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The year of the coast

For a lot of folks in the landlocked interior of the country there may seem little need to know and appreciate the world's oceans. The theme of National Wildlife Week—"We Care About Oceans"—may have been lost on many

Kansans. There also may seem little cause to join in the observance of "The Year of the Coast," a theme advanced by conservation groups in 1981 to rally public interest in the oceans and support for their nurturing.

Since oceans cover nearly three-fourths of the planet, their importance can't be ignored. As the major reservoir of the earth's water supply and a predominate supplier of atmospheric oxygen, the oceans are as

important to inland residents as to coastal dwellers. With the earth's land areas becoming more crowded, man will increasingly turn to the sea for food, minerals, and energy.

It is now essential that we learn to use our ocean resources without irreversibly altering the natural balance that has made the sea a great reservoir of life. Failing to do so will jeopardize the future of our own lives on the planet.

Lending support for the preservation of the oceans begins with an understanding of the dynamic interaction of its various parts, from sea otters to diatoms. And that is a challenge that needs to be accepted by everyone, despite their geographic location, since the oceans ultimately affect wheat farmers as profoundly as clam shuckers.—**Bob Mathews.**



We care about
OCEANS

 Join and Support the National Wildlife Federation and State Affiliates

Whoopers:

Management and politics of an endangered species

Chris Madson



Steve Van Riper, USFWS

The departure of the whooping cranes from Aransas National Wildlife Refuge has turned into something of an annual event across the plains. Phone calls pour into the regional Fish and Wildlife Service office in Denver, some of them from newspapermen working on Sunday features, some from refuge managers, biologists, and wardens, a lot of them from landowners and birdwatchers from Texas to southern Canada.

The whooper seems fated to attract such attention. It is an imposing creature, four and a half feet tall with a wing span of seven and a half feet, pure white except for its black primaries and red face. It is also an underdog. While many other species have recovered from the hammer blows dealt them in the late nineteenth and early twentieth centuries, the whooper has lingered on the brink of extinction. These cranes were never abundant, probably numbering no more than 1300 individuals before white settlement, and they were killed by the hundreds in the late 1800s, apparently because of their size and conspicuous whiteness.

By 1941, they had dwindled to only twenty-one birds, fifteen in the migratory flock on the plains and six more in a small, nonmigratory population in southwestern Louisiana. The Louisiana flock had been battered by a Gulf storm in 1940 and apparently dropped to such a small number that the birds' reproductive behavior was disrupted. The last member of the flock was taken into captivity in 1948.

The remaining plains flock continued to show up on the Gulf coast in the winter but evaporated mysteriously into Canada each spring. Historical reports indicate that the crane's preferred breeding habitat was the prairie pothole country and aspen parkland of central Canada, but the last nest in this region was abandoned in 1922. It wasn't until 1954 that researchers found the breeding whoopers farther north where they had been inadvertently protected in the giant Wood Buffalo National Park of Canada's Northwest Territories.

The plains whoopers have bounced back moderately from the 1941 ebb. Recent studies have shown that the birds are in greatest jeopardy in the first few months of their lives. Life for a whooping crane chick at Wood Buffalo is not easy, and mortality is high. More of the young disappear along the migration route.

The slow recovery of the population may well be a result of its increasing notoriety after World War II. As late as the thirties, a few cranes may have been shot during migration, but since that time, a combination of more thorough law enforcement and far greater public awareness seem to have reduced migration losses and allowed the species to turn the corner. The change in mortality may have been fairly small, but it doesn't take much to make a difference. A whooper may continue to breed for twenty years or more. If a pair manages to produce two chicks that survive to breeding age, they have guaranteed the population's

stability. Anything more means the population will grow. The future of the species balances on this knife edge of credit and debit.

The first major whooping crane management effort besides protection of breeding and wintering grounds began in 1975 when biologists removed fourteen eggs from whooper nests at Wood Buffalo and placed them in greater sandhill crane nests at Gray's Lake National Wildlife Refuge in southeastern Idaho. Fifteen eggs were transferred the same way in 1976; sixteen more in 1977. In addition, thirty-two eggs produced by the captive whooping crane flock at Patuxent Wildlife Research Center in Maryland were also placed under Gray's Lake sandhills.

The intent of the research was simple enough: to find out whether a distinct population of whooping cranes could be established among the greater sandhills. If the foster parent program worked, it offered some obvious benefits. The second flock would protect the species from extinction if the plains population were wiped out by a freak storm, a Gulf coast oil or chemical spill, or a sudden outbreak of disease. If the population managed to establish itself and began to breed, it might very well grow more rapidly than the plains flock since brood-rearing conditions at Gray's Lake. There was little doubt that the sandhills would raise the young whoopers, but there was concern that the young cranes might learn too much from their parents. The result could be a "whoophill", a bird that showed every sign of being a whooping crane but behaved like a great sandhill. These birds might choose sandhill mates and hybridize themselves out of existence. Some biologists were also uncomfortable with the introduction of the whooper outside its historic range.

Some of these reservations about the foster effort have turned out to be groundless. The egg taking has not disturbed the Wood Buffalo breeding flock. In fact, there is evidence that the reproductive success in Canada has increased because of the egg-napping. Studies at Wood Buffalo had shown that a pair of whoopers seldom raise more than one chick to flight stage even though the female nearly always lays two eggs. The habitat in the park is simply not as productive as the ancestral pothole nesting grounds to the south. The parents are lucky to raise one chick; when they try to raise two, they are almost certain to lose one and run the risk of losing both. Since the egg-nappers remove only one egg from each nest, the adult cranes are free to concentrate on rearing and protecting a single chick, increasing its chances of making the trip to Aransas.

As for the "whoophill" problem, there are still no conclusive indications of how the foster whoopers are going to behave as breeders. Last year, two of the oldest male birds did establish territories at Gray's Lake and evicted the mated pairs of sandhills that occupied those areas. They showed no signs of courting sandhill females. Unfortunately, four of the five

oldest whoopers appear to be males, so it may be some time before the question of breeding behavior among the foster cranes is resolved. Biologists associated with the program are hoping that the disproportionate number of males is just accident and not the result of a lower survival rate among the young females.

Besides the biological problems with the foster crane program, there have been a series of political confrontations that are as surprising as they are troubling. With all the uproar over the snail darter in the early 1970s, it may have been inevitable that one of the endangered species effort should suddenly run into trouble. Measured on the scale of the Tellico donneybrook, the controversy over the foster whooping crane program was a tiny difficulty, but it is significant and worrisome that, after years of unequivocal support for the whoopers, the first snag in crane management should show itself within two years of the passage of the 1973 Endangered Species Act.

The introductions started in an atmosphere of cooperation. The state wildlife agencies who would play host to the birds were enthusiastic about getting them. Bill Huey, director of New Mexico Game and Fish at that time, had worked with the Whooping Crane Conservation Association for a number of years before the foster program was proposed and was particularly supportive. He worked hard to sell the program in New Mexico and finally won approval for it over substantial opposition.

Huey and other biologists were particularly interested in the foster program because they felt it was a more natural approach to whooper propagation that would have a better chance of succeeding than the captive rearing, artificial insemination techniques that Fish and Wildlife Service scientists were experimenting with at Patuxent. The state people were only really concerned about one thing—that the whooping cranes be allowed to fit into the environment along the flyway as they found it without intensive protection. As far as the states were concerned, the experiment would be made or broken at Gray's Lake. If the whoopers bred successfully, the occasional loss of a bird to a misguided hunter or to some unforeseen accident on the wintering grounds would have little if any effect on the future of the population. If they failed to breed, no amount of protection could help them.

Four young whoopers came south to the Rio Grande valley in the fall of 1975, and, as soon as they arrived, it was obvious that the hands-off policy was not going to be followed. The Fish and Wildlife Service assigned a special agent to keep each bird under surveillance, and when one of the youngsters showed up at Belen State Wildlife Area, problems developed.

The Belen area is not open to waterfowl hunting, but it does attract large numbers of ducks and cranes in late January and early February when its crops are harvested. On the afternoon the first whooper arrived, state biologists were planning to fire a cannon net to

capture mallards for banding. There are conflicting reports about what passed between the federal enforcement agent who was following the whooper and state biologists, but when the dust settled, the Belen cannon netting had been discontinued and the Game and Fish Department was upset. The mallard banding was part of the state's contribution to a flyway research project. If the cannon netting had threatened to wipe out the new cranes, the federal concern would have been understandable, but was there really any risk of flushing the sandhills and a whooper with the report of a cannon net?

While New Mexico Game and Fish was still smarting over the duck banding fiasco, another problem surfaced.

It came as no surprise to anyone that the presence of whooping cranes on the Bosque del Apache refuge brought with it certain restrictions on the area's waterfowling. Still, the timing of the introduction was a little unfortunate. Goose shooting had declined at Bosque for a number of years because the Canada geese that had been the hunter's mainstay in the Rio Grande valley were stopping more and more often in southern Colorado. By the late 1950s, the flow of Canadas to the Bosque area had slowed to a trickle. During this period, the snow goose populations in New Mexico were insignificant. Beginning in the late 1960s, however, that situation changed. The western arctic snow goose flock began a drastic expansion. Populations at Bosque rocketed from just a few hundred birds to normal mid-winter counts of 28,000. On certain occasions during migration, the count went as high as 40,000. Game and Fish had limped along on a sixteen-day goose season in the Rio Grande valley for a number of years because of the declining Canada goose population, but this snow goose explosion prompted them to press for a more liberal season. In



1976, they got it—a five-geese bag limit on snows and a ninety-three day season.

This was wonderful except that the geese could not be persuaded to leave Bosque. The best hunting focused on the refuge, and the refuge just happened to be the foster home for half a dozen wintering whoopers. Snow goose hunting was still allowed on the area, but it was regimented and the season was relatively short—only 16 days. Hunters have been required to pass a bird identification test that stresses the difference between the four-pound white geese with black wing tips and the twenty-pound whoopers also with black wing tips. Blinds are rigged with a paging system that allows refuge personnel to warn hunters of a whooper's approach. Actually, many of the hunters appreciate the I.D. training, and most are willing to tolerate the added regimentation for the sake of the whoopers. But some of them must be starting to wonder why the annual harvest on the burgeoning snow goose population is being held to about 800 on the refuge and 200 or 300 more on surrounding private land. Although hunting is not allowed on most of the Aransas refuge in Texas, waterfowling pressure is intense on the private land surrounding it. In the last thirty years of duck and goose hunting, only one

whooper has been killed by a hunter. That shooting was completely accidental and occurred in a dense fog. The hunter was immediately approached by other waterfowlers in the area and gave himself up to authorities. With an intensive I.D. course in place, it's hard to believe that a more liberal snow goose season at Bosque constitutes much of a threat to the cranes.

The New Mexico department has come up with a few ideas designed to disperse the snow geese so that they are more available to hunters. The key elements of a good goose roost are water and food, and the depart-

New Mexico's Bosque del Apache National Wildlife Refuge attracts three spectacular species over the winter. Flocks of greater sandhill cranes and the western arctic population of lesser snow geese have both prospered and are beginning to cause some depredation problems on surrounding private ground. Since the beginning of the foster whooping crane program, young whooping cranes like the rusty colored youngster at left are often mixed with the more common birds. Photo by Rod Drewien.



ment has tried with little success to establish both away from the Bosque refuge. There were plans to flood a ten-acre piece of ground at the Bernardo State Wildlife area north of Bosque with the eventual aim of creating sixty acres of water, but regional Fish and Wildlife Service personnel quite properly told the state that the effect of such management changes on the whoopers would have to be studied carefully before they could be funded under the federal Pittman-Robertson program. The state also asked for changes in cropping on the refuge which they hoped would disperse the geese when combined with complementary changes on their own areas. This request was also turned down.

These efforts to spread out the geese and sandhills were more than just an attempt to improve hunting. Large flocks of closely confined birds are perfect incubators for disease, and they often cause substantial damage to nearby crops. Depredation by big flocks is seldom an easy problem to solve, and the presence of a few whoopers complicates the situation tremendously. Right now, most local farmers appreciate the whoopers enough to overlook increasing damage from sandhill foraging, but as the sandhill and goose populations continue to expand, the attitude among landowners is almost certain to change. If they try to flush a flock of sandhills that happens to contain a few whoopers, they can be cited for harassing an endangered species. The Fish and Wildlife Service would rather not see a confrontation like that develop, but Audubon Society representatives have indicated that they would not be pleased if farmers were given the freedom to disperse whooping cranes whenever they were causing damage.

It's hard to say what the outcome would be in a face-off between an irate landowner, the Fish and Wildlife Service, local Audubon Society members, and New Mexico Game and Fish, but one thing is almost certain—the state agency would end up catching most of the heat. Considering the complications that have arisen in the Bosque area as a result of the crane introduction, it's not too surprising that the state is a little jumpy about the additional problems that could be caused if the whooper population begins to grow and disperses throughout the state. Some of the more unbending advocates of the foster program have described this attitude as paranoia, but of course, those people can afford such a view—they won't have to deal with the political pressure or public outcry that will arise if the paranoid imaginings of Game and Fish become reality.

Wrangling over the foster whoopers came to a head late in 1979 when the state struck on another idea they thought would help the situation. Since the foster program was an experiment outside the historic range of the species, why not create a special category for it in the Endangered Species Act? The intent would *not* be to automatically strip the population and other similar populations of all protection and special han-

dling but to allow a little more flexibility in management efforts so that state and federal biologists could strike compromises when a controversy arose.

The state was well pleased with the idea, and the regional office of the Fish and Wildlife Service in Albuquerque saw nothing wrong with it. When the state contacted one of its Congressmen to introduce the bill, however, word of the action got out to the Audubon Society and there was trouble.

In a letter to John Breaux, chairman of the Congressional subcommittee who would first consider the bill, Russell Petersen of the National Audubon Society made a number of points. First, the Society was not aware of any actual problems. Most of the difficulties they had heard mentioned had not yet occurred, and, in any case, the Society felt they could be resolved. The Society vigorously opposed any change in the classification of the whooper, stating that New Mexico Game and Fish had confused the status of the bird—obviously an endangered species—with the techniques applied to its management which might in fact be experimental. Petersen felt that any provision in the act which required the Fish and Wildlife Service to get state approval for the introduction of an endangered species in that state would cripple the Endangered Species Act. The proposal was quickly killed.

The message to New Mexico Game and Fish in all this was fairly clearcut: States involved in the introduction of an endangered species will be bound to the letter of the law on that species. There will be no compromise. As Bill Huey has pointed out, it was hard to avoid the impression that the Endangered Species Act was being used to appropriate the state's authority to manage its wildlife. The state's reaction was predictable. If no compromise on experimental introductions of species outside their range could be reached, they wouldn't allow such introductions at all. In a November, 1979 letter to the Fish and Wildlife Service, Harold Olson, new director in New Mexico, promised his opposition to the transplant extension of the ranges of all threatened and endangered species until some sort of understanding about their management could be reached.

Since the confrontation over the experimental classification, much has been done on both state and federal levels to heal the breach caused by these confrontations. The Fish and Wildlife Service began banding mallards on the Bosque refuge two years after the banding was stopped at Belen State Wildlife Area. State and federal personnel have worked out a staggered shooting schedule in the Rio Grande valley that closes the season on private ground during the first two five-day segments of the refuge goose season. This not only improves the goose shooting on private ground but gives the whoopers added protection while the Bosque hunt is going on. The state and feds are also working on a comprehensive management plan for the entire Rio Grande valley which may improve hunting,

help ease problems with depredation, and reduce the risk of disease. As a spin-off of these agreements, Game and Fish representatives have also met with the Audubon Society and Fish and Wildlife Service to work out less restrictive management approaches for endangered fish, particularly those that can be produced in hatcheries for reintroduction to the wild. The atmosphere of communication and cooperation is encouraging; it's a shame that the earlier phases of the foster program couldn't have been carried on in a similar mood.

This change in approach doesn't mean that problems with the whoopers have evaporated. Critical habitats were recently identified for the Gray's Lake flock even though there is no way of knowing whether the birds are going to breed. Audubon representatives are still not inclined to allow the dispersal of sandhill cranes if there are whoopers in the flock. They prefer to look for some method of payment for damages which would not only be more expensive but would probably not be the best way of dealing with a landowner who has a grievance against the birds. The farmer is likely to feel that he has been forced into an action without any options, and he may have a point.

It's also widely accepted that the loss of a single whooper to a hunter will mean the inevitable closure of the Bosque goose hunt and may well threaten the goose season in the entire Rio Grande valley. This seems a little drastic in light of the minimal effect such a loss would have on the whooper flock. The closure would probably only occur if anti-hunting groups took advantage of the accident to press their vendetta against hunters, and found support among some of the more enthusiastic whooper conservationists.

In addition, no one has yet dealt with the possibility that some of the young whoopers that are wandering across the Southwest right now might someday establish permanent wintering territories away from the Rio Grande. Under current regulations, their presence would require the same kinds of restrictions currently in place in and around Bosque.

There are huge issues involved in this controversy. The proper role of national wildlife refuges is called into question. Is a refuge mainly in the business of supplying hunting or is its primary function to provide a birdwatching sanctuary? Can the traditional meld of these activities be maintained? And if a refuge concentrates large numbers of migratory birds, should the Fish and Wildlife Service shoulder the responsibility for depredation or is the damage "an act of God"?

The ongoing tension between federal and state wildlife management also crops up. Upper level bureaucrats in the Fish and Wildlife Service's Washington offices seem to suspect that all state agencies are bowing to pressure from local politicians and special interest groups. Once in a while, there's some truth to that suspicion. At the same time, there is often some truth to the state agency suspicion that the Washington

bureaucrats have been too much influenced by the intense pressure they receive from environmental and anti-hunting groups.

Then there is the conflict between full-time wildlife managers, state or federal, and concerned groups of private citizens. Through their day-to-day efforts in the trenches, wildlife professionals buy time for the private environmentalist. Instead of having to fight for a scrap of songbird or waterfowl habitat in his home town, the private citizen can afford to take on larger, more spectacular issues. The relationship between the private conservationist and the conservation professional has been an effective symbiosis in the past. It ought to be preserved. That's why it's important for private groups to realize that the tendency toward compromise in most state agencies and the Fish and Wildlife Service isn't accidental. Most of the personnel in these outfits started their careers just as gung-ho and unbending as the most radical environmentalist. Most have also learned that failure to compromise at the right time often leads to total defeat. There are conservation principles that simply cannot be compromised, but there are also situations in which a compromise is the best of a number of unpleasant alternatives.

Which brings us to the Endangered Species Act of 1973. The provisions for consultation in the Act and its accompanying regulations have avoided confrontations in thousands of cases. In fact, there has been only one major battle over an endangered species—the snail darter—and that one battle nearly brought the entire Endangered Species Act down in rubble. Whooping cranes are far more important to the public than snail darters, but as migratory birds they also have a greater chance of coming into conflict with the public, especially when they are mixed in with tens of thousands of sandhill cranes. The aftermath of the snail darter episode has left a big part of the general public gun shy about the possible effects of endangered species management in their own backyards. Even federal agencies like the Forest Service and the Bureau of Land Management in New Mexico are finding subtle ways to stay clear of endangered species. If this attitude persists, recovery efforts for such rare animals as the grizzly and Mexican wolf may never get off the ground. Even the whooping crane foster work could be crippled.

An experimental category for special populations like the Gray's Lake whoopers seems like a workable way to head off endangered species paranoia, but if the Fish and Wildlife Service doesn't feel equal to the task of protecting such an amendment from abuse, there are still ways to reach unwritten agreements that would accomplish many of the same ends. Times are particularly bad right now for a family squabble among conservationists; hopefully, we'll have the sense to avoid them. For if winning our internal arguments turns out to be more important than our common ground, the loss of a few white cranes will be the least of our problems. □

*A history of
the fisherman's most
basic piece of equipment*

The Hook

*Bob Mathews
Illustrated by Dycie Madson*



Gorge

Look in any wilderness survival kit. Shoehorned in there with the butterfly bandages and waterproof matches and tube tent are, invariably, a couple fish hooks and some monofilament line. The fact that fish hooks are included says a lot for their fundamental value.

Although the design and adornment of hooks today is more varied and effective than early hooks, they still are the most elemental component of any fishing outfit. If we have to, we can get along without bass boats and inflatable waders and electronic fish finders. We can even afford to leave behind our rod and reel. But if we forget the hooks there will be no fishing. That's appropriate, since the most time-honored tool in a fisherman's possession is the hook.

Men first began fishing as a means of procuring food during the Paleolithic or Old Stone Age. The original fishermen were more hunters than fishermen, since they had been hunting for thousands of years by that time. They probably began fishing by simply applying the tools of the hunt—spears and harpoons—to fish. Somewhat later in the same period of human development a new approach set the stage for the development of fishing as we know it today.

The new approach involved the use of a tool known as a gorge, the predecessor of the fish hook. The gorge—a dowel-shaped implement sharpened to points on either end, with a line attached to the middle—was imbedded in a bait and tossed into the water. When a fish swallowed the bait the line was jerked, jamming the gorge in the fish's gullet.

Actual hooks came into use later. One of the oldest hooks ever found was made from the upper mandible of an eagle. While it is not known exactly where or when the first fish hook was fashioned, it was apparently an idea whose time had come, since countless variations on the theme appeared. The Maori people of New Zealand carved hooks from human bone. Mohave hooks have been found that were made from the thorn of the barrel cactus. New Guinea tribesmen used hooks made from the clawed hind legs of a fearsome looking insect. Wooden hooks, fashioned from V-shaped twigs and sharpened to a point, were fairly common among early fishermen. Shells, horn, bone, and flint also were commonly shaped into hooks by early fishermen.

The next major innovation in the making of fish hooks had its origins in the Neolithic or New Stone Age. The invention of the wheel is probably the best known cultural advance of this era. Another advance involved man's first experiments with metals. Sometime between 12,000 and 5,000 B.C. men began to work with copper and bronze. Copper fish hooks dating back to 5,000 B.C. have been found. Copper hooks were common for several centuries until some enterprising pioneer metallurgists began fashioning hooks from bronze, an alloy much stronger and more durable than copper. Barbed and eyed bronze hooks have been found among Mycenaean remains; tomb paintings in ancient Egypt depicted similar hooks.

Bronze remained as the premier fish hook material for several centuries. By about 2,000 B.C., however, the Bronze Age was succeeded by the Age of Iron, when steel fish hooks were introduced. It was about this same time that fly-fishing, in which a hook is dressed to resemble an insect, came on the scene. At about the time of Christ, Greek fishermen were attaching bits of wool and bird feathers to their steel fish hooks to entice trout in the Astraeus River.

Hook making was still an individual craft, practiced by devoted fishermen and metal workers who meticulously fashioned one hook at a time in an intricate and involved process. Although not much was written about fishing for the next

ten centuries, individual crafting of steel hooks apparently continued throughout the civilized world.

Dame Juliana Berners, a 13th-century English nun and sportswoman, called hook-making "the most subtle and hardest craft." Her thoughts on fishing appeared in her *Treatyse of Fyshinge Wyth an Angle*, published in 1496. Dame Juliana's book, the first classic of angling, explained the then-current state of the art of hook making. A fine, steel, square-headed needle was heated red hot. As the needle cooled, the artisan fashioned a barb near the point of the needle, then resharpended the point. The needle was then reheated and bent to shape around an anvil. The end opposite the point, where the eye is located on modern hooks, was flattened and filed smooth. The hook was then reheated a third time and plunged into cold water to restore its temper. The finished hook was fastened to the horse-hair leader by lashing hook shank to leader with silk thread. Needless to say, Dame Juliana and her angling peers were more aggravated by the loss of a hook than are modern fishermen.

Not long after Dame Berners' *Treatyse* appeared, the steel needle industry took up the manufacture of hooks. By the seventeenth century, London was well established as the center of the needle and hook making industry. By 1650, a London manufacturer named Charles Kirby was producing hooks using the same basic methods applied to hook making today. Kirby improved the methods for tempering and hardening the metals used in hook production and developed the Kirby pattern, a hook design still in common use all over the world.

One hundred years later, after disastrous fires and the plague had devastated London, the center of the world's hook trade had



Early bone fish hook

shifted to the English town of Redditch. By now, hook making expertise had spread to other parts of the world, however, and English makers began to lose some of their pre-eminence in the industry. Norwegian, French, Japanese, and American companies eventually began offering stiff competition to the English manufacturers.

O. Mustad & Son, a Norwegian firm established in 1832, is now recognized as the world's largest maker of hooks. Wright-McGill, Inc., an American manufacturer which produces the "Eagle Claw" line of hooks and tackle, is also among the world's leaders in hook production.

Although manufacturing processes of today's hook makers vary, modern hooks are made almost entirely by machine. Material used is normally 80 to 85 per cent carbon steel, although stainless steel and other rustless alloys are used in hooks where corrosion is a problem.

One common hook making process begins by cutting steel wire into lengths twice as long as what is required for a particular size and style of hook. The wire is ground to points at both ends, then cut into two "needles" of equal length. The pointed lengths of wire are then fed into a machine which either flattens the non-pointed end (for hooks which will have a flat or hole-eye attachment rather than an eye) or makes the eye, cuts the barb, sets the point, and forms the hook. The eyes are later turned up or down according to pattern. The hook is hardened and tempered with heat treatments then scoured to remove residues resulting from the heating and cooling processes. Finally, the hooks are washed and a protective plating is applied.

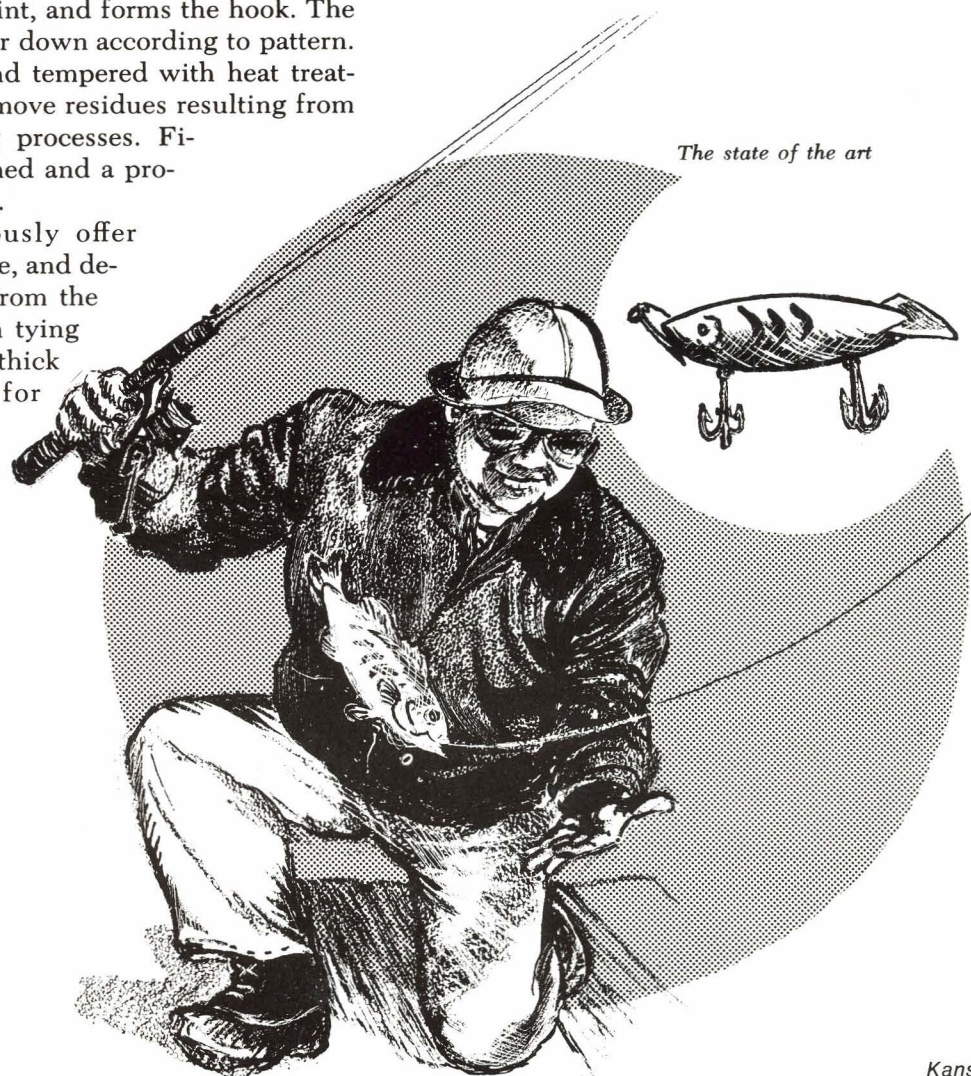
Today's hooks obviously offer more variety in size, shape, and design than ever before. From the light wire hooks used in tying tiny artificial flies to the thick stainless steel hooks for ocean fishing, today's tackle options allow the angler to custom fit his hooks to his own fishing needs. Modern hooks are not infallible. But the modern angler can improve his chances by choosing wisely the size and style of hook he plans to use for a particular type of fishing. It also pays to keep hooks in top working order by touching up

dulled points, rebending straightened hooks, or straightening bends that shouldn't exist.

Fishing, and fish hooks, have come a long way since the original Stone Age angler lobbed a bait-covered gorge into the water. The wide array of hook styles and sizes has made greater fishing success possible but has also complicated the sport a bit. Fortunately, the angler confused by too many choices in terminal tackle can find advice from several sources. Sporting goods and bait dealers, fishing "how to" literature, tackle manufacturers, and other fishermen can all contribute useful information. Personal experience, ultimately, can refine this information into fishing savvy.

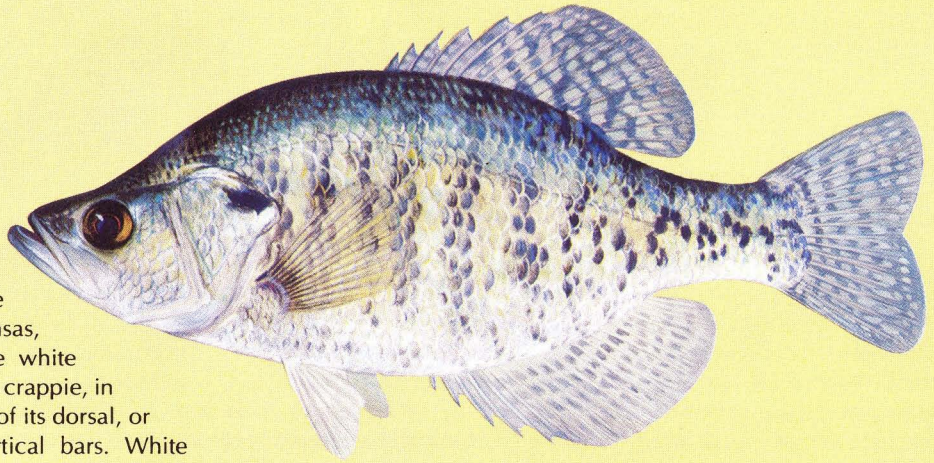
The soundest basic advice on hooks is simply this: Fish hooks may not be the most expensive items in an angler's tacklebox but they are, without doubt, the most essential. Recognizing them as such will contribute much to fishing success. □

A native of Alton, Illinois, Dycie Madson is a versatile artist who works in clay, bronze, and wood as well as pen and ink. Her portraits hang in a number of local collections in the St. Louis area. She was also an exhibitor at last year's National Wildlife Art Show.



White crappie

Found in nearly all the waters of the state, the white crappie is the most common fish in Kansas, a fact that delights a lot of fishermen. The white crappie differs from its close relative, the black crappie, in having only five or six stiff spines in the front of its dorsal, or back, fin. Body markings include faint vertical bars. White crappie spend most of the year in large schools in moderately deep water off shore, but they do move into shallow water with brushy cover in the spring during spawning. Adults feed mainly on small fish, especially minnows and young gizzard shad. The current world white crappie record is five pounds, three ounces. The Kansas record is four pounds, one-quarter ounce.

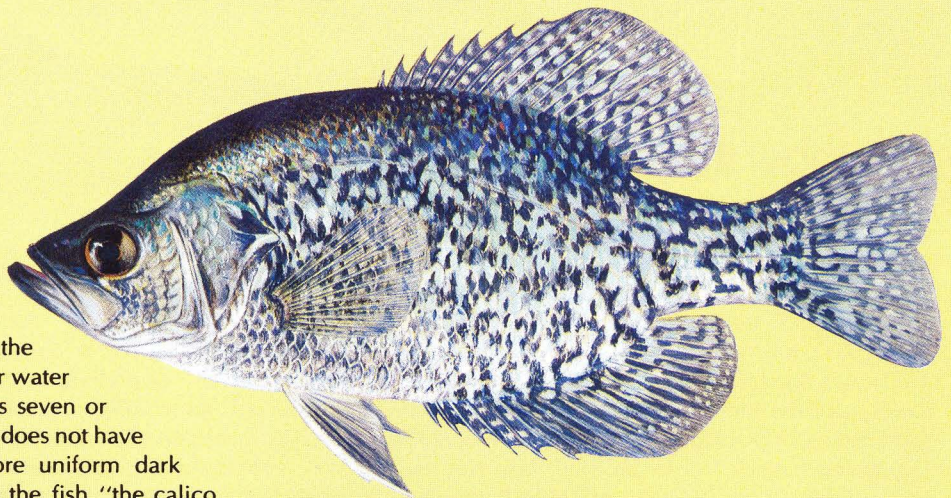


Kansas Sport Fish

Illustrations by Maynard Reece, courtesy of Iowa Conservation Commission, and by Neal Anderson.

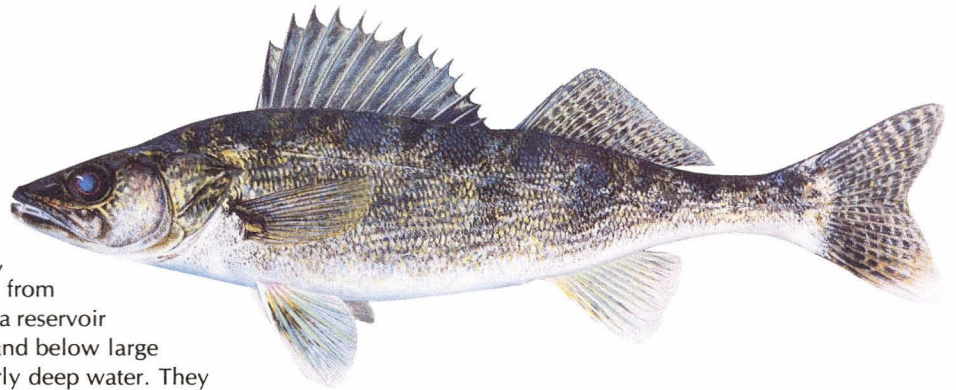
Black crappie

The black crappie is not as abundant in Kansas as the white but is often found in lakes around the state where it prefers somewhat clearer, cooler water than the white crappie. The black crappie has seven or eight stiff spines in the front of its dorsal fin and does not have the white crappie's barring. The black's more uniform dark splotching has led some anglers to nickname the fish "the calico bass." Black crappie are strictly carnivorous, feeding on smaller fish and some insects. Fishing success for both crappie species is best during spawning. World black crappie record: five pounds. Kansas record: four pounds, ten ounces.



Walleye

The separate dorsal fins, streamlined shape, and large, milky eye set the walleye apart from all other Kansas fish. The walleye is mainly a reservoir fish, found occasionally in streams above and below large lakes. Walleye are often found lying in fairly deep water. They spawn over bare rock and are often taken by fishermen on rock outcrops or over riprap along dams. Fishing the walleye spawning run is one of the toughest kinds of angling in the state since the walleye move up into the shallows in mid-March and are usually finished by early April. The walleye is universally applauded as table fare and is a fine game fish as well. The world record weighed twenty-five pounds. Kansas' best ran thirteen pounds, one ounce.



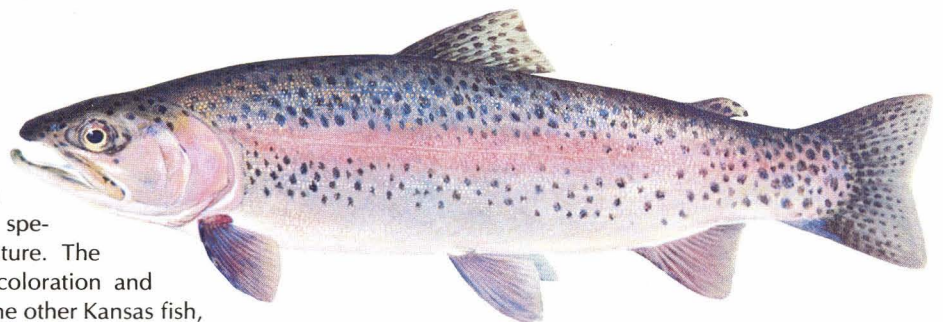
Northern pike

The torpedo profile and mouthful of sharp teeth of the northern distinguish it from all other Kansas fishes except the gar. Farther north, the northern is often found in streams and flowages, but in Kansas, it is primarily a resident of a few large lakes where it has been stocked. Northerns like clear, shallow water with plenty of emergent vegetation or submerged weeds where they ambush smaller fish. Northern eggs must be laid on flooded plant materials in order to hatch and survive. Because they are relatively uncommon, northerns aren't often caught in Kansas, but the fishermen who occasionally hook them say they'll claim your complete attention for ten or fifteen minutes. The world northern record is forty-six pounds, two ounces, and the best Kansas northern is a respectable twenty-four pounds, twelve ounces.



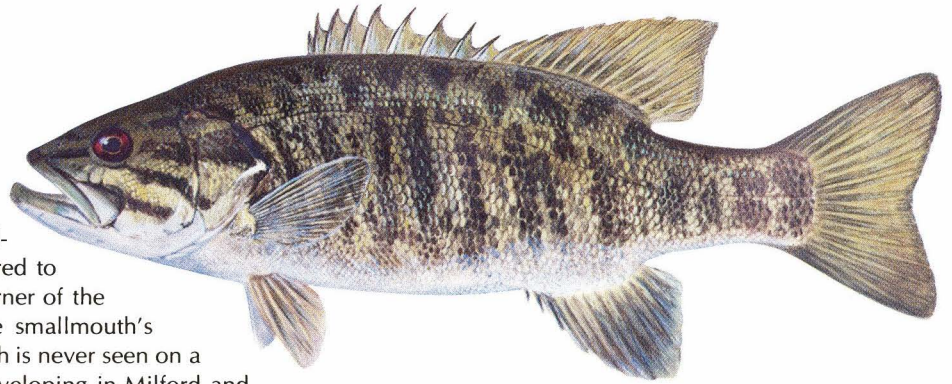
Rainbow trout

Recent introduction of rainbows by the Fish and Game Commission may establish this species as a noted Kansas trophy in the future. The rainbow can be identified by its unique coloration and small fatty fin behind the dorsal fin. Only one other Kansas fish, the brown trout, has the fatty fin and the general look of the rainbow. The brown does not have the pink flank usually seen on the rainbow, and the dark spots on the lower part of its body and toward its tail are rimmed with pink or red. Spots on the rainbow are solid brown or black and have no outer rim of color. The Fish and Game Commission has introduced rainbows in Cedar Bluff Reservoir and spillway, in Webster Reservoir spillway, below Tuttle Creek Reservoir in Tuttle Puddle and in the Rocky Ford Fishing Area, and at Wyandotte County Lake. Shawnee County officials have also maintained a substantial rainbow fishery in Shawnee County Lake. The world rainbow record is eighteen pounds, five ounces. The Kansas record stands at five pounds, twelve ounces.



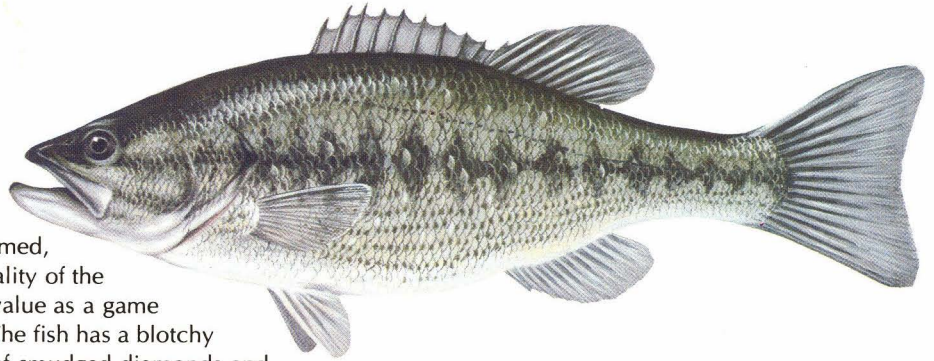
Smallmouth bass

The smallmouth is a superb game fish that prefers relatively cool, clear water. The smallmouth does not have a small mouth when compared to its warmwater cousin, the largemouth. The corner of the mouth is located just below the eye, and the smallmouth's flanks usually have a faint vertical barring which is never seen on a largemouth. Populations of smallmouth are developing in Milford and Clinton reservoirs in northeast Kansas. Lake smallmouth aren't as tied to heavy brushy cover as largemouths are. They can be found along rocky reefs and bank outcrops where they hunt crayfish. The largest smallmouth ever caught weighed eleven pounds, fifteen ounces. The Kansas record is four pounds, one ounce.



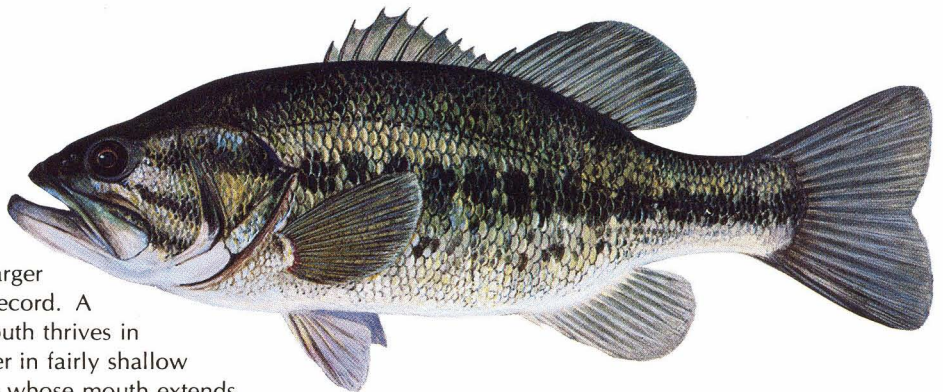
Spotted bass

The spotted bass is most common in southeastern Kansas where it inhabits the limestone-bottomed, spring-fed streams that drain the Flint Hills. The quality of the water and country it is usually found in add to its value as a game fish. The spotted bass' jaw ends just below its eye. The fish has a blotchy lengthwise stripe that sometimes looks like a row of smudged diamonds and rows of small dark spots below this stripe. The state spotted bass record is four pounds, seven ounces. The world record fish was taken in Georgia and weighed eight pounds, ten and one-half ounces.



Largemouth bass

The largemouth is the biggest of the three Kansas bass species, probably growing even larger than the eleven-pound, twelve-ounce state record. A common farm pond and lake fish, the largemouth thrives in warm, murky water usually around heavy cover in fairly shallow water. The largemouth is the only Kansas bass whose mouth extends beyond the eye. Largemouths are generally green-backed with light sides and a dusky length-wise stripe. Largemouths have broad tastes in prey and may strike anything from a live mouse to a nightcrawler. The world record largemouth weighed twenty-two pounds, four ounces and was caught in 1934—probably the longest-standing freshwater fish record in the world.



Channel catfish

The catfish can be told from other fish species by their lack of scales. The channel can be separated from its close kin by its deeply forked tail. The blue catfish looks a lot like the channel but is heavier in the body and has about thirty-two spines in its back belly fin. The channel catfish always has less than thirty.

Channels are native to all the large streams in Kansas and have been stocked in most lakes and ponds. They tolerate muddy water and wide water level variations. The world catfish record is fifty-eight pounds. Kansas' best is thirty-three pounds, twelve ounces. The world record blue cat is ninety-seven pounds, although there are commercial fishing records that run larger. The Kansas record is forty-seven pounds, twelve ounces.



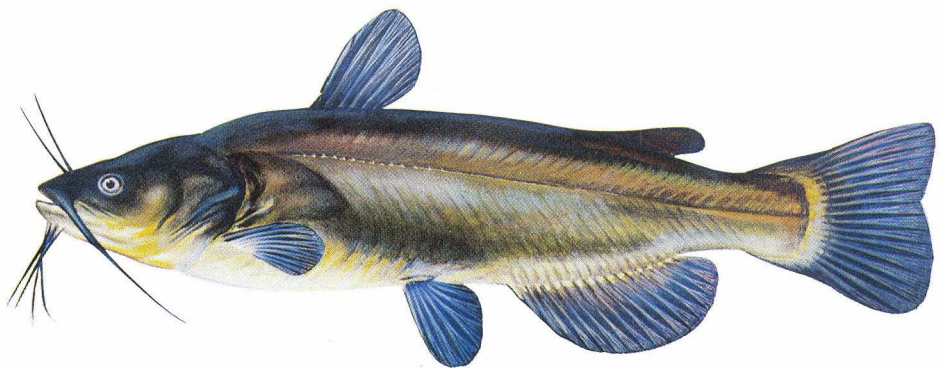
Flathead catfish

The flathead *does* have a broad, flat head with a jutting lower jaw. Young fish are black but become mottled with yellow and brown as they grow. Really big adults are often solid yellow-brown. Flatheads prefer deep holes in streams and the spillways of reservoirs where they grow to enormous size, sometimes more than 100 pounds. They are strict predators and do not scavenge like channel catfish or bullheads. The world hook-and-line record for flatheads is seventy-nine pounds, eight ounces. Ray Weichert of Brazilton, Kansas took the best Kansas flathead on record with a sunfish-baited trotline. It weighed eighty-six pounds, three ounces.

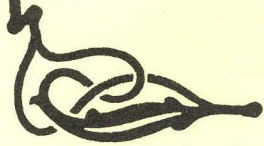


Black bullhead

This relatively small catfish does not have a forked tail. It frequents calm, murky water usually over a mud bottom and is seldom found in clearer, faster flowing streams. This species can be separated from its close relative, the yellow bullhead, by the color of the barbels on the underside of the chin. Barbels on the black bullhead are darker than the skin immediately above them. On the yellow bullhead, they are usually white or cream-colored, always lighter than the skin above them. The yellow bullhead is also found in different habitat, preferring clear, permanently-flowing streams with rocky bottoms. The world-record black bullhead weighed eight pounds. The Kansas record came from a southeastern Kansas strip pit and weighed five pounds.



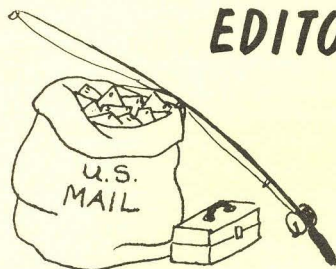
the YELLOW Pages



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LETTERS to the EDITOR



IDENTIFYING FISH

I enjoy your magazine very much. I have just recently become interested in Kansas fishing but have some trouble identifying the fish. I have tried to find a booklet or a book to help me but have not found what I want yet.

I wonder if you would get good enough response to print pictures, identifying characteristics, size limits, etc. of the fish that may be caught in Kansas waters. Most of my fishing has been fly fishing in Colorado, which goes a few years back. I feel that Kansas has made great progress in wildlife management and now provides opportunities for the sportsman that heretofore were not available.

Roy A. Coombs
Wichita

Apparently we think alike, Roy. By now you've seen that eight pages of this issue contain color reproductions of just about any fish you're likely to catch in Kansas.

DON'T CHANGE

Your response to Grady Elder in the January-February issue was excellent. I feel your magazine is number one, even above *Outdoor Life*, *Field &*

Stream, Guns and Ammo, etc. I hate to read three paragraphs of an article, turn to page 97, read two more paragraphs, turn to page 182, etc. The suspense of the article is lost I feel in other magazines. Also, reading around advertisements tears me up. Keep your magazine as is.

I would like to see an indexing of your issues by subject covered such as pheasants, listing all articles written about pheasants. This would truly allow you to study your game before the hunt.

Thomas A. Penka
Pratt

WILD ABOUT FLOWERS

Your magazine comes to my son but I enjoy it as much as he does. I love your pictures on wildlife, especially the January-February article on birds. I feed birds all winter. I would like to see some articles on wild flowers of Kansas because I belong to a wild flower study group. Thanks again for a fine magazine.

Alice Bell
Herington

FIRST PHEASANT

The "After the Crowd's Gone Home" article in your November-December issue reminded me of my first pheasant which was shot here in Kansas. Might I add that Kansas does have excellent pheasant hunting. I'll never forget the thrill of jumping and shooting the most beautiful and colorful game birds of Kansas—the ringneck pheasant.

Brad Morgan
Wichita

CONTROLLING ACCESS

In your January-February issue,

Mr. Terry Johnson said that he did not believe that the landowners should have control or rights to deny people access to rivers in Kansas. I disagree with him totally.

I believe that a landowner should have every right in the world to keep people off of his property. If the landowners didn't have this right, his or her property would surely be torn up severely. People would tear up wheat fields trying to get to the rivers and things like that.

By the way, your magazine is great. Keep up the great work.

Alex E. Darg
Bennington

GOOD LANDOWNERS SCARCE?

In regard to the letter in the January-February issue from a boy who said he and his father were denied permission to hunt: He asked if good landowners were becoming scarce. Well, good landowners aren't becoming scarce . . . good hunters are.

Jim Malm
McPherson

ETHICAL CONDUCT HELPS

This letter is in response to David Jones' letter published in the January-February *Kansas Wildlife*. Hopefully, it will help him understand why he had poor success in getting permission to hunt on private land.

He was trying to get permission to hunt in the vicinity of Lake Perry, a public reservoir near large urban areas. One must understand that landowners in such areas are constantly bothered by road hunters, poachers, and people stopping to ask about hunting. If they let everyone hunt there would soon be no game left on their land to hunt.

For better success in obtaining per-

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mission to hunt on private land he should observe the following guidelines:

— Start early. Scout out possible hunting spots in August, September, and October. Locate landowners, introduce yourself and ask about returning to hunt later in the year. Follow up successful inquiries with a written note.

— Avoid the vicinity of public hunting areas. Landowners in these areas see so many hunters that they tend to be quite negative to hunting inquiries.

— Go at least two hours drive from Kansas City to areas that have a lower population density.

— Be considerate to landowners that allow you to hunt. Offer to share your game. Christmas cards and thank you notes don't hurt. You need to find places to return to each year.

— Don't ask the same landowner to hunt more than twice during the same season. Call ahead at least two or three days. Show your appreciation by bringing token gifts.

— Leave the land better than you found it by picking up trash, etc. Report to the landowner anything that doesn't seem right (a sick cow, downed fence, etc.).

If you follow these guidelines for four to five years you will have hunting places aplenty. Finding and keeping hunting spots is not easy . . . but then the good things in life seldom are.

Gene Maggard
Leon

PREFERS PUBLIC LAND

I am writing in response to David Jones' letter in the January-February issue.

Years ago, like David, I was disillusioned with public hunting land until I really started "hunting" it. Now I hunt public land by choice. With habitat managed strictly for wildlife I've found more game and better hunting on public land than what I've experienced on private land.

Public lands get a lot of use, so a hunter that relies on his eyes and uses his head more than his legs will do just fine. In some cases private land is more practical, as in David's case; being too young to drive you must take what's available. I agree that more and more land is being posted and permission is sometimes hard to get.

Most landowners are hunters themselves and many would like to grant permission but, because of the actions

of a few "slob" hunters, they don't feel they can afford to. It just costs too much to repair the damage done by these few.

Basically, what it boils down to is that David, his father, myself and the rest of us will have to shame the "slob" out of existence. We have to set a shining example, practice what we preach, and turn in the violator. We don't owe those guys anything.

It will be a long uphill battle, but if we all pull together it's a battle we can win.

Mike Dye
Kansas City, Ks.

LIKES CONTENTS

I receive *Kansas Wildlife* as a gift from my daughter and her husband, who are Kansas residents. It is really a great magazine and covers the gamut of wildlife very well. It seems to improve with every issue but the January-February issue was outstanding. Wonderful photography. Keep up the good work.

Joseph E. Bagwell
Greer, S.C.

CHENEY EAGLES

We want to compliment Fish and Game on the Cheney eagle tour Feb. 7. We did see two bald eagles—the first my husband and I have seen in the wild. All the personnel were very friendly and helpful. We enjoy *Kansas Wildlife* magazine and we think the Nongame Wildlife Improvement Program is a good way to help support the wildlife of Kansas. Thanks again for a great day at Cheney.

Mr. and Mrs. C.L. Woodson
Wichita

Glad you enjoyed the Cheney eagle tour, which was organized by Steve Capel, Fish and Game's southcentral region game supervisor. The response by the public may mean the tour will become an annual event.

HOME AGAIN

I moved to Florida a few months ago to be near my parents, but I miss pheasant hunting so much I'm going back to K.C. I think the cost of the licenses should be doubled and the money used

as follows:

— For the department to contact landowners who would allow hunting on their land.

— To post such land with the owner's address or phone number.

— To pay the landowner for leaving some crops in the field.

This would save a lot of driving around, for as you know, sometimes it's impossible to locate the owner. This would ease some of the public hunting pressure. This would make hunting in the game-rich state of Kansas a more enjoyable experience for generations to come.

Alberto Parajon
Kansas City, MO

BIRD LOVERS

The January-February issue tops them all. It is the best little magazine I've ever read and, believe me, I've read a lot of sporting magazines in my lifetime.

My wife and I are both lovers of wildlife and we have martin houses all over the place. In addition, we have a 12-inch by 14-inch gabled feeder within four feet of our kitchen window. We dine and enjoy the birds at the same time. We have suet racks at both ends and from an extension to the roof we have a finch feeder hanging that feeds eight birds at one time. Talk about bird feeding, we DO feed the birds.

We fell in love with the last issue, especially your photos of birds at the feeders. The cardinal photo was a piece of art. We feed at least 20 of these birds all winter long. We have goldfinches galore, at least 50 or more. All the birds you displayed we have at our feeder except the Harris sparrow.

You failed to mention the downy and hairy woodpeckers, the redheaded woodpecker and the flickers. We also feed fox sparrows, mockingbirds, and redwing blackbirds. All these plus five or six squirrels.

Yes, you have one good magazine. Keep up the good work.

Lester G. Winfield
Osawatomie

CONCERNED FOR COYOTES

After reading the January-February issue of *Kansas Wildlife*, I felt that I must write a letter concerning your article on furbearers. Being an avid hunter I feel that the coyote is unjustly

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persecuted and the Fish and Game Commission perpetuates this tragedy by their lack of action.

According to Kansas law, the coyote is not a legal furbearing animal. This means that there is very little that Fish and Game can do to control coyote hunting. Since the coyote is not protected as other furbearers are, they are hunted cruelly and in such a manner that it is not in the best interest of hunting to allow it to continue. They are chased unmercifully by people in vehicles (I refuse to call them hunters, as they are far from that) and by dogs which are released from these vehicles.

From personal experience, I know of many farmers and landowners who now post their land because of lack of good hunter ethics from the type of people who chase coyotes in vehicles. I have closed many gates, and repaired many fences which were left open or knocked down by these vehicles. It is apparent that this group is largely responsible for the abundance of "No Hunting" signs.

According to your article, the coyote is one of the top six "furbearers" in Kansas, with a total of 56,000 coyotes sold in 1977, and 86,000 in 1979 on the fur market. When there are big bucks to be made from the coyote they will continually be hunted in such a manner that gives all hunters a bad name.

When a special interest group, such as the Cattleman's Association can control the actions of our legislature, then I feel that it is up to Fish and Game to help protect our wildlife. It is nothing short of total disgrace for any game animal to be chased and taken by the aid of vehicles and greyhounds. I feel that the Fish and Game Commission should take steps to have the coyote recognized as a furbearer, and give it the protection that all other furbearing animals receive.

The Fish and Game Commission should be commended for their work in wild turkey and pronghorn antelope re-establishment in Kansas. But I feel the Commission has completely missed the boat when it comes to regulations governing the lawful taking of this furbearer.

Jim Keenan
Oakley

NIX NONGAME

As a Kansas sportsman, I appreciate the fine work you are doing to develop

and maintain game species habitat in the state.

However, I am disturbed by what I perceive as a movement to expand the scope of your Commission. You are, after all, the "Fish and Game" agency. You are not a branch office of either the "Birdwatchers of America" or the "Sierra Club." You seem to be expanding your power, budget, and base of public support by embracing "nongame" wildlife management. I see this as another example of the cancerous growth of a bureaucracy in the guise of offering more services to more and more people, and it is happening right here on our doorstep.

Please, confine your activities to your original stated purpose—you are very good at game species management.

Terry Nunemaker
Rose Hill

We've been hammering pretty hard on nongame wildlife in the last few issues of the magazine, so I can understand your concern about the Commission's apparent change of focus.

First off, we'd like to stress our continuing commitment to hunting, fishing, trapping, and the "harvest user" of Kansas wildlife. Sportsmen pay for everything this agency does . . . some \$9 million worth this coming year, and the decision makers with the Commission aren't about to forget that.

On the other hand, there are some reasons that nongame wildlife is receiving a little more attention these days.

The first is that the Commission is committed by statute and professional ethics to look after nongame as well as game. Consider this passage from the Fish and Game laws: "The Commission shall conduct investigations on nongame species in order to develop information relating to population, distribution, habitat needs, limiting factors, and other biological and ecological data to determine conservation measures necessary for their continued ability to sustain themselves successfully." Modern wildlife biologists recognize that effective wildlife management uses a broad approach. Game and nongame animals are too closely related to each other and their habitats to separate one from another.

The second reason for the recent emphasis on nongame is that the sportsman simply can't afford to pay the bills for modern wildlife management on his own. The problems are too big.

The Commission today is forced to produce and review environmental impact statements on a whole spectrum of development schemes, to take the lead in the protection of threatened and endangered species, to fight for the protection of the state's streams, to push for agricultural policies that will help conserve instead of destroy wildlife.

The new source of funds will free a lot of sportsmen's dollars for use in specific game and fish management. At the same time, the money spent on nongame management will benefit game animals as well.

We don't like the idea of runaway bureaucracy any better than you do, but we're more concerned about the condition Kansas wildlife and wildlife habitat is in. There are big economic interests and bureaucracies trying to wipe wildlife off the face of the continent. About the only way to fight them is to build a bureaucracy of your own, then watch it carefully to make sure it does its job better than the others.

NEED A LICENSE?

I am almost 80 years old and own a cabin on the Marais des Cygnes River, where we spend most of the summer. I have always bought an out-of-state fishing license which I don't think is right.

W. L. Morse
Kansas City, MO

Kansas laws allow the owner of any land or the owner's immediate family living with him to hunt or fish on such land by legal methods without a license. Therefore, you can fish without a license in any portion of the Marais des Cygnes River which is located on your property. However, a license is required to fish in portions of the river not located on your property, and since you are an out-of-state resident, a non-resident fishing license is required, regardless of age.

WE WELCOME LETTERS TO THE EDITOR and ask only that they be kept as short as possible. Address correspondence to:

Editor
Kansas Wildlife
Rt. 2, Box 54A
Pratt, Ks. 67124



ACROSS KANSAS

NEW LIMITS IN EFFECT

Kansas fishermen need to remember some new numbers this year. Creel limits have been changed on several species of fish popular with Kansas anglers,

MARYSVILLE OFFICER HONORED

A 33-year veteran of Kansas Fish and Game's law enforcement division has been named winner of the Shikar-Safari Club International award as outstanding conservation officer in Kansas for 1980.

Wallace Ferrell was presented the award during the January meeting of Fish and Game Commissioners. Shikar-Safari, a conservation group organized in the early 1950's, has been presenting the award annually to the outstanding conservation officer in each of the

SAVE A LITTLE, SAVE A LOT

Thinking smaller can save big. The proof is illustrated in computer printouts of Kansas Fish and Game's agencywide savings accomplished in the past two years, according to Allen Stoops, Fish and Game's purchasing and procurement officer.

Agency employees drove 350,000 fewer miles from July 1980 through November 1980 than during the same period the previous year. That figure represents a 20 percent decrease, from 1.8 million miles to 1.44 million miles, Stoops said.

In the past two years, the agency also has replaced many full-sized cars and pickups with smaller, more fuel efficient vehicles, Stoops continued. The result has been an increase in the average miles-per-gallon figure for agency vehicles from 11.8 to 13.

"That increase in MPG may not sound dramatic

EAGLE WATCHERS GAIN

Kansas' wintering eagle populations are apparently finding much to their liking here. At least 367 bald eagles and 50 golden eagles spent much of the winter in Kansas before heading north again to nest. That's the number of eagles sighted during a two-day count across the state Jan. 9 and 10.

Although the past winter's count is higher than the previous year (341 bald eagles and 33 golden eagles),

reports Mike Theurer, fisheries management supervisor for Kansas Fish and Game.

Under the new regulation, a fisherman may keep more walleye than in the past but fewer black bass and channel catfish. Daily creel limits prescribed in the new regulation are: channel and blue catfish - 8 in combination; walleye and sauger - 8 in combination; rainbow and brown trout - 8 in combination; largemouth, smallmouth and spotted bass - 5 in combination; flathead catfish - 5; northern pike, tiger muskie, and muskellunge - 2 in combination; striped bass - 2; paddlefish - 2; white bass, crappie, bullhead and all other species - no limit.

The possession limit under the new regulation is three daily creel limits.

50 states.

Ferrell patrols Marshall, Nemaha, and the north-eastern portion of Riley County. He and his wife, Lois, live in Marysville. Ferrell's work in developing river access sites on the Blue River near Marysville was cited in the presentation of the award, as well as his overall dedication to the job.

"You won't find a more dedicated person than Wally," said George Schlecty, assistant chief of law enforcement for Fish and Game. "If a job needs doing, he'll go out and get it done."

but when you consider that it applies to about 240 vehicles, it can add up to a lot in a year's time," Stoops explained. In addition, agency employees have been adding to the fuel savings by improving their driving habits and keeping their vehicles tuned so they will run more efficiently.

Some dramatic savings also have accrued in heating and cooling costs of agency-owned houses, Stoops noted. Two years ago the attics in the 30 agency-owned residences scattered throughout the state were insulated. As a result a savings of 20 to 25 percent in use of propane or natural gas was observed in all of those residences.

"The savings was so encouraging it prompted us to insulate the side-walls in all agency houses this winter," Stoops said. "That should mean another 10 to 15 percent savings in fuel costs."

the higher number doesn't necessarily indicate that the population is on the upswing, since Kansas is one of a dozen states that serve as winter homes for the nation's interior population of eagles, reports Fish and Game biologist Marvin Schwilling. The counts in other wintering states may have been lower than previous years, he explains.

What is encouraging, Schwilling continues, is the fact that about 40 percent of the eagles seen in Kansas

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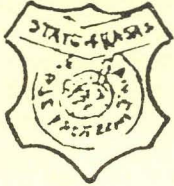
in this year's midwinter count were young birds, an indication that they are reproducing more successfully than some years in the recent past.

"In the mid-1970's there was a year or two when there were no young in the population . . . a real discouraging situation," Schwilling said. "They're doing much better now."

The fact that wintering eagles have increased in Kansas in recent years is due primarily to the fact that more suitable winter habitat is available. Bald eagles, especially, are drawn to large lakes where fish and waterfowl, which comprise a large part of their

diet, are readily available. With the construction of numerous manmade reservoirs in the state in recent years, good wintering sites are more numerous than before.

With more eagles wintering in Kansas, there are more eagle watchers. About 700 persons attended an "eagle tour" of Cheney Reservoir during one weekend this past winter. A similar tour was organized at Flint Hills National Wildlife Refuge on John Redmond Reservoir. And many more Kansans are eagle watching individually to get a closer look at the birds and their lifestyles.



It's The Law

Two Sedgwick County men were ordered to pay a total of more than \$1,100 in fines and court costs on charges related to the poaching of two deer.

William S. Whitchurch and Kenneth Torkleson, both residents of the Maize area, were charged when law enforcement officials found two deer carcasses in their vehicle following a high-speed chase in north-west Sedgwick County. The chase began when State Game Protectors Jack Dunbar, Ed Brown and Virgil Cox approached Whitchurch's residence to question them after a Harper County landowner provided information implicating the two men. The two men sped away in Whitchurch's vehicle. Assisting game protectors in the chase were Sedgwick County sheriff's officers and Kansas highway patrolmen.

When law officers apprehended Whitchurch and Torkleson, they were found in possession of two whitetail bucks. They were each charged in Sedgwick County District Court with possession of an untagged deer. Whitchurch was also charged with attempting to elude police officers and was fined a total of \$200 plus court costs. Torkleson was fined \$100 plus costs.

The two men were charged in Harper County District Court with taking a deer during closed season, unlawful hunting, and taking a buck deer with no fork in the antlers. The Harper County court assessed each man a fine of \$350 plus \$40 court costs. In addition, each was placed on probation for one year and prohibited from hunting in the state for a year. They also forfeited their firearms, which were given to Fish and Game's Hunter Safety Program.

— A rural Hays resident has been fined \$200 plus court costs after pleading guilty to a charge of possessing a deer without a valid hunting permit.

Raymond Jenson was ordered to pay the fine in Ellis County District Court on the charge stemming from his Dec. 9, 1980 arrest by Game Protector Mel Madorin. Madorin made the arrest when, in response to a tip from another individual, he found the animal's carcass hanging in a barn at Jenson's residence.

— The illegal use of cyanide gas guns, or "coyote getters," has cost a Syracuse farmer \$110 in fines and court costs after he pleaded guilty on two charges recently before Hamilton County District Court Judge Donna Blake.

Hershel H. Kennedy, 69, was also fined for unlawful hunting because he had no permission to set the illegal devices on another person's land. When apprehended by State Game Protector Bruce Peters, Kennedy was checking the placement and operation of his cyanide guns. Twenty-four of the devices were recovered for evidence. Peters said he staked out the field where Kennedy was operating after a tip by hunters who came across the illegal sets.

— Two Emporia men were ordered to pay fines of \$500 each on charges of attempting to take a deer during closed season. The two men—James R. Kelly and Joseph A. Mason—were arrested Jan. 18. Associate Judge Francis Powell levied the fines in Lyons County District Court.

— Dodge City resident Melvin E. Clare, 39, paid a \$200 fine, plus \$10 court costs in Ford District Court for trapping out of season. He was apprehended by Fish and Game personnel Marvin Hamilton and Joe Kramer Jan. 22 after an informant told them where they could find the trapper, along with a red fox he had just caught. Trapping season for fox, raccoon, weasel, and opossum ended Jan. 15. Clare relinquished the fox and the trap for evidence, which was later sold for \$25.

KANSAS BOWHUNTER'S ASSOCIATION ESSAY CONTEST WINNER

(EDITOR'S NOTE: Following is Chapman High School student Donna Stewart's winning entry in the second annual Kansas Bowhunter's Association Essay Contest. The contest, open to high school students throughout the state, culminated in a panel of judges choosing the essay which offered the best treatment of the subject: The Role of the Hunter in Wildlife Conservation. Second place winner is Joe Babcock of Leawood. Third place belongs to Hanna Mahar of Wamego.)

By DONNA STEWART
Chapman, Ks.

By dawn, another six inches of snow had fallen. That, added to the eight inches already there made a thick, white blanket that stretched on for miles. As I looked out the window, I realized Ken would be out sitting in his tree, deer hunting. I smiled as I looked back on the year since Ken and I had started dating, and all the changes he had brought about in me.

"Hunting's not just a hobby," he always told me. "It's a way of life." It's a way of life that I soon discovered was fascinating and something I wanted to learn more about.

"Doesn't it bother you to shoot those beautiful animals?" I would always ask. To me it seemed terribly cruel. Not as cruel as some of the weapons nature uses, though.

That blanket of snow that all of us love to see can make survival quite difficult for the animals. The ground lies dormant and, for the most part, their food source is cut off. Year after year, great numbers of animals die of starvation. It seems ignoble for a grand animal like a deer to suffer and die a slow death of starvation. Or take the quail, for example. Often they are able to find enough food to fill their craw, but they die because they aren't getting the nutrition they need. To me, that seems much more cruel than harvesting them.

I say harvesting, rather than hunting or shooting them, because that's what it's become. Hunting is no longer just grabbing a gun and some shells and taking off. Research is done and seasons are set. Wildlife conservation isn't just a bunch of bumper stickers anymore. It's a science and the hunter plays a major role in it.

Studies have shown that because the hunter's consumption of game can be limited by laws, deaths by natural causes becomes the biggest consumer of game. Very rarely does any game animal die of old age. Nature makes sure of that. The dangers are always there to keep the populations down so only the young and strong survive.

Wildlife biologists research the populations and give the wildlife manager the information he needs to manage game. One of the important facts biologists have come up with is that game lavishly overproduces. When the animals had all the land they needed to live on, they were fine. They had all the food they needed, and room to spread out so that whole herds might not be wiped out by disease. It was alright for them to overproduce, because they still had the habitat they needed to live. But since our own population has grown and we have expanded land-wise, there just isn't room for this overproduction. So, the wildlife managers make sure that the habitat is the best it can be so most of the overproduction will survive. Then that overproduction becomes a surplus for the hunter to harvest. Game laws are made to be sure the hunters don't overharvest supplies. Many people see hunting a threat to the existence of wildlife in the United States. This isn't true. Legal hunting is in no way a threat to U.S. game animals.

In Kansas, no general tax money is spent in the operation of our wildlife conservation agency — the Kansas Fish and Game Commission. Sportsmen provide all the funding in the form of excise taxes on the sale of arms and ammunition, license fees, duck stamp sales, and direct contributions.

Unfortunately, hunters are plagued by false images created by people who call themselves hunters but are really just a bunch of armed dummies. Farmers look at the broken down fences, damaged property, and wounded livestock and attribute it to "hunters." This is where they're mistaken. The true hunter realizes that the private landowner holds the key to the future of hunting. Kansas law states that the hunter must have permission before going on someone's land. Nobody's saying that the landowner has to grant permission. The hunter realizes this.

Another constant battle for the hunter is people who are determined that hunting is a cruel pastime that needs to be banished. It wouldn't make a whole lot of difference to many of them if they never saw another deer in their lives. Many of them never do. But never seeing another deer or any kind of game would change the hunter's entire way of life. There's no question which of the two would work harder for wildlife conservation.

Since the hunter provides most of the concern, the time, and the money in the preservation of wildlife, how can they be called anything but conservationists?

SHORT STUFF

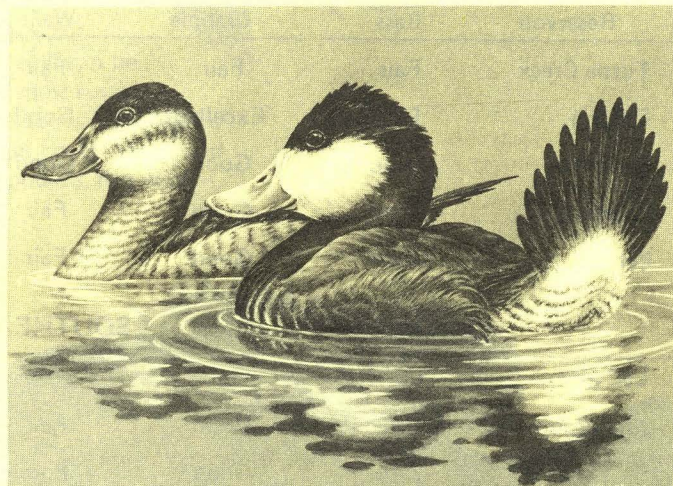
RECORDS KEEPERS — The Boone and Crockett Club assumed sole responsibility for maintaining the trophy records for North American big game Jan. 1, according to the Wildlife Management Institute. Since 1973, Boone and Crockett has been sharing responsibility for the program with the National Rifle Association, which handled the everyday administration of the program. The decision to terminate the cosponsoring agreement and for the Club to assume full responsibility for the records-keeping program was reached after careful evaluation of the objectives and essential priorities of both organizations, which have pledged mutual full cooperation for the future of their respective endeavors.

ENDANGERED SPECIES AID — Conservation programs for endangered and threatened species in 38 states and territories have been helped by \$4 million in matching federal grants for fiscal year 1981, the U.S. Fish and Wildlife Service reports. The amount is \$1 million less than was available for fiscal year 1980. (*Kansas' share of the initial 1981 allotment is \$10,700.*) The federal grants are helping in projects to reintroduce peregrine falcons in the wild where they are now reproducing in the eastern United States for the first time in 20 years. Bald eagle conservation measures are underway in several states. Cooperative efforts also are underway for the manatee, sea otter, Indiana bat, Florida panther, Kirtland warbler, whooping crane, American crocodile, loggerhead sea turtle, greenback cutthroat trout, lotis blue butterfly, and northern wild monkshood. In all, 151 federal or state-listed endangered or threatened animals and plants are now benefiting from the program.

TURN FOR THE WORSE — After a year in which the "quality of life" remained virtually unchanged in the United States, halting a 10-year decline, four environmental indicators resumed their downward trend in 1980, the National Wildlife Federation reported in its 12th annual Environmental Quality Index (EQI) survey. Among the seven natural resources measured, water, wildlife, living space, and soil all suffered during the past year, the EQI study found. The other three — minerals, air, and forests — remained unchanged. For the first time in five years, none of the indicators showed any improvement. The EQI is an estimate of the quality of life in the U.S. based on a combination of objective measurements and subjective judgments by Federation staff members, government experts, and academic researchers.

STAMP ART — South Dakota artist John S. Wilson's tempera painting of male and female ruddy ducks on the water (*below*) will be reproduced on

this year's Migratory Bird Hunting and Conservation Stamp (duck stamp). Wilson's entry topped a record 1,507 paintings in the federal government's only regularly sponsored art contest. Wilson, a self-taught artist, has worked for the past 25 years as a designer of plastic and neon signs. Since 1934, when duck stamps first went on sale, nearly 2.5 million acres of prime waterfowl habitat have been acquired with over \$367 million in revenue. By purchasing the stamps, more than 2.2 million conservationists provide over \$16.5 million in revenue annually. The 1981 stamp will go on sale at post offices on July 1.



MISGUIDED YOUTH — The average school-age youngster thinks the white-tailed deer, elk, and antelope are in danger of extinction and knows very little about the role of wildlife management in conserving America's wildlife, according to tests recently conducted for the National Shooting Sports Foundation (NSSF). More than 80 percent of the youngsters questioned indicated they thought elk, deer, or antelope were in "serious danger of extinction" or "some danger of extinction." Only 20 percent indicated any knowledge of the role of wildlife management in America. In an effort to provide youngsters with the facts the NSSF and the International Association of Fish & Wildlife Agencies have prepared a teaching package on the subject. Individual sportsmen, sportsmen's clubs, conservation groups, and others can obtain copies of the program for donation to their local school systems for only \$4.75 by writing: "The Un-endangered Species," 1075 Post Road, Riverside, CT 06878.

TAXES AND WILDLIFE — Tax code changes made by Congress last year may help conserve wildlife habitat, the Wildlife Management Institute reports. The revisions allow landowners to receive increased federal tax benefits for donating property to be used for conservation purposes. Section 6 of Public Law 96-541 permits property owners a federal tax deduction for the surface value of land while allowing the subsurface mineral rights to be retained by the original owner. Congressman John Dingell (Mich.) said the new provision removes a longstanding impediment to

1981 RESERVOIR FISHING FORECAST

NORTHEAST REGION

Reservoir	White Bass	Crappie	Walleye	Channel Cat	Largemouth Bass	Striped Bass	Flathead
Tuttle Creek	Fair	Fair	Fair	Good	Poor	Poor	Good
Clinton	Fair	Excellent	Good	Good	Good	Poor	Poor
Melvern	Good	Good	Good	Excellent	Good	None	Good
Pomona	Good	Good	Fair	Excellent	Fair	None	Fair
Perry	Good	Good	Fair	Excellent	Fair	None	Poor

SOUTHEAST REGION

LaCygne	None	Good	Poor	Good	Fair	Fair	Poor
John Redmond	Excellent	Good	Fair	Good	Poor	None	Good
Elk City	Good	Good	Poor	Excellent	Good	None	Excellent

NORTHCENTRAL REGION

Lovewell	Excellent	Fair	Good	Excellent	Poor	None	Good
Milford	Fair	Good	Good	Excellent	Poor	Poor	Good
Glen Elder	Good	Good	Good	Excellent	Good	Fair	Good
Wilson	Good	Poor	Good	Poor	Fair	Fair	Poor
Kanopolis	Good	Good	Good	Good	Poor	None	Poor

SOUTHCENTRAL REGION

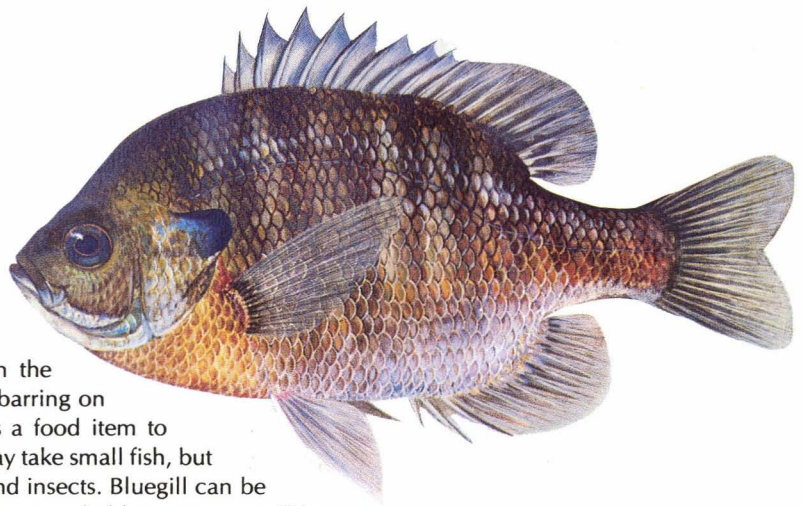
Council Grove	Poor	Fair	Fair	Good	Poor	None	Good
Marion	Good	Fair	Excellent	Good	Poor	None	Fair
Fall River	Fair	Good	Fair	Good	Fair	None	Excellent
Toronto	Good	Fair	None	Good	Poor	None	Excellent
Cheney	Excellent	Good	Good	Good	Poor	Good	Poor

WEST REGION

Kirwin	Fair	Fair	Fair	Good	Poor	None	Good
Webster	None	Good	Good	Fair	Fair	Fair	Fair
Norton	None	Fair	Poor	Good	Good	None	None
Cedar Bluff	Good	Fair	Good	Good	Fair	Poor	Good

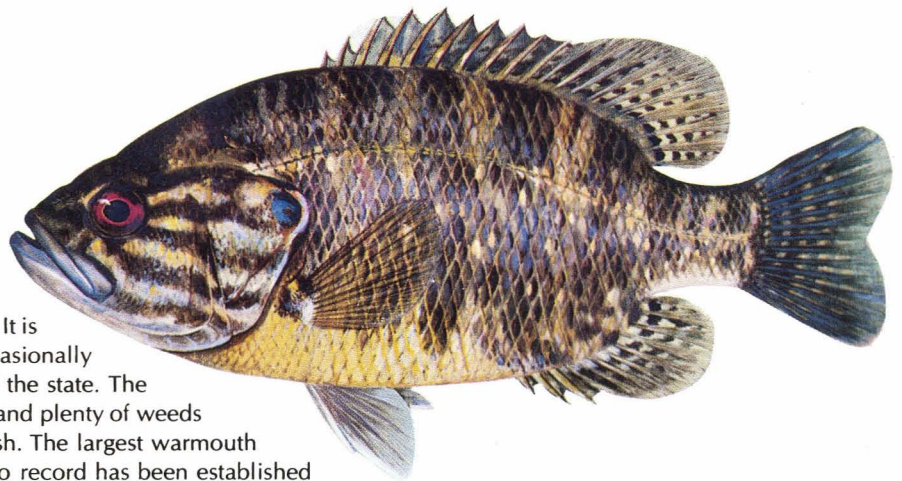
Bluegill

The small mouth and blue-tipped tab on the gill cover are unique bluegill traits. The bluegill's body is rounder than the green sunfish's or warmouth's, and often has faint vertical barring on its side. The bluegill is a prolific fish that is important as a food item to predators like bass as well as to fishermen. Large bluegill may take small fish, but the bulk of the species' diet consists of small crustaceans and insects. Bluegill can be caught almost any time of day at any time of year, but they are probably most susceptible on their spawning beds in May. A similar species not shown is the redear sunfish. The redear has more bronze coloration on its body and a red "ear" flap on the gill cover. The world bluegill record is four pounds, twelve ounces; the Kansas record is two pounds, five ounces.



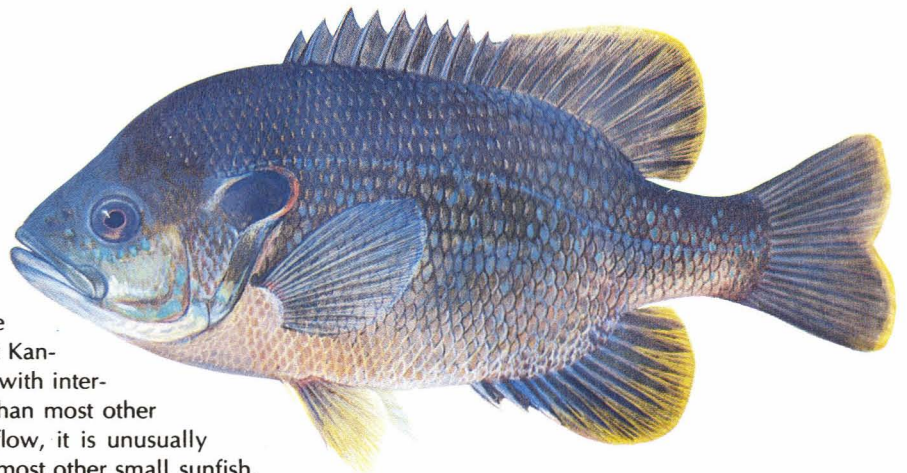
Warmouth

This yellowish brown panfish has red eyes and a mouth that is considerably larger than the bluegill's. It is found mainly in eastern Kansas lakes, but may occasionally turn up in sluggish streams in the southeast part of the state. The warmouth prefers ponds with soft, muddy bottoms and plenty of weeds where it feeds on insects, crustaceans and small fish. The largest warmouth on record weighed two pounds, twelve ounces. No record has been established for Kansas.



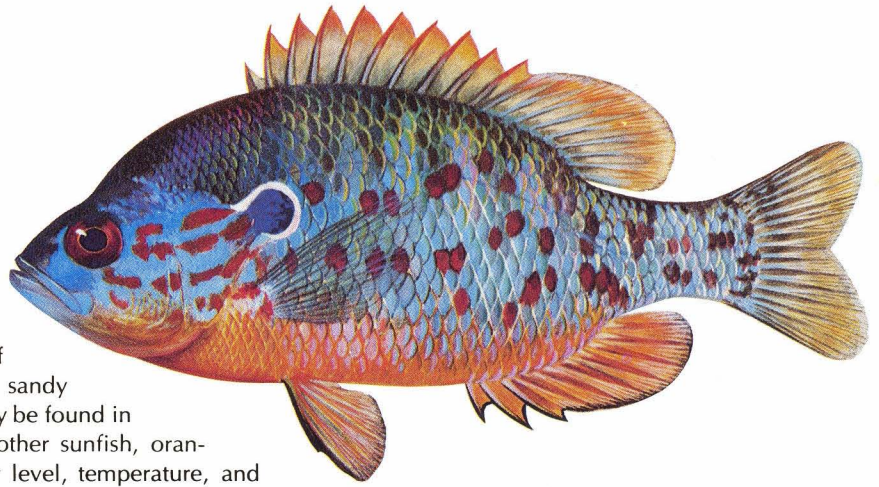
Green sunfish

The green body, large mouth, and usual yellow-edged fins are the key identifying marks of the green sunfish, a very abundant species throughout Kansas. The green sunfish favors small, muddy creeks with intermittent flows and pioneers farther up drainages than most other fishes. Caught in pools by sudden decreases in flow, it is unusually adept at surviving until the stream recovers. Like most other small sunfish, green sunfish can easily overpopulate a small impoundment, overtax food supply, and produce large numbers of stunted offspring. Properly managed, they are a fine little game fish, especially for young anglers. The world record green sunfish weighed two pounds, two ounces and was taken by Louis Ferlo in the strip pits of southeast Kansas.



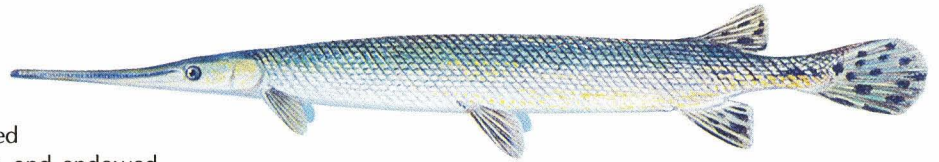
Orangespot sunfish

The orangespot sunfish is easily the most colorful of the Kansas sunfish. Orangespots seem to favor sandy streams but have a wide tolerance in habitat and may be found in rock- or mud-bottomed water as well. Like most other sunfish, orangespots can handle extensive fluctuations in water level, temperature, and turbidity. They are mainly insect eaters and do not get big enough to be important game fish. No Kansas record has been established for this species; the world record is one pound.



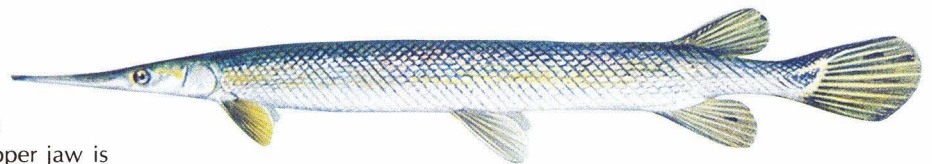
Longnose gar

The gars are primitive fishes, torpedo shaped and toothy, possessing lungs as well as gills, and endowed with an incredible toughness. The longnose gar can be separated from its relatives by the length of its beak, which is always more than twice as long as the rest of its head. It is the most abundant of the three gar species in Kansas and is found in most streams in the eastern half of the state. Strict predators, gar can be caught on spinners with nylon floss substituted for hooks. The Kansas gar record is thirty-one pounds, eight ounces. The world record stands at fifty pounds, five ounces.



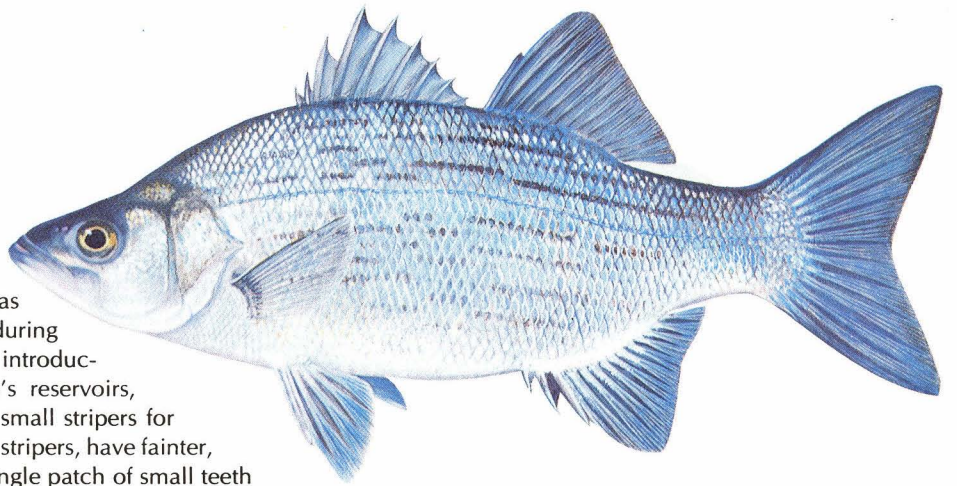
Shortnose gar

The shortnose gar's jaws are less than twice the length of the rest of its head, and the upper jaw is wider than the diameter of the eye throughout its length. The shortnose has been found only in Kansas' larger rivers where it avoids the quiet backwaters and oxbows that are often occupied by longnose or spotted gar. The shortnose can be distinguished from the third Kansas gar, the spotted gar, by the absence of dark, rounded spots on its head. The spotted gar is usually found only in the extreme southeast corner of the state. The world shortnose gar record is three pounds, five and one-quarter ounces. No record has been established for the spotted gar.



White bass

White bass occur in large schools in most Kansas reservoirs and can be caught by the dozens during their spring spawning runs. Since the recent introductions of striped bass into some of the state's reservoirs, biologists feel that anglers may be mistaking small stripers for white bass. White bass are deeper bodied than stripers, have fainter, more broken lengthwise stripes, and have a single patch of small teeth on their tongues. Kansas' current state record—five pounds, four ounces—was also the world record for a number of years until it was broken in 1972 by a five pound, five ounce catch in California.

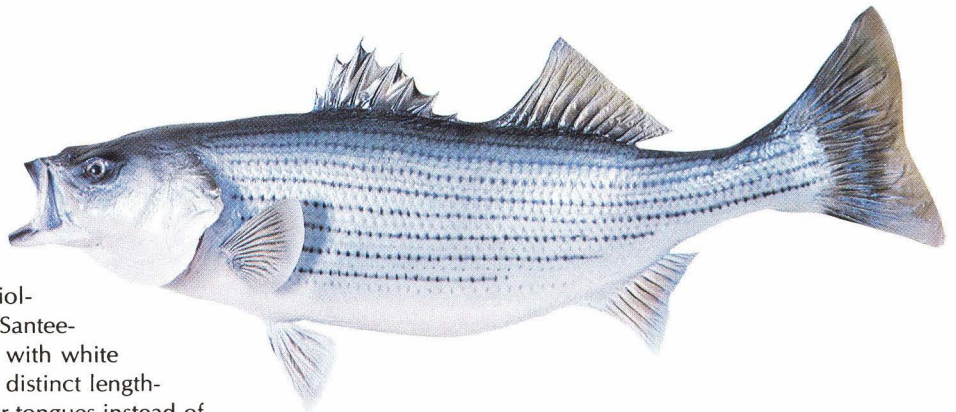


Wiper

Kansas biologists have also introduced a striped-white bass hybrid in some of the state's reservoirs. The wiper can be distinguished from its parents by the combination of its relatively deep body and two rows of teeth on its tongue. Like many hybrids, wipers seem to combine many of the best attributes of both parents. They get bigger than white bass and adapt to Kansas reservoir conditions better than stripers. The current world wiper record is eighteen pounds.

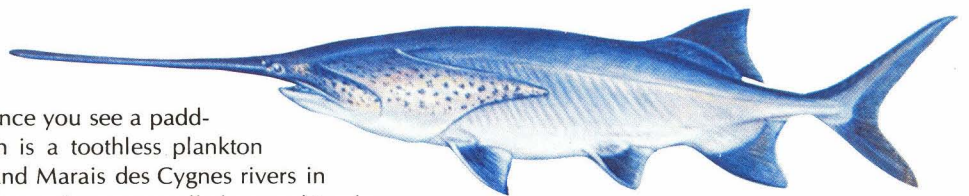
Striped bass

A saltwater native, the striped bass began an inland odyssey when South Carolina fisheries biologists found it was surviving landlocked in Santee-Cooper Reservoir. Stripers have been confused with white bass, although they are more streamlined, have distinct lengthwise stripes, and have two rows of teeth on their tongues instead of the white bass' single row. Stripers estimated at fifty pounds have been reported in Kansas, but the current state record is thirty-three pounds, twelve ounces. The world freshwater record is fifty pounds, four ounces.



Paddlefish

Also called spoonbill for obvious reasons. Once you see a paddlefish, you'll never forget it. The paddlefish is a toothless plankton feeder common today only in the Neosho and Marais des Cygnes rivers in eastern Kansas. Because of its food habits, this species can usually be caught only by snagging. Although paddlefish do well in reservoirs, they must migrate upstream into flowing water. As a result, they often concentrate below dams in large numbers. Fishermen who enjoy the snagging say that it is the best chance a Kansas angler has of hooking a really big fish and that the paddlefish is easy to clean and good to eat. No world paddlefish record has been established because current regulations bar fish that have been snagged. The Kansas record is seventy-four pounds, eight ounces.



Bigmouth buffalo

The bigmouth buffalo is the only member of the sucker family that has a large, thin-lipped mouth that opens nearly straight forward. Buffalo are seldom caught on hook and line since they are plankton feeders. Bigmouth buffalo occur in rivers in the eastern part of the state, but they are most common in lakes where they prefer silt or sand bottoms. The smaller-mouthed, darker black buffalo is found often in riffles or fast runs of eastern Kansas streams, as well as in lakes. The smallmouth buffalo with its sucker-like mouth is also found through most of eastern Kansas. Scott Butler of Lawrence currently holds the world smallmouth buffalo record with a fifty-one pound catch. The world bigmouth buffalo record is fifty-six pounds; the Kansas record stands at fifty-four pounds, four ounces.



Carp

The pair of barbels at each corner of the mouth and the sawtoothed spine at the leading edge of the dorsal fin are key identification marks of the carp. The carp was introduced in Kansas in 1880. Its hog-like feeding habits increase turbidity in the streams, lakes, and marshes in which it is found, and it tends to root out aquatic vegetation that would otherwise be attractive to waterfowl. Carp can be caught on a variety of baits, and those anglers who overcome the widely accepted prejudice against the fish report that they are powerful fighters and tasty when prepared properly.



Drum

The drum can be identified by its arched back, straight belly line and rounded tail. A common fish in eastern Kansas rivers and most impoundments in the state, the drum is a surprisingly mysterious fish. Very little is known of its breeding behavior. Its name is derived from the booming noise it makes which is thought to relate to reproduction in some way.





Red Hills Spring:

A photo essay

Photo by Gene Brehm

The Red Hills aren't the kind of country you'd expect to find in Kansas. They have a Zane Grey sort of look, high buttes and tablelands broken by cedar-filled ravines with spring branches trickling through them. Low rainfall and the broken terrain exclude extensive farming operations in most of the region; land holdings are large and devoted mainly to cattle ranching. It's not always easy to get permission to poke around the back pastures of these ranches, but the effort is worthwhile for the best parts of the Red Hills are often tucked back away from the road.

Scarlet globe mallow (Bruce Kintner)



Red hills buttes (Mark Eckhoff)





Meadow flax



Spiderwort

Whitetail deer (all photos by Bruce Kintner)



Great blue heron (Bruce Kintner)



Beaver (Gene Brehm)





Nine months of Kansas walleye fishing

A Fish For All Seasons

Mike Theurer

Illustrated by Doug Schermer

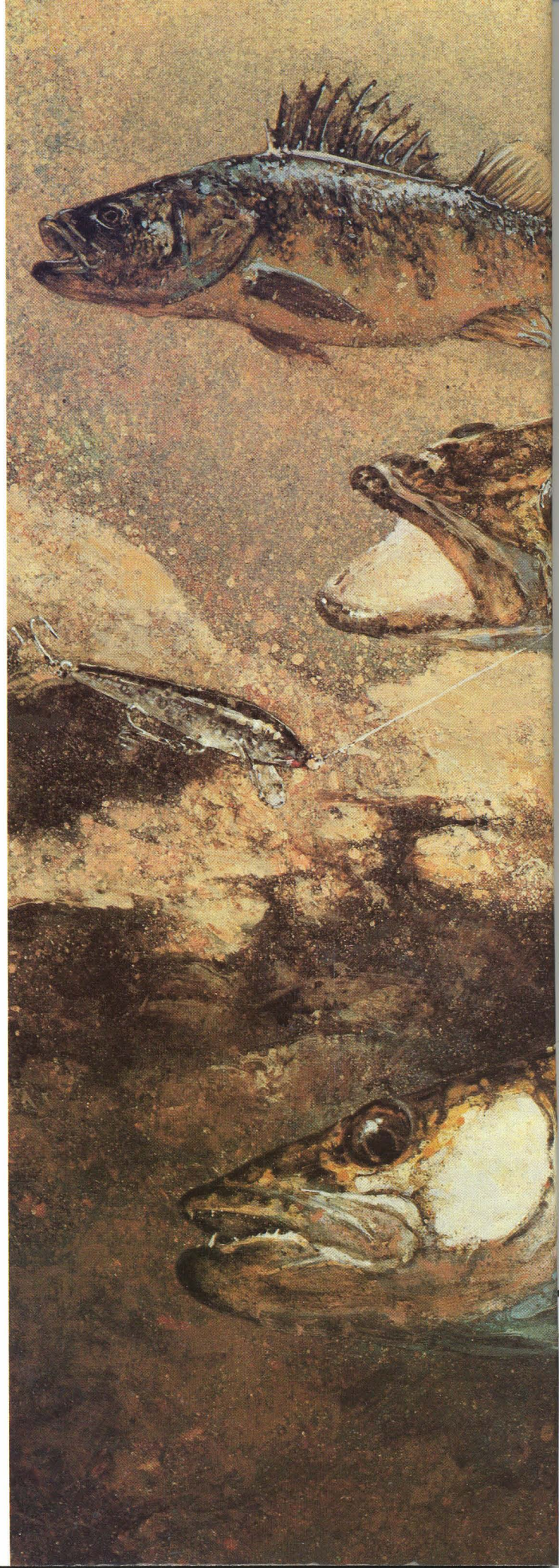
The walleye is a very popular resident of Kansas waters and presents the angler with both a treat and a challenge. The treat comes on those rare occasions when you can catch them in abundance and the challenge is, where did they go the rest of the year?

The walleye is the largest member of the perch family, a close relative of the yellow perch, sauger, log perch and darters.

The original range of the walleye extended as far north as Canada's Great Slave Lake, south through the Mississippi River system, and west to Georgia and northern Arkansas, Kansas and Nebraska. The native range in Kansas was restricted to the large river systems in the east, and even in these river systems, the habitat was marginal and populations were low.

The walleye became abundant in large lakes after accelerated introductions beginning in 1960. The largest walleye ever caught in Kansas weighed thirteen pounds, one ounce. The fish was 31½ inches long and was caught on March 29, 1972, at the Rocky Ford Fishing Area, below Tuttle Creek Reservoir, by David Watson of Manhattan, Kansas.

Most walleyes occupy fairly deep water, near steeply sloping banks or bars and are often associated with cover, such as ledges or brush. They often migrate to





shallow water at night. Large concentrations of walleye can be found below reservoirs in stilling basins which consistently discharge water through the dam.

Walleyes spawn in late March and early April, along dams or other clean, sloping areas with rocky bottoms and on stream riffles above the reservoir in some of the larger streams. Prime water temperature for spawning ranges from forty-five to fifty degrees. Female fish group in cooler, deeper waters until ready to spawn and then migrate to the shallow rocky areas occupied by the males. The eggs are deposited along the gravel, fertilized, and hatch in approximately two weeks. The newly hatched walleye feed predominately on small insects and crustaceans, and by mid-summer, switch to a fish diet. The chief food source for walleye in Kansas waters is gizzard shad.

Walleye have been stocked in reservoirs and lakes all across the state. Self-sustaining walleye populations are found in large federal reservoirs exhibiting fair to good water clarity where continual flooding through the reservoir does not occur. Walleye reestablishment projects have been initiated on older reservoirs where the fisheries division has been successful in negotiating water level management plans.

State fishing lakes and some community lakes have received walleye stockings, and most have developed and show promise of maintaining a good walleye population. Small lakes with lots of gizzard shad and good gravel-rock habitat show the most promise.

Now that you have put in a cold, hard winter and you are thinking about fishing and readying your gear, a calendar of good prospective fishing times will assist you.

SPRING

MARCH 1981

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APRIL 1981

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It was one of those odd spring fronts that slide over Kansas

once in a while. The wind had been strong for days but, during the morning, it died completely away. The lake was oily calm, the worst possible conditions for spawning walleye, but someone had failed to inform the walleye of that fact. We could see them rolling in the shallows up and down the dam, hundreds of fish, many of them big females that suddenly moved up out of deeper water. We slapped on our waders, grabbed our spinning rods, and proceeded to flail the water to a froth. Two or three times, I could feel big fish bumping into my legs, completely oblivious to anything but

spawning. The end of the story is obvious. We were supposed to come up the riprap with two stringers of six pound walleye. Unfortunately, nobody bothered to inform the walleye of that, either. After four hours without a single bump, we gave it up. The moral? Sometimes you catch walleye, sometimes you don't.

The walleye spawning season is one of the most popular seasons among walleye fisherman. During this time, the fish are accessible from shore, and if you hit the right combination, a limit can be your reward.

Walleye concentrate on the rip-rap faces of reservoir dams at this time of year. Other areas which may prove productive are gravel shorelines or points with gentle slopes that are exposed to wave action. Walleye congregate in these areas to spawn and can be readily caught. The average fish run a little small this time of year because the smaller male fish stay on the dam face while the larger females move in to lay their eggs and swim back out again soon afterward.

A fisherman on one of these dam faces should have a pair of chest waders, a medium or ultralight spinning rod and reel, and a large supply of maribou feather jigs. Jigs should be sixteenth or eighth ounce. A wide range of color from white and yellow to the darker shades will be effective at various times.

Wade out on the dam or rocky sloping area and cast a lot. The important thing is to keep the jig on the bottom and don't give up. Keep in mind that the fish are constantly moving in and out and up and down the dam. Many times, a stout wind blowing directly into the dam creates good fishing, but I have seen excellent fishing off the dam with no wind when the water was like glass. When there is a good wind, use an eighth-ounce jig to stay near the bottom, and when the wind lays, switch to a sixteenth-ounce jig, which will keep you from getting snagged as often. Fish where the fish should be; keep casting and make sure the jig is on or near the bottom, snags or no snags (this is where the "lots of jigs" comes in).

ON THE FLATS

MAY 1981

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JUNE 1981

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We drifted across the flats, trolling Hot-n-Tots, prospect-

ing for fish. We had picked up a few walleye, mostly in the twelve-inch range, but fishing was slow. Then we started catching crappie. They were good-sized fish, some running three quarters of a pound or better, just down out of the creeks from their spawning cover. The

walleye fishing never did pick up, but it was hard to feel too disappointed about the day with twenty crappie in the fish basket. Sometimes, you catch walleye; sometimes you don't, and sometimes, it doesn't matter.

Just after the spawn and before the fish move onto the mudflats, they effectively "disappear" and catch rates drop. Activity during this slack period seems to be variable from lake to lake and year to year. Most often, the fish retreat to deeper water sanctuaries and then migrate to timbered areas associated with the mudflats, or they migrate from the deep water directly to the flats. In either case, the fish are difficult to locate and even harder to catch.

The most productive season, in regards to number and size of fish, is when the walleye move to the flat areas. Locate the flats with a depth finder or by watching where the other boats congregate. Fish large "table top" areas, ranging in depth from five to twenty feet.

One important element in fishing this time of year is to cover plenty of water. This can be accomplished by trolling with artificial lures, such as the Hot 'n' Tot or weighted Thin Fin. Troll at a steady pace and keep the lure near the bottom. A good way to make sure you are trolling correctly is to keep the lure nudging the bottom periodically. If you aren't bumping the bottom, put on a bait that will, or vary your trolling speed.

Drift fishing is a very effective method when fishing the flats for walleye. Locate the flat and allow the wind to move you across it. Use at least an eighth-ounce jig, your choice of colors, or a quarter-ounce if there is a stout wind. Dress the jig up by looping a night crawler on the hook so that a generous portion of the worm trails behind the jig hook or trail a lindy rig with a worm. Keep this rig near or on the bottom, judging this by the frequency you feel the jig bump the bottom. If there is a walleye in the area, he'll go bonkers over this rig.

One trick that will result in more fish in the boat is not to set the hook the exact second you feel the strike. A walleye will swim up and mouth the trailing portion of the worm, and if the hook is set, the jig won't be in the fish's mouth. When you feel a series of sharp taps, wait and wait some more until you feel a steady pull, then set the hook so it crosses his eyes.

SUMMER

JULY 1981

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I had heard that a few fishermen had been taking walleye at Melvern in deep water—twenty to as much as forty feet. There were a couple of problems, though. First, it's hard to troll that deep with any normal tackle; second, we couldn't find any fish at those depths or any others

we tried. After two or three hours of total boredom, we were ready to give up. Then I hooked a walleye, a nice one, in about fifteen feet of water. Before I had a chance to gloat over the fish, both of my partners had walleye on, too. We drifted over the same spot again and took a couple of more fish. It turned out that we were floating over an old road lined with plum brush on both sides. The walleye had been driven out of deeper water by a lack of oxygen and had taken to the bushes to find shade in the shallower water. We anchored right over the plum and vertical jigged for forty-five minutes or so. That was all it took to catch three limits. All of which goes to show that sometimes you don't catch walleye . . . and sometimes, you do.

Fishing is normally slow through the heat of the summer except for white bass and channel cat, but walleye can be caught and they are; as a matter of fact, this is the time to get the big ones.

You constantly hear the phrase "structure fishing." Each species of fish associates itself with certain features in the reservoir—structure—which, for walleye, consists of gravel banks, flats, creek channels or rock piles and brush. In mid-summer, walleye are normally in deep water lying in a creek channel or around brush. Structure located in water fifteen to thirty feet deep will hold fish this time of year. The water here is cooler than in the rest of the reservoir, and it has a low light intensity.

The trick is to locate this type of structure and fish right down in the middle of it. Most often, these areas can best be located with a depth finder or by drift fishing until you pick up a fish or snag up in the brush. Walleye will not move too far from these haunts. Use a spinning or ultra-light spinning outfit equipped with eight to ten pound line. The jig and nightcrawler combination is deadly when "vertically jigged." Vertical jigging means simply locating structure, positioning your boat directly above it, and lowering the jig and worm right into the middle of it. Slowly jig your rig up and down a foot or so and cover all the structure you can reach. The strike may come as a sudden jolt, but most likely you will feel only a slight resistance or tap. Walleye are fairly slow this time of year, so give them plenty of time to take the worm, and when you set the hook, put all your heart and soul into it. Get ready for a battle because this is the time of year the big ones are caught.

FALL FISHING

OCTOBER 1981

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NOVEMBER 1981

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A Kansas lake can be a very lonely place after mid-

Our five best for walleye

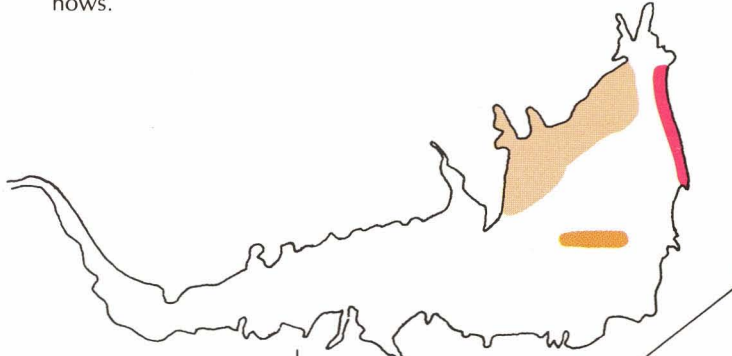
Webster

Mid-March through mid-April is the time to concentrate along the face of the dam at Webster Reservoir (red), casting jigs. The same area can be productive through June by trolling. After spawning, walleye school to the flats along the north side (orange) where drifting with jig and worm, or minnows works well from mid-May through June. During the same period, the brush still intact from a submerged windbreak (brown) offers good fishing whether trolling along the edge or still fishing with jig and worm, or minnows.



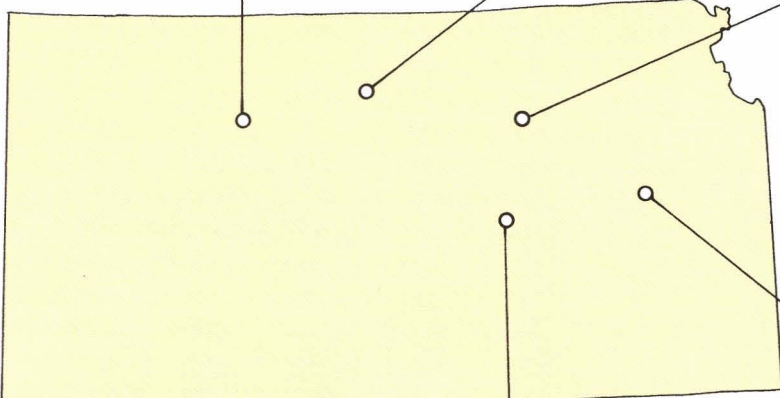
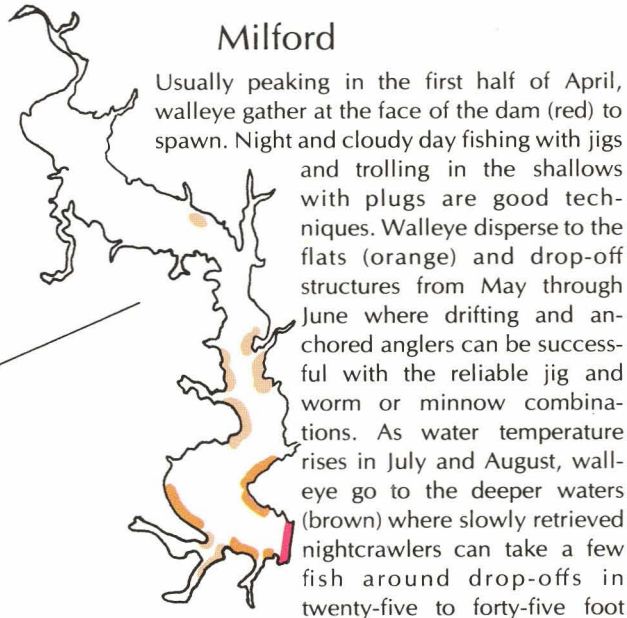
Glen Elder

During the late March and early April spawning period, anglers have the best luck fishing the shoreline in the northeast part of the lake (red); the shore from the Marina to the north corner of the dam is particularly good. The rocky bluffs on the south shore (red) are also good for the spawners, but access on foot is not as easy as on the north side of the lake. Small jigs, spinners, and shallow running plugs in one to six feet of water are all good baits. In May and June, it's the jig and nightcrawler combination, drifting across the flats (orange) that works for most.



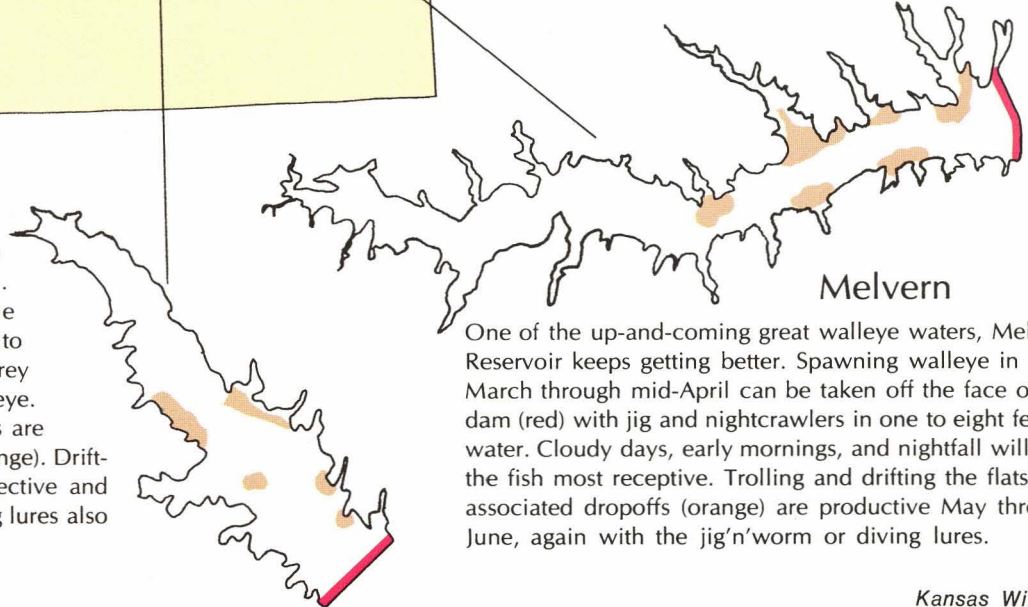
Milford

Usually peaking in the first half of April, walleye gather at the face of the dam (red) to spawn. Night and cloudy day fishing with jigs and trolling in the shallows with plugs are good techniques. Walleye disperse to the flats (orange) and drop-off structures from May through June where drifting and anchored anglers can be successful with the reliable jig and worm or minnow combinations. As water temperature rises in July and August, walleye go to the deeper waters (brown) where slowly retrieved nightcrawlers can take a few fish around drop-offs in twenty-five to forty-five foot depths.



Marion

Right off the face of the dam (red) is where Marion Reservoir walleye fishermen will have their best luck, casting jigs from mid-March through most of April. From May through June, the standing timber (orange) in ten to fifteen feet of water attract the prey species and the predacious walleye. Three other late spring hot spots are also good during this period (orange). Drifting with a jig and worm is effective and trolling in these areas with diving lures also works.



Melvern

One of the up-and-coming great walleye waters, Melvern Reservoir keeps getting better. Spawning walleye in mid-March through mid-April can be taken off the face of the dam (red) with jig and nightcrawlers in one to eight feet of water. Cloudy days, early mornings, and nightfall will find the fish most receptive. Trolling and drifting the flats and associated dropoffs (orange) are productive May through June, again with the jig'n'worm or diving lures.

September. Most Kansas anglers do not fish in the fall, and as a result, they miss out on some prime fishing.

During October and November, good catches of walleye can be made. Water temperatures have cooled and the fish become more active, prowling in search of food. These fish will be found in areas similar to the ones they inhabited in late spring and early summer. Check the mudflat areas adjacent to creek channels and the drop offs leading into deep water. In order to locate the fish, troll a diving plug or drift fish a jig-and-worm combination. Fish can be caught in the fall, so don't put your fishing equipment in dry storage after the hunting season starts. What would be more enjoyable than a morning duck hunt and an afternoon spent walleye fishing?

WINTER

JANUARY 1982

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FEBRUARY 1982

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Fisheries Supervisor Mike Cox tells a good yarn about his first Kan-

sas ice fishing trip: "I had fished walleye for years through the ice in Iowa, so I was anxious to find out how Kansas stacked up. Just a couple of days after I moved to the state, I went up to Webster to give it a try. There were a few people already on the ice, fishing crappie with tip-ups and long spinning rods. I saw that one man had a small walleye, and since I always dress the hook on my Kastmasters with a walleye eye, I struck up a conversation with him and finally asked him for one of his walleye's eyes. He looked at me a little strangely but said I could have them both if I wanted them. I cut a hole thirty or forty yards away and immediately lost my first Kastmaster and eye on a snag. With the second one, I caught five nice crappie in twenty minutes. When I pulled a three-and-a-half pound walleye up, the man who had given me the eyes sidled up to me and said, 'How the heck are you doing that?' When I came back the next day, there wasn't a walleye on the ice that didn't have empty sockets."

When the winter is harsh and ice is safe to walk on, a hearty breed of angler is still fishing. Ice fishing is a unique sport and one that can be very rewarding. All it takes is a frozen lake with good ice four to six inches thick, warm clothes and a willing participant. Your "normal fishing season" gear is quite adequate, although once you get into it, you may want to specialize with short ice rods and perhaps a tent or shanty for protection from the winds and the cold.

Mike Cox's walleye technique through the ice is deadly.

Structure is a key ingredient. Search for an area with water twelve to fifteen feet deep with a rock rubble bottom or rock pile. Terminal tackle consists of a "Kastmaster spoon," with the eyeball of a walleye hooked onto the treble hook. Use an eye from a walleye under three pounds, so the size and weight will not severely impair the action of the spoon. The spoon is lowered and jugged up and down, allowing the spoon to drop and keeping tension on the line to detect the strike. The spoon will twist and turn and slip off to the side and slowly flutter down with the strike normally occurring on the fall. The eye acts as dressing, similar to trailing a worm with a jig, and the fluids may aid in attracting the fish. The best time is just after the ice has formed and the fish are still relatively active.

If you find a particularly hot hole, make a note of the time of day and plan your next trip for that same time. Walleye seem to settle into predictable movement patterns during the winter, and the same hole may produce good fishing for a number of days, assuming that you are there when the walleye are.

One characteristic of walleye to keep in mind when fishing any of the seasons is that they are sensitive to light. Use this to your advantage and fish areas that aren't subjected to intense light—drop offs, stream channels, or on points where wind action has muddied the water. Another good idea is to fish at times of the day when light intensity is less—early morning and late evening—and don't forget about night fishing. It can prove very productive.

When walleye fishing, you need to know something about the habits of the fish and their preferences regarding food, water temperature and the bottom structure they associate with. To sum it all up, you need to fish where the fish are. The most important element of fishing success is the angler and the time he puts in, so get out on the lake.

One of the most important annual duties of Mike Theurer's fish management section is netting walleye for use in egg production. Some of the walleye eggs are used for in-state stocking, but because Kansas walleye populations are generally self-sustaining, many of the eggs are used in trades for other game fish from different states. The walleye netting is a great way to find out where the fish are, and Theurer and his staff have been known to do additional research with their fishing rods while off duty. In fact, it has been said that one of the most effective conservation moves the Commission has ever made was to move Theurer out of the field and saddle him with paperwork to cut down on his hunting and fishing.

Doug Schermer is a frequent contributor to KANSAS WILDLIFE's fishing spreads. Although still in his early twenties, Doug is rapidly gaining recognition. One of his walleye recently appeared in a nationally published promotion for Dardevle.

