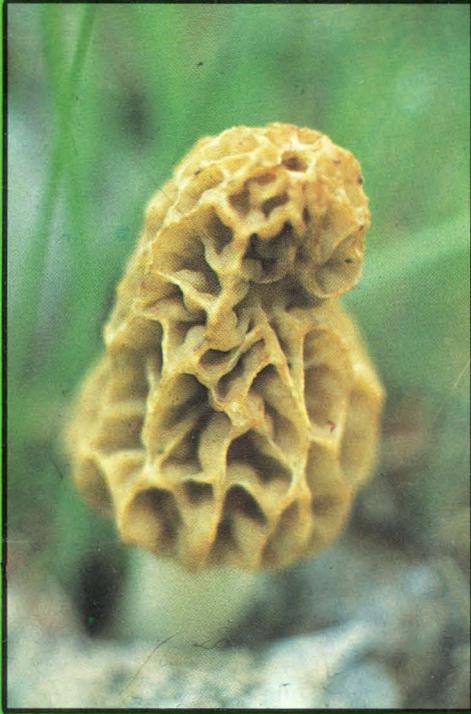


KANSAS

FISH & GAME



March-April 1976

KANSAS FISH & GAME



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Vol. 33, No. 2

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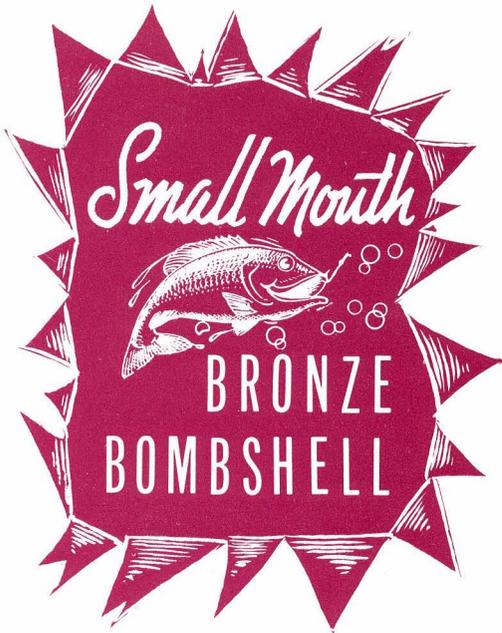
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By George Anderson
Staff Writer

"HE IS PLUCKY, game, brave and when hooked, unyielding to the last. He has the arrowy rush and vigor of a trout, the untiring strength and bold leap of a salmon, while he has a system of fighting tactics peculiarly his own" . . . said Dr. A. J. Henshall in describing the fighting characteristics of the smallmouth bass in *Book of the Black Bass*.



Anderson

Henshall completed his description by saying, "I consider him inch for inch and pound for pound, the gamest fish that swims."

Now — you countless legions of largemouth bass fishermen will probably fall down in a pile at that last statement, "the gamest fish that swims," but don't pass judgement until you can prove it wrong. Meet the smallmouth on his own ground and I think you'll agree—he's one mean critter when attached to the business end of your favorite rod. Another good point is the fact that Mr. Smallmouth is alive, well and living in Kansas.



The first encounter this writer had with smallmouth bass in Kansas was during the summer of 1969. During this period I was a state game protector stationed at Ellis and Cedar Bluff Reservoir was in my district. Cedar Bluff is located on the Smoky Hill river in Trego county and is a deep, clear, beautiful lake managed by the Bureau of Reclamation for irrigation and flood control. Located below the dam is Cedar Bluff National Fish Hatchery, operated by the U. S. Fish and Wildlife Service, a division of the Department of the Interior.

I caught my first smallmouth at Cedar while fishing for white bass with Leon Eveleigh, owner and operator of Sport Haven Marina. We were trolling off the dam when my beetle-spin lure promptly came to a halt. Cutting the outboard motor and letting the boat drift free, Eveleigh settled back in the seat with a casual "Get after him."

"I've caught my share of white bass many times, and have always been of the opinion that they are about the fightin'est fish in the pond, but this was ridiculous. In the next minute that fish did more tricks under the water than a monkey can do on

a mile of grape vine. He ran away from the boat, came back to the boat, went sideways and finally came out of the water with a display of tail-walking that was unbelievable.

My first look at the fish when it broke water was at best a disappointment. The fish wasn't big. In fact it wasn't even a keeper. After another short run I lifted the fish into the boat. "Smallmouth," Leon laughed. "Hatchery boys put some here once in awhile. Scrappy rascals ain't they?"

I agreed as to how they were scrappy and released the three-quarter pound bass back where he came from.

Being new to the area I quizzed Leon about the smallmouth bass and how they happened to be at Cedar Bluff. "Like I told ya, the hatchery below the dam raises 'em and they started putting a few in Cedar some years ago to see how they'd do," Leon repeated. "Fishermen don't catch many of 'em, but they show up from time to time. Walleye and white bass are the favorites here. I doubt if the majority of the fishermen even know what a smallmouth is."

"Yeah I doubt it," I agreed and dropped the subject, not wanting to let Leon know that I was one of those that didn't know either. I am sure he

knew it anyway by that silly, little smile that crossed his face as he started the boat.

Not wanting to get caught with egg on my face again I decided to find out all I could about the smallmouth bass. Now don't get me wrong, I had been a game protector all of two years and had certainly heard of a bass called a smallmouth. I've also heard of a white shark but never seen one of them either. I did realize that in order to enforce fishing regulations on Cedar Bluff I had better learn about this smallmouth bass as the limit was 10 and they lived here.

First of all you have to be able to identify a smallmouth bass in order to confirm it for a record. This bass is very similar in appearance to the well-known largemouth bass at first glance but closer observation shows the difference.

The smallmouth bass, contrary to popular belief, is not a bass. It is a member of the sunfish family. According to Cross and Collins in their book *Fishes in Kansas*, there are twelve kinds of sunfish that live in Kansas. These are conveniently divided into three groups. One group consists of the black basses (largemouth, smallmouth and spotted bass, genus *Micropterus* they grow larger than other sunfish, are more slender than the other members of the family, and are the most prized as game fish.

Scientifically the smallmouth is known as *Micropterus dolomieu*. It differs from the largemouth mainly in appearance and requirements. The upper jaw of the smallmouth extends approximately to the center of the eye, while the largemouth's upper jaw extends past the eye. The smallmouth is not marked with the dark lined side, like the largemouth, but rather by a row of vertical stripes. He is more streamlined in appearance and is frequently a brown or bronze color.

While the largemouth bass can be found statewide and in most types of water habitat, the smallmouth is more demanding on his living conditions. According to Cross and Collins' book *Fishes in Kansas*, smallmouth bass inhabit clear, cool, rocky streams in the southeastern corner of the state, and have been introduced into reservoirs elsewhere. Most introductions have

failed, probably due to the competition of largemouth bass that were already established. In streams, smallmouth bass usually occupy pools, especially those having undercut banks, boulders, or fallen trees as cover

The spawning process of the smallmouth bass is described by Harlan and Speaker in their book, *Iowa Fish and Fishing*. The actual spawning activities commence when the water temperature reaches about 60 to 65 degrees. The males construct the nests on gravel, coarse sand, or rock bottom. They are saucer-shaped depressions from 14 to 30 inches in diameter, fanned out by vigorous movements of the tail fin. Nest completed, the male selects a 'ripe' female and drives her to the nest by nudging or actually biting her about the head or body.

The smallmouth is by nature a sight feeder, showing a preference for aquatic creatures such as crawfish, minnows, and other fish found in streams and lakes. Early morning and late evening are the best times to find this bass on feeding patrols.

The rip-rap dam at Cedar Bluff reservoir is a favorite hang-out for the smallmouth that inhabit this lake. Fishing for white bass in the spring from this area accounts for many of the smallmouth caught at Cedar Bluff. A number of anglers have dropped

their lure in the water while they straighten a back-lash or kink in the line, only to have a smallmouth come out of the rocks and do it for them.

Establishment of the first state record smallmouth bass came very shortly after the word was out that no record was on the books. Clyde Mong of Ogallah, trolling on white shyster lure at Cedar Bluff reservoir was to become the first record-holder of a smallmouth legally caught in Kansas. Clyde caught the little bronze-back on September 9, 1969. The legal weight on scales at an Ellis grocery store was 11¼ ounces. Not big—and Clyde knew it. But it was a start.

Nobody expected an 11¼ ounce fish record to stand for long—and it didn't. On October 4, 1969, a Wichita fisherman, P. R. Gempler, fishing North Otter creek in Greenwood county, landed a 1-pound 3-ounce smallmouth and the state had a new record.

The ink was hardly dry on Gempler's certificate when a Hays, Kansas, angler, T. L. Wenke, brought the record back to Cedar Bluff with a 2-pound 3½-ounce catch on a reflex minnow. The Greenwood county record had lasted only 17 days.

The current state record smallmouth is owned by Mrs. Max Bell of Norton, Kansas. Her 2-pound, 9½-

The smallmouth bass is characterized by a series of vertical stripes on its side, while the largemouth is marked with a dark stripe on its side.

Ken Stiebben



ounce bass was taken at Norton reservoir in May 1972 with the aid of a Yellow Agitator lure.

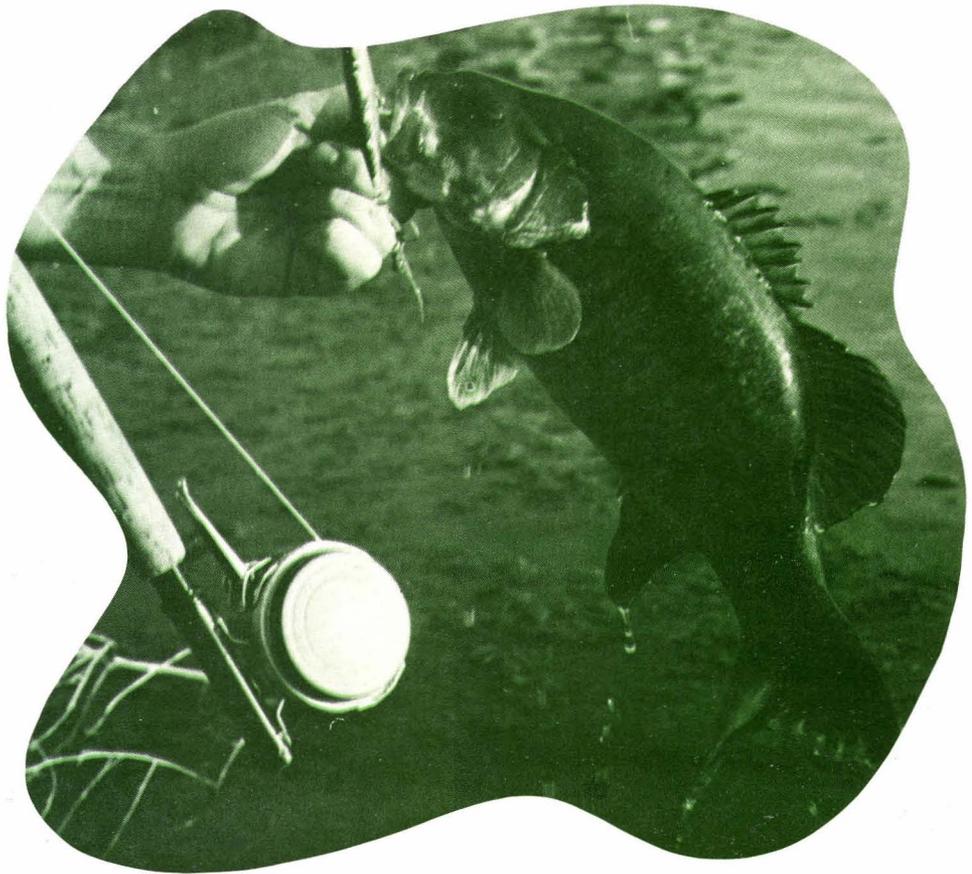
Information in the files at commission headquarters shows the current world record smallmouth bass standing at 11 pounds, 15 ounces. This fish was taken on July 9, 1955, from Dale Hollow Lake, Ky. Remembering my three-quarter pounder at Cedar Bluff and the tricks he pulled, I can't help but wonder what a smallmouth weighing almost a dozen pounds could do to your nerves. One thing is certain. In order to have big smallmouth, you have to start with little ones and that's where the National Fish Hatchery at Cedar Bluff comes into play.

The Kansas Fish and Game Commission has no active smallmouth program currently underway in the sunflower state. In past years a few smallmouth were raised at the commission hatchery in Pratt but the program was dropped. The demands made upon the Kansas fishery division to produce channel catfish, largemouth bass, walleye, northern pike and more recently striped bass have become dominant over the smallmouth bass.

Cooperation between the U. S. Fish and Wildlife and the State Fish and Game Commission is the result of smallmouth bass being stocked in Kansas water. It is through the efforts of the National Fish Hatchery at Cedar Bluff that Kansas anglers can enjoy the thrill of catching this "Brown Bomb Shell," the smallmouth bass.

Cedar Bluff National Fish Hatchery was established in 1959 to provide fish for western Kansas, eastern Colorado, and portions of the panhandles of Oklahoma and Texas. The major production at this hatchery is largemouth bass, walleye, channel catfish, northern pike and smallmouth bass.

The federal hatchery, like the Kansas Fish and Game, is finding the demand for fish is exceeding the supply. "Last year we supplied fish to 17 western states, including Hawaii," said Jim Hudson, hatchery manager at Cedar Bluff. "Smallmouth production is important at our hatchery, but compared to other species of fish we



Ken Stiebber

The excellent fighting qualities of the smallmouth are obvious if you've ever landed one on a flyrod.

just don't raise that many. In 1975 we supplied 80,000 young smallmouth but that number is spread pretty thin, considering the request for this fish."

Several years ago, at the Cedar Bluff hatchery, Marvin Smith, biotechnician at the federal hatchery, came up with an idea that has been of great help in smallmouth production. Smith developed a smallmouth bass spawning box which allowed hatchery personnel to pick up the tiny fish shortly after hatching. Greater numbers of the young bass were recovered using Smith's idea.

"Marvin's idea really helped," Hudson noted. "He received an incentive award from the department for his efforts."

Of the 80,000 smallmouth hatched at the federal hatchery during 1975, Kansas received 5,000 of the fish and was happy to get those. These fish were transported by Kansas fishery biologists and released in Milford reservoir in north-central Kansas. This stocking supplemented the 1973

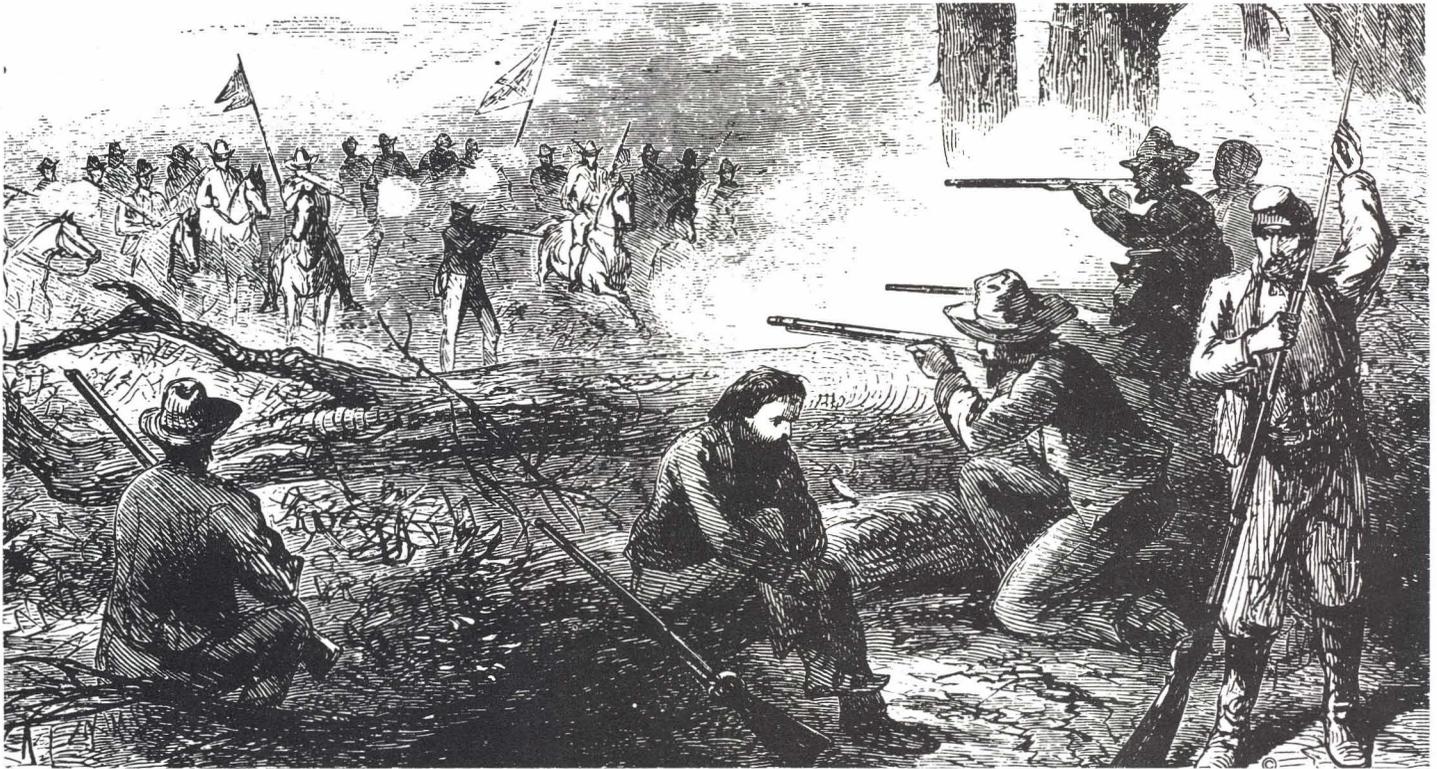
stocking of 20,080 smallmouth at Milford.

Persons wanting to try their luck at catching a Kansas smallmouth have, for the most part, three locations to consider. "Since 1964 our hatchery has cooperated with the Kansas Fish and Game Commission in stocking 74,000 of the fish in Kansas water," Hudson noted. "Aside from the Milford release, Norton and Cedar Bluff are the only reservoirs to receive the smallmouth. A few were released in Otter Creek in 1965, but the greatest number have been released in those three reservoirs."

Several things are a certainty about this fish we've called the "Bronze bombshell of Kansas." If you're at Milford or Norton reservoirs and catch a smallmouth bass, it began its life below the dam at Cedar Bluff in that federal hatchery. If you're honest, and all fishermen are, you'll have to agree with the description that Leon Eveleigh gave to me in 1969, "Scrappy rascals, ain't they?"

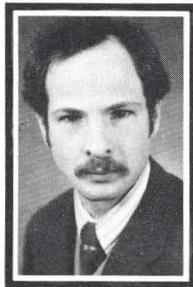
BLACK POWDER

is Back



IT WAS not quite that total darkness of night, but the only indication of oncoming day was a faint glow in the eastern Kansas sky. The commotion and stir that lends substance to daytime had not yet started.

The two hunters stepped silently down the rutted road in the woods, watching for sign and looking for a small gathering of shag-bark hickory trees that should have been a promising sight to sit and wait for squirrels to emerge from the trees.



Wellborn

By Bob Wellborn
Staff Writer

Their shots had to be clean. There could be no question when they took aim and filled the woods with the BOOM of their caplock rifles and filled the air with the acrid smell of sulphur and charcoal, smoke and the spouting flash of a flaming cloth wadding encasing a .36 caliber lead ball.

A hand signal and the hunters moved into a good spot.

The difficult part of the hunt was just beginning. The mosquitoes started buzzing as the hunters sat silently. The impulse to slap at mosquitoes buzzing in their eyes and ears was maddening to restrain, feet and

legs were cramping and the only sound or movement in the woods was the mosquitoes—no game yet.

Twenty minutes crawled by in the growing light and it seemed like twenty hours. But the wrist watch said twenty minutes.

The hunters were not plainsmen whose lives depended on their sharp eyes and speed with a rifle, but their appreciation of how life could roll over a man one hundred fifty years ago on the Kansas plains was as keen as man's striving for survival on these plains one hundred fifty years ago.

"What it is, it's just a challenge. You're sitin', waitin' for that one clean shot," Jack Puett said about muzzle loading hunting.

"The idea behind my black powder hunting is, I want to get back to hunting like my grandfather and great-grandfather did," he said.

The hunt was over, the sun was high and the two men had taken a squirrel each. Not much to put on the dinner table, but that wasn't what they had in mind anyway. They had seen and watched far more squirrels than they had shot at.

The hunters didn't try to trek to the rendezvous site to meet with several other black powder hunters, but drove, breaking the feeling of traveling back in time and away from the present.

While they drove, Jack Puett pointed out the land around Valley Falls at the upper end of Perry Reservoir. "Around here was where Daniel Morgan Boone built his cabin and raised his family. His boy was the first recorded birth of a white child in Jefferson County.

"If you look for them in that valley over there, you can find all sorts of Indian relics. This area is alive with history." He talked of past Army posts and towns that lived and died within the county. Towns and posts that no road map shows today.

They pulled up to the rendezvous and got in on this story . . .

"I was just sittin' there, waitin' and here come these two squirrels, chasin' and playin', roudin' every stump and tree they came to. I had my rifle layin' acrost my knee, and when they passed me one of them stopped just about three feet from me. Just dead stopped—I just sat while he was sittin' and lookin' straight up my gun barrel," the man said.

He wore a fringed buckskin-looking

shirt and a floppy felt hat. He was the picture of the typical mountain man with his possibles bag slung over one shoulder and his powder horn hung from the other shoulder. His flintlock rifle was completely handmade, engraved and, in a word, beautiful—in every detail. His rough and dark complexion only added to the aura.

"I figured him for a perfect head shot, pulled the trigger and damn! A flash." The gun had misfired.

"He zipped off through the brush, but he shore looked amazed for a second there."

"I'll bet you 'shore looked amazed' when that rifle flashed, too," said another of the men gathered at the rendezvous, listening to the hunter's tale.

This rendezvous was a sort of modern-day likeness to the rendezvous of the 1820s and 1830s. It was a time when the mountain men gathered for one month in the summer to replenish their supplies, sell their furs, gamble, drink, chase any nearby Indian women and sometimes die before spending all the money they had earned and returning to the mountains.

The rendezvous was also an excellent chance for neophyte trappers to learn about trapping, learn how to handle the Crow and Blackfoot Indians and hear tall tales of adventure.

One of the greatest trials for historians now is to unravel the stories of the mountain men trappers of the time. Some books are available that tell true stories about the mountain man, but time and campfire embellishment have distorted the facts in others. They are all exciting reading.

The organization of the fur trade made the mountain man, or free trapper, that most people think of today. Organized by William H. Ashley and Major Andrew Henry, they soon came to be known as "Ashley men."

Ashley did not hire the men at a fixed wage, but first transported them from St. Louis to the Rockies with their supplies and cash in exchange for half their furs. Later the rendezvous were announced and at that time Ashley was to take all furs collected in exchange for whiskey, food supplies, knives, powder, shot and rifles at highly inflated prices.

The Ashley men developed a culture of their own, trapping for beaver in the spring and fall, wintering in the mountains and arriving at the rendezvous in the summer.

The life required a knowledge of the Indians. Some of the free trappers lived with the Indians. This was encouraged by the traders, because it opened new sources of furs and a new demand for "foo-fa-raw" for trappers' wives and children.

The Ashley rendezvous were in such places as Henry's Fork on the Green River in Utah, Cache Valley on Bear River in Utah, Pierre's Hole in the Tetons and Green River in Wyoming.

When the demand for fur dropped due to economic reasons or a fashion-shift from beaver felt to silk hats, the mountain trappers had only to hang on and hope for the price of the pelts to rise again. Some of them tried returning to St. Louis or settling down on a farm, but few ever lost the unexplained urge to be alone in the mountains, playing a deadly game of tag with nature.

The use of black powder and muzzle loading rifles is climbing nationwide and Kansas is no exception.

Bob Wellborn



Others guided wagon trains of settlers across the land that was virgin and unexplored when the trappers first crossed it.

They saw the end of their way of life with the coming of the settlers and civilization, but with no demand for fur and a tremendous decrease in beaver, they had little choice but to succumb to civilization.

Jack Puett and Jake Howser and many others of the black powder shooters are historians of Kansas. No university or museum has hired them for their knowledge, but they make it part of their black powder shooting to understand why history happened the way it did.

Jack and Jake are members of the First Santa Fe Trail Plainsmen. Jake is president of the group. They are part of the National Muzzle Loading Rifle Association which claimed 18,000 members in 1974. There are 300 NMLRA shooters in Kansas, and far more black powder shooters in the state not belonging to any particular black powder club.

The man with a Remington 700 .243 caliber rifle may laugh at these black powder shooters as serious marksmen or hunters, but not within fifty yards with iron sights. The "charcoal burners" are as accurate as any high-powered rifle within that range. And that is what the "new" style of hunting is all about. The sport of hunting really becomes a sport when the ranges are reduced and the probability that the rifle will go off is reduced if not treated with care.

The black powder shooter today generally shoots a replica of a rifle manufactured over one hundred years ago. If he owns an original, he probably keeps it tucked away in the gun cabinet and rarely if ever shoots it.

Among the most famous of the black powder caplock rifles are those manufactured by Jacob and Samuel Hawken in St. Louis and Denver. Mountain trappers such as Jim Bridger, Kit Carson, Mariana Modena and Livereating Johnson all carried them.

"The Hawken brothers took great pride in their rifles, and you can bet nothing went out of their shop that did not meet their approval. . . .

"Hawken rifles were used by men who played a large part in the development of improvement in the rifle itself. A Missouri ridge-runner turned Rocky Mountain trapper had no qualms about telling a Yankee gun tinkerer what he wanted when he brought in a rifle broken through the wrist from a fall from a horse, or one with the trigger guard torn away from a hand-to-hand scuffle with a a redskin. If he wanted a bigger caliber rifle, you can bet Jake and Sam went to work to make him what he wanted. Improvements in the Hawken were rapid because each change was brought about to satisfy customer demands, and as proven sound in use, were incorporated into succeeding rifles as a matter of course," said John D. Baird in his book, *Hawken Rifles, the Mountain Man's Choice*.

Jake and Sam Hawken's attention to the latest developments in rifle manufacture makes the dating of Hawken rifles an easier task.

"To compare a Hawken rifle to a J. Henry or a Leman trade rifle would be equal to today's comparison between a fine custom built rifle and a cheap mail order gun," Baird also wrote.

Amazingly, these fine, hand-built rifles sold for \$25 to \$40.

A Hawken, a few beaver traps, a knife, powder and lead; pipe and tobacco; a little flour, coffee, tea and salt were the basics for going into the Rocky Mountains. Why? The historians are still working on that one, but for now it might be that whatever drives a man to solitude, death and his own personal suffering as a way of life, or complete freedom, that must be the answer. . . .

Today's black powder enthusiast usually shoots a replica of the early day rifles.



Bob Wellborn

Hooked

ON CRAPPIE

By Farrell Brewer
Staff Writer
and
Tom Giffin
Fisheries Biologist

TODAY IT is not uncommon for a person to become hooked on something. Its definitely not uncommon to find sunflower anglers young, old male, female, agile or fragile hooked on crappie fishing.

I have been hooked on crappie fishing for several years. Following my acquaintance with Tom Giffin, a fisheries biologist for the Fish and Game Commission, addiction would better describe my love for crappie.



Brewer

Why? Probably because Tom gave me a clear picture of the habits, life history and angling techniques for crappie.

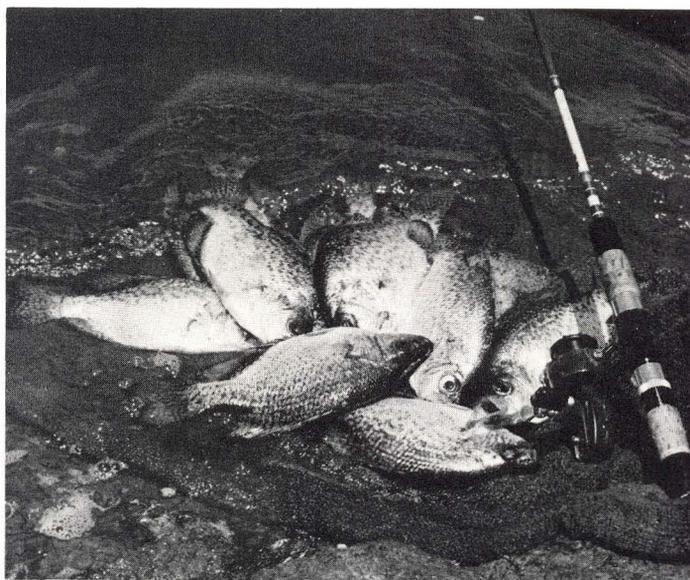
The white crappie is a silvery-olive fish shading to green or brown on the back and can be found in every major reservoir in the state and some impoundments that fish and game biologists would rather not have them. The black crappie is also a silvery-olive fish with a dark back and numerous green or blackish spots irregularly spaced over the sides. The best way to tell the difference between the two is the black has seven or eight spines in the front portion of the dorsal fin and the white has only six.

Tom said crappie spawn in the spring when water temperatures range between 65 and 68 on the surface. Before the water warms to this mark, usually in late March and early April, crappie move from deep to shallow water with thoughts of love on their minds, looking for spawning areas.

Shallow brush and rocky areas, one to six feet deep, attract spawning crappie. Hundreds of them may converge on one general area in any given body of water. Seasoned fishermen know this and take huge stringers of crappie from boat or bank in one single location.

It's during the spawning process that most crappie are caught in Kansas. Although good fishermen can find them almost any time of the year.

Fishing shallow areas in the spring, using minnows will usually produce fish. A depth finder can be used to locate brush piles, other structures and schools of crappie. After locating these areas drop a minnow over the side and begin fishing. I usually vary the depth of my minnow until I locate the fish and then continue fishing at that depth. There is no limit on the number of crappie that can be taken from Kansas waters.



Ken Stiebhen



Another technique that has proven successful during the spawning season is dabbling. This can be accomplished using a long cane pole with a short line attached. The pole allows you to reach your line back in around brush and stick-ups that are impossible to cast into. Dabbling is simply moving your bait up and down.

Whether dabbling or using a conventional method for catching crappie don't overlook "the jig." This little lead-headed bugger comes in weights from one thirty-second to one-eighth ounce and has caused the demise of many a crappie. The jig is simply tied to the end of a line and provides enough weight for casting. It contains a hook which is imbedded in the lead head and is generally surrounded by maribou feathers.

In the water the jig resembles a minnow. By pumping a rod tip up and down the jig takes on the action of a swimming, wounded or darting minnow which entices the crappie.

Do large catches in the spawning season threaten the population? Not according to Tom; research shows a

half-pound female is capable of laying from 20,000 to 60,000 eggs, though the number varies from fish to fish, and lake to lake. Biologists have taken as few as 3,000 eggs from an adult female and as many as 158,000. Facts point out that angling pressure does not affect crappie populations.

Anglers, for years, have been baffled by severe fluctuations in crappie populations at their favorite lakes. Too many predator fish, pollution and overfishing are many times blamed. Truth is, population decreases are many times caused by crappie themselves.

In a good year, when spawning and food conditions are ideal, crappie will produce a large hatch of young fish. This brood will become a dominant year class. In future years, the dominant year class will devour its own young as well as other fish.

Crappie are relatively slow-growing and short-lived, seldom surviving more than four years. Usually growing two to three inches the first year; five to eight inches in two years; nine to fourteen inches by three and four-

teen plus inches in four. Growth rates are directly related to the availability of food. Crappie need an adequate forage fish to prey upon. Gizzard shad can fill this requirement to some extent.

Gizzard shad seem to do well in large impoundments, 500 surface acres and larger, but do not fare so well in smaller bodies of water.

Under ideal conditions when gizzard shad spawn throughout the warmer months a continual supply of fish small enough to be used as food by crappie is available. However, many years shad only spawn in the spring and these fish soon grow too large for crappie to eat. When this condition exists, crappie must find other sources of food—other crappie or other fish species.

When a dominant year class is making its life cycle, other year classes are utilized as a food supply. This may be part of the answer to the fluctuation in crappie populations. Biologists have contended for years that the crappie is a cyclic species. In other words there will be good years and then the fishing will drop off and then peak again.

Crappie prosper in larger bodies of water because larger supplies of food fish are available and there are more predator fish to control crappie populations.

With all the plus factors in the life cycle of the crappie, being able to control their own numbers, providing food for other fish, etc., it seems that the crappie would do well in all waters.

Perish the thought. I made a statement similar to this and Giffin threatened to use me for fish bait. He maintains crappie have their place but their place is certainly not in impoundments under 500 acres.

As stated before crappie are prolific breeders, so prolific in fact that a pond or small lake can become overpopulated with them in a short time, causing the fish to become stunted and have eyes as big as shooter marbles and so thin you can read a newspaper through them. Stunted crappie are a result of overproduction, low food supply and a lack of enough predator fish.

Crappie stocked in any body of water may initially exhibit desirable growth, but once they spawn the stunting problem becomes evident. Stunted crappie not only compete with each other, but compete with panfish and bass causing these to decrease in number and growth, which is undesirable.

Let's take a look at a three-year-old crappie in various sizes of waters. In a pond a three-year-old crappie will average six inches and make up a large percent of the population. In a small lake they will range between five and seven inches and also comprise a large portion of the population. In a reservoir three-year-old crappie will range from nine to fourteen inches. From this it is easy to see crappie do better in larger bodies of water. The point is, and it can't be stressed enough, crappie are detrimental to the population in smaller impoundments.

By now you should realize that neither Tom nor I care for crappie in small impoundments. Our feelings are shared by many others. If you want to catch good sized crappie we recommend you visit one of the many reservoirs in the state.

Where do the crappie go when their spawning activity is completed? The adults move to deeper waters and concentrate in submerged brush and rocky areas. Learning to locate areas of this type will improve your success in late May and early June.

Fisheries biologists have found that brush shelters (fish attractors as they label them) have been successful in getting the fishermen and fish together. In many reservoirs where suitable cover is not available fish and game commission employees are placing man-made fish attractors. These need to be properly constructed to do the job. Indiscriminate dumping of brush or building shelters is generally wasted effort and causes navigational hazards and eyesores. If you are interested in fish shelters in your favorite lake, check with the biologist assigned to the area for permission and instruction on proper construction.

As stated earlier, crappie may be caught throughout the year. During the summer, fishing really slows up,

but during the fall fishing for crappie picks up again. They will be found in the same type of areas they were during the prespawning and spawning season.

Bait and hook selection are very important in crappie fishing. Select a bait minnow not over two inches. Minnows larger than this are too large for crappie to get in their mouth and smaller minnows will be knocked off by smaller crappie.

While still fishing I prefer a hook size eight or ten hooked through the minnow by running the barb through the back just behind the dorsal fin. Avoid sticking the barb too low or you will sever the backbone and kill them.

Just hook them through the skin and they will be lively for a long time. Hooked like this the minnow will perform in a lifelike fashion.

Crappies are a schooling fish; this means where you catch one there are more to be caught. Mark your position and check your line depth on the first one and go right back as there should be more caught in the same spot.

Bobbers are an effective tool for

for maintaining a depth setting. I prefer a slip bobber; to rig up for this you simply determine the depth you want to fish, tie a piece of dental floss on your line at this point and place the bobber below this. Many bobbers are made so they will slide in one position of attachment; usually I have to close the eye of the bobber to prevent it from passing the dental floss.

Many crappie fishermen fish from a boat. If you are going to use a boat use a quiet approach when you near your selected area. Cut the motor and slip in; if you have a partner you may talk but avoid kicking the bottom of the boat with your big feet.

Remember in late March and early April the crappie are beginning to move into the shallow areas for spawning. After the spawning is completed in late May or early June they move into the deeper areas of the reservoir. Then there will be a period in the summer that they are hard to find. In the fall as the water cools they will be moving back into the shallow areas.

Be careful or you will become as addicted to crappie fishing as I did.

Fish tagging is another tool which helps the biologist gather data on crappie.



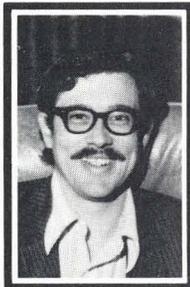
Ken Stebben

Fishin' in my pond is LOUSY!

By Bill Scott
Staff Writer

BIG DON Gabelhouse was musing about the attitudes of landowners toward their farm ponds.

"Farm pond owners view their ponds much as they look at outer space," Don said, eyes twinkling. "Instead of applying the rules of nature, they apply their imaginations! So often, they have a little body of water and they think fish should do well no matter how many they throw in. Actually," the district fisheries biologist continued, "the same principles apply to a farm pond that apply to a feedlot or an agricultural crop."



Scott

Just about every pondowner either has had the bitter personal experience of fishin' going to pot in his pond or knows of a neighbor's farm pond that has gone there. There may be as many reasons as there are ponds in Kansas; then again, there are some common strains that run through the collapse of a pond's sport fishing. Let's look at 'em.

The Big Three of Kansas farm ponds are bass, bluegill and channel cat. This trio provides the best balance of sport, size and proportionate population. However, a pondowner who tosses in these three with bright hopes for draggin' out braggin'-size bass in the next two years and doing so for four years running is doomed to disappointment. Within a few years, if he doesn't understand what these species require to thrive, a pond can be so totally messed up only complete rehabilitation will bring it back.



It's a good idea to release young bass in the 12-15 inch class since bass in this size range keep the bluegill population in check.

To get a pond off on the right foot, fingerling channels and bass need to be stocked at about 100 per acre. Bluegill, the food fish, should be stocked 500 or more per acre. And if there's an existing adult fish population in that pond, you're simply pouring those precious little fingerlings down the tube. They make a nice snack for a hungry adult fish of any species.

As Don explained it, an out-of-balance farm pond has been victimized by one or more of three factors: Muddy water, vegetation or problems in population dynamics.

You're wasting time and money stocking bass in a pond that has turbid or muddy water! Here's the test: Put your hand in the water up to your wrist. If you can't see your fingertips, it's too muddy for the bass. They can't see to feed on the bluegill, which overpopulate as a result. About the only thing a farm pond is good for (when it's that stirred up) is channels and minnows.

Vegetation is a natural consequence of a pond's aging—but as time goes on and if there aren't control measures used, that stuff will hide the bluegill and away goes the bluegill population once again.

Last but perhaps most important is a breakdown in population dynamics. Here's an oversimplification, but as the illustration indicates, leave those 12- to 15-inch bass alone! Don, the artist, purposely put the hog's face on that leering fisherman. Mr. Bass Hog has just succeeded in darn near wiping out the population balance in that farm pond.

It's true. The pondowner gets fish commercially or from the Fish and Game Commission and he's anxious to catch those fish. He hits—or somebody fishing his pond hits—the bass real hard right away, say after two years. Bass are around a foot long then and highly vulnerable to the lure. A pond can actually be overharvested within a matter of hours or days at most. "What it gets down to," Don said, "is how good that bass tastes to you in the frying pan. Does it taste good enough to sacrifice a quality sustained fishing future?"

Bass are the Policemen, if you will, of the Pond. They won't spawn until two years of age, but each year after the second, they will. But—the spawn won't reach predator or catchable size for three years, so the original stock will have to carry the burden of keeping the bluegill under control, as well as support the bass harvest for the first five years after stocking. No bass should be taken for the first two years after stocking. After this time, bass may be harvested but must be done judiciously.

Studies have shown that a harvest of any more than 25 bass per acre per year results in an out-of-balance fish population. The policeman has been stripped of his "enforcement powers." It's a good practice, also, to release all bass under 14-15 inches for the first five years after stocking. After five years, new year classes of bass will have entered the picture.

Sometimes—only sometimes—bass will overpopulate. You can tell this if you're catching mainly 12-inch stuff and smaller after several years. If this is the case, Gabelhouse and Tom Berger, also a district fisheries biologist, recommend you reduce the numbers of bass less than 12 inches long by angling. Continue to throw back those in the 12-15-inch bracket as

they must be present to keep the bluegill in check. Keep those more than 15 inches long.

Tom, as a result of his experimental feeding program for channels and bluegill conducted this past summer on Pottawatomie State Fishing Lake #2, believes forage is the answer. If natural forage is not present, Tom believes this can be supplemented by using artificial feed available from Purina. Either an automatic or demand-type feeder may be used; it's about \$175 for an automatic feeder and up to \$50 for demand feeders.

If you're right in the middle of a bluegill-gone-wild situation on your pond and have no bass left, you might

consider stocking some good-sized bass. Leo Dowlin, northeast regional fisheries supervisor, said "A pondowner can stock either fingerling or short-size bass. If he wants sport fishing sooner, he might pay the extra money and get shorts. But either size will eventually control the overpopulated bluegill with proper management."

Well, if bluegill cause so many problems, why stock them in the first place? Because bass need them to feed on, and in a well-managed pond bluegill do provide an additional sport fish when the bass and channels are not hitting. Any fisherman who has battled the pugnacious little scrap-

Bass hogs like the one pictured here, can upset a pond's balance by keeping too many small bass. (Art by Don Gablehouse.)





pers on a spinning or flycasting outfit when the big bass are sulking know what I'm writing about.

Many pondowners also get cute ideas about what to stock in their pond. Don comes a little unglued when he talks about stocking crappie in ponds in particular. "A lot of people like to stock 'em because they fish the reservoirs and like the crappie's style. But crappie spawn nearly a month earlier than bass and these young of the year crappie are too large for young of the year bass to feed on and control effectively. They'll compete with bass for food and eat young bass. They don't belong in a farm pond!" Don stated emphatically. "Crappie work in reservoirs because gizzard shad are plentiful there and they're a better food fish for crappie." And gizzard shad don't adopt to farm pond life because they thrive in large, open waters like reservoirs.

Other species commonly stocked include green sunfish, carp and bullheads. Green sunfish—don't mistake 'em for bluegill!—compete with bass and bluegill for food and space. They also have a tendency to overpopulate. Bullheads also run wild, overpopulate and muddy the pond, thereby fouling up the bass feeding.

Allowing cattle to drink directly out of your pond is a mistake for fisheries management too. Cattle, as they drink, muddy and sometimes pollute the water and disturb nests of game fish. Instead, install a trickle tube running through the dam. Fence the pond, keeping the cattle out and allow them to drink below the dam.

Did you know that putting milk cans or tire reefs in your pond to encourage channels to spawn is a mistake? Another one of those deals where our efforts to help out just make it worse—because one female channel cat is fully capable of spawning 30,000 young in a one-acre pond. Likely, they'll stunt at about six inches with thousands of tiny channels overrunning the pond, especially when bass populations are low or absent. It's best to maintain good populations of bass and supplementally stock catfish.

A farm pond isn't outer space. It responds to sound management just like a half acre of wheat or corn or milo. Apply the rules of nature and happy days will be here again!

Placing old cream cans in your farm pond for channel cat reproduction is a mistake. You're liable to end up with a population explosion of stunted channels.



Ken Stiebben

WHIP

TWO YEARS LATER

PAT SAUBLE, a Chase County rancher, believes in wildlife management and saw the need for improving the living conditions for bobwhite quail, prairie chicken, waterfowl and deer on his ranch southwest of Cedar Point.

Having heard about WHIP, the Wildlife Habitat Improvement Program sponsored by the Kansas Forestry, Fish and Game Commission, he applied for technical assistance to the South Central regional Fish and Game office in Newton.

While investigating what WHIP had to offer, Sauble discovered that two of the agency's objectives coincided with his needs. These are to develop and implement a wildlife habitat improvement program and to improve the level of appreciation of wildlife, as well as an understanding and acceptance of sound wildlife management principles by all segments of the Kansas public.

Bob Naney, district game biologist, called at the Sauble Ranch to visit with its operator and assess the wildlife potential. He learned that most of the acreage was in native prairie, utilized by a cow-calf herd and managed on a deferred-rotation grazing system.

Most of the cropped acreage was planted to corn and milo. Cattle grazed the stubble following harvest in the fall. After a complete evaluation, Naney determined that the ranch offered potential for management of cottontails, bobwhite, prairie

By Paul Bocquin
Staff Writer

Photos by Ken Stiebhen



Bocquin

chicken, waterfowl (resting areas, nesting for wood ducks) and deer. Non-game species of wildlife should benefit greatly from wildlife management, he pointed out.

The game biologist recommended a burning program in conjunction with the deferred-rotation grazing plan. This would reduce or eliminate woody vegetation and control the cool season grasses. Controlled burning also is a necessary part of tall grass prairie ecology. Fire removes litter, making movement possible for young birds and making seed more available.

It also was recommended that Sauble leave a row or two of milo standing near the timber in certain fields to provide food during critical winter stress periods.

The district biologist found a good distribution of watering areas on the Sauble ranch and advised fencing parts of two of these ponds so that cattle would still have access to water and at the same time reduce the turbidity of the ponds. Fencing would allow vegetation to grow, providing food and cover plots that will benefit quail.

Landowners and farm and ranch operators like Sauble are receiving technical assistance throughout Kansas under WHIP, beginning its third year under Project SASNAK.

Another typical example is the Allan Hesel farm in Sumner County. This native rangeland was potentially a productive nesting and brooding site for upland ground nesting birds such as quail, doves and an assortment of

songbirds and shorebirds, according to Carroll A. Lange, district game biologist.

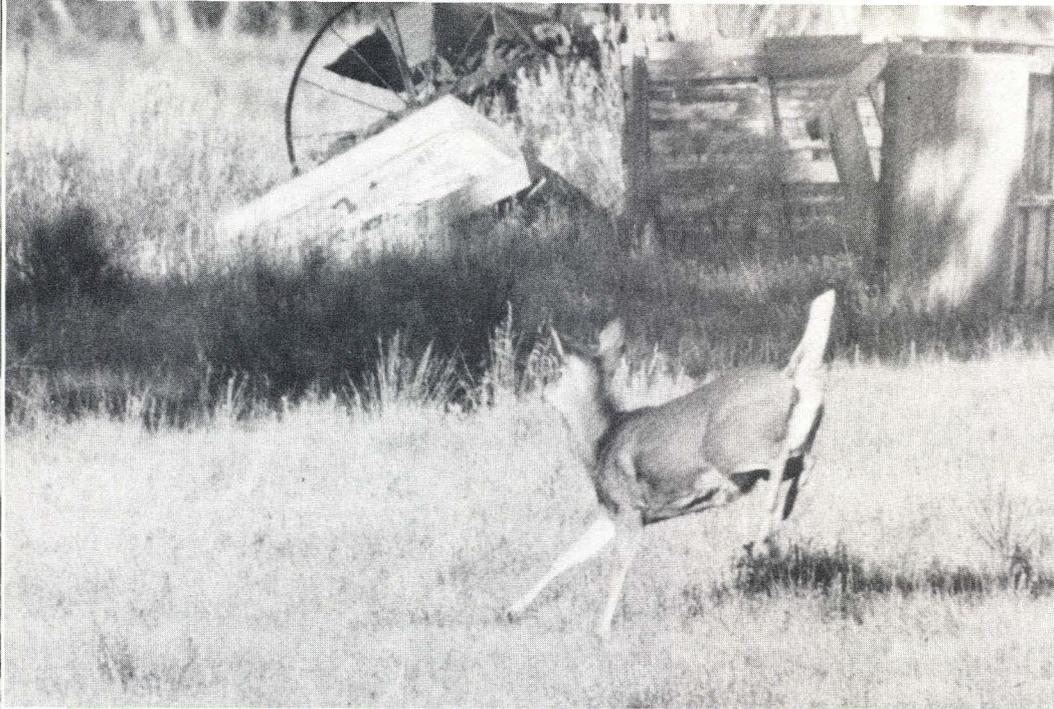
Lange recommended that Hesel's pasture be given a complete rest from grazing for one year, after a late spring controlled burn, April 20-25. This would enable the native grasses and forbs to increase in vigor and density without having to compete with brush and woody vegetation.

"Moderate grazing and periodic controlled burning will not only enhance range condition and grass vigor, but will also increase gains per head for livestock, availability for ground brooding young birds, and seed set by pasture forbs to be utilized by birds as a fall and winter food supply," Lange wrote in his recommendation.

On Hesel's cropland, farming practices such as minimum tillage were suggested. This would leave crop residues exposed after harvest and thus provide feeding areas which can be gleaned by wildlife during the fall and winter. Milo stubble left standing during the winter is especially valuable to wildlife, Lange noted.

"Field borders which contain hedgerows may be enhanced by widening them," he continued. "This should be done by sowing and establishing a native grass mixture strip 20 to 30 feet wide along the hedgerows. These strips should contain a mixture of native warm-season grasses."

In Woodson County, Myron Cooper, a retired farmer on Route 2, Chanute, was interested in improving habitat for wildlife on the 240 acres he still owned. Actually, Cooper had encouraged wildlife management on his farm for several years but wanted to go a step further. So, he applied for



Farmers and ranchers interested in big game may want to provide a home for species like deer or wild turkey.

technical assistance under WHIP.

District game biologists Larry Houf and Steve Clubine called at the Cooper farm. After appraising his existing habitat, they recommended a range management program for his rangeland, along with controlled range burning.

A Crawford County farmer, Glen Crumpacker, received technical assistance for his land on Route 1, Girard. The district game biologist evaluated the potential for game on the 320 acres. A habitat plan was developed for a total ecosystem of wildlife conducive to southeast Kansas, such as quail and cottontail. Plant materials were ordered to carry out this program.

Kansas Habitat Endangered

Problems in retaining wildlife habitat are not new in Kansas. But with more intensive agricultural land use practices, along with the gradual encroachment from urbanization and industrial expansion, and with certain governmental projects consuming large acreages, a heavier toll of wildlife habitat loss has occurred in recent years.

For example, thousands of miles of hedgerows have disappeared. This means a permanent loss of habitat for bobwhite quail, pheasants and many songbirds.

Recognizing the losses of wildlife populations, the Kansas Forestry, Fish and Game Commission established the Wildlife Habitat Improvement Program, commonly known as WHIP, in 1973. It was made available to landowners in March, 1974.

Improving habitat on private lands was one of the five goals set forth by the Commission under Project SAS-NAK. As 95 percent of the hunting areas in Kansas are privately owned, such an undertaking presented a challenge to the game division and to the game biologists assigned to make contacts with landowners and farm operators.

WHIP is aimed at developing wildlife habitat at little or no sacrifice to farm and ranch production. Before landowners apply to a regional game manager, they are requested to obtain two aerial photographs of their land from the county ASCS office. All land use practices are considered for the wildlife management plan, plus marginal areas such as field edges, creek banks or small groves of trees and other odd areas.

Game personnel aid principally with technical assistance in planning this habitat development. They help landowners find the best possible sources for habitat planting materials, recommend what wildlife species may best utilize the terrain and suggest

which plant types provide the most effective habitat for those species.

The game specialist classifies each land unit into one of nine land-use types. Using aerial photographs, a brief field survey of the land is taken to note any changes of existing borders or land-use types. After necessary corrections are made on the aerial photo, each type is clearly marked and its boundary traced.

Landowners retain the right of hunting privileges. Signs reading "Safety Zone—No Shooting" are available to WHIP cooperators for posting near work areas and farm buildings. The game division has printed brochures to guide landowners in planning operations to include wildlife benefits and to show how to develop and maintain wildlife habitat.

Cooperate With Agricultural Agencies

The Commission also has established liaison with agricultural agencies in each county to develop an understanding and close working relationship with these organizations. Co-operative agreements have been made with many Soil Conservation districts throughout Kansas, according to Robert Wood, agricultural liaison biologist. He said 96 of these agreements had been signed as of Nov. 15, 1975.

Wildlife must be treated as a product of the land, just as wheat, corn or livestock. Because private land comprises more than 95 percent of Kansas, the future of the state's wildlife lies in the hands of these landowners.

The abundance of wildlife is dependent upon both the quality and quantity of habitat. It is important that such habitat provide a source of food and water as well as providing nesting cover and protection from the rigors of nature, especially severe, winter weather.

The landowner can produce a better crop of wildlife by cooperating in WHIP to provide these habitat requirements. WHIP is tailor made to fit any farm or ranch and requires little time on the part of the owner to get involved.

In an effort to make WHIP more attractive to potential cooperators, the 1975 session of the Kansas legislature

approved an appropriation to cost-share planting materials for nesting and survival habitat during fiscal year 1976. Materials used in permanent cover plantings, recommended to WHIP cooperators by agency personnel, will be cost-shared at the rate of 25 percent by the landowner and 75 percent by the agency. In addition, the biologists will advise farmers on how they can receive federal funds under current Agricultural Stabilization and Conservation Service (ASCS) approved practices.

The more discriminating wildlife enthusiast may be interested in developing year-around habitat for a particular kind of wildlife, such as pheasants or quail. Management recommendations for pheasant or quail will stress the importance of permanent cover (native grasses or woody vegetation) in conjunction with the complete farming operation.

Those interested in larger game may want to provide a home for deer, antelope or wild turkey, which have become adapted in certain areas of Kansas. In addition to improved conditions for game species, non-game species such as songbirds also derive benefit from habitat development.

Landowner Response Significant

The response from landowners and farm operators to the Wildlife Habitat Improvement Program has been encouraging, according to Larry Tiemann, WHIP coordinator for the Commission.

During the first 18 months, 364 landowners and operators had signed up 160,242 acres under WHIP. Of this group, 242 cooperators have received complete management plans on 94,999 acres.

"These tracts of land ranged all the way from five acres up to 14,000 acres. This showed a large cross-section was interested," Tiemann reported.

Northeast Kansas had the greatest number of cooperators signed up. There were 100 signups and 63 of these had completed their habitat plans by Oct. 1, 1975. South central Kansas had the most land under WHIP, where 45,729 acres were signed up. Of this territory, plans were completed on 20,108 acres.

In continuing with the third year under WHIP, game biologists are making additional contacts with landowners. Applications are being processed through the six regional offices.

"Follow-up consultations by the game biologist with the landowner will continue to be an important aspect of WHIP," Tiemann pointed out. "The agency's goal is to improve existing wildlife habitat and to continue striving to prevent habitat destruction.

While continuing to inform and educate the public in the responsibilities of wildlife management, game division personnel work intensively to retain and improve wildlife habitat, Tiemann said.

"The loss and destruction of habitat through private and governmental projects has not necessarily slowed the progress in developing and improving wildlife habitat. But the amount of habitat destruction by private and governmental projects exceeds the amount of development and improvement of wildlife habitat on private lands," the WHIP coordinator noted.

WHIP is the first step in reversing this trend. A thorough public understanding has been and will continue to be an important factor in its success.

"WHIP never can be expected to completely offset the wildlife habitat losses caused by encroachment of agricultural practices," said Lee Queal, game division chief. "Hopefully, it will help slow the rapid rate of habitat destruction.

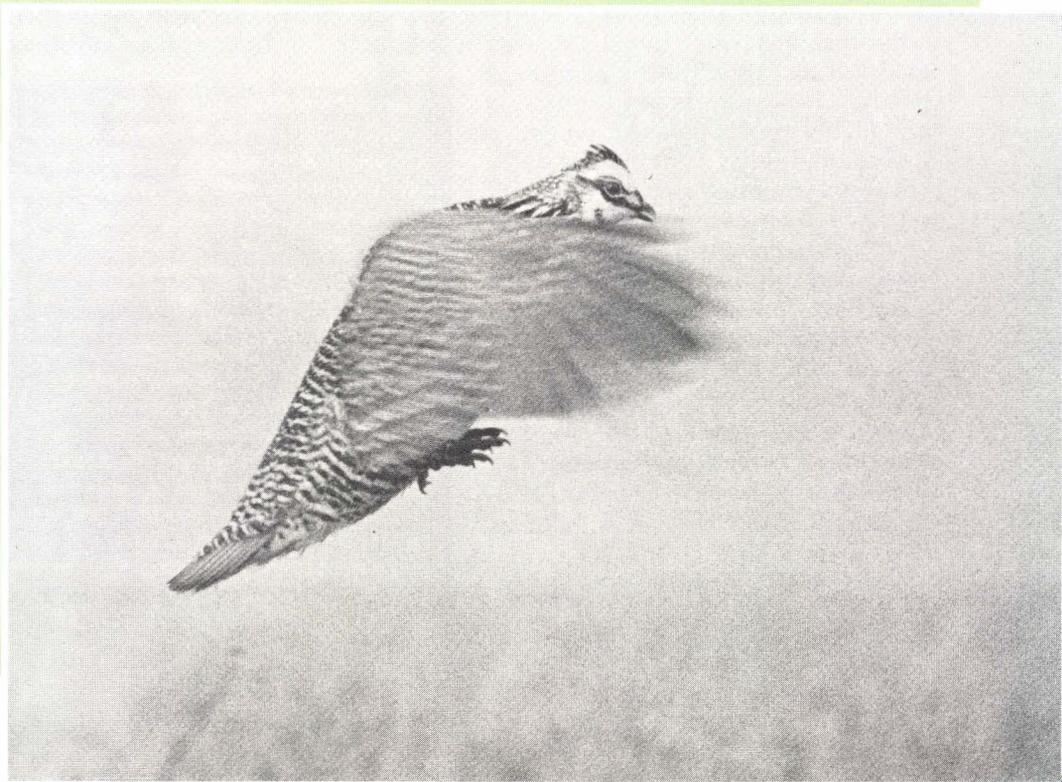
"An increased appreciation for the habitat needs of the state's wildlife is sorely needed. We believe WHIP will lead in this direction due to the increased contact between landowners and wildlife managers," Queal pointed out.

"WHIP will cost money in person-nel, time, materials and travel expenses. The overall benefits will justify the costs if people are patient. Permanent wildlife habitat takes several years to develop. It only takes a few minutes to destroy it with a bulldozer, a plow or an aerial application of herbicide.

"With the ever increasing demand for production of food for a growing national and world population, wildlife usually takes a back seat. We must involve the agency in WHIP," the game division chief emphasized.

To apply for technical assistance under WHIP, the landowner or operator should obtain two copies of aerial photographs of his land from the county ASCS office, fill out the WHIP application and mail these to the Kansas Fish and Game regional office in that area. WHIP brochures containing information and the application form are available from district game biologists, district game protectors or from the regional office.

Regional offices and regional game managers are listed on the inside front cover of *Kansas Fish & Game* magazine.





Fish and Game Forum



Q. What's the main difference between our lesser and greater prairie chickens?

A. Basically, the difference lies in size and coloration. The greater prairie chicken attains a maximum length of 17-18 inches and a weight of 2½-3 pounds while the lesser prairie chicken usually measures only 16 inches with a weight of 2-2½ pounds. In addition, the lesser prairie chicken is paler in color than the greater. According to Buford Welch, Moran game breeder who raises greater prairie chickens, the lesser prairie chicken makes a whooping or cackling sound on the breeding grounds while the greater prairie chicken makes its famous "booming" sounds. Also, the lesser prairie chicken's air sacs are a dull red or pinkish in color while the greater's are yellowish-orange. The bird's habitat preferences are different with the greater prairie chicken preferring tallgrass prairies of eastern Kansas while the lesser prairie chicken is restricted to the shortgrass prairies of southwestern Kansas.

Q. Is it advisable to use the fathead minnow as a supplemental food fish for the largemouth bass in my farm pond?

A. Fisheries biologists say yes, the fathead minnow can be an excellent food fish for largemouth bass in farm ponds. However, fathead minnows are highly susceptible to predation by bass and other sight-feeding game fish so they're often a short-lived food supply. Biologists say it's best to stock the minnows in a new or renovated pond during the spring. This gives them time to reproduce and become established before the introduction of game fish in the fall. Cross and Collins, in their book, *Fishes in Kansas*, note: "This is one of the most widespread fishes in Kansas. Its abundance is greatest in pools of intermittent creeks that have bottoms of mud or firm clay. It is least com-

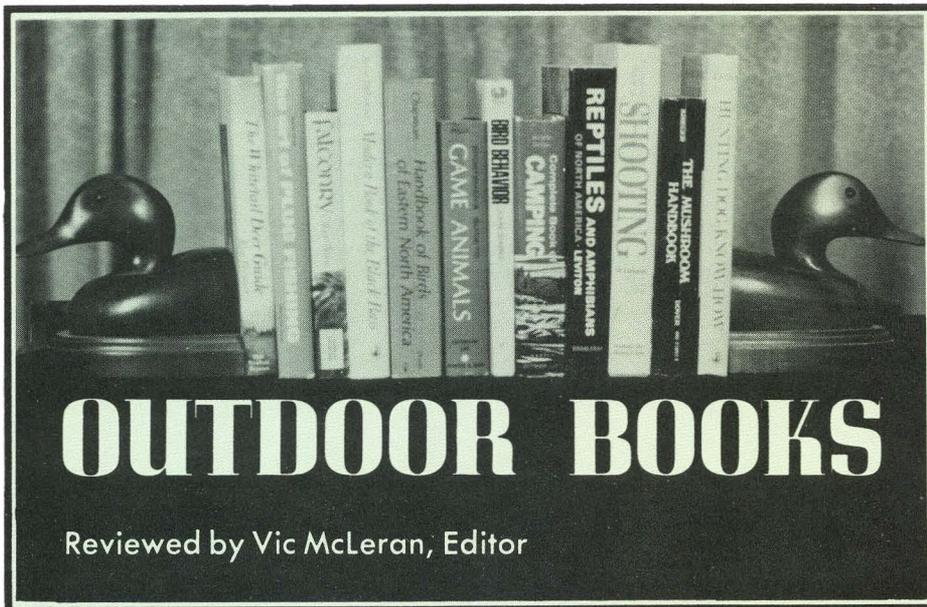
mon in the sandy mainstream of rivers. The fathead minnow is like a hardy pioneer, being among the first fish to invade intermittent drainages after rains, and the last fish to disappear from small, muddy, isolated pools during drought. Another aspect of its hardiness which enables it to flourish where other fish perish is its high tolerance of pollution. The fathead minnow spawns from April through August. The eggs are attached to the underside of a stone, piece of bark or other debris in the water. The male rests just beneath the eggs throughout their development, brushing them with his dorsal fin and a fleshy pad on his back. The young sometimes mature and spawn during the same summer in which they hatch. This fish is omnivorous, consuming small animals, plants and organic debris. The fathead minnow is widely cultivated in ponds as a bait fish."

Q. What's a massasauga?

A. Massasauga is the name given the smallest rattlesnake in Kansas. Also referred to as pygmy rattler, the massasauga has a ground color of gray or light brown. There are 20-50 dark gray or brown blotches on the back and tail. The belly may be mottled or blotched, or light with an indistinct

pattern. Adult males have longer and thicker tails and reach a greater length than females. Joseph T. Collins, in his book, *Amphibians and Reptiles in Kansas*, says, "Adult massasaugas normally attain a length of 18-26 inches. The largest specimen from Kansas is a male from Anderson County with a total length of 28¾ inches. Maximum length for this species is 32¼ inches. Generally the massasauga is found throughout the eastern two-thirds of Kansas. It seems to be absent from the northern High Plains and has not been taken in the Glaciated Region of northeast Kansas. This species is found in a wide variety of habitat ranging from arid open sagebrush prairie and rocky, prairie hillsides to open wetlands. It seems to reach a peak of abundance in grassy wetlands such as Cheyenne Bottoms in Barton County where I observed a dozen in one day. Massasaugas are active annually from April to October. Like many other snakes they are diurnal during spring and fall, and prowl at night during hot summer months. Much of their time is spent basking in the sun and waiting for food. During the winter they crawl deep into rock crevices or down rodent burrows to avoid the cold. The massasauga is known to mate in both spring and fall. Pregnancy lasts from 15-16 weeks; the young are born in July and August and are venomous at birth. Number of young per litter ranges from 5-13 in Kansas. The massasauga has been recorded as eating frogs, lizards, other snakes and rodents. Throughout most of Kansas the western massasauga is the only subspecies encountered. But in the southwestern corner of the state from Comanche County to the Colorado line, the western massasauga intergrades with the desert massasauga."

EDITOR'S NOTE: Each month, hundreds of letters reach Fish & Game Commission headquarters with questions regarding various phases of the department's activities, policies, projects and plans. In addition, we receive numerous queries about hunting, fishing, trapping and wildlife. As space permits in future issues, we'll publish some of these questions and their answers to provide Sunflower sportsmen with a greater appreciation and understanding of their Fish & Game Commission and the Kansas outdoors. If you have a question, mail it to FISH & GAME FORUM, Box 1028, Pratt 67124.



DUCKS, GEESE AND SWANS OF NORTH AMERICA by Frank C. Bellrose; Stackpole Books, Cameron and Kelker Streets, Harrisburg, PA. 17105; 535 pages, \$12.95

This volume is a completely new and expanded version of the classic work by F. H. Kortright. For more than a third of a century Kortright's book was the recognized bible for identifying and knowing every type of waterfowl on the continent. Frank Bellrose's new edition of the same book is even more impressive.

Many advances in knowledge on the life histories, habitats, movements, and classification of waterfowl have occurred since this important work first appeared. In view of that situation, the Wildlife Management Institute enlisted Bellrose, one of North America's foremost waterfowl authorities, to build a modern text along the general format pioneered by Kortright a generation ago.

Retaining the ageless elements of the original—such as T. M. Short's 36 beautiful color plates that show all American waterfowl in different stages of plumage development—Bellrose reevaluated the remaining facts in the light of the latest scientific information on waterfowl.

From this process of scientific reevaluation came such important additions as the unique range maps which have been added to show the importance of the different flight corridors that connect the breeding and wintering ranges.

The bulk of the book is devoted to descriptions, identifications, and life stories of the ducks, geese, and swans. Each kind appears alphabetically by colloquial name. The text includes the scientific name, full descriptions of adult and juvenile (male and female), a discussion of field marks on the water and in flight, and a comprehensive life history.

These complete descriptions are supplemented by discussions of: moults and plumages; specimen identification; sex and

age determination; mating, nesting, and feeding habits; longevity records; speed of flight; diseases; lead poisoning; banding practices; and management.

Totally new maps and illustrations, a complete glossary, a discussion of scientific nomenclature and duck topography, tables of weights and measures, and the family tree of ducks, geese, and swans round out this complete body of information on every detail known about the 61 forms of waterfowl that are found on the North American continent.

Although the accompanying brochure indicates that orders must be placed before January 15, 1976 to take advantage of the \$10 prepublication rate, the Wildlife Management Institute is pleased to announce that the publishers have extended that date a few days. Students should be aware that the Institute has arranged with the publishers a special \$7.75 student price. It is recommended that consolidated departmental orders be placed directly with Stackpole Books. All orders should include each student's official school registration number.

AMERICAN SPORTSMEN AND THE ORIGINS OF CONSERVATION by John F. Reiger; Winchester Press, 205 East 42nd Street, New York, N. Y. 10017; 307 pages, \$10.00

"American sportsmen, those who hunted and fished for pleasure . . . were the real spearhead of conservation," says Reiger. "One of the most important misconceptions is that no conservation movement existed until the twentieth century. . . . During the Roosevelt Presidency, in the years from 1901 to 1909, a federal bureaucracy dealing with environmental issues came into being, and the engineers, geologists, and other experts . . . were indeed important but they were not the group that originated the movement in the 1870s."

It has become fashionable, Reiger says, for armchair ecologists to vilify sportsmen—and especially hunters—as wastrels and

wildlife destroyers who care nothing about the environment. The fact is, Reiger continues, sportsmen—especially hunters initiated the modern conservation movement and continue to be its most important supporters and activists. The book is a thoroughly documented volume which leaves no doubt about that fact.

Reiger's book is an exciting narrative of the struggle to save American wildlife from profiteering exploiters. Sportsmen and non-sportsmen alike will be keenly interested in the fast-paced account.

LIZARD TAILS AND CACTUS SPINES by Barbara Brenner; Harper and Row Publishers, 10 East 53rd Street, New York, N. Y. 10022; 81 pages, \$5.95

This volume is one of Harper's Junior Books. The sights and sounds of the desert and its animals come alive for the young reader in Brenner's book. A desert adventure, which is not just entertaining but informative, unfolds to the reader through the eyes of a 12-year-old boy.

During six weeks of observation, exploration, and adventure, the young lad in the book comes to understand desert lizards, in terms of their environment; the grand natural system of the desert itself. He experiences a flash flood, the scorching heat, scorpion bites, etc. But he comes to appreciate the desert world and can lead the young reader to do the same thing.

THE COMPLETE BOOK OF BOAT MAINTENANCE AND REPAIR by Dave Kendall; Doubleday and Company, Inc., Garden City, N. Y.; 201 pages, \$8.95

This book tells how to start a comprehensive maintenance program and to make the occasional repairs every boat needs. Starting with tips on buying a boat, new or used, the author systematically covers all aspects of boat care, for about all kinds of boats; inboard, outboard, or sail; wood, fiberglass, or aluminum. His down-to-earth approach includes lots of personal experience—methods and materials that have worked for him over the years—as well as a complete service materials directory for easy reference.

ARCHERY WORLD'S COMPLETE GUIDE TO BOWHUNTING edited by Glenn Helgeland; Prentice-Hall Inc., Englewood Cliffs, N. J. 07632; 262 pages, \$8.95

This guide is a survey of bowhunting with contributions by some of the country's top experts who explain their experiences and techniques in full detail. There is abundant information on bows and arrows, auxiliary equipment such as binoculars, camouflage, clothing, footwear, scent and sights. The book tells how to size up a hunting site and territory, and goes into the best ways to practice for various types of game. It is a fine volume for beginners and oldtimers.

Reviews courtesy of the Wildlife Management Institute.

