

KANSAS FISH & GAME



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MAY-JUNE 1972

KANSAS FISH & GAME



May-June, 1972

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Cover Photos

Front cover—Whitetail deer fawn. Ektachrome transparency by Leroy Lyon.

Back cover—Timber rattlesnake. Ektachrome transparency by Vic McLeran.

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PROCLAMATION

By the Governor

Executive Department
 State of Kansas
 Topeka, Kansas

To the People of Kansas, Greetings:

WHEREAS, boating on our Nation's waterways has become a source of recreational pleasure for a rapidly increasing number of Americans. Increased use means more enjoyment for more people, but it carries with it an increased responsibility as well. Those who use our waterways must take greater care to observe the rules of good seamanship and of boating safety; and

WHEREAS, to focus national attention on the need for safe boating practices, the Congress, by a joint resolution approved June 4, 1958 (72 Stat. 179), requested the President to proclaim annually the week which includes July 4 as National Safe Boating Week; and

WHEREAS, many boating tragedies could be avoided through education and common sense. I urge all Americans who use our waterways to take advantage of the numerous boating safety courses offered by governmental and private organizations, such as the United States Coast Guard, the Coast Guard Auxiliary, the United States Power Squadrons, the American Red Cross, and various State agencies:

Now, Therefore, I, ROBERT B. DOCKING, Governor of the State of Kansas, do hereby designate the week beginning July 2, 1972, as

NATIONAL SAFE BOATING WEEK

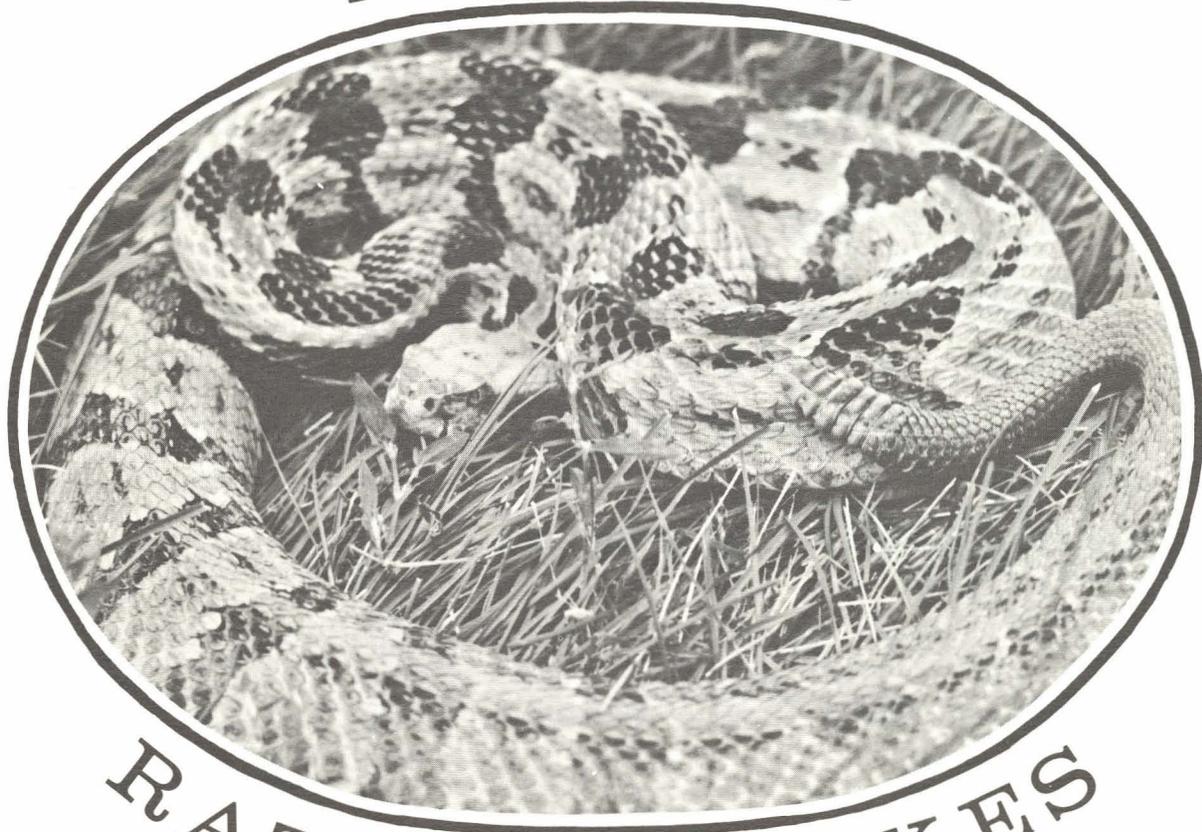
in Kansas, and urge all residents of this state to take proper cognizance thereof.

Done at the Capitol in Topeka under the Great Seal of the State this 1st day of March, A. D., 1972.

By the Governor:

ROBERT B. DOCKING
 ELWILL M. SHANAHAN
Secretary of State

KANSAS



RATTLESNAKES

By Vic McLeran

RATTLESNAKE versus snapping turtle!

It was almost like one of the hoaxes you see billed in a carnival side-show, a fight to the death between two reptilian monsters. Except it wasn't a carnival and it wasn't a hoax—it was the real thing!



McLeran

afield on a snake collecting trip in southern Johnson county.

It was June, 1961 and Gary Clarke, currently director of the Topeka Zoological Park, was then employed by the Kansas City Zoo. His work that day had taken him

Approaching a willow-lined creek from the south, Clarke suddenly heard a violent splashing in the water. As quietly as possible he slipped through the streamside foliage. Immediately beneath the surface on the far side, the water was boiling with action. As Clarke watched, a monstrous snapping turtle jerked its head above the surface. Clamped in its jaws was an enormous timber rattlesnake! The turtle rolled sideways in the water, tightening its hold with violent jaw movements and constantly raking the rattler with its foreclaws. Since the turtle had grasped the reptile midway on its body, the snake was still free to strike. Whipping its body from side to side, the rattler struck repeatedly, sinking its fangs into the

leathery skin on the snapper's neck. Fighting desperately for its life, the big rattler finally broke free of the snapper's jaws as the two combatants rolled beneath the surface. The rattlesnake surfaced inches from the far bank and quickly swam to shore. The turtle, apparently unhurt, surfaced, then swam away.

Clarke figured if he could cross the creek he might be able to capture the exhausted rattler. Running downstream a few yards, Clarke forded the creek at some riffles. Working his way upstream on the opposite bank, the snake hunter soon located the reptile. By this time, the snake had crawled out of the water and up into some tree roots which the creek's current had exposed. Clarke crouched



The timber rattlesnake, found in heavily wooded sections of eastern Kansas, is the largest rattlesnake truly native to the state. The slightly smaller prairie rattlesnake is found in the western half of Kansas, while the massasauga—smallest of the three species—is found throughout most of the state. The western diamondback, although recorded once in Kansas, is not considered a true native.—*Photo by Vic McLeran.*

behind this tree on his hands and knees. Taking a long snake hook which he used to capture reptiles, Clarke leaned forward, eased the tool under the rattler and quickly but smoothly lifted the snake up to level ground. Then he saw it—the massive damage the snapper's jaws had inflicted on the snake. From a point midway down the reptile's body, the skin and flesh had been ripped away exposing the rib cage, vertebrae and ligaments. Several hours later the snake died, thus closing another exciting but factual chapter in the annals of rattlesnake lore.

The snake collector hypothesized the rattler was simply crossing the stream when it was attacked by the hungry snapping turtle which appeared to be the aggressor throughout the struggle.

Few reptiles have stimulated man's imagination like the rattlesnake. As a result, this species has been responsible for more myths and old wives' tales than any other snake.

Let's disregard the fiction for awhile and take a factual but revealing look at the various rattlesnakes here in Kansas.

The massasauga is the smallest species of rattlesnake in Kansas, averaging about two feet in length. A 32-inch specimen is the largest on record. According to Dr. Robert Clarke, herpetologist and biology professor at Emporia State Teachers College, the name "massasauga" is an old Indian term meaning "swamp dweller." Joseph T. Collins, herpetologist and vertebrate preparator in charge of the reptile collection at Kansas University's Museum of Natural History, says the massasauga is probably the most extensively distributed rattler in the state but that the prairie rattler is our most common rattlesnake in terms of sheer numbers. Within its range, which includes all but the northwestern corner of Kansas, the massasauga occupies open fields, marshy bottoms, hedgerows, woodlots and rocky areas. Dr. Clarke

says it is common in the Flint Hills where it is often found under bales of hay by farm workers. The massasauga's ground color is gray or brownish-gray with several rows of spots or blotches on its back and sides.

The rolling prairies and arid grasslands of western Kansas are home to the prairie rattlesnake. It ranges in size from 25 to 45 inches with a 57 inch specimen in the record book. Carbed in dusty gray with a series of dark blotches along its back and sides, the prairie rattler is the most common poisonous snake in the western half of the state. The prairie rattler inhabits short grass and sagebrush country, rocky outcrops and ledges along wooded prairie canyons.

The timber rattlesnake is found only in the wooded eastern quarter of Kansas. Slightly larger than the prairie rattler, the timber ranges in size from 36 to 54 with a North American record of 74 inches. Timber rattlers occur in two color phases. In the light phase, the ground color is yellowish with darker V-shaped crossbands on its back and sides. Dark phase timbers vary in color from dark brown to almost black. Timber rattlers prefer thick woods which contain rocky ledges, limestone outcrops, and lots of brush.

A fourth species, the western diamondback, has been recorded only once in Kansas. That specimen was found near Weir in Cherokee County. Hobart Smith, author of "Handbook of Amphibians and Reptiles of Kansas," says ranchers in Barber, Comanche and Clark counties report the diamondback's occurrence in that region.

The rattle, that appendage which gives the snake its name, is used as a warning device by the reptile to let an intruder know he is getting too close. Contrary to common opinion, rattlesnakes don't always sound off before striking. Many are the snake-bite victims which didn't see or hear the snake before they were bitten. That old story about telling the age of a rattlesnake by the number of rattles on its tail is another myth. Herpetologists (those who study reptiles) say rattlesnakes add a new rattle each time they shed their skin, which, depending on their food supply and

growth rate, can be three or four times a year. The late Laurence M. Klauber, author of a two-volume set entitled "Rattlesnakes," was, until his death, the world's leading authority on these reptiles. Klauber mentioned several schools of thought regarding the origin of the rattler.

One group claims the rattle was developed by snakes living in rocky surroundings, saying they were forced to acquire thicker tails to withstand wear when vibrated on the rocks. Others theorize that the sound, which is a toneless buzzing, was designed to prevent buffalo and other heavy grazing animals from stepping on the reptiles. Some biologists now claim rattlesnakes are rattling less. They say those snakes which rattled frequently attracted attention to themselves and were killed by man. The more silent rattlers, they contend, have escaped notice and human persecution. As a result, these individual rattlesnakes have survived to produce offspring which have a similar tendency to rattle less.

All rattlesnakes, along with copperheads and cottonmouth water moccasins, belong to a group of poisonous reptiles known as "pit vipers." They are so classified because of a heat-detecting organ called the facial pit. This apparatus allows the rattlesnake to accurately detect the presence and position of warm-blooded mammals, even in total darkness. This organ takes the form of a small depression or "pit" directly in front of and below the reptile's eyes. Although rattlers lack external ears, they "hear" through their ability to detect ground vibrations.

Coupled with this pit, rattlesnakes possess a fang and venom apparatus which places them among the most deadly reptiles in the world. Rattlesnake fangs, like those of other poisonous reptiles, are actually enlarged, hollow teeth which conduct venom from the glands into the victim, much like a hypodermic needle. Two or three times a growing season, these fangs are shed by the rattlesnake. Replacement fangs, located behind the original set, become functional when the snake loses its first pair.

Rattlesnakes swallow their food

whole without any chewing. As a result, their venom contains powerful enzymes which break down tissues and aid digestion. Yellowish in color, the rattler's venom also contains protein poisons that attack blood cells, blood vessels and the central nervous system of the victim. Rattlesnake venom has been used experimentally in the medical treatment of epilepsy, asthma and neuralgia.

Birth for most young Kansas rattlers occurs in August or September. Like copperheads and water moccasins, rattlesnakes give birth to live young rather than laying eggs. Not long after birth, the eight or ten young rattlers are forced to seek shelter from the oncoming winter temperatures. Along with the adult snakes, the youngsters require crevices of at least frost line depth in order to survive. In the eastern part of the state, timber rattlers and massasaugas utilize the deeper caverns and crevices in limestone rock formations. In western Kansas, prairie rattlers often use abandoned prairie dog villages. A. M. Jackley, who for many years was rattlesnake control officer for South Dakota, reported seeing from 50 to several hundred rattlers in abandoned prairie dog villages.

In this unusual photo, "Alabaster" an albino prairie rattler housed in the biology department at Emporia State Teachers College, is seen eating a mouse. Since rattlesnakes are unable to chew their food, they swallow it whole. Most prey items are taken head-first.—Photo by Robert H. Wright.



The rattlesnake has some odd bedfellows during its winter hibernation. Bull snakes, blue racers, garter snakes, black snakes and copperheads are not uncommon "roommates" of hibernating rattlesnakes. Turtles, skunks and mice have also been observed in the same wintering burrow with rattlers. In Texas, a swarm of bees and an armadillo were found in the same den with several wintering diamondback rattlers!

Rattlesnakes emerge from their dens during the first few days of warm, spring weather. Joseph T. Collins says this usually occurs during early April in Kansas. Following emergence from the dens, rattlesnakes occupy themselves with courtship and mating. Following procreation, the snakes are concerned primarily with the business of procuring food for the remainder of the spring and summer months.

Since rattlesnakes feed primarily on small rodents, it's likely that most small critters occupying the same general area with the snakes are, at one time or another, preyed upon by the reptiles. Mice, rats, ground squirrels, tree squirrels, chipmunks, prairie dogs, rabbits, flying squirrels, shrews and pocket gophers have all been found

among stomach contents of various rattlesnakes. Ground nesting birds like meadowlarks, horned larks and quail are also included in the rattlers' diet. Toads, frogs, salamanders, lizards and even fish occasionally show up in the rattlesnakes' menu. A prairie rattler in Colorado was observed swallowing an eight-inch trout.

Sometimes the rattler's appetite puts him in conflict with man. A grouse hunter in South Dakota knocked down two grouse on a rise. He found the first bird easily but you can imagine his surprise when he spotted the second grouse disappearing down the maw of a large prairie rattlesnake.

Occasionally rattlesnakes—like people—bite off more than they can chew. In Pennsylvania, a large timber rattler was found with a dead squirrel in its mouth. The squirrel had locked its teeth on the rattler so it couldn't be swallowed or ejected. The snake presumably would have died from its victim's revenge. Horned toads, also, have proven to be fatal meals for the rattler. When grasped, the toads often swing their head vigorously from side to side. A small diamondback in Texas was found dead with a horned toad partly swallowed. The toad's horns had penetrated the reptile's neck and throat and protruded outside.

Rattlesnakes hunt from ambush. When a prey item moves within range, the reptile strikes. A few convulsive kicks and it's usually all over. The snake then seizes its victim by the nose and starts swallowing it, almost always headfirst. The elastic nature of the rattler's jaws enable it to swallow surprisingly large prey items.

During this summer period when rattlers are busy hunting food, they occasionally find themselves being hunted. Birds of prey are common natural enemies and eagles, hawks and owls have all been recorded as dining on rattlesnake at one time or another. In some instances, the raptors carried snakes high in the air then dropped them, letting the fall kill the reptiles.

Wild deer and pronghorn antelope both seem to have an instinctive aversion to rattlesnakes and often kill them on sight. Both species have been observed leaping into the air and

coming down on the reptiles, cutting them to pieces with their sharp hooves.

Even domestic animals like sheep and goats have been known to kill rattlers in a similar manner. With hogs however, snake killing is an entirely different matter. Swine simply grasp the snakes in their jaws and start chewing. Hogs are not immune to the venom but their heavy layer of fat is thought to retard absorption of the poison.

King snakes, black snakes and other constrictors are common reptilian predators, killing rattlesnakes with the constrictive strength in their coils.

On rare occasions bullfrogs and even fish have been known to eat rattlesnakes. In Florida, a large bullfrog (which had been placed in the snake pen as food) caught and swallowed a small rattlesnake. A California fisherman, when dressing a largemouth bass, found a 14 inch rattlesnake which the fish had swallowed. In the same state, a four-pound rainbow trout was caught which contained a nine-inch rattler in its stomach.

Rattlesnakes are tenacious critters and even with this array of natural enemies, there is evidence which indicates some rattlers approach 20 years of age. In captivity some specimens have lived even longer.

In some areas (notably Oklahoma) rattlesnakes are hunted and killed in large roundups each year. The meat from these snakes occasionally ends up on grocery shelves where it is considered a delicacy. Having heard about the taste of rattlesnake meat, I once cleaned and dressed a large prairie rattler which a companion had killed. I cut the snake in three-inch chunks and deep-fried it. The meat had a bland but pleasant flavor similar, I thought, to quail.

For years, rattlesnakes have been viewed in a mysterious and fearful light. And make no mistake about it—rattlesnakes are dangerous critters! The western diamondback (rarely seen in Kansas) is responsible for more serious snakebites and fatalities than any other reptile in North America. In fact, it and the eastern diamondback (not native to Kansas)

rank as two of the world's most dangerous reptiles.

For some people however, rattlesnakes make fascinating, if dangerous, pets. A St. Louis high school student recently had a finger amputated as the result of handling his "pet" carelessly.

"Snake-bites-man," isn't really news. But "man-bites-snake,"—that's news! A rattlesnake enthusiast in California was bitten twice in the hand by his pet rattler. Infuriated, the man bit the snake back—just behind the reptile's head. The man recovered. The snake died.

Laurence Klauber's comprehensive study of several hundred snake bite cases across the country indicated the majority of victims fell into two categories; those who put their hands or feet into places where a rattler was concealed and those who were so absorbed in other activities they weren't alert to their immediate surroundings.

In Kansas however, snakebites are rare. And deaths from the bites are even rarer. A Kansas State Department of Health report for the period 1950 through 1970, shows only two deaths occurred as the result of a rattlesnake bite. Both victims were children; one aged seven and the other nearly two.

Most biologists feel rattlesnakes in their natural habitat should be left alone. Being superb reptilian predators, rattlers are a natural part of the ecosystem. They perform a useful and beneficial function by preying on destructive rodents. Only when they are in close proximity to human habitation and pose a threat to inhabitants should they be killed.

Rattlesnake "scares" have ruined many an outing. But for hunters, fishermen and others who enjoy the Kansas outdoors, the precautionary advice is simple. Learn to identify the various rattlesnakes, familiarize yourself with the type of habitat which they prefer and watch where you put your hands and feet.

This knowledge and precaution can pay dividends with more enjoyable hours afield and less time spent worrying about rattlesnakes.

Here's a profile on the largemouth bass—a species which many anglers consider our number one game fish!

"The Gamest Fish"



The author hoists a chunky five-pound largemouth from the waters of a Kansas farm pond. The largemouth bass's supreme fighting ability makes it a favorite with many anglers.

IT WAS quite a mystery for awhile—the way those lunker bass kept turning up in “trout only” lakes.

It all took place up in the northwestern states where salmon and trout reign supreme as the most popular game fishes. From time to time, fish and game agencies there received reports of bass taking over trout lakes. When this happened, the bass were removed and replaced with trout. Infuriated, the area bass anglers raised Cain. But, since fish and game departments stock fish according to the demands of the majority of anglers, complaints of the outnumbered bass fishermen were futile. Several years passed and once again complaints started pouring in to state fisheries personnel. “Mystery” bass were again

being caught in that lake which supposedly contained no bass. The trout purists were pulling their hair. Where were these bass coming from?

For some time, the problem puzzled fisheries officials. But not any more. Now they know where the “mystery” bass came from. Dedicated bass anglers were catching their favorite fish elsewhere and secretly, under cover of darkness, placing them in these forbidden waters.

Luckily, Sunflower bass fishermen don't have this problem since the Kansas Fish and Game Commission stocks fingerling bass in all reservoirs and state lakes as well as countless farm ponds and water-shed lakes. However, the incident illustrates lengths to which bass anglers will go

in assuring themselves of continued fishing for their favorite quarry. This fighting ability which has made the largemouth such a favorite, was recognized as far back as the 1800's when Dr. James Henshall, author of “The Book of the Black Bass,” noted, “I consider him (the black bass) inch for inch and pound for pound, the gamest fish that swims.”

Nesting and Spawning

Let's take a look at ol' *Micropterus salmoides*, as the large-mouth bass is known biologically. His annual cycle in Kansas starts when warmer spring weather raises water temperatures to about 60 degrees. With sex on his mind, the male bass selects his nest site on a sand or gravel lake bottom

in two to six feet of water, depending on water clarity. Cocked at a 45 degree angle, the male fans clean a two or three foot area with his tail. This sweeping action often leaves the tail bloody and raw. Once this operation is complete, the male brings in pebbles with his mouth and deposits them on the swept area. When the nursery is finished, the male starts his search for a female. Finding one, he coaxes her back to the nest site, biting and nudging her.

Male bass which are ready to spawn but unable to find a ripe female, have been known to enter the nest of another male in an attempt to "steal" his female. Bloody battles have been observed where the winner took not only the female, but the nest of the loser as well!

Once on the nest, the spawning takes place with both fish pressing their bodies together, emitting eggs and milt. The number of eggs spawned varies from several hundred to several thousand, depending on the size of the female. The eggs hatch several days later. During that time and for the next week or so until the youngsters leave the nest, male bass maintain constant vigil over their offspring. The males have been observed fighting off bluegill, carp, catfish, turtles and even water snakes—all of which were trying to make a meal of the young bass.

Natural Enemies

After they leave the nest, bass fry are susceptible to predation by a host of natural enemies—mostly larger bass, big bluegill and crappie. In the South, alligators are known to prey on larger bass, while in areas where they are common, both mink and otter will occasionally take bass. Snapping turtles, water snakes, gar and northern pike are other occasional predators. In Kansas, the bass's worst enemy, outside of pollution, is probably the skilled angler. At times though, due to cannibalistic habits, the bass can be his own worst enemy. In one experiment, biologists placed 20,000 bass in a pond during July. The young fish were fed ground fish six times daily equalling three times their

aggregate weight. This food was supposed to dull their cannibalistic tendencies and the young fish gobbled their rations greedily. In October, the pond was drained and the fish were counted—only 11,000 remained. In the watery, "eat or be eaten" world of the pond, 9,000 young bass had succumbed to their hungry brethren!

The bass's cannibalistic traits have proven fatal not only for the "eaten" but the "eater" as well. Writing in the "Fishermens Bible," Tom McNally cites the classic case of three-pound largemouth trying to eat a three and one-half-pound brother. "Somehow the smaller bass secured the larger one in its mouth head-first, and got his victim down as far as its dorsal fin. But the hungry bass couldn't get more down nor could he disgorge the larger bass. Both fish died."

Food Items

If a young bass survives his first two or three years, he's on the way to becoming a top notch predator in his own right. As such, he preys on a multitude of fish, birds, crustaceans, reptiles, amphibians and mammals. Although fish constitute the bulk of a bass's diet, some species are not as desirable as others. Bullheads and other small catfish—because of their sharp spines—sometimes prove fatal to bass. A pathologist for the Pennsylvania Fish Commission once dissected a 16-inch largemouth bass to determine what caused its death. He found the bass had gorged itself on several brown bullheads. For some reason, 25 or 30 of the catfish spines had worked through the stomach walls of the bass and into all parts of the body cavity. The size of the spines indicated the bullheads were six or seven inches in length.

A pair of Maryland anglers found another largemouth in similar trouble. The bass had taken a spotted catfish tail first. This is unusual since bass nearly always take their prey head first. The bass had swallowed the catfish as far as the "cats" pectoral fins, where the sharp spines prevented further entry. The largemouth, flopping on the surface, was unable to disgorge the catfish and probably would have died.

Bluegill, crappie, shad and other small fish are taken readily by bass. Frogs, crawfish, salamanders and large insects are other common food items. Like all predators though, the largemouth is an opportunist, preying on whatever presents itself when the bass is ready to feed.

Birds are not uncommon prey items and are consumed by bass whenever possible. Ducklings, small shorebirds and songbirds which nest near the water have all been found in the gullets of largemouth bass. Bob Hartman, supervisor of fishery research and management for the Kansas Fish and Game Commission, once watched a four-pound largemouth rocket up from the depths to "inhale" a young red-winged blackbird. The fledgling had fallen from its nest among the cattails at the edge of a strip pit. As the youngster fluttered helplessly on the surface, its movements attracted the fish's attention. The big bass knifed up through the water at a 45 degree angle. One gulp and it was all over!

Purple martins and swallows, which swoop low over a pond's surface to scoop up water in their bills, occasionally fall prey to the largemouth. Anglers have reported seeing bass actually leap out of the water and, in effect, "field" these low-flying birds much like a second baseman going high to spear a line drive.

Small mammals swimming above the lair of a hungry bass can be in real trouble too. Young muskrats, squirrels, chipmunks, mice and rats—all have been included in the diets of largemouth bass. Even that blood-thirsty little killer, the shrew—which eats several times its own weight each day—is potential bass food when he hits the water. However, outdoor writer Tom McNally penned one incident which showed the vicious little mammal to be more than the bass could handle. "A Pennsylvania fisherman once saw a largemouth bass flopping almost lifeless on the surface," McNally wrote. "He netted the fish, and discovered the bass had swallowed a shrew that must have fallen into the water. Once in the bass's stomach, the shrew dug through the fish's stomach wall with its sharp

claws and crawled halfway out. The shrew drowned and, naturally, the bass also died."

Even venomous reptiles aren't immune to the largemouth's voracious appetite. In California, the stomach contents of a four pound largemouth bass yielded a 14-inch rattlesnake which the fish had apparently taken when the rattler tried to cross a small pond. At the Aransas National Wildlife Refuge in Texas, researchers have removed cottonmouth water moccasins from the stomachs of largemouth bass. Harmless water snakes are also taken readily by bass. In fact, old-time bass fishermen say a lip-hooked snake in the eight or ten-inch class, fished slowly through lily pads or partly-submerged vegetation, is a deadly bass bait.

Two years ago, a Kentucky angler discovered the hard way, about a largemouth's fondness for snakes. His fishing companion hooked a nice five-pounder on a jig and eel. As the bass was brought alongside the boat, our subject reached down, grasped the fish by its lower jaw and swung it into the boat. The Kentuckian extracted the hook and started to string the bass when a common water snake slithered out of the lunger's gaping maw. The guy evidently had a thing about snakes because both the trophy bass and reptile were returned to the lake—immediately!

In addition to this vast array of living creatures on which the largemouth feeds, the following inanimate items have been found in the fish's stomach: a bottle cap, golf ball, Micronite cigarette filter and metal shoehorn.

Size and Growth Rates

With this attitude of eating just about anything it can swallow, it's no wonder largemouth bass attain some monstrous proportions. In the South, where warmer waters provide a longer growing season, bass get larger than they do in colder northern waters.

Howard T. Walden, in his book, "Familiar Freshwater Fishes of America," cites a study which lists the national average for growth rates on bass. This study showed three-year-old fish to average 9.8 inches in length

while five-year-olds averaged 14.9 inches.

Fishery Research Supervisor, Bob Hartmann, referring to a population study of largemouth bass in south-eastern Kansas state lakes, said Sunflower bass grew slightly faster than the national average. "Our three-year-old bass averaged 10-12 inches in length while our five-year-old fish reached 14-16 inches."

By contrast, Florida largemouths will often grow 10 or 12 inches their first year, reaching 15 or 16 inches during their second.

How long does it take a six-pound Kansas largemouth to attain this lunger size? "On the average, it probably takes five to seven years," said Hartmann.

The existing world record for largemouth bass is a 22 pound, 4 ounce giant taken by George Perry on a Creek Chub jointed pikie lure. Perry hauled his trophy from Montgomery Lake near Valdosta, Georgia, back in 1932. Cut this Georgia lunger in half and you have our current state record here in Kansas. Charles "Shorty" Prewett, set the pace for Sunflower bass fishermen back in January, 1965, when he lifted a dripping, 11 pound 3 ounce "bucketmouth" from a private lake in Bourbon County. Prewett hooked his monster on a Johnson spoon-pork frog combination.

Coloration

The largemouth's color ranges from pale green to a darker, greenish-black. Young bass have a distinct horizontal dark band along their side which tends to fade and become indistinct with age.

Color variation is often dependent on water clarity. In ponds containing predominantly muddy water, bass are usually pale in color, sometimes almost white. In clearer water, where the rays of the sun penetrate more deeply, the bass's pigment becomes darker, actually "suntanned" in effect. Interestingly, when bass are in shallow water during the spring spawning season, their color is darker than it is later in the summer when they inhabit deeper water.

Habitat

The largemouth bass is a cover fish. Regardless of whether it's submerged stumps, brush piles, logs, large rocks, masses of aquatic vegetation, underwater ledges, or sharp dropoffs, the largemouth usually selects one of these areas as his favorite hunting, hiding and resting spot. This submerged cover is essential to the bass for several reasons. It not only provides him protection from predators but it also attracts bait fish and other natural food items. Since bass hunt from ambush, darting out to snatch up unsuspecting prey, this cover lets them make a stealthy, unseen approach on potential dinners.

Coupled with this preference for underwater cover, bass are also fond of water temperatures in the 65-72 degree range. Wise anglers search for areas which combine both factors, knowing sooner or later they'll take bass from spots like these.

Part of the largemouth's appeal lies in his wariness and apparent "intelligence" in spurning anglers' bait. Seasoned bass fishermen have maintained for years, that largemouth bass can learn to avoid angler's lures. Word from the American Fisheries Society seems to confirm this. The Society conducted aquarium studies on several species of fish which showed that largemouth bass learned best how to avoid artificial lures.

Although the largemouth's early range was restricted to the eastern and central part of the United States, the species fame as a fighter soon spread westward. Today, as the result of numerous stockings and transplantings, anglers nationwide can fish for the largemouth bass. And this species popularity as THE premier game fish continues to grow each year as more and more sportsmen join the bass fishin' fraternity.

Who knows—maybe ten years from now the growing popularity of the largemouth bass will force trout and salmon purists of the Northwest to stock "mystery fish" in bass-only lakes.

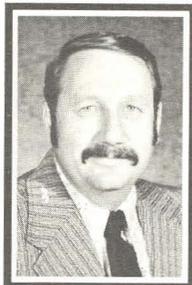
High plains mule deer are anything but homebodies as evidenced by tag returns over the past few years . . .

Wanderlust

By Bill Hlavachick
Big Game Biologist

Photos by KEN STIEBEN

AWARE of approaching footsteps, the mule deer fawn pressed himself even closer into his weed and grass bed. It was 4:05 p. m. on June 8, 1970, and the fawn was only a few days old. Since birth the mule deer fawn's world and that of his twin sister had been confined to the small, grassy draw in northwest Kansas



Hlavachick

which he had only glimpsed briefly while feeding on his mother's rich milk. His dappled coat, blending splendidly with surrounding vegetation, was rich reddish-brown in color but dotted with regularly spaced white spots which effectively broke up the brown pattern and provided a much needed camouflage against predation.

But now, as footsteps came closer, only his expressive eyes told of the fear he felt. As the footsteps drew nearer then stopped, he might have panicked if had known the doe fled at the approach of two men who were now within a few feet of the youngster.

"There he is," whispered one of the men. "Come around from the other side and we'll make a try for him." Making as little noise as possible, the two men, with small cast nets ready for fast action, stepped cautiously toward the fawn. Sud-

denly one man lunged forward covering the fawn with his net.

At the same instant the other man jumped in enveloping the fawn with the second net thereby insuring the fawn would not escape. The young deer struggled against the confining nets but to no avail. Sensing he was caught, the fawn sank down again as if to await his fate.

"I've got him now, you keep going and see if you can locate the other one," said one of the men. As the search continued the captor reached into his pocket for two numbered metal ear tags and a pair of applicator pliers. Recording the numbers A-20 and A-21 on a data card, the ear tags were affixed to the underside of each ear near the fawn's head. As each tag was inserted, the fawn gave a small bleat as if to express his displeasure. After determining the fawn's sex, the man gently laid the fawn back into his grassy bed beneath the net.

After a time the other man returned reporting "no luck" in locating the fawn's twin sister. "Let's leave and find another doe," he said. "We're wasting valuable time and it will be easier to locate another fawning area than trying to find this one's twin." So saying, he proceeded to the pickup parked on a hill behind them.

Slowly the other man lifted the net off the now quiet fawn. Retreating as silently as he came and following his partner's path, he joined the other man. Quickly they started the truck and left the area so the doe would return to stand sentry near her twins.

"We were lucky on that one," said one of the fawn trappers. "He stayed in his bed after I lifted the net."

"Yeah," said his partner, "sometimes they'll get up and run off. I like it best when they stay where they are."

Since 1966, the mule deer fawn and 62 other fawns including some white-tails have been surprised by Kansas Forestry, Fish and Game Department personnel who spend countless hours finding the fawns' hiding places to

give them special "earrings" which they will wear the rest of their lives. Of these, 14 tags have been returned by hunters and other individuals. Some of the tagged deer were taken during the deer hunting seasons while others have died from highway accidents and other causes.

Since little was known about the movement of mule deer prior to this tagging study, it was hoped such a project would provide information which would be beneficial in the overall management of the deer resource. Previously it was not known if mule deer stayed within a watershed or if they moved among and between several drainage areas during the year.

If the study proved that mule deer confine themselves to a single drainage area future management could be based on an individual herd or watershed basis rather than use the broader deer management unit concept which was currently being used.

After being tagged, the male deer

The author, left, attaches an ear tag while Bill Peabody, Commission biologist from Emporia, restrains the fawn. Tag returns provide information on mule deer movements.



fawn, now known to game biologists as A-20/A-21, spent the summer and winter with his twin, the doe and several other deer. Most mule deer fawns stay with the doe during the first year.

With the approach of spring, the doe and fawns moved away from the herd and traveled back to the secluded draw where the twins were born the previous spring.

As June once again neared, the doe turned on the now one-year old twins to drive them away from her fawning area. After repeated attacks the two begin their travels; they are on their own.

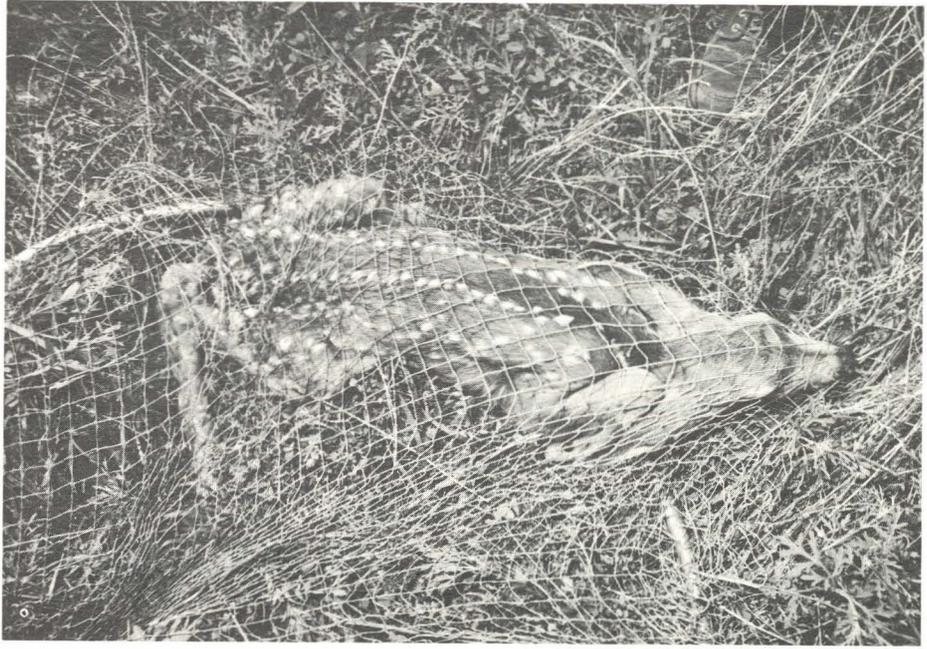
As is the case with mule deer, the tagged buck spent the summer and early fall of his second year in the company of two other bucks. As September comes to a close, his antlers, small but arrayed in a four-point conformation typical of his species, harden and he polishes the velvet from them leaving gleaming hard tines. Normally a yearling mule deer will produce only two points to a side but it has been a good year. Forage is abundant and living is easy so he has grown a nice four-point rack his first year.

As leaves begin to change colors and nights become frosty, he feels a restlessness that causes him to wander from his summer home. This is the rutting season and some primitive urge tells him it is time to take his place in the age old ritual of re-creating his own kind.

For some reason, perhaps an increase in hunter activity during the fall, the buck strays to the north ever further from his home territory. He eventually takes up residence along some unnamed canyon a few miles south of the Platte River in Nebraska.

One frosty morning just as the sun begins to edge down the sides of the canyon, the buck raises his head sensing that something is wrong but not knowing just what it is.

"There he is in the same place I saw him two days ago," says one pair of deer hunters. "It's your turn to shoot." The hunter slowly raises his gun and a shot echoes down the draw. It is November 13, 1971; the buck is 17 months and five days old.



Captured! A young mule deer fawn struggles for its freedom. After being tagged, the fawns are released and allowed to rejoin their mothers.

As the hunters inspect the buck they had harvested, one of them spots a gleam of metal in the early morning sun. "What do you make of that," he says. "This deer is carrying ear tags." Inspection of the tags indicate they are to notify the Kansas Fish and Game Department at Pratt, Kansas.

"Where do you think he came from," asks the Nebraska hunter who had shot the buck and was in the process of field dressing him, "without the ear tags the hunters would probably never know.

But, when the tags are sent in and forwarded to the men who trapped and tagged the buck as a fawn, some of the mystery is solved. The story of A-20/A-21 is complete. He has supplied some needed information concerning his 65-mile journey from the grassy draw where he was born.

A-20/A-21 and other tagged deer like him, have proven that mule deer do not stay in one drainage but will move among and between several drainages in the course of a year.

Like A-20/A-21, some movements of tagged deer have been astonishing. The longest movement to date was accomplished by a yearling whitetail doe which was tagged at the old Sheridan Lake site in Sheridan County and harvested by a deer hunter two

miles west of Rago in Kingman County. The doe had wandered some 170 miles from her birth site.

On the basis of the 14 returned tags, the average distance traveled for each tagged deer is 51 miles. Before the study we were certain that mule deer would travel to some degree but the magnitude and extent of the movements is surprising.

Quite obviously we will not be able to refine our movement unit concept of deer hunting along a drainage or herd basis. With deer moving in such an unpredictable manner, it will be impossible to reduce the size of our present management units which restricts the harvest of deer within the unit during the legal hunting season.

Although the original objectives of the study are nearly completed, one more year of fawn tagging operations will be conducted to add as many more tagged deer to our study as possible. Eventually several of these tags will be returned giving some insight into how long deer normally live—another benefit of the project.

And so it goes. With each new tag returned another piece to the complex puzzle of wildlife management is fitted into place and eventually the whole picture will emerge.

Kansas Fish & Game Interview

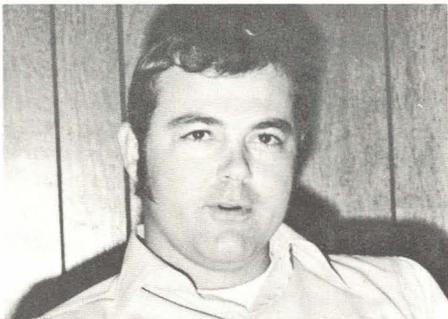
NOTE: The Bass Anglers Sportsman Society (B. A. S. S.) based in Montgomery, Alabama, is a national organization of and for, bass fishermen. In addition to its constant crusade for cleaner waters, this organization sponsors several professional bass fishing tournaments annually. Dennis Pope, Haysville attorney, competed in several of these tournaments and did so well he was ranked 17th nationally. As a result of this ranking, he was invited to participate in the Bass Master Classic at Lake Mead, Nevada, consisting of the 24 top point-winners for 1971. Pope was the only Kansan invited. A transplanted Sooner, Pope cut his teeth on big bass early in life. At the age of six, he hauled a five pound largemouth from an Oklahoma sand pit and he's been at it ever since. When he's not bass fishing, Pope practices a little law, handles secretarial duties for the Wichita Bass Masters and heads up the Sunflower Tackle Company. His largest Kansas bass, an eight pound, four ounce lunker, was taken from a farm pond in "the southern part of the state." (That's all we got, that's all you get!) In this issue, Managing Editor Vic McLeran draws on Pope's vast knowledge of bass fishing which the Haysville attorney has acquired after two years on the professional circuit. Regardless of how you feel about tournament fishing, we think Pope's observations and tactics are food for the thinking bass angler, especially those who fish large reservoirs. For those of you who aren't bass fishermen, don't worry. We have future interviews scheduled on crappie and catfishing, trotlining, waterfowling, upland gunning, archery, trapshooting, deer hunting and trapping—all with proven experts from the Kansas Outdoors.

McLERAN: Speaking of B. A. S. S., what do you think this organization has to offer the average bass fisherman?

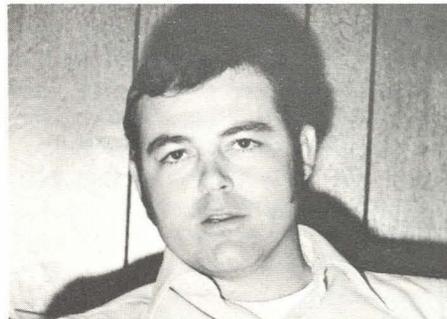
POPE: A great deal! The average fisherman is limited in scope. He usually fishes the same waters with about the same type tackle using

about the same methods. Membership in B. A. S. S. exposes him to fishermen, techniques and information from all parts of the country. This exposure can't help but put more bass on the stringer.

McLERAN: Specifically Dennis, how has it helped your bass fishing?



"As far as I'm concerned, Milford and Wilson are the best bass reservoirs in the state. Both have good water, cover, variable bottoms and a good supply of bait fish."

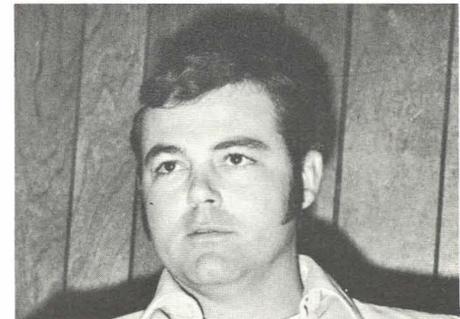


"I've always found bass were less reluctant to hit on cloudy days than during sunny ones. There are exceptions sure, but in the long haul, overcast days are best."

POPE: It's enabled me to meet and fish with the best bass anglers in the world. Just talking with them and watching their techniques has helped me immensely. Also, the magazine published by B. A. S. S. is jampacked with "usable" information. Too many magazine articles are like lures—they catch a lot of fishermen but few fish. Not so with the articles in *Bassmaster*.

McLERAN: Some people claim professional bass fishing tournaments are bad for a lake since a concentration of experts like those who participate in the tournaments will clean out the lake's bass population. How do you feel about this?

POPE: You couldn't print it in your magazine! Seriously though, this charge is ridiculous. In the first place, tournament dates are drawn up months in advance. As a result, we have no guarantee of good weather and fish under some of the worst conditions possible. Secondly, tournaments are held on reservoirs, which for the most part are unknown waters to all but those contestants who live in the immediate area and have had the opportunity to fish and become acquainted with the lake. Thirdly, all B. A. S. S. tournaments are held on the first or last quarter of the moon when daytime fishing is probably at its worst. Then too, there are anywhere from 150 to 200 boats tearing up the



"In my opinion, plastic worms are the most deadly bass bait on the market. As long as the water temperature remains above 58 degrees, you'll find me fishing worms."

water and spooking the bass. Sure, these guys are some of the best bass fishermen in the country and they're going to catch some fish, but the "killer" reputation is undeserved. I think most of it stems from the impact that 200 or so professional bass fishermen make when they all pull up to the weigh-in station at about the same time. It looks a lot worse than it actually is. Last week a bunch of local bass fishermen may have really sacked 'em down at Joe's Marina, but it was done without the fanfare and publicity which accompanies a tournament. However, in an attempt to save some of these bass, the Society is initiating a "save-the-fish" procedure for future tournaments. They have required all contestants' boats to be equipped with an aeriated live-well. The fish will be kept alive during each day of the tournament, weighed in the evening, then released. If any opinions prior to this time were valid, B. A. S. S. certainly has corrected them with the new program.

McLERAN: Where is most of your bass fishing in Kansas done?

POPE: Well, I prefer reservoir fishing because of the challenge it offers. But I also fish farm ponds, strip pits—just anyplace where there are bass. Like the man said, "I'd fish a pay toilet if it had bass in it."

McLERAN: Which are your favorite Kansas reservoirs for bass fishing?

POPE: As far as I'm concerned, Milford and Wilson are the best bass reservoirs in the state. Both have good water and cover, variable bottoms and a good supply of bait fish. Unlike some reservoirs, these two don't have large concentrations of stagnant water and terrible fluctuations.

McLERAN: What kind of tackle do you use, Dennis?

POPE: I use the Ambassadeur 5000c with 17-20 pound test monofilament line. I also keep a Garcia open face reel rigged with 6-8 pound test line for those times when bass are skittish about taking large lures on a heavy

line. My rods are Fenwick blanks, custom-wrapped by Joe Keltner of Brookline, Missouri.

McLERAN: What about a boat?

POPE: I have a Ranger bass boat with a Motor Guide electric trolling motor, a 120 horse Mercury engine, a Lowrance Lo-K-Tor depthfinder and a Lowrance Fish-N-Temp thermometer. I also keep two anchors, one for each end of the boat.

McLERAN: When attaching lure to line do you prefer a snap swivel or do you attach the line directly to the lure?

POPE: Most of the time I use a modified form of the improved clinch knot, and tie directly to the lure.

McLERAN: What lures do you consider most effective for taking bass here in Kansas?

POPE: I like Yum-Yum plastic worms; the jig and eel; the tandem spinnerbait; and the Devil's Horse or "chugger" type lures for the surface. At night, I use a dark Jitterbug fished real slow.

McLERAN: What are your color preferences in these lures?

POPE: I've been most successful with grape and purple as well as the two-color plastic worms. In spinnerbaits, I like yellow or white. When using the jig and eel I stay with black. On surface lures, I prefer yellow, white or the new chrome color which is real hot right now.

McLERAN: How do you rig and fish the plastic worm, Dennis?

POPE: I use the so called "Texas" rig with the hook embedded in the worm to make it weedless. The Eagle Claw Model 40, with its extremely sharp point, works best for me. The slip sinker size I use depends on the type of fishing I'm doing. For the most part though, I think the heavier sinker pulls the worm down in a rapid, unnatural manner. Then too, I don't feel a heavy sinker allows the angler to feel

the pickup as easily as a smaller sinker does, especially when bass are taking the worm gently. After I cast the rig, I allow the lure time to reach the bottom. Since 90 per cent of my strikes occur when the worm is falling or in the first seven or eight feet of the retrieve, I engage the reel and wait several seconds before retrieving. Then, with the rod at an angle of about 45 degrees, I shake or jiggle the tip in sharp, jerky movements rather than sweeping it back in one continuous movement. I retrieve the worm all the way to the bottom in this manner if the bottom cover is the same. If it's spotty, I only retrieve the lure through the most productive-looking cover. By retrieving the worm in these short jerks, I keep the lure in good bass cover longer than I would with the big sweep. I also feel the jerky, jiggling motion draws the bass's attention more quickly than the steady motion of the sweep. Upon feeling a pickup by the bass, I set the hook immediately. As a general rule, I've had more luck with a quick wrist movement than with the "reel down and rock the boat" style of setting the hook. As I say, I usually hit 'em quick, but when I miss two or three and it looks like they need more time, then I give them some line.

McLERAN: What do you consider the most important factor with regard to lures—color, size, depth or method of retrieve?

POPE: They're all important, but to me, method of retrieve is number one since you often have to make bass move to the lure. Because of this, the successful bass angler has to develop the ability to make the lure appear natural and attractive to bass. Depth of the lure is definitely important due to the bass's habit of staying deep much of the time, but all things being equal, I'd have to stay with method of retrieve as being the most important factor.

McLERAN: You mentioned earlier that you use a depth finder and an electronic thermometer. Do you consider both of these essential when fishing the large reservoirs?

POPE: No doubt about it! With these two items the bass fisherman can quickly locate cover and “underwater structure” as well as the bass’s preferred temperature range of 65-72 degrees. Also, if used properly, the depth finder will tell you the type of bottom you’re fishing. This is helpful since bass prefer a gravel or grass bottom over one of mud. Day in and day out, I think bass seek comfort over anything else. The thermometer lets a guy zero in on that layer of water which has the temperature bass prefer.

McLERAN: What about topographic or hydrographic maps? Do you use them and consider them essential for reservoir fishing?

POPE: Definitely! When fishing the big lakes, they’re invaluable since they eliminate those portions of the lake which are barren of cover and they also show the angler where the structure is located.

McLERAN: Just what is this “underwater structure” we read and hear so much about?

POPE: Underwater structure is anything beneath the surface that’s different from the surrounding area. It can be large rocks, submerged stumps, logs, brush piles, a ledge, drop-off, old road bed or the adjacent culverts or ditches, or old creek channels. Areas like these appeal to bass because they appeal to bait fish on which the bass feed. In addition, they provide both with cover and concealment. Then too, these places are often shadowy and darker than places without cover and I have every reason in the world to believe bass shun light and seek darkness. In short, these areas provide bass with food, comfort and darkness.

McLERAN: You’d obviously prefer an overcast day to a sunny one for bass fishing.

POPE: No doubt about it! I’ve always found bass were less reluctant to hit on cloudy days than during bright sunny weather. There are exceptions sure, but in the long haul, the over-

cast days have produced more fish for me. The same thing applies to murky versus clear water. Bass aren’t as hesitant about taking a lure or moving from one area to another in murky water. Bobby Murray fished murky water at Lake Mead during the 1971 Bass Master Classic and collected \$10,000. A great example of how good murky water fishing can be occurred during the Lake Table Rock National Tournament in April, 1971. The weather was cloudy and we had a light rain during most of the first day. The rain and accompanying runoff made the water murky. We had fantastic fishing during that day. In the following two days, the sun came out, the water cleared up and very few fish were caught. If you’ve ever tried to shoot quail or bass fish looking into the sun, you have some idea of how a bass feels in crystal-clear water during sunny-weather.

McLERAN: Do you pay any attention to the solunar tables?

POPE: Religiously! If I didn’t fish the national tournaments, I probably wouldn’t hit the water until the tables were right. Sure, I’ve had exceptions but day in and day out, the solunar tables are great indicators of peak activity.

McLERAN: Do you think barometric pressure has any effect on bass fishing?

POPE: Definitely! I think fish can feel and are aware of, barometric changes long before we are. When bass feel the pressure dropping before a storm, I think they go on a feeding binge. I’ve been on the water 30 minutes before a storm with barometric pressure dropping and the bass went wild, hitting anything I offered them. Fishing can also be good a day or two after a storm when the barometer is rising. I think the poorest fishing occurs when the barometer is stationary although we’ve all seen exceptions.

McLERAN: How does water temperature play a part in your bass fishing?

POPE: As far as I’m concerned, locating the bass’s preferred water temperature is THE place to start fishing. Show me water in the 65-72 degree range, and the bass will be near. Last winter, a friend and I stopped at Toledo Bend Reservoir on our way back from Sam Rayburn Lake. The dock reports were negative—no one was catching any bass. However, we hit the water and within three hours had our limits—all taken from three to seven foot of water. The natives thought we were nuts, fishing that shallow water during the winter. Well, the water temperature was 60 degrees on top and cooler as you went deeper! We found that the unseasonably warm weather had created a warm layer near the top and despite bright sunlight and clear water the bass moved to this comfort zone. We found warm water in winter and we found bass. Temperature is paramount!

McLERAN: What’s this thermocline we hear so much about and how does it affect bass fishing?

POPE: Basically, the thermocline is the stratification or “layering” effect which separates water of different temperatures. The colder water has more density, meaning less oxygen and therefore the fish avoid this layer. Normally the surface layer is quite thin and affects fishing very little. The next layer down is usually the oxygen rich layer which is above the cold bottom layer. The point where these two layers meet is the thermocline. It can be found by lowering a thermometer and finding at what depth you get a drastic temperature change. Fish abound around cover that is just above the thermocline. Tree studded points and drop offs are the most easily fished areas when the lakes have a distinct thermocline.

McLERAN: How often do you change lures if they’re not producing?

POPE: That’s a tough one. Generally speaking, I’m not a lure changer but I will change occasionally. First of all, I think it’s important to thoroughly fish the structure which you’ve

found. Remember, it often takes several retrieves through the same cover before the bass will decide he wants your bait. I would rather take a plastic worm or even a Jitterbug to 15 different places than to sit on the same place and fish 15 different lures.

McLERAN: In recent years, the plastic worm, jig and eel and spinnerbait have all become top notch bass lures. What conditions dictate fishing with each of these lures?

POPE: In my opinion, plastic worms are the most effective bass bait on the market. As long as the water temperature remains above 58 degrees, you'll find me fishing the plastic worms. However, when the water temperatures get colder, the plastic worms tend to get a little stiff. When this occurs, I get out the jig and eel. In other words, I fish the worm in late spring, summer and early fall. In late fall and winter, I work the jig and eel. Spinnerbaits are another excellent lure and they're effective most of the year. In shallow reservoirs which contain lots of brush and stumps, they are super. The vibrating, spinning action of these baits seem to trigger the attack response in bass more than any other lure I've seen.

McLERAN: Do you think big bass "school" or congregate in the same area?

POPE: You bet! I think this occurs in large waters more than it does in small waters but I know it happens. I watched John Powell win the National Tournament at Lake Sam Rayburn in Texas after he'd located one of these schools of big bass. He took 10 bass weighing five pounds up to seven—all from the same hole.

McLERAN: What procedure do you use when trying to locate bass in a lake you've never fished?

POPE: First I obtain a topographic map of the lake. I then pick those areas in the lake which have the greatest variance in bottom structure. With a depth finder I locate the underwater structure. Once this is done, I fish the area thoroughly using the

thermometer to determine water temperatures in these areas containing structure. If the lake contains any murky water areas, I give these quite a bit of attention.

McLERAN: In closing, Dennis, what advice could you give the average bass fisherman which might help him put more bass on the stringer?

POPE: Concentration is probably the key. If you want to catch more bass you have to think more bass. Bass fishing is just like golf, trapshooting or any other sport since it requires total concentration. All the really "great ones" have this ability to concentrate totally on their sport. True, the guy who goof's around will catch a few fish, but over the long haul, the angler who concentrates and uses all his knowledge will catch more bass. Good equipment is essential too. Even

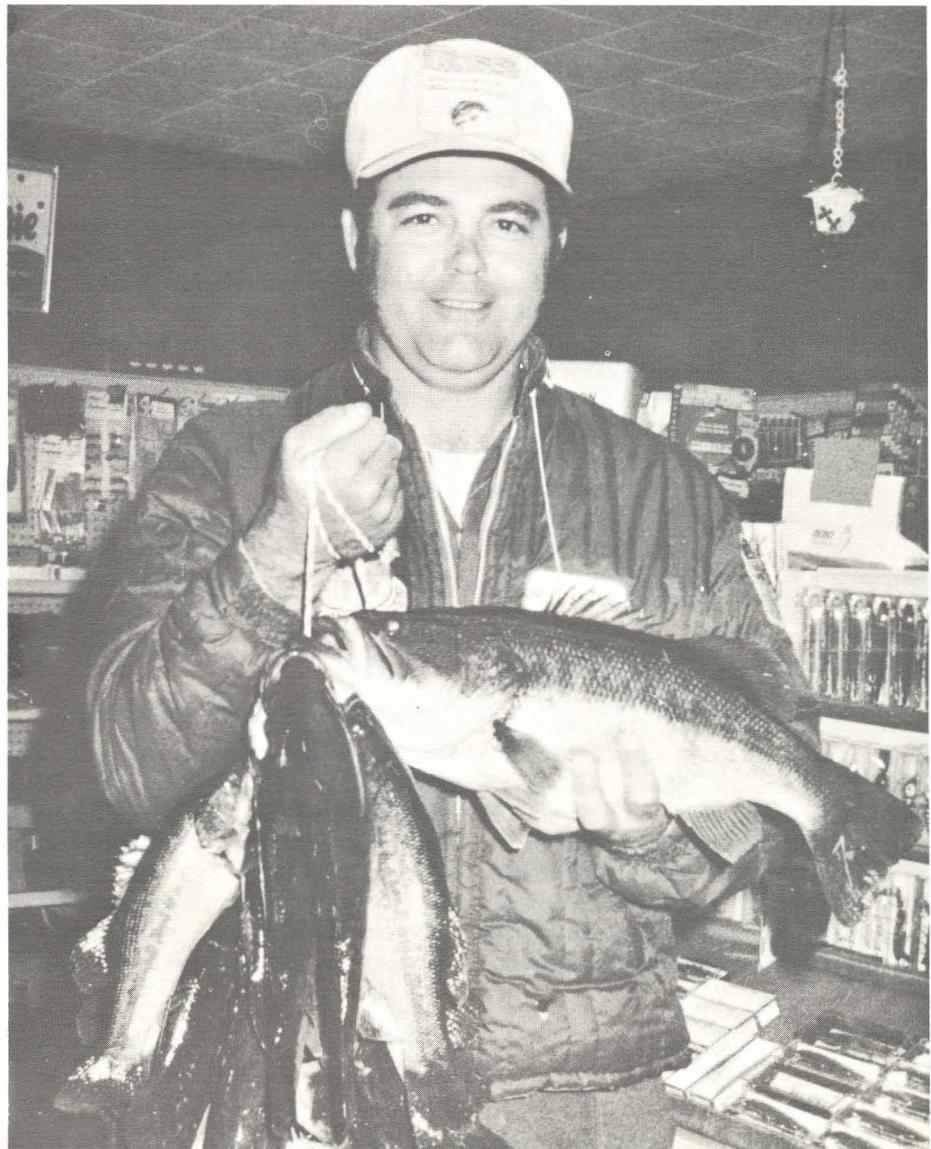
though we've all heard the story about an enormous lunker being caught on a two dollar rod and reel, the good equipment will pay dividends in the long run. Practice in developing a touch is helpful too. By this, I mean the ability to retrieve a certain lure in a manner that attracts bass. Last but not least, is patience. All good bass fishermen I know have it—the ability to stick with it, knowing in the long run application of those basic lessons will pay off.

McLERAN: One more thing before we close, Dennis. Could you show me the pond where you caught that eight pounder last spring?

POPE: I'd love to, Vic, but to be honest, I don't think I could find it again.

McLERAN: Unhhuh . . . sure!

Dennis Pope, considered the "best bass fisherman in Kansas," by many people, displays a string of largemouth bass.



FRENCH FRIED CHANNEL CATFISH

After channel cat is skinned and dressed, cut it crosswise into slices about 1 inch thick. Have a kettle of fat or cooking oil, deep enough to completely cover all the fish, smoking hot. Salt pieces, dip in unsweetened condensed milk (full strength) roll in cracker crumbs (or dip the unsalted pieces and roll in salted cornmeal). Cook until golden brown, serve hot with melted butter and lemon juice. Note: use of condensed milk makes it easy to burn the fish; watch carefully; remove when they rise to the top of the cooking fat or oil.

BAKED CARP OR BUFFALO

Remove head and insides; in dressing remove the skin, cut out the brown strip down each side as it is sometimes strong, wash well, rub on salt to season inside and out, place in a grease covered roaster. Use juice of 1 lemon over 4 pounds fish, more or less is O. K. Cover, bake 1 hour at 325 degrees. Remove cover, baste several times with own liquid while continuing to bake ½ hour uncovered. Then place liberal amount bacon over top, continue to bake till light brown, about ½ hour.

This fish may be cooked in a pressure cooker (or pressure canner) at 15 pounds, 1 hour 50 minutes. Wrap well in foil, place on rack above water in cooker. Warning: Since this is longer than most pressure cookery is done a little more water must be used and heat carefully watched. Usually this is long enough to dissolve bones. Allow the fish to cool so you can handle the fish without them falling apart, place in flat open pan, bake 1 hour as above using lemon juice, then add bacon and baste with own liquid till light brown.

BROILED BASS, CRAPPIE OR WALLEYE

In preparing fish to broil, add 2 tablespoons prepared mustard to 1 stick of butter and rub inside and outside of fish, then salt and pepper and wrap in aluminum foil and place in broiler. For a fish under 1 pound allow about 15 minutes; over 1 pound from 15 minutes to a half-hour. When you

remove foil the skin comes off with it. Very delicious.

BARBECUED FISH

Any variety of small whole fish. Barbecue sauce. Clean and dress fish, place over a grill. As fish cook, brush with warm barbecue sauce.

BARBECUE SAUCE

- ¼ cup lemon juice
- 3 tablespoons vinegar
- 1 teaspoon salt
- ½ teaspoon pepper
- ½ teaspoon garlic
- ½ teaspoon paprika
- ¼ teaspoon cayenne pepper
- 1 teaspoon dry mustard
- ¼ teaspoon red hot sauce

Combine all ingredients to boiling point.

FRIED BASS, CRAPPIE OR WALLEYE

- 2 pounds of fillets
- 1 egg beaten
- 1 tablespoon milk
- 1 teaspoon salt
- ½ cup flour
- ½ cup dry bread crumbs

Cut fish into serving-size portions. Combine egg, milk, and salt. Mix flour and crumbs. Dip fish in egg mixture and roll in flour-and-crumbs mixture.

Pan-fried: Place fish in a heavy frying pan which contains about one inch of fat or cooking oil. This should be hot but not smoking. Fry at moderate heat. When fish is brown on one side, turn carefully and brown the other side. Cook approximately five to ten minutes depending on the thickness of the fillets. Drain on absorbent paper.

Deep fat fried: Fry in a basket in deep fat, 350 degrees for 2 to 5 minutes. Drain on absorbent paper. A commercial breading may be used in place of the flour-bread crumb mixture.

BAKED BASS OR WALLEYE

Fillet the bass if it's large enough. If not, just scale it and scrub the flesh white with a stiff-bristled brush. Place the pieces in a collander and let cold water run on them for 10 to 15 minutes turning occasionally.

Drain, salt lightly, and place in refrigerator overnight. Remove, let

Aquatic

By VIC

Fishin' season is here! And this is in many Kansas households. However, found in our lakes and streams. Freshwater mussels, crawfish, turtles, easy-to-prepare recipes for the common. Recipes included here are not only more unusual delicacies as well. Missouri Conservation Department's Don't turn up your nose at some of the quite tasty if properly prepared. Let's try it." Bear in mind, that for best results should be cooked fresh. Frozen fish is fresh fish.

stand until approximately room temperature. Melt enough butter to allow generous dipping of each piece.

Now, comes the gourmet's touch!

Roll butter-dripping fish sections in potato chip crumbs. That's right crumble the chips with a rolling pin and the rolled fish will look like it's got scales again.

Lay pieces in a baking dish, pour remaining butter over them, and bake-fry until golden brown and just done. DON'T OVER-COOK! The succulent flavor will come close to making you an addict.

EEL MATELOT

- 2 pounds eel
- ½ pint white wine
- ½ cup stock
- 2 onions sliced
- 1 clove garlic
- Salt, to taste
- 2 tablespoons butter
- Mixed herbs
- Salt
- Pepper

Skin the eel, cut in 3-inch pieces; brown the onions with eel, herbs, garlic and salt. Cover with wine and stock. Cover, bring to boil and let simmer for about ½ hour.

Remove the pieces of eel from the liquid, strain the liquid through a sieve into another pan and let it cook until reduced by ½. Pour liquid back over eel and serve with croutons of fried bread.

Delicacies

DELERAN

As fresh fish will soon grace the tables, fish aren't the only aquatic delicacies there are many more—things like frogs, even eels. We've assembled several delicacies of sportsmen and their wives. Common species, but for some of the more of these recipes were taken from the "Guide to Cooking Fish and Game." These are little-known dishes. They're actually, as the man said, "Don't knock it 'til you taste it." Results, fish and other related items are OK, but their flavor is nothing like

MUSSELS IN WHITE WINE

Scrub well 3 quarts mussels. Place them in a saucepan or kettle with 1½ cups white wine and 6 shallots (scallion or onion tops), finely chopped. Cover and cook over a high flame for 6-8 minutes or until the shells open. Remove the mussels from the saucepan and, if desired, take off one shell from each mussel. Arrange the mussels in a heated large deep platter (turkey platter), and keep them warm by covering the platter with a towel wrung in hot water.

Reduce the cooking liquor to ½ its original volume and thicken by adding a combination of 5 tablespoons butter and 2 teaspoons flour.

Taste for seasoning, add 1 tablespoon finely chopped parsley and pour the sauce over the mussels. Serve immediately in deep soup plates and eat directly from the shell.

The mussel broth may be served without reducing or thickening.

CRAWFISH COCKTAIL

Use standard shrimp cocktail recipe, substitute crawfish tails for shrimp. Peel the tails of enough crawfish to equal the volume of shrimp called for, remove vein, boil in salted water about 20 minutes or till pink.

Boiled crawfish tails may be used in any shrimp recipe as a shrimp substitute. Be sure the crawfish tails

are fresh; they spoil as quickly as shrimp do.

BOILED CRAWFISH

Keep your crawdads alive until ready to prepare, by having them in a good sized container in plenty of water. The recipe should be about right for about 1½ gallons of crawdads. Place crawdads in lukewarm, strong salt water, this induces regurgitation and cleans them. Rinse. Now, dump crawdads into pot of boiling water containing: 2 ordinary sized bay leaves, 1 tablespoon comino seed, 1 teaspoon celery seed, 2 chili peppers, 1 teaspoon salt (add more to taste), 1 teaspoon wine vinegar, pinch of oregano. Red peppers may be substituted for chili peppers. Boil about 1 hour at low boil. (Cook until they are bright red.) Taste test. In removing tail from shell pull center fin to remove intestine.

FRIED CRAWFISH

Wash the crawfish and pour boiling water over them, letting them stand until they turn real pink. Pour over cold water and clean out the tails of the crawfish and pull the little black threadlike intestine from the center, add cloves and allspice (whole) to the above while cooking. Roll the tails in cornmeal and fry a delicate brown. They are delicious.

FROGLEGS A LA NEWBURG

2 tablespoons butter
Salt and cayenne
3 egg yolks
½ cup Madeira
½ pint cream

Boil 3 minutes. Add the cream and egg yolks slightly beaten. Cook 2 minutes stirring constantly and pour over the froglegs, which have been dipped in egg and cracker crumbs and fried a golden brown in hot fat.

FRIED FROGLEGS

Soak for one hour in a mixture of equal parts lemon juice and water, salt and pepper. Wipe with cold, damp cloth. Roll in flour. Dip in well beaten egg diluted with water. Roll in cracker crumbs. Fry in deep, hot fat until a golden brown. Serve with tartar sauce.

PAN FRIED FROGLEGS

2 pounds froglegs
1 teaspoon salt
½ teaspoon pepper
¼ cup flour or cornmeal
¼ cup butter or margarine
About 1 teaspoon grated onion

If the froglegs are large ones cut apart through backbone. Do not wash, just wipe with damp cloth; the delicate flavor is easily lost by washing. Cut off feet, combine salt, pepper and flour, dip froglegs in flour mixture to coat well (same as you would chicken), fry in hot butter or margarine and onion until browned, cover and cook over low heat until tender, about 15 to 20 minutes.

TURTLE SOUP

1 pound veal bones, cracked
1 onion, sliced
1 carrot, sliced
1 tablespoon butter
3 whole cloves
Salt and pepper
¼ cup sherry
1 cup cooked turtle meat

4 cups beef stock, cold
5 cups tomatoes
2 tablespoons flour
½ lemon, sliced
1 hard-boiled egg, chopped

Brown bones, onions and carrots very slowly in butter in heavy pan. Add flour, and stir until blended. Add cold beef stock, tomatoes, cloves and salt and pepper. Heat slowly to boiling, skim, cover, and simmer 2 hours. Strain stock through a fine sieve and cool quickly. When cold, remove fat, and if necessary, clarify soup.

Add turtle meat and sherry, bring to a boil and serve with a slice of lemon and chopped egg. Serves 6.

FRIED TURTLE

Chop off the head, then turn the turtle on its back and nail 2 nails through the shell into a block at the tail and head. Then, with a sharp knife and a pair of pliers cut off the sharp claws first at the first joint. You can then hull it right out.

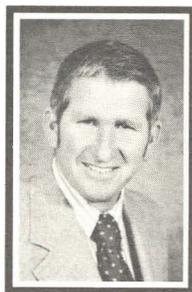
I cut the meat in frying size pieces, salt and pepper it, roll in flour and fry brown on both sides. If this is a large turtle, I pressure cook it about 30 minutes at 15 pounds in a saucepan.

Can Chemicals Do The Job?

By Verl Stevens, Hatchery Superintendent

Drawings by Betty Stevens

AQUATIC vegetation in small farmponds can frustrate fishermen, both boaters, snare swimmers, and destroy domestic water supplies. It directly interferes with the harvest of fish in commercial ponds and can seriously affect population balance in fishing ponds by providing unnecessary hiding places for small fish which



Stevens

should be available as forage to larger fish.

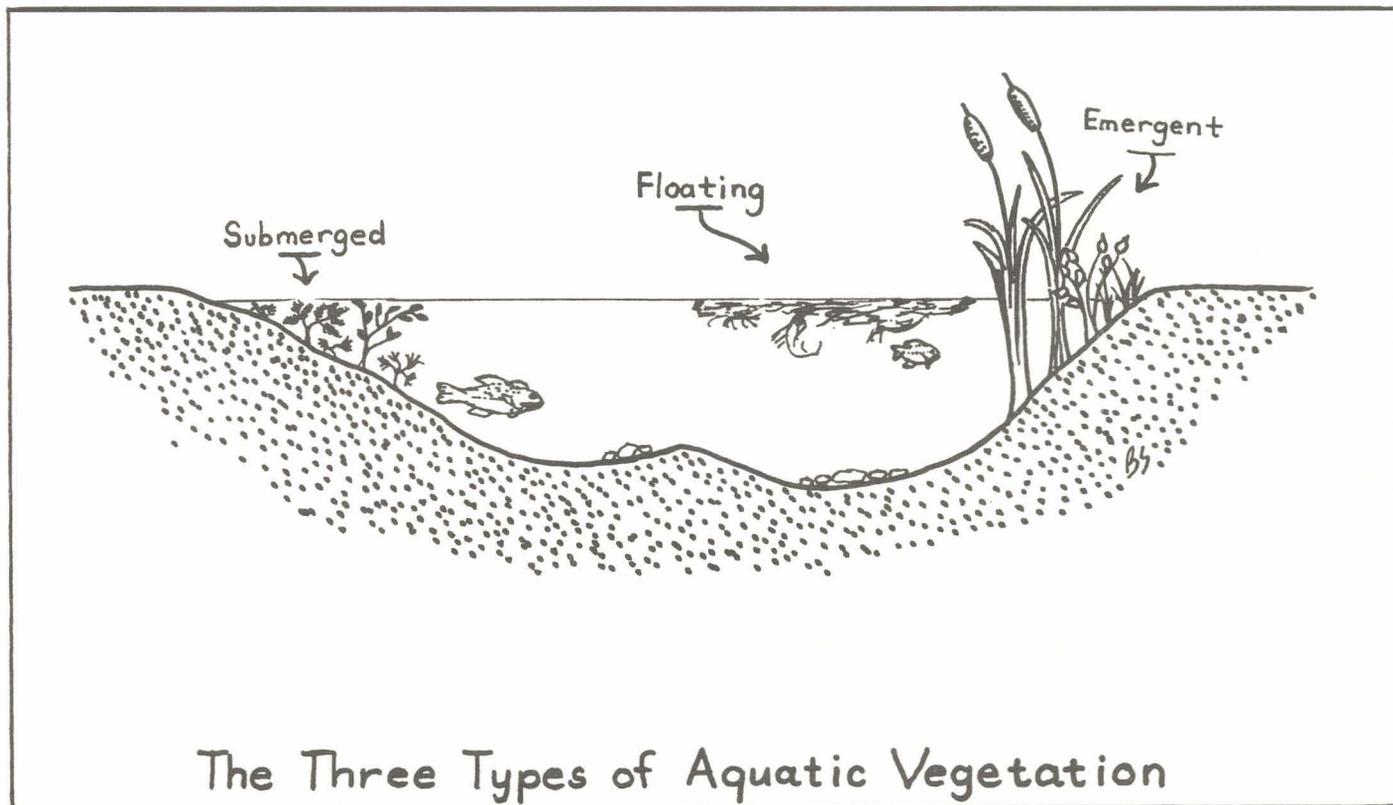
We usually think of plants as land dwellers. Actually, many of them live entirely in water, using food substances in the pond bottom or in the

water itself and the sunlight that penetrates the water to grow and reproduce. Because sunlight is essential, weed growths usually start in shallow areas of ponds where more light is available. This problem is greatest in clearwater ponds since sunlight penetrates to a much greater depth encouraging the growth of undesirable plant life. Seldom is there a vegetation problem in turbid ponds. When a pond is constructed, extensive shallow areas of depths less than three feet should be avoided.

It is natural for pondowners to want to control unwanted vegetation. This control can be divided into three very important steps: (1) identification of the plant to be controlled; (2) selection of an appropriate method of control; and (3) determination of rate and method of application if chemicals are to be used.

Exact species identification of nuisance vegetation is required for chemical selection. Many species look much alike, but sometimes the same chemical will not control all the look-alikes. If exact species identification cannot be made, help should be requested from district fisheries biologists or by sending samples or pictures of the vegetation to the Kansas Fish and Game Headquarters, Fisheries Division, Pratt.

Aquatic vegetation can be divided into three groups: algae, emergent weeds, and submerged weeds. The first group includes all types of algae. Algae can be divided into phytoplanktons (suspended, microscopic algae) and filamentous algae (growing in long strands or filaments). The latter plague the fisherman by entangling his bait and line and allowing the big one to get away. Normally the phy-



The Three Types of Aquatic Vegetation



Chara (1)

toplanktons are beneficial, vital links in the basic food chain. They also inhibit light penetration through the water and so limit the growth of undesirable rooted vegetation.

Filamentous algae can usually be seen floating on the surface of the water. However, these algae normally start growing on the bottom of the pond and float to the surface as growth progresses. Almost all members of this group (also called pond scum) are made up of long string-like filaments. Three species are common in Kansas: *Cladophora* (cottony mat type), *Spirogyra* (slimy and green), and *Pithophora* (horsehair clump type). *Chara* resembles a rooted plant even though it is an alga; it can be identified by the characteristic musky odor when pulled from the water (see Figure 1). Although a common nuisance to pondowners and fishermen, most filamentous algae are relatively easy to control.

The second group of plants, the emergent weeds, grow in shallow water with roots attached to the bottom and leaves and stems above the water. Cattails and bullrushes are the most common offenders, but arrowhead and water willow are also commonly found in all parts of Kansas. Emergent plants can spread by means of underground root systems as well as by seeds.

The third group, the submerged

weeds, have roots attached to the bottom of the pond and can grow all the way up to the surface. In extremely clear water they can take over an entire pond, even growing in water up to 10 feet deep. Most of them resemble higher plants in having root systems, a main stalk, and leaves. There are several common species in Kansas and it is especially important that exact species identification be made before applying any chemicals to control them.

Sago pondweed *Potamogeton pectinatus* (figure 2), sometimes called brushy pondweed, is one of the common aquatic weeds in Kansas. The leaves are somewhat stiff, round, tapered, and hairlike in appearance. The spreading of the leaves under water resembles a fan. Seeds are produced on a long stem above the plant.

Leafy pondweed *Potamogeton foliosus* (figure 3) is a close relative of the Sago pondweed but can be identified by the short, grasslike leaves. During mid-summer the seed pods are attached to the center stems by a short stalk.

Coontail *Ceratophyllum spp.* (figure 4) is widely distributed in Kansas. On close examination the leaves appear threadlike and have a forked appearance; however, the stem and leaf arrangement resemble a raccoon tail.

Water milfoil *Myriophyllum spp.* (figure 5) should not be confused with coontail. The leaves resemble feathers and the plant is even called parrotfeather in some areas.

Slender naiad *Najas flexilis* (figure 6) is very common in small ponds throughout Kansas. It is characterized by rather short, curved leaves. Seeds are produced at the junction of leaves and stems.

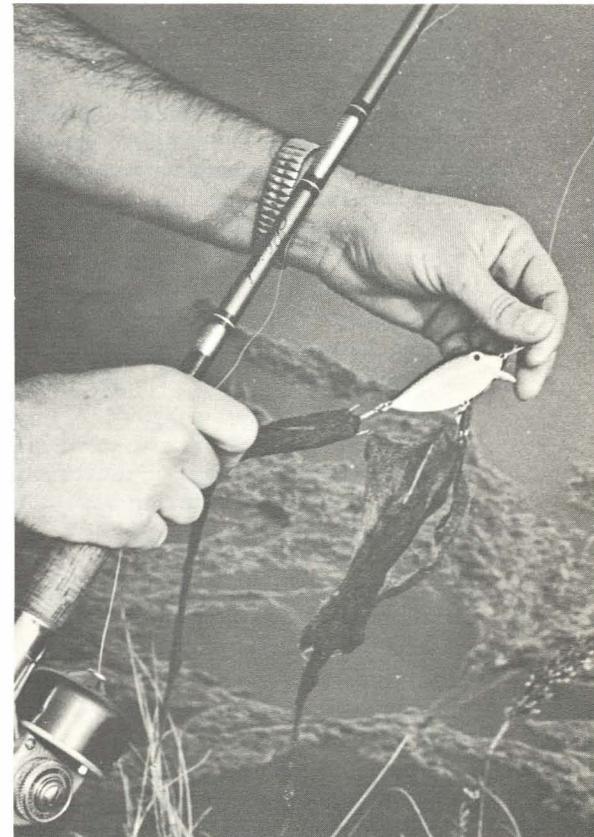
There are three basic methods of aquatic weed control; mechanical, biological, and chemical. Mechanical control is the pulling, cutting, or raking vegetation from the water. This method has not proven to be very successful and is frequently very expensive. However, mechanical control should not be completely ignored because it may be the most practical in some cases.

The most popular biological control

is fertilization of the water to produce an algae (phytoplankton) growth to shade out submerged vegetation. Often the introduction of plant-eating or bottom-rooting fishes such as various carp can produce turbid water, but most of the time the fish are more undesirable than the vegetation.

Agricultural chemists have made life much easier for pondowners. Chemical control of aquatic weeds is an outgrowth of related agricultural activities. New products have been developed and carefully tested by industry representatives and federal and state regulating agencies. Tests are regularly conducted to insure that when chemicals are used as directed there are no hazards to fish or other kinds of animal life associated with the ponds. Conditions for using a herbicide in the aquatic environment are extremely restrictive and carefully regulated. Commercial firms wanting to distribute a product must invest substantial effort and money in testing any product before state and

Filamentous algae can be a nuisance to fishermen—notice the clump-like appearance of this one, called Pithophora.





Sago Pondweed (2)

federal registration agencies will allow the product to be marketed.

Many new products are being approved for use on aquatic vegetation, but there will be no attempt to deal with all of them here. A visit to the local agricultural chemical dealer will help the pondowner know what is available. Each container will carry a label with instructions for use, a list of specific plants it will control, application rates, and precautions. No chemical has been developed that will effectively kill all problem aquatic plants. Most chemicals have been developed for a particular group or family of plants and have little or no effect on others. Many chemicals are available for treatment of submerged vegetation. There has also been research on pre-emergent herbicides to be applied to the dry, exposed pond bottom. Both types of chemicals will control the same species of weeds.

In choosing a method of vegetation control, it must be remembered that even chemical control is usually temporary. The vegetation will return as the chemical is diluted and becomes ineffective. Sometimes pond fertilization can be initiated AFTER the application of a chemical. This helps produce a phytoplankton bloom which may shade out and prevent the return of rooted vegetation. Fertilization of a pond with an existing weed problem usually doesn't help at all. If weeds

are growing already, adding fertilizer will only make them grow better!

Chemicals can be applied to almost any vegetation problem and desirable results can be obtained most of the time. Vegetation is usually well developed before being detected and the use of chemicals is the only feasible way to eliminate the problem.

Some aquatic weeds are annual plants; that is, they grow to maturity and produce a seed crop in one year. Other plants are perennials; they may live for several years and may propagate by means of an underground root system as well as by seeds. Chemical treatment early in the growing season will prevent the production of seeds.

Aquatic weeds are most easily controlled when they are growing vigorously. Herbicides should be applied early in the growing season while the plants will readily absorb the chemical. If treatment is delayed until a large quantity of vegetation is present, more chemical may be needed and a complete control is harder to obtain. Most aquatic weeds are more difficult to kill after they have produced seeds. In Kansas that means the treatment should be made before mid-June.

To control some perennial plants such as cattail, chemical application should be made at a time when it is effective on both roots and seed production. Cattails are normally easiest to kill about the time the head (cat-



Leafy Pondweed (3)



Coontail (4)

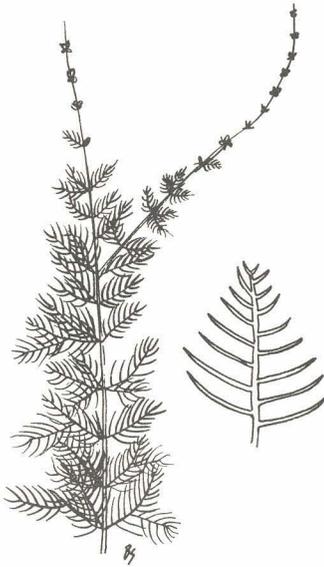
tail) begins to form. Sometimes satisfactory control of a stand of weeds will require several applications for more than one season. Some dense stands of aquatic weeds can be very stubborn. Buried seeds and underground tubers can be especially troublesome. Treatment for several years might be needed to destroy them all.

If chemicals are to be used, there are several very important points to remember:

1. Pond waters vary considerably in chemical compositions from one part of Kansas to another. It is never possible to be completely sure that any given chemical will give the same results in all waters.

2. Caution!! Use only those herbicides which have been registered by the Department of Agriculture. Other chemicals may be extremely toxic to fish, man, or other animals coming in contact with the pond water.

3. In many areas of the state there are large numbers of spring-fed ponds. In such ponds it is sometimes impossible to get a good weed kill because the chemicals are diluted so fast they do not have time to be absorbed by the plant. Water flow through a pond should be shut off during the treatment period. If springs cannot be diverted from the pond, good weed control should not be expected.



Milfoil (5)

4. Read the entire label before application. Many chemicals are not suitable for use on ponds used for watering livestock for domestic use, or for irrigation. Many labels have restrictions on the eating of fish or swimming in ponds after treatment.

5. It is absolutely necessary to use only the recommended dosage of chemical. If heavier concentrations are used, fish, insects, and other beneficial pond animals may be endangered. These preparations are safe, but only if used at recommended rates and if applied in the correct manner. Use only those chemicals recommended for the kinds of weeds you want to kill. Do not increase the rate of application to attempt a more rapid kill.

6. Once killed, weeds start to decompose. This process uses oxygen, and if large amounts of vegetation are decomposing at the same time, fish may suffer and die from lack of oxygen. If most of a pond is covered with vegetation, it should be treated by sections. Plan treatments early in the growing season to minimize chances of an oxygen loss to fish. In early spring there is much less vegetation and it is easier to kill.

7. If fish have been affected by oxygen deficiency, they can usually be seen just about dawn near the top of the water. They will be swimming around with their heads partly out of

the water "gasping" for air. Fish in this condition can sometimes be saved by adding large amounts of fresh water. If the herbicide has dissipated from the water, sunlight may cause phytoplankton to give off more oxygen.

Herbicide labels will supply rates of application, but it is useful to know how these rates are determined. Rates of application for submerged plants are calculated on the basis of water volume. Chemical doses are expressed in parts per million (ppm.). This figure indicates the number of units of active chemical ingredient per million units of water.

To obtain a reasonable water volume estimate, only two values are needed. The surface area (length x width) multiplied by the average depth will give the number of cubic feet in the pond. A pond having a surface area of one acre (43,560 square feet) and an average depth of one foot would contain one acre-foot of water. A typical one acre pond with a maximum depth of eight feet would hold about four acre-feet of water. An acre-foot of water weighs about 2,700,000 pounds. An application of one ppm would require a dosage of 2.7 pounds of active ingredient. Accurate volume data can be obtained from county SCS agents if the pond was constructed in conjunction with their programs.

For powdered herbicide, 2.7 pounds of active ingredient is one ppm. Many of the new herbicides are in liquid form so when using them one must know the number of pounds of active ingredient per gallon of stock solution. If there is one pound active ingredient per gallon, it would take 2.7 gallons for a dosage of one ppm, for one acre-foot of water. If the herbicide contained four pounds active ingredient per gallon, only .68 gallons would be required to treat one acre-foot at one ppm.

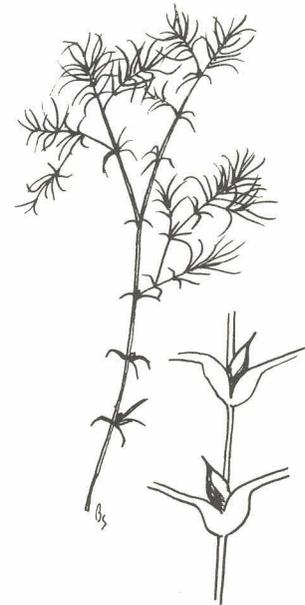
A typical rate of application for the control of filamentous algae is 0.5—1.0 ppm. of Copper Sulfate. Sometimes *Chara* can be difficult and may require as much as 1.5 ppm. However, even with that dosage, little effective control can be expected after mid-

June. Sometimes filamentous algae may cover only a small portion of the edge of a pond. Only the mats themselves and the area around them need be treated.

Another example. Emergent vegetation (cattails, etc.) can easily be controlled by spraying liquid 2, 4-D ester, four ounces per gallon of water, on the foliage until it is wet. Household detergent must be added to make the water sudzy so the chemical can penetrate the waxy film on the plants. Remember: to get good results, these plants MUST be sprayed early in the season.

Oh, yes. What is all this going to cost? Treatment of algae with Copper Sulfate can be accomplished for less than \$1.00 per acre foot. Most submerged weeds can be controlled with Diaquat or Endothall; cost about \$9.00 to \$40.00 per acre foot. In most cases do not plan a weed control program unless you have some money available.

Weed control is a very difficult task. Planning should begin early in the pond's construction to control weed growth by eliminating shallow areas. Remember: identify the problem, choose a method of control that will work and that you can afford, and if you use chemicals—be sure to do it right. The sooner the weeds are licked, the better chance there is that they'll stay that way.



Slender Naiad (6)

BOATING PRIMER

By Farrell Brewer

THERE'S ONE fast way to increase your family boating fun. Launch early—don't wait for the heat-filled days of summer.

Once you start boating early each year, you'll see what good sense early season boating makes. Although tem-



Brewer

peratures are sometimes cool, you can solve this problem by dressing properly. It isn't necessary to battle near-freezing temperatures since there are many balmy spring days when boating is a real pleasure.

Early season launching is just the answer for the over-anxious angler, a description which fits about everyone

Sailboating is becoming more and more popular as increasing numbers of Kansans take advantage of our lakes and prevailing summer breezes. *Photo by Ken Stiebben.*



who owns a fishing rod. In many areas, the months of March, April and May provide the hottest action of the year for largemouth, white and striped bass. Another prize is the walleye when it starts its annual run.

For the angler who enjoys the solitude of a quiet lake, spring carries a special bonus. While most weekend captains are talking about the coming season, you'll be hauling in the big ones.

Cruising enthusiasts will also find that spring and early summer boating is made to order. You'll have less congestion to worry about and more room to operate on your favorite lake.

But, while you may be ready to join those early-season boaters, what about your rig? Is it ready for the season? If not, now is the time to make sure it's ready to go when the first balmy spring weekend finally arrives.

To assure a carefree summer of fun, boat, motor and trailer must be in top performance condition.

An outboard motor is a finely-tuned, precision instrument. No matter what condition it was in when put up for winter, its operating efficiency will be affected by a few months in storage. But it doesn't require a great deal of mechanical skill to tune-up your outboard motor. The following procedure will make the job easier and faster.

For safety's sake, the first step in preparing a motor for the season is to remove the spark plugs and leave them out until you have finished your motor work. If the plugs are at all questionable, the simplest and safest thing is replacement. If they are almost new, clean them and reset the gap. Be sure to inspect spark plug connectors and rubber insulators.

Hard starting, rough idling and excessive fuel consumption can be caused by defective plugs, connectors or insulators. Other parts of the ignition system including breaker points, condenser, coil and wiring can be tested with a spark checker available at most marine stores.

Cracked or frayed wires can create a potentially dangerous situation. Use electricians tape for temporary repairs, but plan to replace damaged wires.

Did you neglect to change the lubricant in the lower unit last fall? If so, do it now. If water or metal chips are detected, have a qualified marine dealer check the unit for cracks. When refilling the lower unit, use only the type of lubricant recommended by the manufacturer.

A damaged propeller can cause performance problems. Your marine dealer can correct minor nicks by grinding the surface smooth. He can also check the pitch of the blades. If he recommends a new prop, keep the old one aboard as a spare.

Your owner's manual is a handy guide to lubrication of fitting and



Every year, more and more people are discovering the ease and fun of water skiing. This scene will be repeated on lakes and rivers throughout Kansas this spring and summer. Photo courtesy Johnson Motors.

This scene will be repeated on lakes and

connectors. Remaining metal surfaces should be covered with a light coat of oil.

If your outboard has remote controls, remove the outer cover and inspect all moving parts. They should be clean, well lubricated and free of corrosion. Remote steering cables should be properly adjusted and checked for signs of wear.

Now that you have your engine properly tuned, a little touch-up paint can give your outboard motor a brand-new look.

Spray paint in pressurized cans makes this a simple task, one that even youngsters can handle with ease. A wide selection of colors, one of which will match the original surface paint, is available at most marine dealers.

Whether your outboard has just a few scratches or shows the signs of much use, it's a good project to add

to your spring tune-up list. Besides improving the appearance of the engine, it will prevent rapid deterioration. The following step-by-step procedure will aid in attaining a professional job.

Sand the surface that's to be painted with No. 320 or equivalent grit sandpaper. Remove all corrosion, grime, oil and grease. It's not necessary to sand the surface to bare metal, but merely break the glaze of remaining paint. Use a cloth to wipe off any sanding dust.

Ordinarily it isn't necessary to apply zinc chromate primer for simple touch-up work. However, this undercoating is recommended when doing a complete re-paint or when applying paint to bare metal.

Use masking tape to cover chrome plating, decals or fittings. When applying the paint, move the can from

side to side, applying it in light coats so the paint will not run.

Have a rag handy in case you make a mistake. If you act quickly, you can wipe off the excess and start over again. If this is the first time at the controls of a spray paint can, it's wise to practice before tackling the real thing.

If you left fuel in the tank over the winter months, throw it out. Using it can cause hard starting and fuel system fouling. If the tank was left partially filled during the off season, there is a possibility that gum deposits have formed. Such deposits can usually be removed by scrubbing the inside of tanks with acetone or lacquer thinner.

Finished with the motor and fuel system—now on to the boat. Your boat and accessories should also be checked out each spring. Start by tilting the boat up on its trailer. Re-



Overloading and drinking are major causes of boating accidents. Most boat manufacturers affix capacity plates on the gunwale which state the number of persons and total weight the boat can hold. For safety's sake, don't exceed this maximum. Photo courtesy Evinrude Motors.

move the drain plug and give the hull a thorough washing inside and out with warm water and mild detergent. Use a putty knife to remove growths from the bottom of the boat.

Make sure running lights and other electrical accessories are in proper working order and that wiring is in good condition. If your boat is equipped with a battery, check for cracks and corrosion on the battery and cables. Start the season with a full-charged battery.

Hardware should be checked for corrosion and for pitting. Polish or replace fittings. Accessories such as life preservers, seat cushions, anchor and line should be inspected to make sure they are still serviceable and in good condition.

If you own a trailer, inspect its tires for wear. See that they are properly inflated. Under-inflated tires will run hot and could cause problems. Pull the wheels and check the bearings. Since the wheels are immersed in water many times when you launch your boat, water can pass the seals and rust the bearings. Bearings should be inspected and packed with grease at least once a season.

Be sure the rollers on the trailer turn freely. Check and lubricate the coupling mechanism. Check trailer

lights for corrosion and for any filament breakage. A thin coating of waterproof grease or vaseline will keep light sockets from corroding.

With equipment in top performance shape you're on your way to another season of boating enjoyment.

Outboard boating is more fun when the right equipment is aboard. Before launching, make a list and check it twice. The following items should be included:

Tool Kit—Extra spark plugs, plug wrench, adjustable wrench, screwdriver, shear and cotter pins, spare propeller, electrician's tape and your owner's manual.

Safety Equipment—Life jackets and buoyant seat cushions, at least one for each passenger aboard; a fully stocked first aid kit, and a flashlight and flares. Adequate mooring line in good repair and a good anchor should also be standard equipment. A paddle and bailing device would also come in handy during an emergency.

Want to get through the summer without ramming a pier? Or beaching the family runabout on a pile of rocks? As the Old Philosopher put it: a collision at sea goes a long way toward the spoiling of an afternoon. This needn't be the case. "Common Sense"

boating rules will help keep you out of trouble.

Keep It Clean—Your boat this is. Proper maintenance of equipment and spare parts will go a long way toward coping with an emergency when—and if—such happens. Shipshape is the word.

Brief Your Crew—If you have guests aboard, make certain they know of the availability of life jackets or cushions. Show them how to use emergency equipment and make certain that you know how to signal in case of trouble.

Maintain Safe Speed—Adapt your speed to those around you, giving swimmers, divers and water skiers a wide berth. Slow down in areas where there may be submerged objects or where you're not familiar with the bottom. Be cautious in your approach to piers.

Look Alive!—Designate one of your party as a lookout. Keep alert and make certain you have an unobstructed view from your control station. Most collisions are caused through failure to post a lookout.

Know the Rules of the Road—Instead of visible directional signals used by cars and trucks, ships and boats employ sound signals, given with a horn or whistle, to indicate

course changes and other actions they propose to take. Also unlike cars, boats respond to another boat's horn signal by echoing it, to indicate they understand and agree with the proposed action. The main features of the rules, as they relate to pleasure boats, can be summarized quite briefly, and that is what's being done here. The rules of the road exist for one purpose, to prevent collisions. They are most emphatically not guidelines for a game of nautical chicken. The first-rate skipper plans ahead far enough so that he rarely gets his boat into a situation where danger of collision exists—the point at which rules of the road come into effect.

The whole concept of the rules is that in a given situation involving two boats, one has the right-of-way (and is called the privileged vessel) and the other does not (she is called the burdened vessel).

Now, on to the situations. When two vessels are approaching each other head-on, or nearly so, it's obvious that something's got to give. In this situation, the proper course is for each skipper to swing his boat's bow sharply to the starboard or right, then swing back after a few moments and assume a course parallel to his first one. The boats will thus pass, like cars on the road, port side to port side. Boats may, of course, pass starboard to starboard, to—especially if the situation suggests that both boats are proceeding safely along courses that will take them clear of each other, but when meeting head-on, you should instinctively swing to the right.

A boat being overtaken always has the right-of-way over the overtaker. The preferred way to pass is to swing to port, or left, clear the overtaken boat's wake (while you're in the wake your boat is not really under control), give one short blast on your horn and pass as soon as the signal is acknowledged.

In most cases, of course, the whistle signal is not given between pleasure boats—nor is it really necessary, as long as you know the overtaken boat sees your own vessel.

While it's important to understand the Rules of the Road and the other nautical regulations that apply in

your part of the boating world, it's equally important to remember that the Golden Rule applies as much as any of them. You can, of course, insist on your right-of-way—and you'll probably get it but it's far better to give a little. Ignorance of the law is the usual reason for breaking one of boating's rules. Mistakes are made by boaters all the time, and not because of any willful attempt to fool the authorities but merely the result of a misunderstanding of some of the important boating regulations.

It will certainly be much safer and more pleasant for everyone to brush up on all regulations now.

A synopsis of Kansas Boating Regulations may be obtained free upon request from the Kansas Fish and Game Department's Information and Education Division, Box 1028, Pratt, Kansas 67124.

Now that you have some information to help ensure a fun filled boating season, will your favorite waterways be ready for you? Or will they be cluttered with refuse left by last summer's careless captains?

Clean water is everybody's business. Too many are blind to litter and have come to accept it as part of the scenery. Every yachtsman should make it a habit to pick up and dispose of the litter that is an eyesore on our waters and beaches.

A good way to start out the boating season, would be to take a clean-up cruise on your favorite waterway. It makes a good family or group project. Take along large containers or bags and comb the shoreline both on foot and from the water, picking up refuse washed ashore and floating near piers and in off-shore areas.

You'll enjoy the boating season much more on litter-free waterways.

Outboard boating is more fun when the right equipment is aboard. Tools, extra spark plugs, shear pins, life jackets, first aid kit and other items pictured here are essential for a safe, convenient boating trip. Photo courtesy Evinrude Motors.



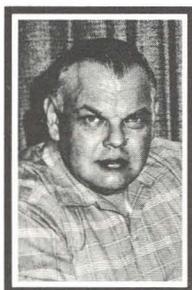
Pointers on the Point System

By George Valyer

Photos by Leonard Lee Rue

WHEN drought hit the prairie provinces of Canada and north-central states late in the 1950's, a sizeable portion of nesting ducks were left high and dry. Marshlands dried up, pot-hole lakes disappeared—and the total duck population declined sharply.

The result of this natural catastrophe was a tightening of regulations



Valyer

governing duck harvest in the major flyways and an increased emphasis on species management. The drought had adverse effects particularly on canvasbacks and redheads. The bagging of these species was completely prohibited in the early 1960's and only limited hunting has been allowed since that time.

Although special limits on various species of ducks have been imposed for nearly 50 years, a new approach has been tried in the management of the continent's waterfowl. This new effort to provide for a selective harvest of ducks is commonly called the "point system."

The point system not only establishes different values for various species but also different sexes within a species. For instance, there is normally a surplus of mallard drakes. Therefore hen mallards carry a higher point value than does the drake.

Under the point system, each species is given a point value. Values are assigned depending on the relative scarcity of the individual duck or its need to be conserved as breeding stock. A list of point values might look like this:

90 Points—female mallard, canvasback, redhead, wood duck, black duck, hooded merganser.

20 Points—male mallard, female pintail, ringneck duck.

10 Points—all other ducks, mergansers and coots.

If the daily bag limit is established at 100 points, a duck hunter reaches his limit at the time his point value of bagged ducks reaches or exceeds the 100 point total. If the first duck killed on a given day is one of the 90 point ducks, the hunter is entitled to only one more duck for that trip. If on the contrary, his first duck is a low point duck, he may go on shooting until his bag has reached or exceeded the allowed point total of 100.

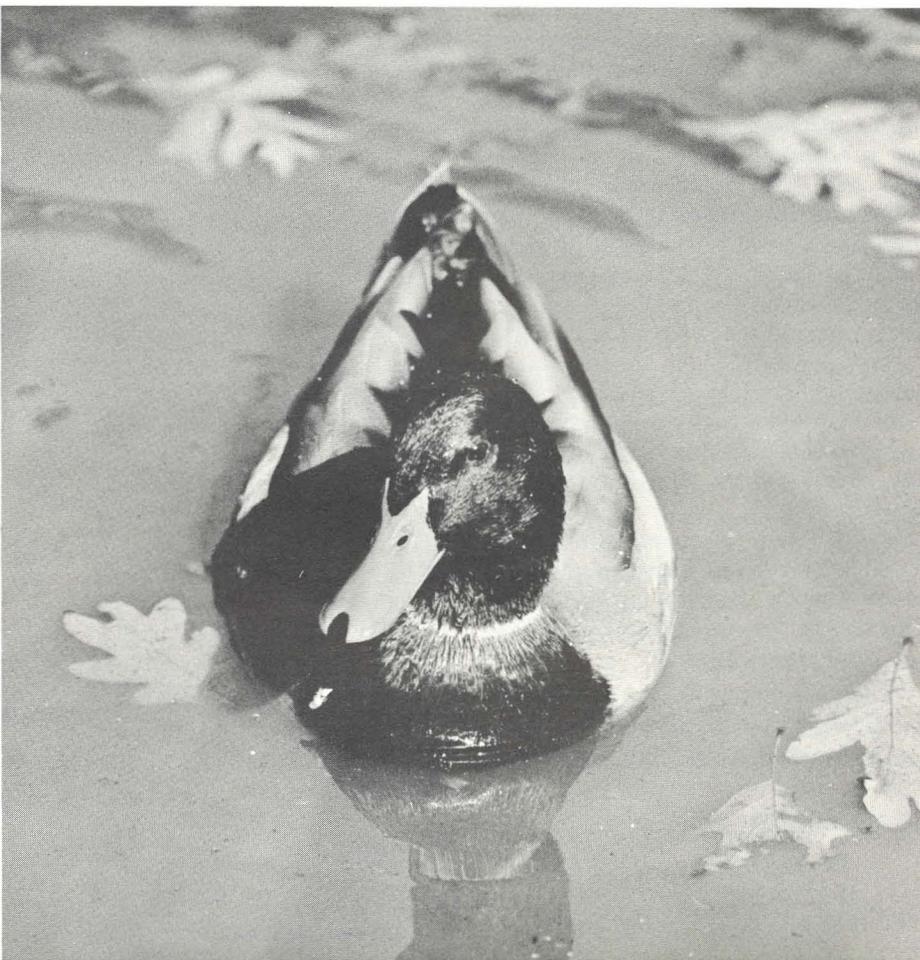
Suppose then you went hunting on a frosty November morning and collected two teal from a flock winging over your blocks. This would amount to 20 points of your limit. A flock of pintails comes in next and you bag a female of that species. Your point total has now reached 40. A flock of mallards now fly past your blind and,

if you can down a male rather than a female, you will have ducks in your possession totaling 60 points. However if your swing is a little slow and a hen mallard falls when you were after a drake, your point total jumps to 130 points and you are through for the day.

As you may well understand, being able to identify ducks according to species and sex while the ducks are in flight is a decided advantage for hunters under the point system. It allows them to take ducks of low point value and prolong their day's hunt.

However, under the point system, it is not necessary to identify the bird until you have it in your hand. Some hunters find it difficult to tell species unless they have the bird for comparison with a water fowl guide book. If you are one of these, just count the points after each bird is downed.

When shooting under the point system, a waterfowler can take five "twenty point" mallard drakes like the one shown here. Under this system, the gunner must stop shooting when his point total reaches or exceeds, 100.



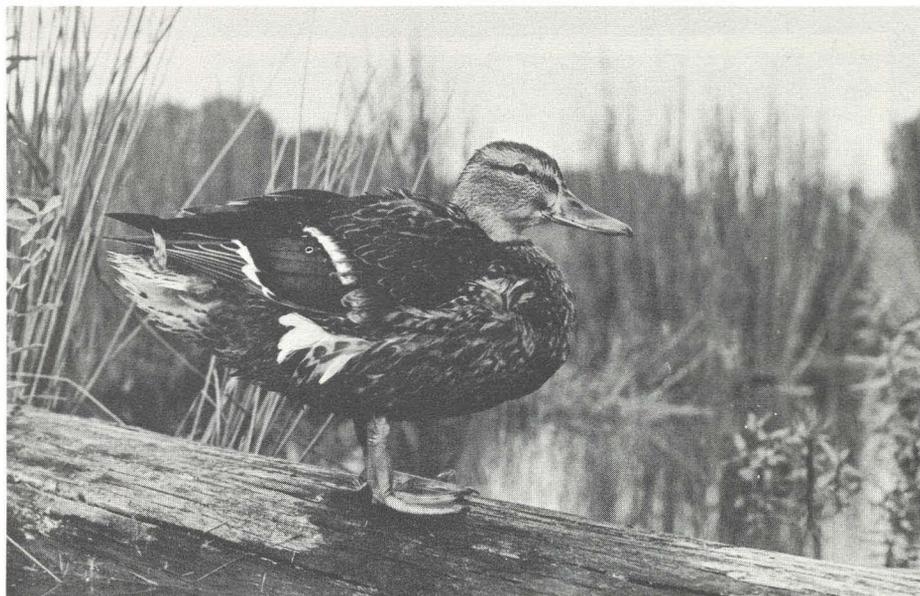
when the total reaches or exceeds the limit, quit hunting.

The point system was first started in 1968 when it was tried experimentally in Colorado's San Luis Valley. In 1969 the point system was expanded to include the High Plains Mallard Management Unit of the Central Flyway and a state game management area in Michigan. During the fall of 1970 the experiment was broadened to 12 states in the Central, Atlantic and Mississippi Flyways. These 12 states also had a point system season last fall. They include Nebraska, Colorado, Oklahoma, Texas, Wyoming, South Dakota, Montana, New Mexico, Iowa, Illinois, New Jersey and Florida. Michigan was added to the list in 1971.

Almost without exception, duck hunters in these states are enthusiastic about the new way to figure the bag limit on ducks. Especially vocal in their praise of the point system are those hunters who are able to identify their ducks in flight. For them such a system allows them to concentrate on those of low point value. By shooting only 10 point ducks, the bag may include 10 of such species as teal, gadwall and baldpate.

This type of season has a tendency to encourage duck hunters to learn species identification of birds on the wing. By having this knowledge, he can prolong each day's hunt. Such a season also has the effect of shifting hunting pressure away from species in short supply. This is the reason for restrictions in the first place and enhances waterfowl management efforts.

Admittedly there are some drawbacks to a point system. It is possible that some hunters will be tempted to discard high-point ducks so that they can prolong their shooting day. Also some hunters may be tempted to "re-order" the ducks in their bag to achieve the same result. Re-ordering is simply the changing of reporting the sequence in which the birds are shot to make it appear that the high-point duck was harvested last. However, observations of hunters under point system limits have revealed that violations of this type are rare. Most duck hunters are vitally con-



Shown here is a mallard hen, one of the "high point" ducks. Other 90 point species include either male or female canvasbacks, redheads, wood ducks, black ducks and hooded mergansers.

cerned with the perpetuation of their sport and are quite willing to cooperate with such management procedures.

Observations by law enforcement personnel in Michigan reveal that only four percent of all hunters who were watched from concealment actually violated imposed restrictions. The Michigan report also stated that the few parties observed reordering or overbagging were not believed to be significant enough to offset benefits of the statewide point system. Many officials of the U. S. Bureau of Sport Fisheries and Wildlife are of the opinion that the incidence of violations is no greater under the point system than under the conventional bag limits.

What about hunters that have shot under the point system? What do they think about it?

The U. S. Bureau of Sport Fisheries and Wildlife surveyed duck hunters in 12 states that held point system seasons in 1970. In that survey 55 per cent of the waterfowlers reported they enjoyed hunting more. Only 13 per cent enjoyed it less; 32 per cent remained the same or were undecided.

Another question was posed by the same survey. How did the point system affect the number of birds bagged in the season? Only 22 per cent said

it increased their harvest while 16 per cent noted a decrease. A majority, or 62 per cent, reported the same harvest or were undecided.

If you talk with any of the waterfowl experts on the staff of the U. S. Bureau of Sport Fisheries and Wildlife, they will tell you definitely that the point system is classed experimental. The Bureau is reserving judgment on the success or failure of the system until such time as all facts are known. In the Central Flyway, all states with the exception of Kansas and North Dakota have had the point system for the past two seasons and an evaluation of the results is now underway.

Presumably, all flyway states will be offered the option of the regular bag limit or the point system for the 1972 waterfowl season. Those which have had the point system are not expected to go back to conventional bag limits. The major reason for rejecting conventional limits is that hunters, once they have "counted points" much prefer the new approach to species management.

Admittedly the point system does have some drawbacks but most waterfowl managers and the majority of duck hunters think that it is the best system yet devised to manage waterfowl on the North America continent.

Glimpses of Kansas Wildlife

Prairie Dog

Photo by Leonard Lee Rue

By **LEROY E. LYON**

He may bark and wag his tail but a dog he is not. So it is with the prairie dog, the heavy-bodied ground squirrel of the plains.

Belonging to the Sciuridae family which includes squirrels, marmots and woodchucks, the prairie dog was so named because of its series of barks which sounds much like a small noisy dog.



Lyon

The black-tailed prairie dog can best be described as a large rodent with a short, slender tail. Males weigh from two to three pounds while females are slightly smaller averaging about two pounds. Length of adults varies from 12 to 15½ inches. As its name indicates, the tip of the black-tailed prairie dog's tail is black.

The reddish-brown, natural-earth color of this short-legged chunky mammal is a highly effective camouflage against its natural enemies. Black-footed ferrets were the prairie dog's arch enemies until man reduced the ferrets to their present-day endangered status. Ferrets, rattlesnakes and constrictor-type snakes can easily enter a burrow in search of a meal while a badger, now the most feared enemy can dig the animals out. Owls, hawks, the golden eagle, coyotes, foxes, bobcats and domestic dogs are always a constant danger but can be avoided if a burrow is close at hand.

Community living best describes the life style of black-tailed prairie dogs. Gregarious by nature, they establish themselves in large social groups called towns. Such a dogtown is a scene of constant activity, enough to keep an observer entertained for hours.

A dogtown is by no means permanent. The town is established in the midst of an ample food supply but if food is depleted the entire colony must travel to better feeding grounds to establish a new town.

Prairie dog towns are easily recognized by the presence of circular dirt

mounds which have been built around the entrance tunnel to the prairie dog's underground home, more correctly called a burrow. Earth excavated from the burrow is used to form the mounds which are usually from one to three feet high and from three to ten feet in diameter. Without this mound around the entrance tunnel, water from heavy rains would pour into the burrow and either drive out or drown the resident.

Usually there is only one entrance to the prairie dog's home but an escape tunnel is usually built to help escape enemies.

The burrow is one of the most complex in nature—an intricate system of intersecting tunnels and chambers. The home is an elaborate affair compared to the abodes of some other mammals and has grass-lined bedrooms or nesting chambers, a listening post or guard room about three feet below the entrance, and quite often even a toilet room.

Although community minded, prairie dogs establish territorial rights in the town. Studies show that from two to 35 animals will form a coterie, or social group, and live happily together.

Prairie dogs are active during daylight hours but in hot weather are most active early in the morning and late in the afternoon. During winter months black-tailed prairie dogs do not hibernate although cold, snowy weather may cause them to hole up for a few days.

Prairie dogs mate from February through April. Young dogs are born naked and helpless about one month after mating. Only one litter is born per year and the litter size may vary from two to ten young.

Young dogs grow rapidly and when five weeks old their eyes open. When about seven weeks of age, the young are able to climb out of the burrow to view the outside world and nibble on green grass or forbs.

Prairie dogs do not live where the ground is soft and where grass grows tall. As a result, their range in Kansas is primarily restricted to short-grass and mid-grass prairies found in the western two-thirds of the state.

Primarily vegetarians, prairie dogs will also eat insects, particularly grasshoppers. On rare occasions they will eat meat, such as the burrowing owl or ground nesting birds. Prairie dogs have little need for water because their body requirements are met through the water content of their food.

Usually the prairie dog eats all vegetation around its burrow. Tall grass and forbs are not given a chance to grow within the boundaries of a town since the dogs rely on vision to locate predators.

A new colony trying to become established cannot succeed in an area where vegetation is tall and thick since a small number of dogs simply cannot keep up with lush plant growth. However, even prior to settlement, prairie dogs lived in long-grass areas of Kansas where bison cropped the grass short and trampled the soil until it was hard.

Later, after settlement, overgrazing by cattle similarly made a habitat favorable for the prairie dog. For this reason prairie dogs greatly increased in numbers after ranchers and their cattle appeared on the scene.

As ranchers watched "sod poodles" grow fat and grass grow thin, they reacted by opening warfare on the little animal which thrived on their carelessness. Poisoning programs were initiated since the rifle was of little benefit in the war against such a large rodent population. But, by taking advantage of the prairie dog's safety-in-numbers concept of town living which provided security against natural enemies, strychnine-treated grain and other poisons did their work well. Concentrated in towns, thousands, later millions, of prairie dogs died in a matter of months.

On the short-grass prairie the prairie dog is a most influential and beneficial citizen because he contributes, on a long-term basis, to enriching the soil thus providing a more abundant growth of forage for both domestic livestock and native wildlife. The dogs bring up subsoil from their burrows and spread it on the surface where it breaks down into soluble forms of plant food. Their burrows

conduct air underground and make oxygen available to microbial life and other small living things that contribute to the enrichment and mellowing of soils. Deep layers of the earth are loosened by the prairie dog and fertilized with deposits of vegetation, droppings, and topsoil.

In his book, "Mammals of Kansas," E. Raymond Hall writes: "Concerning this animal, as I recall in the Dakotas, the late Theodore Roosevelt once wrote of vast towns of prairie dogs that gradually and slowly moved across the plains. The air, and water with its contained solvents, that entered the ground enriched the soil and caused a much better growth of grass in the wake of the prairie dog town than there was in front of it."

No one denies that it is often necessary to control prairie dogs to prevent over population but too often prairie dog control is not just "control" but an all-out campaign of extermination.

Everything considered there's little reason to believe that the prairie dog is going anywhere but good-bye. There are still some rather sizeable dogtowns in western Kansas but we now have as many prairie dogs as we will ever have. From here the population of dogs will undoubtedly decline.

But the prairie's elaborate home-builder won't go alone. Other natives of the prairie will go with him since a dogtown is not reserved for prairie dogs alone but rather is a gathering place for other members of the grassland community. Burrowing owls are competent tunnelers in their own right but usually they will set up house-keeping in a ready-made burrow abandoned by a prairie dog family. The disappearance of the prairie dog would probably mean a greater reduction in the interesting little mouse-catching birds which now are only rarely seen.

Likewise, a large member of the weasel family, the black-footed ferret is dependent upon the prairie dog for survival. This beautiful little mustelid is apparently poised on the brink of extinction; as the prairie dog goes, so goes the lithe black-masked hunter that is rarely found away from dogtowns.

Thus a number of predators and many game and non-game species hang around the mound-shaped homes—proof that the black-tailed prairie dog is a vital link in the ecological chain of the living prairie. When poisons are spread to eliminate prairie dogs, the once thriving animal city, either directly or indirectly, becomes a place of death for other wildlife species.

Modern agriculture and control methods have cut the prairie dog population down to numbers that are no longer a real problem in most areas. Eleven years ago there may have been as much as 57,000 acres of prairie dog range in Kansas—quite a decline from the estimated 2½ million acres of dog range in the state in 1903.

In 1957, researcher Ronald E. Smith, author of the book, "Natural History of the Prairie Dog in Kansas," wrote that "this acreage is being reduced by more than one-fourth in 1957, and at this rate in ten years the prairie dog in Kansas will be a conversation piece. . . ."

Smith's prediction has not come to pass. Not quite. Not yet. May it never happen. It's enough to see the ferret become an endangered species and realize that in all probability we will lose this magnificent animal from the grassland community.

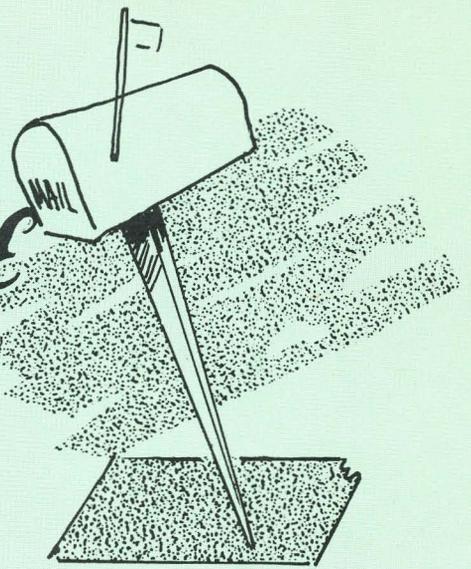
Losing the prairie dog would add insult to injury. For with the prairie dog's passing a vibrant, unique community will cease to exist.

May that day never come.



Photo by Ken Stiebben

Readers' Response



Sure Was Something—“Recently read my son’s KANSAS FISH & GAME magazine which contained the article about coon hunting muleback. It sure was something! I’ve done some coon hunting in my time but have moved to the city and don’t go too much now. But I still like to read about good coon hunting. Please put me on your mailing list.”—Andrew Hattok, Leavenworth.

Copy to Brother—“I sure do enjoy your magazine. I would like to have a copy of the November-December issue for my brother in California. I’m sure he’ll like the article entitled ‘Coon Hunts the Easy Way’ by Vic McLeran.”—Mary Teegarden, Topeka.

Wants to Borrow Transparency—“May we borrow Vic McLeran’s bobcat transparency which appeared on the back cover of the November-December issue of KANSAS FISH & GAME for use in DEFENDERS OF WILDLIFE NEWS?”—Mary Hazel Harris, executive director and editor, DEFENDERS OF WILDLIFE NEWS, Washington, D. C.

It’s on the way!—The Editors.

White Squirrels—“I want to take exception to your article on squirrels in the May-June issue. There is a strain of white fox squirrels in Kansas. These are not albinos and reproduce true to color and form. These squirrels are found near Baxter Springs. I would also like to know the average weight of cottontail rabbits. On a hunting trip near here, a companion shot a five-pound cottontail. It was the largest rabbit I’ve ever seen.”—Larry Grufford, Galena.

We weren’t aware of this white fox squirrel population. Thanks for letting us know. That five-pound cottontail was probably a swamp rabbit. This species is found only in the southeastern corner of Kansas; principally in Cherokee, Crawford and Labette counties. Although marked similarly to the cottontail, swamp rabbits are darker and much larger with some adults weighing nearly six pounds. Cottontails on the other hand average only about two or three pounds each.—The Editors.

Disagrees With Statement—“I have a question about the story on copperheads by Vic McLeran in the March-April issue.

It was an interesting article but I disagree with one of the statements. He wrote, “if a person is bitten they should attempt to remove the venom by sucking the wound.” To me, this just doesn’t seem right. Especially if you have an open sore in your mouth. Wouldn’t this allow the poison to enter your system? Shouldn’t a person either use a snakebite kit or some kind of suction cup to remove it?”—Carol Hicks, Ellsworth.

There are several theories regarding proper treatment of snakebite. Some propose suction of the wound (either orally or mechanically) saying quick removal of as much venom possible, is desirable. Others contend suction is detrimental and destroys tissue. This group feels the body should be allowed to absorb the venom slowly. You are correct in assuming that suction should not be attempted orally if an open sore exists in the mouth. In that case, suction should be applied mechanically as with a snakebite kit or suction cup. However, our advice was designed for the large number of sportsmen who are often afield without snakebite kits or suction cups. Cavities are another matter. The dentists we’ve checked with say unless the cavity was a large one, extending into the nerve, the venom couldn’t work its way through the tooth and into the blood stream. Even in the case of a large cavity, they say the amount taken into the blood stream would be minute and negligible.—The Editors.

Reply Was Bodacious—“I thought your reply to Robert Guilford’s statement about the magazine costing too much was bodacious, (remarkable, noteworthy.) No doubt you took great pride in presenting the truth rather than assumption. Keep up the good work. I for one would like to see even more color pictures. You can even raise

KANSAS FISH & GAME invites all readers to submit their comments, suggestions, likes and dislikes to Readers’ Response. In each issue the magazine will feature as many letters as space permits. We reserve the right to edit and condense letters.

—Editor.

my price from 2.5 cents to three cents if need be as I buy my license yearly.”—R. R. Kitson, Ulysses.

Right on!—The Editors.

Cats Are Necessary—“I’d like to reply to Dr. Wiggs’ remarks concerning farmers’ cats. The doctor doesn’t seem to realize any farmer with sacks of feed needs cats to keep down mice and other rodents. For this service, cats are a necessary part of farming. Cats, here in western Kansas, do have natural enemies. Coyotes kill several of our cats every winter, often within sight of the house. I also want to disagree with his point about hunters eating what they kill. Each year, we find hen pheasants that were shot and left by hunters. Hunters should realize that it’s mostly ground squirrels, gophers, rats, mice and an occasional rabbit which the mother cat brings back to feed her young. Also, any hunter only 100 yards from the farmer’s house is probably on that farmer’s property—often without the farmer’s permission.”—Mrs. Ruth Anthony, Norcatur.

Wants To Reinstate Guilford—“Enclosed you will find ten cents. Please reinstate Robert Guilford of Dodge City to your magazine list. As I understand it, this dime should provide him with a four-year subscription. At the end of that time, if I’m still around, I’ll forward another dime for Guilford’s subscription. Bargains are hard to come by these days. Your magazine is tops so keep up the good work.”—John Reibenspies, Wichita.

Shame On You Doctor—“I just finished reading the remarks in your March-April issue regarding the shooting of cats. I was amazed that any sportsmen would ask a permission to hunt on a farmers land and then want to shoot his cats. He keeps that cat to control rodents around the barns and grain sheds. The farmer needs the cat worse than he needs the hunter. Shame on you Doctor.”—Howard Williams, Topeka.

