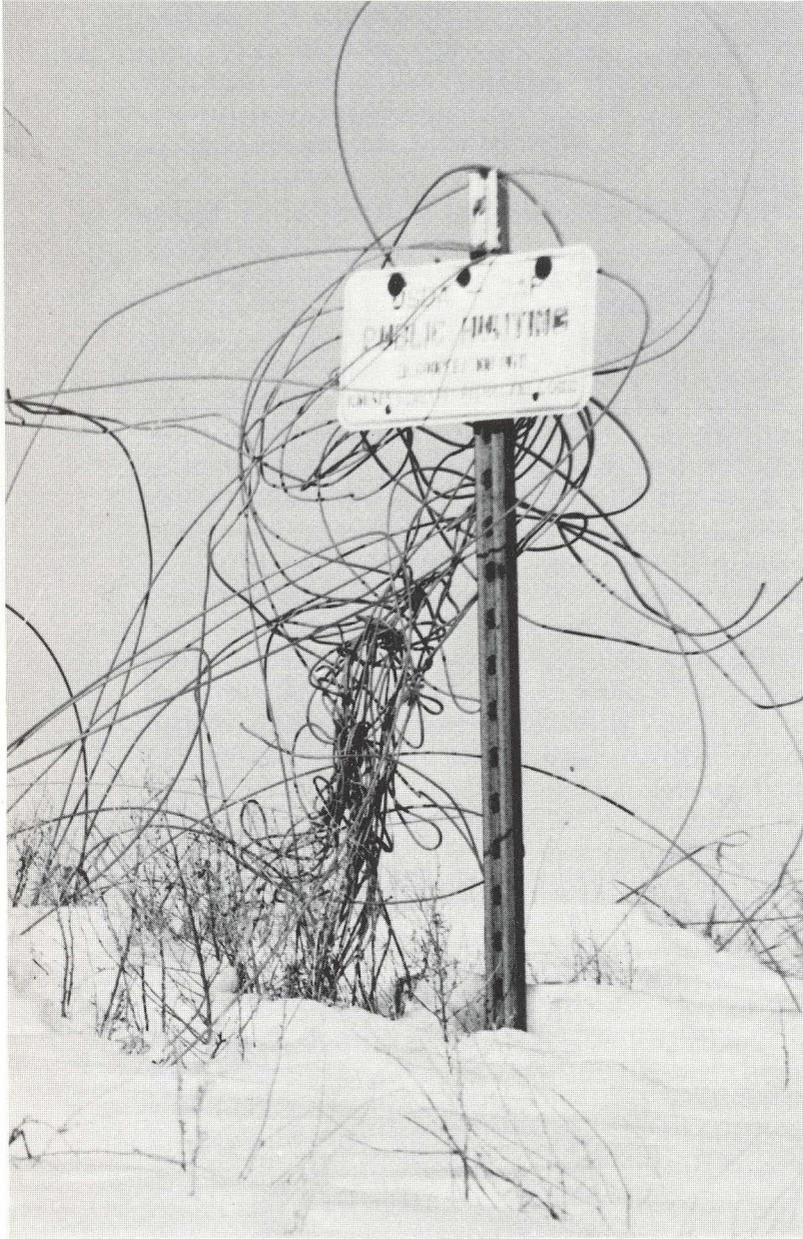
**The old Soil Bank encouraged farmers to participate** by paying them for the loss of production on acres retired. There are no payments for set-aside acreage in the 1978 program, although farmers will have to participate in order to be eligible for other federal ag supports like disaster relief. There are other costs to the program besides the loss of production. If the farmer seeds his set-aside to small grains, it costs him nearly as much as it would to raise a crop what with the cost of seed, tractor time, and the required mowing to prevent seed heads from ripening. He's eligible for federal cost sharing of up to eighty percent of total cost if he decides to establish permanent wildlife cover instead of small grains, but that still leaves a nagging twenty percent bite out of his own billfold. All considered, the farmer has little or nothing to gain from this year's set-aside, and as a result, it's unlikely that many farmers will bother with it. Without some kind of production control, there will inevitably be another all-out production year, more surplus, lower prices, and more hard times for families on the land.

**Even if the retirement program were put into effect** on most farms, wildlife would stand to gain relatively little. It takes more than one year to develop top-notch permanent wildlife habitat, and the new set-aside program works against permanent cover development in a couple of ways. The entire program is a stop-gap, short-term solution to the ag market program and probably won't be around long enough to allow good permanent cover to be established. In addition, there is



Ken Stiebben





Conservation Acres Program, or CAP, followed the Soil Bank. Although it was more limited in scope than Soil Bank, CAP still provided vital habitat in farm country. Today, the only remnants of the program are its signs, inviting hunters to try what was once prime bird cover.

nothing in the program that requires farmers to leave the same piece of ground in set-aside for more than a year. If a piece of land is only retired for one year, the farmer can plant it to approved cover plants in the spring and plow the next fall, fulfilling the set-aside agreement without supplying any winter cover or nesting habitat for wildlife. Another difficulty with the new set-aside program is the types of cover that have been approved for use on retired acres. Many valuable

native cover plants have been excluded from the approved list because they are weeds, even though experience has shown that they are easily controlled and seldom cause any problem in cropland. The 1978 set-aside can have some benefits for wildlife, but it's far from being another Soil Bank.

**N**orth of my house, the Ninnescah River slides up against a set of rolling hills at the edge of its flood plain. Whether because of their slope, sandy soil, or lack of water, a half dozen sections of those hills still support native grass. Last fall, I was driving home the back way on a gravel road that runs twenty miles through cut milo fields and winter wheat before it drops down over those hills into the river valley. It was around midnight, one of those moonless nights when the darkness is thick, the air calm, and the last miles to the driveway refuse to pass. The road was dead, not a farm cat or dog or the gleam of a single wild eye in the ditch for a hundred miles behind. Until I came to the grass. The sand on the shoulder was laced with the trails of dozens of kangaroo and cotton rats, that were jumping in and out of the headlights. There were two coyotes along that two-mile stretch and a screech owl that made a pass at the hood ornament before disappearing moth-like in the darkness ahead. The road dropped down the last, long hill, crossed the river into a section of winter wheat, and was dead again.

Native vegetation like those sections of grass are in short supply in many parts of Kansas. Where they exist, they nearly always support dense wildlife populations, but that doesn't mean that grass alone makes the perfect habitat. One side of that Ninnescah rangeland was bordered by river timber; the opposite edge ran along a shelter belt with a milo field on the far side. It was the variety of the area that made the difference. Nearly all wildlife species benefit from such diversity because it supplies food and cover for breeding, escape, and shelter in all seasons, year after year.

Experience with Soil Bank shows that this same kind of diversity also benefits the farmer. A patchwork of native vegetation helps control erosion, renews soil fertility if used as part of a crop rotation, and slows the overproduction that has driven prices down over the last fifteen years. For the time being at least, there seems to be no way American farmers can collectively handle their own production control and marketing. Only the federal government is in a position to take land out of production, and it will take more than just a suggestion from them to get the required set-aside program started. It will take cost-sharing and a long-term federal commitment. If the 1978 Set-Aside Program is any indication, the feds aren't willing to take that kind of action, and until they do, American farming is likely to be a losing proposition for wildlife *and* the farmer.

# a weed by any other name.....

Steve Capel

**B**iologists call them forbs. Strictly speaking, they include all plants without woody stems except the grasses. They're the first plants to appear on most neglected ground. They fill roadside ditches and line miles of railroad track. On native prairie, they may outnumber the grasses themselves. Some people charitably call them wildflowers. Most folks, though, have another classification—they're weeds, unsightly to city dwellers and a pain in the neck to a farmer running a combine or weighing his grain in at the elevator. People on the land know the worst offenders—musk thistle, cocklebur, velvetleaf, and the others—and unfortunately, the ones they don't know get thrown in with this unsavory bunch of renegades.

**Most forbs that take over neglected land** are not traditional cropland weeds. A succession of plants flourish, then fade on ground that is left out of production. Cockleburs, velvetleaf, and the like may do well the first year or two, but without disturbance, they just can't compete with other forbs and grasses. The next time you're walking through a "weed" patch, take a look around. Do you see any bindweed? Velvetleaf? More than likely, you're looking at different ragweeds, native sunflowers, and other wildflowers and perhaps some shrubby plants like plum or dogwood. These plants are seldom, if ever, problems on cropland because they are easily killed by cultivation, and a few, because of their high protein content and palatability, are actually preferred by pasturing cattle. There are



Butterfly weed (Ken Stiebben)

only a few really tough exceptions like musk thistle that seem to be able to grow just about anywhere. In many cases, the forbs are great healers of land, helping to offset past abuses by man. Along with invading grasses, they hold soil that has been left bare, and they give wildlife a toehold in an often inhospitable landscape. A few of the plants that end up as benefactors of wild critters are surprising. I have a hard time conceding the value of ragweed since I go through more sinus pills and Kleenex each fall than most people do in a lifetime. But I love dove shooting even more than I hate hay fever, and the best shooting always seems to be down by the creek next to that ragweed patch. Ever notice?

**The most obvious thing the forbs have to offer wildlife is food.** Through the spring and summer, forbs support populations of beneficial insects that are vital food for most young birds. The bugs supply protein that supports the lightning growth of the brood in a way no other food can. Later on in the fall, these same cover patches set seed that may be preferred to any other food by many birds. Have you ever hunted quail in a large tract of grass? Such a piece of cover can provide some fine shooting. The birds seem to do just fine without a nearby milo or corn field. In areas that get heavy snow, seeds of certain forbs may be the only food available after blizzards when shattered grain is covered and standing cultivated crops are beaten down by wind and drifts. Studies of small game food habits have prompted Commission biologists to include forb seeds in most grass plantings. The mixed species stands are more useful to a wider variety of animals. Combine the food in a mixed patch of forbs with the cover it provides and you have sure-fire wildlife habitat. Coverts of native forbs in a January countryside are vital sanctuaries, places to loaf without fear of a marsh hawk dropping in for dinner, places where a game bird stands a good chance against a hunter. One farmer in Seward County near Liberal has found that a small patch, maybe an eighth to a quarter of an acre, of perennial Maximilian sunflower in his sandhill pastures will carry a covey of quail through the winter. He's established a number of patches, and the quail on his place have responded by expanding into his pastures from the Cimarron River brush that was once their only shelter.

**Come spring time,** the cover in these odd areas takes on a new role. In April, it isn't enough for wild critters just to be safe from predation and hunger. Game or non-game, predator or prey, there is a universal need

for safe nesting or denning sites. Animals differ in the kind of vegetation they prefer, but nearly all seem to have a taste for undisturbed ground. Denning species like the badger look mainly for isolation and a little cover to allow them to move in and out of the den without being seen. Many of the denning species choose a site just off a ridge or hilltop where they have a good view of their surroundings. Most ground-nesting birds have more specific needs. Quail, for instance, will seek out a place where they can scratch down to bare ground in cover that will provide nesting material and camouflage. Their favorite Kansas nesting cover is usually grass with bare ground between the clumps. The second year's growth after a prairie burn is often ideal. The ground litter is gone, allowing the quail to walk easily through the grass and scratch out a nesting bowl, but there is still enough standing vegetation to supply nesting material and cover. Roadside ditches may be good places for a quail nest, too—if mowing is delayed until most birds have finished nesting. Generally, the bobwhite hens have pretty well wrapped things up by early to mid-July.

**Pheasants aren't quite as fussy about nesting sites.** Almost any undisturbed cover with some grass will do for a pheasant nest, but if the hen has no other choice, she's likely to settle in a field of sweet clover or alfalfa, often to her sorrow. Pheasants nesting in alfalfa fields almost never bring off their nests because the intervals between cuttings are shorter than the time required for



Patches of forbs benefit more than small game. Many hunters have found that whitetails are almost like cottontails in their fondness for weed patches. (Leonard Lee Rue)

# Go Wild!

KANSAS FISH & GAME magazine will give you a look at the wild side of Kansas. Six times a year we'll serve up a hefty helping of wildlife profiles, how-to stories, color photographs, art reproductions, news of new developments and advice from the experts to keep you informed on the natural world around us. All you need to do is send us the names and addresses of the people who would enjoy receiving the magazine along with \$3 for each one-year subscription, \$5 for two years or \$7 for three years. (Please allow 10-12 weeks for delivery of the first issue.)

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## MILFORD AREA SPORTSMEN INVOLVED

Milford Reservoir area sportsmen are doing something for their critters.

Time, effort and materials donated by members of the Geary County Fish and Game Association and members of the Arboretum Green Thumb Project are two recent examples of the type of involvement by sportsmen which enhances wildlife populations.

Members of the Geary County Fish and Game Association collected more than 300 discarded Christmas trees from the Junction City area to construct brushpiles. The brushpiles will provide needed cover for rabbits, quail and other wildlife.

Waterfowl also are receiving a helping hand from Green Thumb workers in Wakefield. Members of that group built 25 wood duck nesting boxes which were strategically placed around Milford Reservoir by Kansas Fish & Game personnel. Wood ducks normally nest in hollow cavities in trees near water impoundments or along streams, but declining nesting areas limit the amount of wood duck nesting occurring on Milford Reservoir. The nesting boxes, which are readily used by wood ducks, should boost wood duck production in the Milford area.



Fish and Game Commission employees Joe Kramer (left) and Charles Howe place another wood duck nest box near Milford Reservoir.

## AIM OF LENGTH LIMITS: BETTER FISHING

In an attempt to fine-tune the management of bass and panfish in Kansas, the Fish & Game Commission will continue bass length limits established on selected lakes for the first time last year.

Twenty-one state lakes will have slot length limits. Under the new regulation, black bass between 12 and 15 inches in length will be protected and must be returned to the water. In addition, eleven other impoundments will have 15-inch minimum length requirement for black bass. That means all black bass less than 15 inches long are protected and must be returned to the water at those impoundments.

Why the complicated regulations? Mike Theurer, fisheries management supervisor for the Fish & Game Commission, explains.

“In many of our smaller lakes, we have two problems with bass. The larger, trophy fish are easier to catch than most fishermen think, so many of our lakes have few of the large predator bass that are necessary to control panfish numbers. At the same time, numbers of very small bass may be so high that the young fish don't have a chance to develop properly. There's constant competition for a limited supply of food.

“Our slot length limit is designed to ease both problems. Fishermen can take home real trophy bass over 15 inches. They can also take home a stringer of smaller bass which will give them a good mess and help thin out the overpopulated group of small bass. The 12 to 15-inch bass will be protected. They're the most efficient predators on stunted panfish. Their presence will not only ensure big bass for the future but will reduce competition among bluegill and sunfish. That means better stringers of panfish.

“The 15-inch minimum length limits were imposed because large bass in those lakes needed protection, but smaller bass were not overcrowded.

“We're monitoring the fish populations in the lakes with the new length limits,” Theurer said. “As we learn more about the effect of the regulation, we may modify the protected length range. The concept is great. For the first time, we have a chance to apply recent discoveries about bass. In the long run, it will mean better fishing for the Kansas bass angler and bluegill fisherman alike.”

The slot length limit will apply at the following impoundments:

### State Fishing Lakes

Atchison	Leavenworth	Osage
Barber	Lyon	Ottawa
Brown	McPherson	Pottawatomie 1
Cowley	Montgomery	Pottawatomie 2
Douglas	Nebo	Saline
Jewell	Nemaha	Shawnee
Kingman	Neosho	Sheridan

The 15-inch minimum length limit will apply at the following impoundments:

### State Fishing Lakes

Clark  
Kiowa  
Meade  
Mined Land Area  
Wilson

### Federal Reservoirs

Clinton  
Fall River  
Glen Elder  
Melvern  
Milford

### Waterfow Mgmt. Areas

Neosho

## SHELTERBELTS VANISHING?

Thirty Kansas counties are currently under study by Soil Conservation Service technicians attempting to compile an up-to-date inventory of shelterbelts in the state.

The reported decline in recent years of field shelterbelts and subsequent fears of wind erosion of prairie soil prompted the survey, which also is being conducted in Nebraska, Oklahoma, and North and South Dakota. Using aerial photographs SCS will attempt to determine the number of field windbreaks in the region, number removed during recent years, and reasons for their removal. The report is due for completion in October.

In a separate survey, two University of Kansas professors reported in a recent issue of the *Journal of Soil and Water Conservation* that “. . . results of a 13-county survey in Kansas suggest that about 20 percent of the state's shelterbelt mileage has been removed since the late 1950's.” The professors, Curtis J. Sorenson and Glen A. Marotz, said the main reason for field shelterbelt reductions apparently is the continued deterioration of original plantings; the rapidly maturing trees planted to shelterbelts during the 1930's and 1940's are simply not being replaced as they die out.

Another reason for shelterbelt removals, Sorenson and Marotz contend, is the cost-price squeeze on farmers which has forced them to farm as much land as possible to harvest higher total yields. To produce more requires that all available land be farmed instead of giving up territory for shelterbelts.

Center-pivot irrigation systems, which have proliferated since the late 1960's, also may be contributing to the demise of shelterbelts in some counties, Sorenson and Marotz explain. Since most center-pivot irrigation systems require an unobstructed field surface, tree removal at those sites was necessary.

In some parts of the country, the disappearance of shelterbelts has spurred action by local governments to preserve the windbreaks. Two Minnesota counties, for example, have passed ordinances which require farmers to develop alternative plans for soil conservation before they can remove a field windbreak.

William Lloyd, Chief Forester for the SCS, believes too much emphasis has been placed on just the erosion control benefit of windbreaks.

“With the introduction of minimum tillage, annual grasses, stripcropping, and other forms of intensive soil management, windbreaks are no longer a necessity for short term erosion control,” Lloyd said. “Instead, the biggest losers when shelterbelts are removed are wildlife habitat and recreational opportunities.”

“Opening the Great Plains to agriculture facilitated development of a multi-billion dollar economy,” Sorenson and Marotz concluded. “Shelterbelts have been a part of land management in practice in recent decades. If the nation's investment is to be maintained, we must understand the vagaries of the Plains environment and use land management practices that will keep soil in place. Federal, state, and local authorities must decide on the continued feasibility and goals of the shelterbelt program given trends reported both for removal of shelterbelts and for the broad acceptance of farmstead/feedlot windbreaks.”

## “ENDANGERED” STATUS AIMS TO PROTECT BALD EAGLES

The bald eagle is being officially listed as endangered by the U.S. Fish and Wildlife Service over most of the country.

The effect of the formal listing is to give the bird protection against any federal action or funding that would adversely modify its remaining habitat. The listing covers 43 of the 48 adjoining United States, but not Alaska, where the bald eagle has a thriving population, or Hawaii, which has no bald eagles. The remaining five states — Minnesota, Wisconsin, Michigan, Oregon, and Washington — have bald eagle populations which are in somewhat better condition than in the other states. In those five states, the bird is listed as threatened.

“Endangered” signifies that a species is in danger of extinction throughout all or a significant portion of its range. “Threatened” means a species is likely to become endangered within the foreseeable future throughout all or a portion of its range.

“Many people believe the bald eagle was already listed as endangered,” said Lynn Greenwalt, director of the U.S. Fish and Wildlife Service. The species is protected by the Bald Eagle Protection Act of 1940, but only the southern subspecies was listed under the Endangered Species Act. However, confusion resulted, since the northern and southern populations have overlapping ranges. A provision of the Endangered Species Act will help slow further deterioration of the species’ critical habitat.

Shooting continues to be the leading cause of premature death among adult and immature bald eagles and accounts for 40 to 50 percent of birds picked up, Greenwalt said. Some people misidentify them for other species while hunting, and others deliberately kill them because of an ingrained prejudice against all birds of prey.

“In addition, in some areas of the country, the eagle can’t even hatch its own eggs,” Greenwalt explained. “Pesticide residues have so contaminated its body that egg shells become thin and break when it tries to hatch them.”

But there’s still hope for the bald eagle. While in the lower 48 states there are only about 700 active nests, the population in Alaska has an estimated 7,000 to 7,500 nesting pairs, Greenwalt said.



## ALASKA — MORE THAN AN OIL RESERVOIR

We're getting a lot more than just oil from Alaska.

About 13 million waterfowl depart Alaska annually, with about 35 percent of those joining migration of the Central and Mississippi Flyways, according to Harvey Willoughby, regional director of the U.S. Fish and Wildlife Service.

"Alaska seems remote to many living in this region, but we will have a lot less ducks and geese in our skies here if the Alaskan flocks are allowed to diminish," Willoughby said.

Congress will make the crucial decisions, possibly this year, that will determine whether more than 45 million acres of Alaska will be designated National Wildlife Refuge lands. Department of the Interior Secretary Cecil Andrus, in an address to the Third International Waterfowl Symposium in New Orleans earlier this year, listed Alaska as the departments ". . . number one legislative priority for this year.

"If we have the vision and courage to protect the vital ecosystems of Alaska, we will be maintaining a life-giving reservoir to support a rich array of wildlife for decades and centuries to come," Andrus said.

† † † †

## TAX OPTION TO BENEFIT NONGAME SPECIES

What does wildlife have to do with income taxes?

Colorado taxpayers can tell you. A provision in the Colorado State Income Tax Form allows taxpayers an opportunity to contribute \$1, \$5, or \$10 from their income tax refund to a Nongame Wildlife Cash Fund.

In the past, threatened, endangered and nongame species have been funded through the state's General Fund. According to Nongame Wildlife Supervisor John Torres, that funding produced a total budget of \$125,000 in 1976 for the state's 783 nongame species. And that's not enough to meet the needs of all of those critters, he said.

Colorado sportsmen, through the purchase of hunting and fishing licenses, fund programs for game animals and fish.

"But since they are not taken for sport, nongame animals have to be looked at as everybody's responsibility," Torres said.

"Most of the animals that will benefit from the Nongame Wildlife Cash Fund arrived at their dangerous status through the direct actions of the human race," Torres explained. "We are responsible for them being endangered. We have the obligation and the ability to correct our past mistakes."

Colorado Division of Wildlife officials are hoping that state's residents keep that thought in mind at tax time.

† † † †

## KANSAN ON PANEL FOR PREDATOR STUDY

Dr. R. J. Robel, Kansas State University, is one of 14 persons named to a select, advisory group formed by the Interior Department's U.S. Fish and Wildlife Service to review data on the impact of predatory animals on western livestock.

The committee, tagged the "Animal Damage Control Policy Study Advisory Committee", will review data obtained by a comprehensive federal study now underway of the problems of animal predation. The study will place primary emphasis on the federal role in problems of coyote depredation on sheep and cattle, according to the U.S. Fish and Wildlife Service.

The federal study, which began in January, will produce two products: A report and an option paper. The report will bring together, in an analytical framework, all relevant information and data. The option paper will be derived from the report. It will present, in brief, the pros and cons of specific courses of action, and it will be used as a basic decision-making aid for Interior Department officials.

The committee met for the first time in February. It will meet at least once but not more than three other times during the study, and will terminate July 31 unless renewed by the Secretary of the Interior. The study's schedule calls for a draft report to be made available for public review in April, for public hearings to be held in May, and for the report and option paper to be delivered to the Secretary in June.

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## BOATERS URGED TO COMPLY WITH CAPACITY RECOMMENDATIONS

Kansas boaters should take extra precautions before heading for the water this year, according to the Kansas Fish & Game Commission.

Growing concern over the hazards of operating overpowered boats has prompted promises of a crackdown on overpowered boats this year, according to Royal Elder, boating administrator for the Commission.

"The main concern is the very unsafe practice of using a boat powered by a motor which exceeds a vessel's horsepower limits," Elder said.

How can you tell the size of motor for which your boat has been approved? Simple. A motorboat manufactured after January 1, 1971, that is less than 26 feet in length and is designed to carry two or more persons, must have a capacity plate permanently affixed to the vessel by the manufacturer.

"This capacity plate states, in addition to other information, the maximum horsepower of the motor the vessel is designed to accommodate," Elder explained. "Simply put, if your capacity plate says your boat should not exceed a 140 horsepower motor, don't exceed that limit. If you can't purchase the motor you want in that size, buy a smaller size."

Last summer, boaters who violated this law were warned to come into compliance by the next boating season. This summer, Elder warned, citations will be issued to those in violation.

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## It's The Law.

No matter how you look at it, violating fish and game laws is not worth it.

Those who have tried could tell you.

A rural Jefferson County couple paid a total of more than \$1,000 in fines and court costs after authorities found two large, untagged deer carcasses in their home. Clarence and Mary Rinke were fined \$500 each in district court on charges of failing to tag deer carcasses as required by law. Each also paid \$40 court costs and was assessed a 30-day jail sentence.

Shooting two cardinals cost two Florida men a total of \$160 in fines and court costs in Harvey County District Court recently. Carlos Vazquez, Hollywood, Fla., and Gerald W. Lock, West Palm Beach, Fla., were found guilty of shooting the birds with a pellet gun. Associate District Judge John Yoder assessed fines of \$50 each for shooting the birds and \$15 for failure to have hunting licenses. In addition, each was ordered to take a hunter safety course.

In a separate case in Geary County, Walter W. Howery, Junction City, was fined \$200 after pleading guilty to a charge of selling protected birds at public auction, including one golden eagle, three hawks, and three owls. The act was a violation of federal law and Howery appeared in U.S. District Court to answer the charges.

In Pottawatomie County, Wesley R. Mattison, Frankfort, was fined \$250 plus costs and sentenced to 30 days in jail on a charge of taking a deer during closed season.

In Osage County, Charles E. Suttles, Olivet, was fined \$300 plus costs and placed on one year's probation after pleading guilty in district court to a charge of illegal possession of deer meat.

A Parsons man, Joaquin Ramirez, was fined \$100 in federal court in Kansas City for hunting and possessing geese out of season.

In many cases, game protectors were assisted by tips from sportsmen or landowners. And that's the way it should be since they are the ones who have the most to gain by apprehension of violators.

a successful nesting. A corner of native forbs near an alfalfa field may convince a hen to nest out of the mower's reach. Forb patches also provide at least some protection from winter storms. Unless there is some heavy brush or woody cover in the patch, it may not be sturdy enough to bring more vulnerable animals like quail through a full-blown Kansas blizzard, but it can bring them through an "average" Kansas winter—if there is such a thing! When the weather really closes in, most wildlife species are mobile enough to move to heavier cover like creek bottoms or shelter belts until things get milder. With the large tracts of solid wheat being grown over much of Kansas today, nearly any diversity in the landscape is a godsend to wildlife. The forb patch is a key element in this diversity, and unfortunately, it's one of the most easily lost. It's easier to get rid of a small, "nuisance" patch than a larger block of native grass or timber; there's no leveling or terracing required, no logging or stump pulling. Just touch a match to it and make one pass with a disc, and there's another acre in production. Or out of produc-

tion, if you look at it from a pheasant's point of view.

**One of the beauties of forb and grass management** is its simplicity—all you have to do to get a weedy corner started is back off and watch. Pick out a hard-to-farm corner, a neck of ground along the creek, a point row area or some other spot that will not be missed much from cropland and simply stop farming it. Guaranteed to come up in weeds. You never know for sure what will come up which is part of what makes life interesting. Over years of managing public lands, though, we have learned a few things about what to expect. If you start out with wheat stubble, you can expect some sunflowers, usually stunted because they were clipped back by the combine. You'll probably find other forbs, too—spurges, wild poinsettias, dove weeds, and annual grasses like foxtail. These plants produce large, palatable, high-energy seeds that are fine feed for many species of wildlife. If you begin with row crop stubble, it's best to leave the stubble over winter without working it under. The next spring you'll get a wide variety of forbs and annual grasses, including all the

For years, road ditches supplied small game cover in all seasons until bigger, cleaner farms came into fashion. This piece of ground has lost most of its wild critters and is well on the way to losing its topsoil, too. Note the black drift covering the snow.



weeds that you've been fighting. In addition to those plants, however, there'll be others—ragweeds, sunflower, mulletail, asters, foxtails, and the like, all desirable food or cover plants for wildlife. Don't be too concerned if, on occasion, you get a really vile mixture in the first year. Once at Marion Reservoir, we stopped farming about twenty acres of milo and got twenty acres of solid cocklebur the next summer. We didn't get many rounds of applause from owners of long-haired bird dogs. One Irish setter owner came out of the patch with a face about as red as his dog. In spite of the gripes, though, we decided to leave the ground alone and see what happened. The second year, there was a dramatic change—sunflowers, wild millets, and a little mulletail. Almost no cocklebur. Once in a while, dumb luck does pan out.

**The first year you retire a piece of ground**, you may want to direct the path nature follows by broadcasting a little sweet clover or lespedeza across the stubble. Drilling the seed in works even better but is also more trouble. If you eventually want the patch to grow up to brushy cover, you may wish to plant a few beneficial shrubs like plum or fragrant sumac. But there's no real need to. Sometimes it's more fun to find out what volunteers to fill the "vacuum". Once the forbs have established themselves, it's surprisingly easy to control plant species that show up from year to year. If you are thinking of returning the area to cultivation at some time or other, you'll want to keep the patch in annual forbs like sunflowers and ragweeds instead of letting woody plants take over. The annuals can be encouraged by *lightly* discing the patch every third or fourth year in early to mid-spring. The later in spring you wait, the smaller the plants will be, but as long as you disc sometime in the early part of the year, you'll get essentially the same plants. Fall discing brings on more winter annuals which are generally not as useful to wildlife.

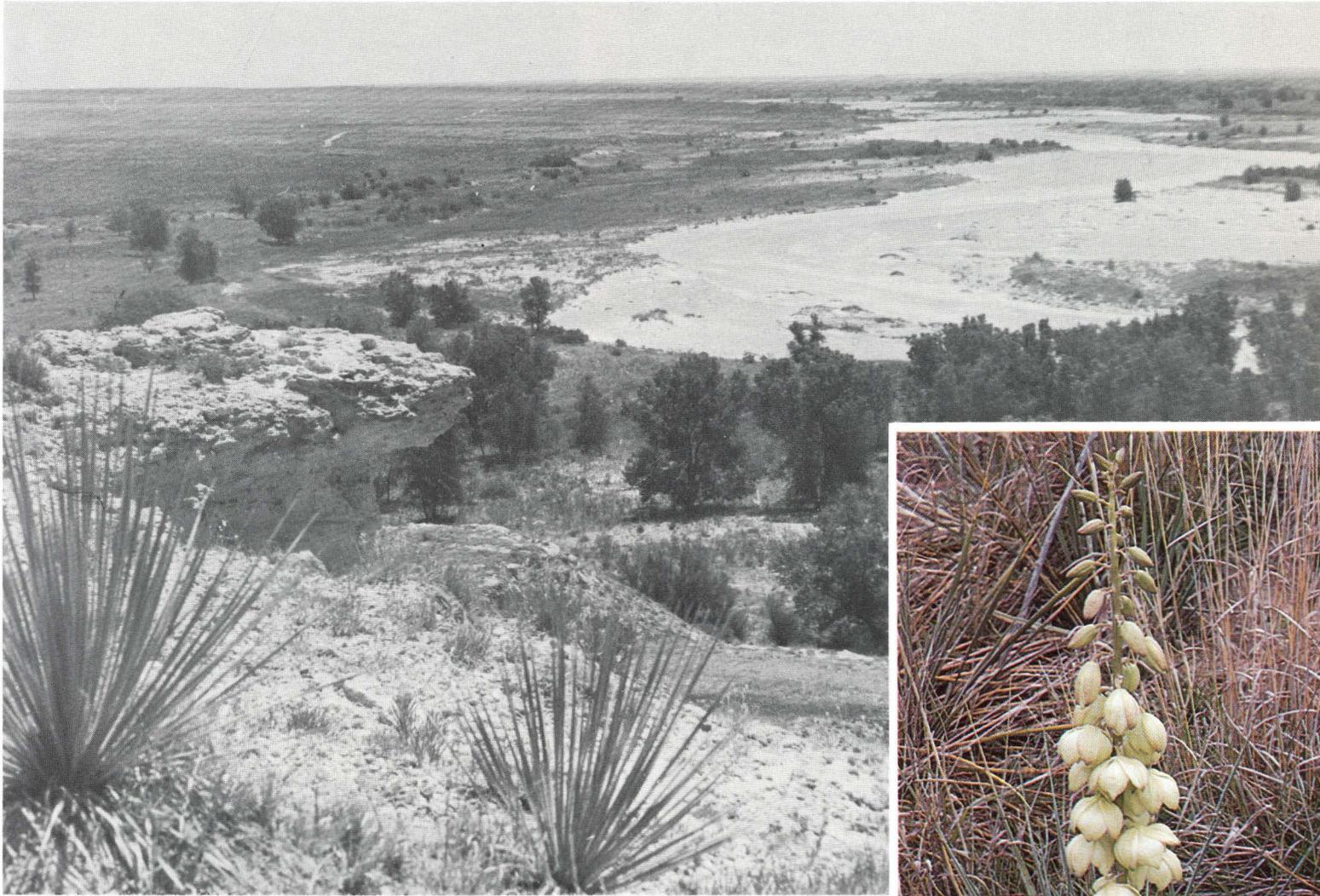
**Another good way to rejuvenate a cover patch** is to burn it, assuming that the fire won't be set where it might take your barn along with the weeds. For the best results for wildlife, try a March burn—earlier than you would burn off pasture. The earlier burn gives broadleaf plants an edge and reduces cheat grass and other winter annuals. Whether you burn or disc to rejuvenate forb patches, don't try to treat them all in the same year. Winter cover and nesting habitat is usually best when more than a year old. By burning a third of your patches in a given year, you'll leave some cover for these critical times and still make sure that there will be healthy patches of forbs in the future. In far eastern Kansas, you may need to work half your patches each year; in western Kansas, only a quarter of the areas may need to be burned in a given year. With a little experimentation, you should be able to find a schedule that works best for your area.

**Treatments like burning or discing** help keep vegetation in an early stage of succession. If the forb patch

gets too woody, it will be less useful as nesting and brood rearing habitat and will produce less food. However, it will improve as escape cover and may eventually become a woodland. Each stage has its advantages and disadvantages for different wild life species. If grass is coming in, the area will make good nesting cover but may become less desirable for brood rearing because of a lack of food. Its value as escape cover will probably stay about the same. Finding the best combination of cover types and cropland to benefit the wildlife species you want to encourage is a challenge, and picking the tools to use in controlling the stage of plant succession can be just as tricky. Fire tends to encourage grass; discing benefits forbs in the long run and just leaving the ground to its own devices favors brush and eventual timber. If you'd like to leave the fine tuning of habitat on your property to experts, there are a couple of agencies that will offer advice. Fish and Game Commission biologists will be happy to survey your property and provide a detailed plan for habitat improvement which you're free to pick and choose from as you see it. The Soil Conservation Service also offers information on developing wildlife habitat, and even better through the ASCS, they may share the cost of the project. The 1978 Agricultural Conservation Program for Kansas authorizes cost sharing on up to eighty percent of the cost of fencing a tract to protect the area from grazing and establishing or improving stands of trees, shrubs, or other vegetation for wildlife.

**Farmers who plan to set aside acres** under the new federal program can manage the land to greatly benefit wildlife. Wheat fields that have been designated as set-aside can be overseeded with clover, lespedeza or some other legume. On set-aside row crop ground, a nurse crop of oats in the spring mixed with a variety of legumes (for example, Korean and Sericea lespedeza in a three pound to one-half pound ratio along with three to five pounds of sweet or red clover) provides a fine combination of cover and food for a variety of wildlife species. Native grasses like big and little bluestem, Indian grass, and switch grass make a good planting mixture for more permanent cover. As with most projects, managing cover plots can be about as simple or as complicated as you want to make it. What's important to recognize is that the overwhelming majority of the plants you're working with can be kept under control and within the bounds you've set for them with a few simple tillage techniques.

**Sooner or later**, somebody is bound to ask why you're wasting time cultivating a weed patch. The obvious answer is that you're not raising weeds; you're farming for forbs—and wildlife. There's something about that word "forb" that lends a little respectability to the project. And while you're on the topic of forbs and critters, you might ask him how the pheasant hunting is on *his* place.



Ken Stiebben

## *The Vanishing* **SANDSAGE PRAIRIE**



Bruce Waddell and Bill Hanzlick

**T**here are many natural grasslands in Kansas, ranging from the tall grass bluestem and Indian grass stands on the Flint Hills to the short grass of the western high plains. Botanists have tried to explain the absence of trees on the prairie in a variety of ways. Some say there was never enough rain to support timber; other believe the trees couldn't survive the wildfires that regularly swept the plains. For most grasslands, the argument will probably never be completely resolved, but for the sandsage prairie, the dominance of grass-sage vegetation is easy enough to explain. The sand country is just too dry to support trees.

It's not that the area doesn't get enough rain. Rainfall averages nineteen inches a year, enough to support some timber if the water stays at the surface. But in sand country, the water seldom stays where roots can get at it. This entire region is made up of stabilized dunes and sandy basins, the result of prevailing winds blowing sand up out of the Arkansas and Cimarron drainages. Most rain quickly sinks out of sight, and the little remaining moisture is sucked back into the air by summer heat and low humidity, leaving a landscape that has about as much in common with central Arizona as it does with the Kansas plains. The largest contiguous piece of sandsage prairie in Kansas is south of the Arkansas River near Lakin, Garden City, and Cimarron, but there are also large tracts in the Oklahoma panhandle, eastern Colorado, and southwestern Nebraska.

**The lack of water in this country** means hard times for most plants, but there are some species tough enough to make it. The most obvious survivor is sand sagebrush, a tough, leather-leaved shrub that is palatable to jackrabbits and antelope and very little else. When the grasses on the prairie are overgrazed, the sage moves in. Where the prairie is less harshly used, other species like sand bluestem, little bluestem, switch grass, sand reed, and side-oats grama are common. Buffalo grass and blue grama do well on the heavier, more stable soils. There are also a large number of forbs—sand lily, blazing star, bush morning glory, sand sunflower, and yucca, among others—that bloom profusely throughout the growing season.

The usual dryness of the sandsage makes it a kind of southwest connection for wildlife. The catalog that follows is an incomplete list of the most unique.

**The roadrunner**, predatory member of the cuckoo family, is a common resident. He's at home in country like the sandsage where he slips through the sparse cover after rats, snakes, small birds, insects—anything that moves and is small enough to kill with a quick stroke of the beak.

**The scaled quail** also calls the sandsage home. Like the roadrunner, the scaled quail seems to feel more comfortable on the ground than in the air, preferring to scuttle off through the sage when threatened instead of flying. It seems like an inefficient way to escape a predator—at least, until you see it. Generally, all a hunter ever spots of a covey of scaled quail is a flicker of movement in the brush accompanied by a faint scuttling sound. Then nothing. They fade into the sage like smoke, driving good bobwhite dogs and their masters slowly crazy. With the lack of tall cover like the brush and timber in good bobwhite cover, it may be that scaled quail have found that a covey rise only exposes them and gives a predator the chance to mark their location when they land.

**The dust-colored Brewer's sparrow** has also adopted the running style of escape. An early naturalist in



Leonard Lee Rue

Leonard Lee Rue



California commented, "The Brewer's are very shy, sneaking from their nests and running through the grass instead of flying." The Brewer's, along with other western dickeybirds like the Cassin's sparrow, black-throated sparrow, and sage sparrow, seem to prefer the sparse brush in the sand country. Most of them make a pathetic attempt to nest up off the ground like their eastern relatives, but "off the ground" in the sandsage may only take them to the dizzying height of two feet. It's not unusual for one of these sparrow's nests to be built in the first crotch of a sage bush with the bottom just touching the ground. With their dull coloring and secretive habits, these sage-dwelling sparrows are practically invisible on the prairie—but far from being unimportant. They make the spring music for this country. Bird biologists have set down a few inadequate descriptions: the Brewer's—"a cicada-like trill . . . suggestive of a canary's song", the black-throated—"tinkling, canary-like", and the Cassin's—"exquisitely sweet, haunting, a long, high, liquid trill."

The kangaroo rat is another common resident on the Kansas sandsage. As the name implies, this rat gets around by hopping on its hind legs with a long tail held behind for balance. But the kangaroo rat's jumping is far from being the strangest thing about him. Most wildlife on the sandsage makes efficient use of water, depending on the moisture from green plant food and an occasional trip to the waterhole to get by. The kangaroo rat doesn't drink any water at all. Water

is produced in the chemical processes as his dry food (mostly seeds and cured vegetation) is broken down. The rat is so economical with his water that he can survive on this moisture alone.

The tremendous variety and number of wild rodents on the sandsage attracts a dense population of predators.

The bridled weasel occurs in the region; coyotes and badgers thrive along with a host of airborne predators. The most striking of the sandsage raptors are the golden eagle, prairie falcon, and ferruginous hawk, but marsh hawks, redtails, roughleggeds, and Swainson's hawks are the most common. There are about as many of them as there are telephone poles for perches.

There are a half-dozen reptiles and amphibians in the area that are found nowhere else in Kansas. All of them are southern species, drawn to the sand by their taste for low scrub and drought. Biologists are just beginning to look at the insects and other invertebrates on the sandsage, but these populations promise to be as interesting and unique as the vertebrates. One of the most voracious predators on the prairie are the tiger beetles, constantly prowling, iridescent insects that will eat anything they can catch and hold. One of the larger species of this beetle has brought as much as \$40 a pair from collectors who prize it for its beauty as well as its rarity. Much stranger invertebrates, the fairy, clam, and tadpole shrimp, also survive in this country. They complete their life cycles in temporary puddles formed by heavy summer thunderstorms, then go into drought resistant egg stages before the water dries up—if they're lucky. The fairy shrimp actually resemble miniature shrimp; the clam shrimp look more like oysters with feathery feelers sticking out of the shells, and the tadpole shrimp is almost like a tiny landlocked horseshoe crab.

Most hostile environments breed unusual critters, and the sandsage prairie is no exception. The region is a wild menagerie of tremendous variety, a unique part of Kansas and the Great Plains. Unfortunately, those who find it interesting had better enjoy it while they can—it's going fast.

Buddy Mays



## The decline of lesser prairie chicken —a sign of the times

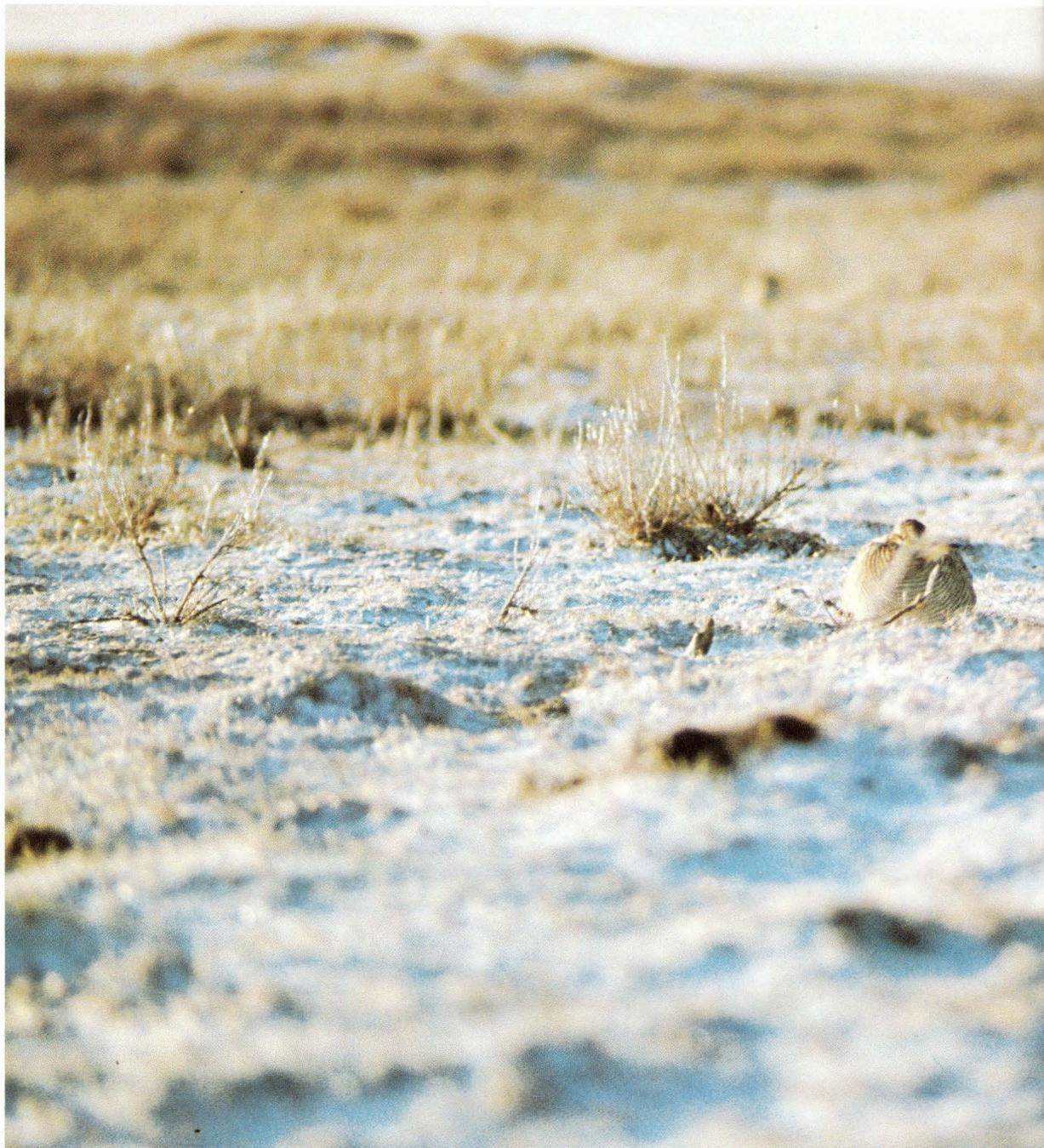
While many of the species on the sandsage are probably adaptable enough to live with row crop agriculture, the lesser chicken appears to require habitat that contains at least sixty percent grassland. An important part of this rangeland habitat appears to be

some form of overhead cover, probably provided by sand sagebrush or plum thickets in Kansas. As a result of these requirements, the lesser chicken does best in the sand country of southwest Kansas, and when center-pivot irrigation systems began to cut into the sandsage in the 1960s, biologists became concerned over the fate of the bird.

Surveys used in the late '60s and early '70s to measure natural population fluctuations were inadequate to assess the seriousness of the threat of irrigation, so Commission biologists began a study in the spring of 1976 to document the current range of the

lesser chicken and to find out how fast its habitat was disappearing. The study focused on two areas: developing an up-to-date map showing where the chickens currently occur and mapping available habitat to show where cover was being converted to row crop fields. Since little work had been done along these lines, the study started almost from scratch.

To determine the numbers and distribution of lesser prairie chickens, biologists began an early spring search for gobbling grounds, the areas where these birds congregate to display and breed. The cackling and gobbling of the males on the gobbling ground can



Ken Stiebben

be heard for a mile or more depending on wind speed and direction and assuming someone is there to listen at sunrise when breeding activity is at its peak. Using this technique, survey parties located gobbling grounds on 237 sections of ground in the first two years of the study.

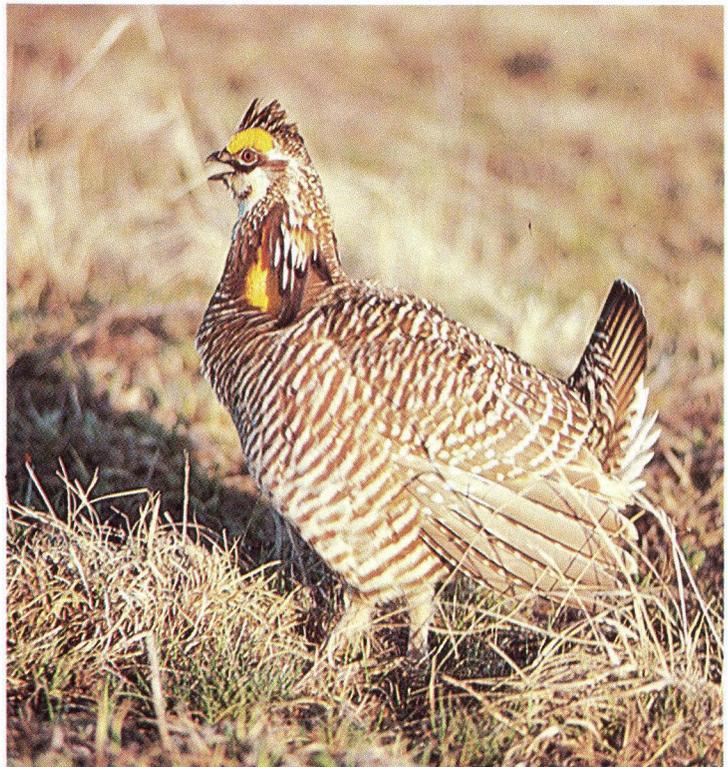
**Getting an idea of the rate of loss of lesser chicken habitat** was a tougher assignment. Vegetation maps and descriptions by the Kansas geographer A.W. Küchler furnished a general idea of vegetation boundaries and a basis for classifying the major plant communities. More specific information on the location

and amount of rangeland came from 1974 maps researched by the Kansas Land Use Data and Analysis Program. After data from all sources had been gathered, calculations showed a lesser chicken range in Kansas of about 4000 square miles, about 1000 square miles of sandsage prairie and around 1300 square miles in cropland.

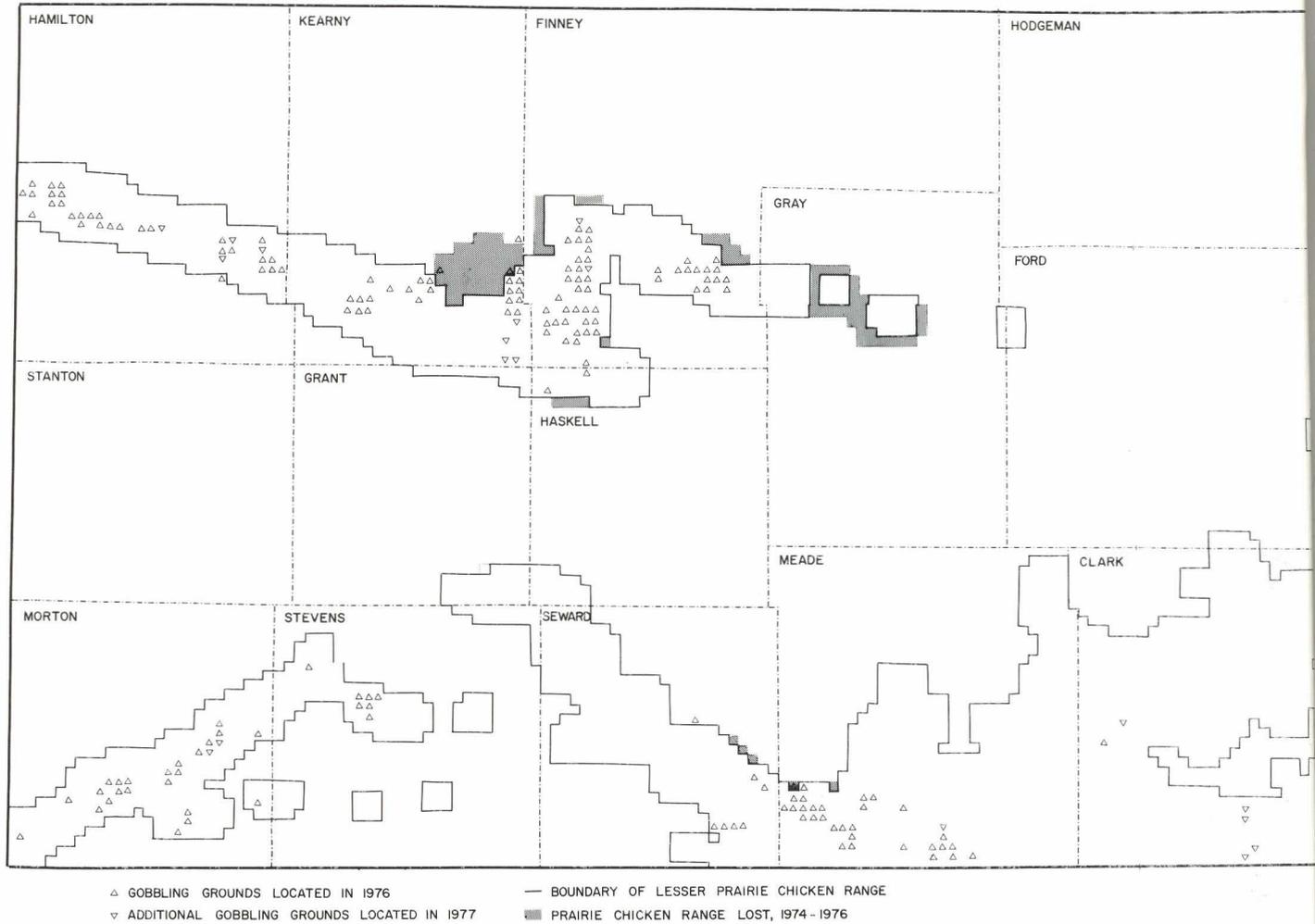
Satellite pictures of southwest Kansas told the rest of the story. Taken in 1975 and 1976, the satellite maps showed that the lesser chicken's overall habitat had been reduced by more than three percent in just two years. Loss of grassland during the two-year period was almost four percent. For the sandsage prairie, a vital habitat for lessers, the loss was about six percent. Sand prairies south of the big bend of the Arkansas River, the core of the range, was disappearing at an average rate of five percent a year.

**In 1974, a tract of lesser chicken range** in southern Finney, eastern Kearney, and northern Haskell, Grant, and Gray counties had 289 sections of land with a minimum of fifty percent sandsage prairie. Prime lesser chicken habitat. By 1976, 44 of those sections had lost their grass. At that rate, the 289 sections of chicken habitat in that area will be gone by 1987.

There are some who might question the assumptions underlying these estimates, but a careful look at the satellite pictures of the area clearly shows that massive conversion to center-pivot irrigation has occurred. There is a threshold acreage below which the future of the lesser chicken is in grave doubt, and that threshold is rapidly being approached in the sand country south



# Habitat of the lesser prairie chicken in Kansas . . .



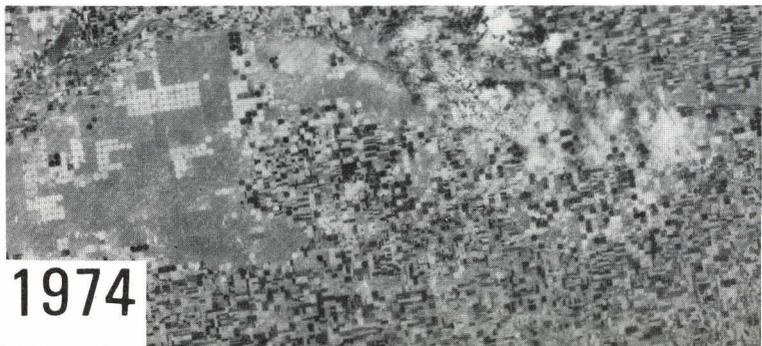
Going . . .

Lands at photos taken from 570 miles above the earth record the spread of circle irrigation in a small part of the sandsage. Circle irrigators show as dots about an eighth-inch in diameter. The lesser chicken tolerates a few irrigated fields, even exploits them when food is hard to find during the winter, but the bird cannot survive what promises to be near-total conversion of grass to cropland.

1972



Going . . .



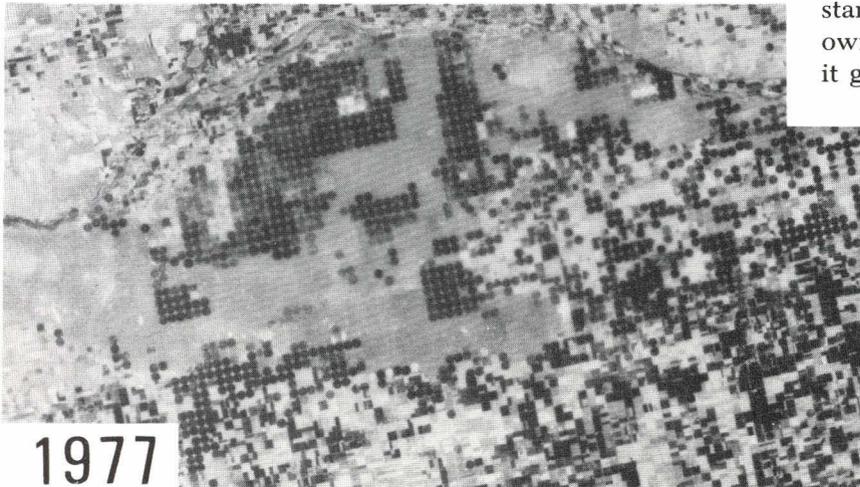
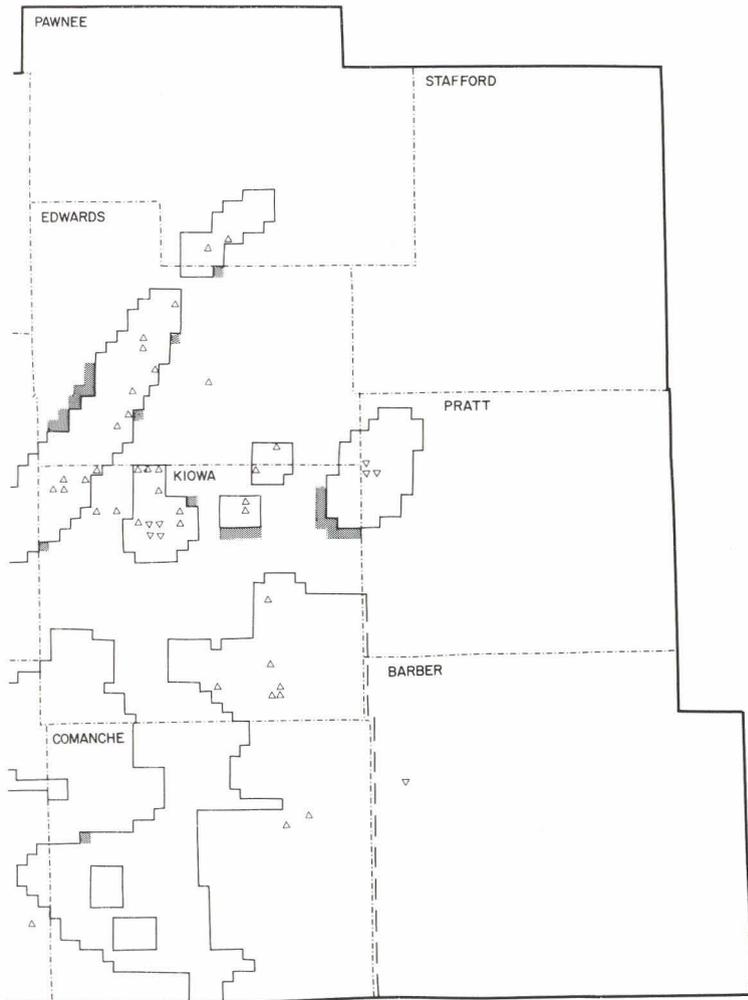
1974

of Garden City. In other parts of the lesser chicken's range, the birds are already restricted to narrow bands of suitable habitat. There are a few lesser chickens on hard land prairies along the fringes of the sandsage prairie, but these hard lands support considerably less than one bird per square mile. The biologists estimate that there are less than 100,000 breeding birds left in Kansas, forty percent of which live in areas which will be plowed by the late 1980s. Generally speaking, as the sand country goes, so goes the lesser prairie chicken.

**Why all the fuss over a wild version of a banty hen?** Observers who have seen the bird on its spring breeding ground know part of the reason. The performance on the gobbling ground is a wild tradition that refuses to be pushed aside, an echo of the Great Plains of 200 years ago.

But there's a more practical reason for concern over the threat to the lesser chicken. Putting the chicken and loss of the sandsage prairie on one side of the ledger and the benefits of more irrigated cropland on the other, it looks as if a chance for short-term profit is going to lead us into long-term bankruptcy. There are 100 to 300 feet of ground water under the sandsage. As a result of the center pivots, that level is dropping from one to nine feet a year, depending on who's measuring and where he decides to measure. As the water level drops, it'll take more diesel fuel or electricity to pump it to the surface. As a result, the price of irrigation water is going to go up, even without another 1973 energy panic. And, of course, there's always the possibility that the ground water will dry up altogether in twenty or thirty years. Thirty years is a long way to look ahead, but from today's vantage point, it seems that the disappearance of the lesser chicken may ultimately be a sign that the sand country farmer himself is threatened.

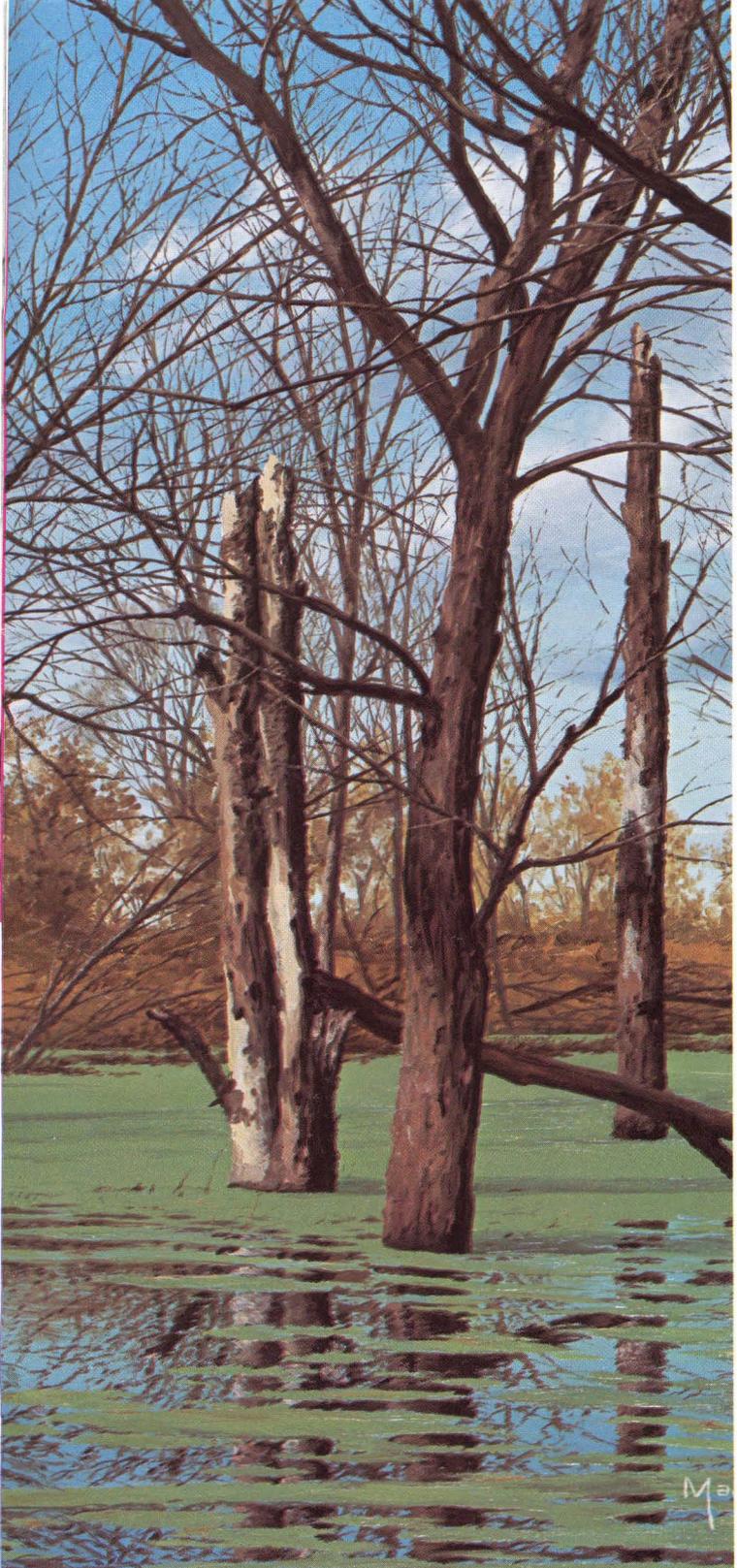
It seems we've always tried a thing just to see if we could do it whether it was building a transcontinental railroad, sending a man to the moon, or growing corn in the desert. That philosophy has brought us a long way—far enough, maybe, to recognize that there's very little we can't do. We've been at it long enough now to start asking a couple of other questions, strictly in our own interest—"Should we? And if we do, how much is it going to cost?"



Gone . . .



*Placid Backwaters—Wood Ducks*, by David Maass. Courtesy of Wild Wings Gallery, Lake City, Minnesota 55041



# Status of the **KANSAS WOODIE**

## Results of the first research project on Sunflower wood ducks.

Bob Mathews

**T**he wood duck is a winner. But the species that is today one of the most common breeding wildfowl in the U.S. didn't always enjoy such distinction.

Once perilously close to extinction, the ornate bird has returned to dazzle hunter and bird watcher alike.

And, for the first time, Kansas Fish and Game officials have an accurate index of the status of the colorful duck in the state. That index is the culmination of five years of investigation of production and distribution data by Fish and Game biologists.

Among the results of that lengthy investigation, coordinated and directed by waterfowl biologist Marvin Kraft, is the heartening news that the Kansas wood duck population has been steadily increasing in recent years.

**The goal of the investigation** was to determine distribution of breeding wood duck populations, to obtain annual indices of productivity, to estimate annual hunting mortality, and to formulate recommendations for future management practices and harvest regulations pertaining to the species.

The wood duck presents a unique challenge for a biologist trying to uncover that information. Because of the bird's secretive habits, more time and patience is required to census production trends and distribution of the species. Despite the gaudy dress of the drake, wood ducks are difficult to inventory since they are masters of camouflage and inhabit terrain that hides them well. Shallow water marshes containing some

type of emergent vegetation are the preferred brood-rearing areas of wood ducks. The presence of emergent cover, such as smartweed, cattail, lotus or buttonbush is a necessity for successful production but also makes it tough to find and count the birds.

**Few natural marshes remain in Kansas**, so most wood duck production in the state takes place along quiet stretches of our rivers and streams. Cover on these types of areas usually takes the form of live trees which have fallen in or are leaning out over the water. These bushy, dense trees at the water level provide excellent escape, loafing, and roosting habitat.

**Since conventional aerial inventories don't work on wood ducks**, Kraft and his biologists began a stream census survey to study the distribution of the bird in the state. They attempted to establish one or more survey routes in every major river drainage system in the state. However, inadequate water flow for canoe travel in the western regions limited survey routes to the eastern half of the state. The eastern half of the state is the principal breeding range of the woodie but production also occurs on suitable habitat in western Kansas. The use of western Kansas as breeding range is limited, however, because of the relative lack of emergent cover or nesting cavities and general lack of surface water.

Each year approximately 30 routes, averaging 13.5 miles in length, were designated for the survey. The stream survey was conducted from May 15 to June 15 since most wood ducks are in some stage of reproduction during that period.

**Each stream survey began one-half hour before sunrise** when investigators climbed into a canoe to float downstream along the route. In addition to tabulating wood ducks sighted, Kraft and his aides noted wind speed, sky condition, time and temperature at the start and finish of each survey.

Data from the stream surveys showed that production occurs on almost all our drainage systems, especially those with deep, quiet stretches of water.

"Considerable production was noted on the Verdigris, Neosho and Marais des Cygnes Rivers and their tributaries and on tributaries of the Big Blue and Kansas Rivers," Kraft said. The lower sections of the Saline and Solomon Rivers also are notable wood duck producing areas.

After reviewing data on the statewide distribution of wood ducks, Kraft determined that the survey routes having the highest number of wood ducks per mile were generally located in or near a band 80 miles wide, centering on and running from Marshall to Montgomery County. As one travels east or west from this band the number of wood ducks seems to decrease.

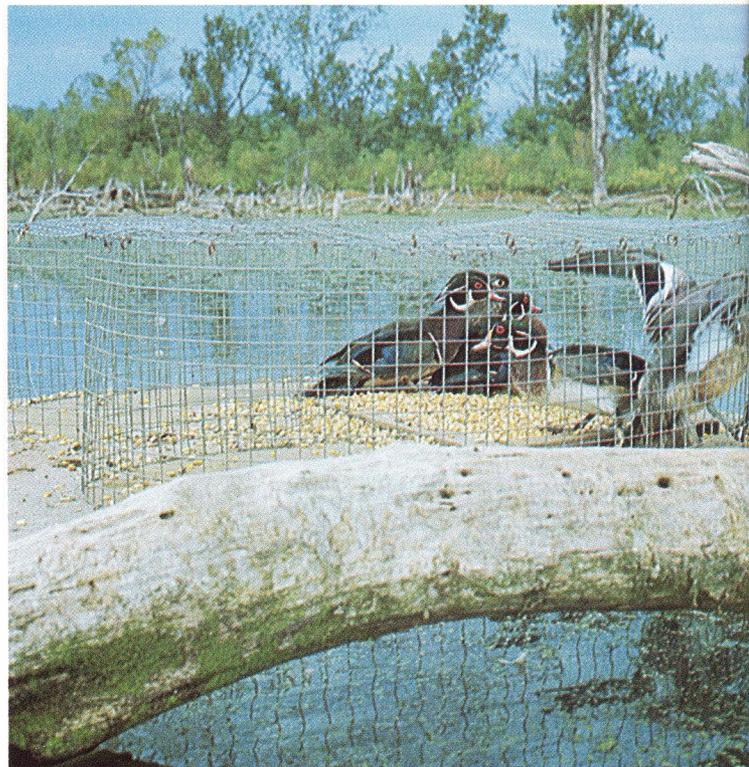
**Rivers with mature timber and long, quiet pools** generally have the highest numbers of wood ducks. Rivers with sandy, shallow, fast flowing water generally have relatively scant populations.

Generally, when we found water with good emer-

gent vegetation or cover of some type there were woodies nesting or present during some time of the year," Kraft noted.

The loss of much of that type of habitat during this country's history almost wiped out the wood duck. Lumbering interests flattened huge tracts of forests which had provided nesting and food, and agricultural interests drained enormous areas of marshland.

**At the same time, market hunting's excesses began**



Dick McCollough

**to tell** on the dwindling wood duck populations. In addition, fishermen contributed to the decline as fly-tiers demanded the woodie's feathers for production of the famous Gordon, Cahill and Hendrickson trout flies.

As early as 1901, conservationists and naturalists were urging implementation of controls to protect the vanishing species.

Finally, in 1918, President Woodrow Wilson signed the Migratory Bird Treaty Act which for the first time, empowered the government to restrict hunting of migratory birds effectively. Before that action was taken,

waterfowl seasons extended from September through April and bag limits were either nonexistent or so large as to be meaningless. The wood duck suffered from the effects of that nonregulation more than other species because its range coincided with the areas of greatest hunting activity. (The wood duck seldom travels south of U.S. borders and its northernmost breeding range is a short distance north of the Canada-U.S. border.) As a result, the woodie was hunted over a longer period

than other species of ducks.

When the Migratory Bird Treaty Act was signed, the U.S. and Canada concurrently abolished all wood duck hunting.

The wood duck's return also was aided by construction of thousands of nest boxes to replace natural nesting cavities wiped out by habitat decimation. The woodie readily adapted to the man-made nesting boxes erected by hunting clubs, conservation organizations, and other concerned groups.

By 1941, wood duck populations had recovered enough to permit limited hunting. Fourteen states allowed one woodie in the hunter's bag. Since the mid-1960's, the wood duck has consistently ranked second or third in the bags of hunters in both the Atlantic and Mississippi Flyways.

Kansas lies at the extreme western edge of the Interior population wood duck range. There are three largely distinct wood duck populations in North America: Atlantic, Interior and Pacific. The Interior population ranges over the states of the Mississippi Flyway and the eastern half of eastern states in the Central Flyway.

During the 1950's and 1960's, the burgeoning woodie population extended its range farther west on the Great Plains.

Bag limits in Kansas reflected the return of the wood duck to the Great Plains. The season on woodies was closed until 1955 when Kansas hunters were permitted one in the bag. That bag limit remained the same until 1962 when hunters were allowed a daily bag of two wood ducks, a limit that remained in effect through 1971.

In 1972, the Fish and Game Commission implemented a point system, on which bag limits were based. The point value of each species of duck was used to determine bag limits. When the last duck shot placed the point total at or over 100 points, the hunter had reached his daily bag limit.

The first year of the point system the wood duck was designated a 90-point bird. The same system has remained in effect in subsequent waterfowl seasons although the value of the wood duck since 1973 has been 70 points.

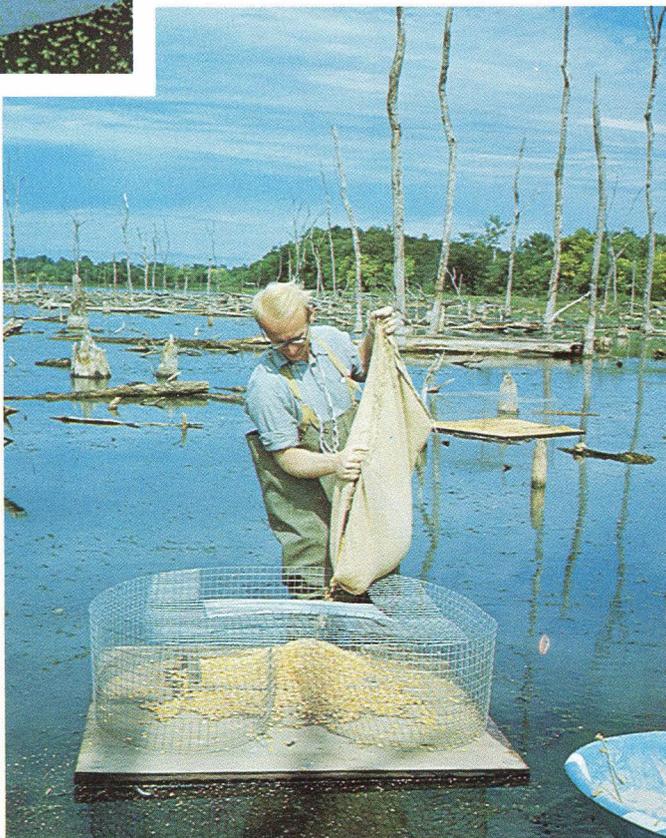
Wood duck numbers in Kansas have increased considerably in the past 20 years. The results of the wood duck stream census surveys graphically illustrate the increase.

All nesting production indices were up during 1977,



In bait traps like this one, most ducks have enough sense to get in, but not enough to get out. They circle the cage until they find the entrance, push through swinging trap door, and gorge on corn until the trapper bands and releases them.

Dick McCollough



Marvin Kraft, biologist in charge of the wood duck study, baits one of his traps. Floating traps like this one worked well in calm water but often washed away when set in streams.

and all but "young per brood" were the highest recorded since the survey was initiated.

After Kraft and his aides completed the annual, month-long stream census survey, the second portion of the investigation began. To determine the rate and distribution of hunting mortality, wood ducks were trapped and banded from June 15 until 10 days prior to the opening of the duck hunting season.

Two types of trapping techniques were used to capture wood ducks—bait trapping and nightlighting.

Floating bait-traps were most effective on marshy areas such as those found at Marais des Cygnes, Neosho and Perry Wildlife Area. Nightlighting was used on rivers where bait-trapping was ineffective due to distances of travel involved, low concentrations of ducks, and loss of traps due to flooding.

From 1972 through 1977, 1,683 wood ducks were banded. Although all band returns are not yet in, certain trends in distribution of hunter harvest for Kansas-grown woodies is beginning to show.

So far, about 60 percent of the recoveries from wood ducks banded in Kansas have come from Kansas. Of recoveries outside our state, Louisiana ranked second

with 16 percent, followed by Texas with 12 percent, and Arkansas with 7 percent.

"It's interesting that few recoveries came from Nebraska, Missouri and Oklahoma," Kraft said. "This indicates a rather rapid, possibly non-stop, migration through those states to the wintering areas in Louisiana, Texas and Arkansas."

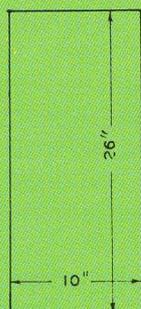
The other major portion of the wood duck study involved bag checks conducted at waterfowl hunting areas. Those bag checks provided information on the number of wood ducks bagged, as well as the sex and age of wood ducks bagged. The data collected from bag checks enabled Kraft to estimate the percent young in the pre-season wood duck population.

Since 1973, the calculated harvest of wood ducks in Kansas has varied from 5,800 in 1975 to a high of 11,410 in 1974.

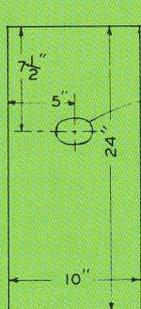
At Marais des Cygnes Wildlife Area in eastern Kansas, wood ducks comprised about nine percent of the bag over a 13-year period and ranked second only to mallards in number harvested.

"The annual harvest of wood ducks seems to depend largely upon the presence of adequate wood duck

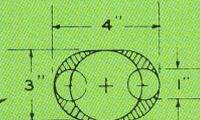
## SPECIFICATIONS FOR WOOD DUCK NESTING BOX



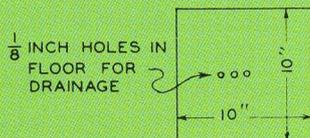
BACK



FRONT

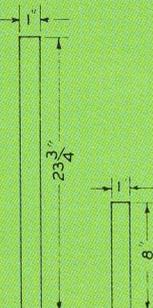


OVAL HOLE MADE BY BORING 1" HOLES AT EACH END, 3" HOLE IN CENTER - CUT OUT SHADED AREAS

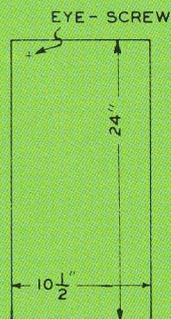


1/8 INCH HOLES IN FLOOR FOR DRAINAGE

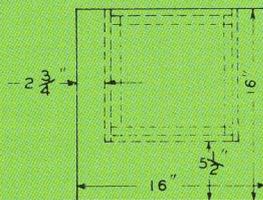
FLOOR



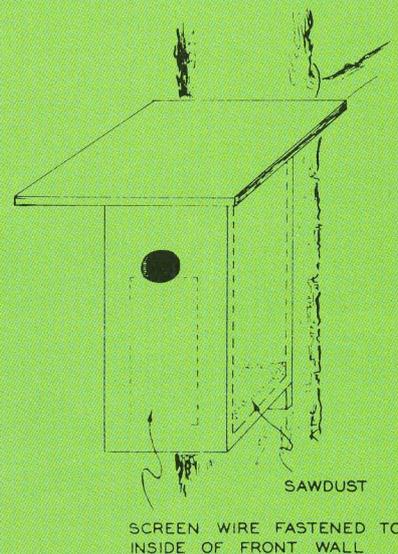
FRAMEWORK



(2) SIDE



ROOF



SAWDUST

SCREEN WIRE FASTENED TO INSIDE OF FRONT WALL

**MATERIALS REQUIRED:** About 13 sq. ft. of 1/4-inch marine plywood, interior plywood or 1-in. lumber (cypress, spruce, white cedar). If 1-in. lumber eliminate framework and make sidewalls 12 in. wide. This reduces roof overhang to 2 in. on sides and 4 1/2 in. at front. 2—Framework, four 1 in. by 1 in. boards, 23 3/4 in. long; eight 1 in. by 1 in. boards 8 in. long. 3—Two large eyescrews and five ft. No. 9 smooth wire. 4—One 6 in. by 14 in. strip of screen wire. 5—Finishing nails or wood screws. 6—One gallon dry sawdust. (Diagram Courtesy of Missouri Dept. of Conservation.)

cover—mainly available roost sites as well as feeding areas,” Kraft hypothesized. Those conditions usually are dependent on adequate to heavy rainfall. Wet conditions in 1974 when high water levels flooded timber at the Elk City Wildlife Area attracted and held wood ducks late into the season. The result was that wood ducks comprised an unusually high 12 percent of ducks checked in that bag that year, Kraft said.

“Something that has been impressed on me while conducting the stream survey and especially while nightlighting wood ducks is that when good overhead cover is absent on rivers and streams, wood ducks are also absent,” he continued. “But when this cover is present, wood ducks are almost invariably present.”

Wood duck populations in Kansas have increased to the point that some limiting factor, such as available nesting sites, brood rearing areas or hunter harvest may halt or slow further population growth.

“I suspect that the major limiting factor for Kansas woodies is the lack of sufficient brood rearing habitat.” Kraft said. He suggests that the problem could be corrected by the creation of small four or five-acre marshes along Kansas rivers and streams. Management

of those small marshes to encourage growth of emergent vegetation like smartweed, lotus, bulrushes or buttonbush would greatly increase the survival of the young and eventually result in a larger breeding population.

“The construction of nest boxes in areas where habitat is present but nesting cavities are lacking also has tremendous potential for increasing wood duck populations,” he added.

As this story is written, Kraft still is sifting through his findings to prepare a report for use by Kansas Fish and Game officials to insure the continued presence of the wood duck in Kansas.

**It is appropriate that the most beautiful duck on the continent** also is a symbol of one of the greatest success stories of wildlife management. It is generally believed that the U.S. now has a stable population of about 3.5 million woodies.

Perhaps the most inspiring facet of the wood duck story is the fact that the species’ comeback was a cooperative venture that combined the talents of farsighted men and women, understanding lawmakers, a helpful public and the woodie’s own resourcefulness.

## Nest Boxes -- a way you can help

**W**ood ducks are different. They nest in trees.

Most often, their nesting site is a natural cavity in the trunk or branch of an old “wolf” tree. Apparently, the species of tree isn’t too important, although the woodie prefers a location close to water.

Few other ducks can benefit so noticeably from the efforts of private citizens or small groups since the wood duck adapts readily to man-made nest boxes. Over the years, thousands of boxes have been built and have played a vital role in the woodie’s comeback as river timber has been cleared and wetlands drained.

The wood duck competes for nest cavities with squirrels, owls, starlings, and woodpeckers. In addition, the woodie has to avoid a number of predators during nesting including mink, raccoons, opossums, rats, house cats, and snakes of various kinds. A properly designed and built nest box can give the wood duck an advantage over his competitors; an improper design may be little more than a death trap. Following are some guidelines for materials and procedures to be used in nest box construction:

—The box should be constructed of unplanned cedar, cypress, or other weather-resistant lumber. It should not be painted, stained, or creosoted. On the inside front of the box under the entrance, a strip of screen or hardware cloth should be attached to provide the ducklings a ladder with which they can escape the box after hatching.

—Boxes can be erected on posts (wood or metal) or placed in trees, provided the trees can be made as predator-proof as posts. Boxes should not be placed on or near trees where they are vulnerable to predators that may reach them from above.

—Ideally, boxes should be placed over or at the edge of a body of water about ten feet above the ground or water surface. When ducklings are hatched away from

water, the female will lead them overland to water after she calls them out of the nest. Since ducklings are extremely vulnerable to predators especially on land, the distance of their overland journey should be as short as possible.

—Maintenance is very important. Since wood ducks do not collect nest materials, a nest base such as wood shavings must be furnished. About three inches will do. Boxes should be cleaned every year and repaired as needed, but the nest box should not be visited from March through July during the nesting season.

—Wood ducks will nest close together, but for best results, boxes should be clustered in groups of six and spaced so that each is less than fifty feet from the other.

