KANSAS FISH & GAME

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SEPTEMBER-OCTOBER 1971

KANSAS FISH & GAME

Sept.-Oct., 1971 Vol. 28, No. 4

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Back cover, great horned owl Ektachrome transparency by Vic McLeran with a Pentax spotmatic, f/8 at 1/125. Related story page one.

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PRINTED BY
ROBERT R. (BOB) SANDERS, STATE PRINTER
TOPEKA, KANSAS
1971

34-694

Keys to Better Hunting

In these days of rapidly expanding suburbs, it's not unusual to arrive at a spot you remembered from last season as open country, where the hunting was great, and find it covered with a brand new housing development or shopping center. When this happens, there's not much you can do but drive on in search of another place.

A far more discouraging event, is to find a large no trespassing, hunting or fishing sign posted on land that is still open. What causes this?

The answer, unfortunately, can often be traced back to careless or inconsiderate people who have failed to ask the landowner's permission to fish or hunt on his property and who haven't respected his property rights whether they had permission or not.

Put yourself in the landowner's shoes. Suppose you had let some hunters shoot on your property and then found they had left gates open so your stock got loose, left litter from their picnic lunches in your fields or killed one of your animals through carelessness. You would be pretty sore about the whole thing. Chances are you wouldn't waste much time in tacking up some signs.

Places to hunt are the key to good sport for all of us, so it pays to take some pains to cultivate good relations with landowners. The fundamentals of common courtesy are the best guide lines, but here are a few simple ideas which any cooperative sportsman can use to make himself welcome:

(1) Always ask permission to hunt on a farmer's or landowner's property.
(2) Hunt only in the areas he designates. Never go on ground he asks you to avoid. Stay away from his stock.
(3) Respect his fences. If necessary to climb them, climb over by a post. Use a gate if possible, but be sure you close it behind you. Always replace lowered fence bars.
(4) Never shoot near houses, barns, or livestock.
(5) Leave his fruit and other crops alone. If you want some, offer to buy it from him.
(6) Go around fields where people are working, or pastures where livestock is grazing. Do not walk on seeded ground. Don't walk through standing grain.
(7) *Share your game with him.*
(8) On your next trip bring him, his wife or children some small gift or token of friendship.
(9) After you've become well acquainted, suggest a planting program to improve game habitat in his fallow or unused fields. You might offer to finance it or help him with it, thereby showing genuine interest in his affairs.

These are a few of the keys that can help you to unlock the door to the landowner's hospitality. At the same time they can make friends for you and bring better hunting to both you and the landowner.

—J. P. Linduska

The Great Horned Owl

Protected at Last

By VIC McLERAN

Photos by the Author

"Yeah, I got 17 last year," the farmer said, pointing to a row of owl talons tacked to his barn door. "That makes a total of 56 for the last three years. Those old pole traps really get 'em."

He was referring to the effectiveness of pole traps in taking great horned owls. Now, however, acts such as these are against the law. House Bill No. 1090, signed into law last spring by Governor Docking, makes it illegal to take, kill or possess great horned owls. The bill also gave protection to bluejays, Cooper's hawks, sharp-shinned hawks and goshawks, all of which were previously unprotected. Under Kansas law, all hawks and owls are now protected.

Since the great horned owl now has a new lease on life, let's take a look at this critter which for so many years, was heavily persecuted.

Physical Description

The great horned owl is one of our largest owls, measuring 18 to 25 inches in length with a wingspread of more than four feet. The average weight of a mature bird is about three pounds.

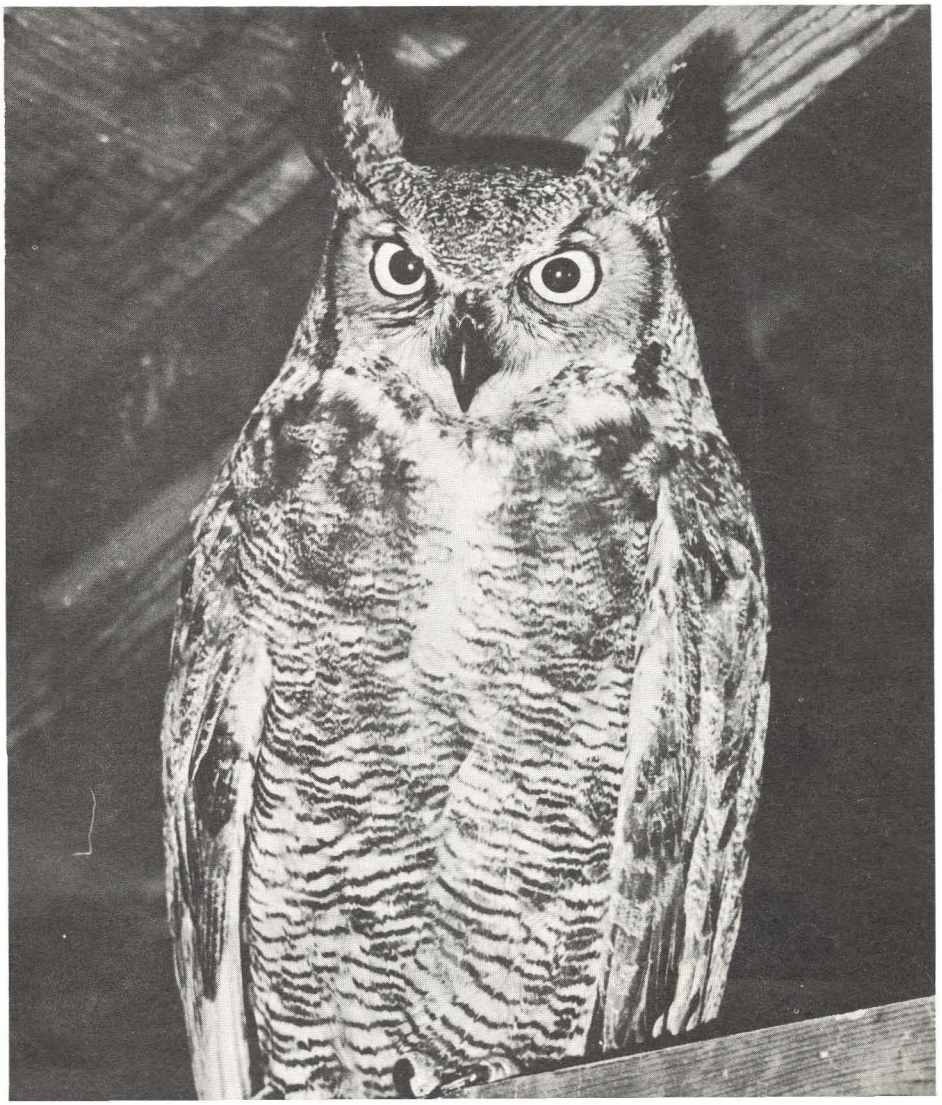
The owl's plumage overall is brownish, ranging from tawny to buff with a white throat patch. The feathered ear tufts—from which the owl gets its name — are prominent identification marks. Large, yellow, staring eyes contrast sharply with black bill and talons.

Courtship and Nesting

During the long, cold nights of January and February when most wildlife is simply concerned with surviving the Kansas winter, the great horned owl has love on his mind. During this period, owls are extremely vocal and their love calls echo nightly through the winter woods. In fact, the owl's calls of "who-hoo-hoo" are more common at this time of year than any other. This winter hooting prompted the common name of "hoot owl." The courtship activities are colorful, with the male approaching the female, bowing his head, ruffling his feathers, drooping his wings and bobbing his tail. Being shy and wary, horned owls are usually difficult to observe but during the courtship period they ignore most human activity. Last winter, one pair was seen consummating their courtship atop a television antenna in Pratt, oblivious to observers.

Nesting sites of the great horned owl vary according to what is available in their area. In eastern Kansas, hollow trees are common nest sites.

The great horned owl, after years of persecution, is now protected by Kansas law. House Bill 1090, signed into law last spring by Governor Docking, provides protection for all hawks and owls.



These two recently-banded young horned owls express their resentment at the author by snapping their beaks and fluffing out their feathers. Note the young owls' large, powerful talons.

Since horned owls don't construct a nest of their own, deserted nests of hawks, squirrels and crows are utilized statewide. On treeless plains in the western part of the state, owls will nest in rock cavities and even on the ground. Although horned owls often select remote nest sites well back in timber or along heavily wooded river bottoms, they occasionally nest near human activity. This spring for instance, a pair nested in the Wakefield city park, ignoring campers and picnickers nearby. Several years ago, I observed a nesting great horned owl about 20 feet behind the back fence of a drive-in movie near Pittsburg. Another pair successfully raised a brood on the state capitol grounds in South Dakota. Still another pair shucked tradition and nested in an abandoned pickup truck. Also, old barns and deserted farm houses are used occasionally.

Due to the owl's early nesting habits, it usually has its choice of nest sites. However, another raptor, the bald eagle, sometimes refuses to yield. The late Charles Broley, renowned "eagle man" who banded more than a thousand Florida bald eagles, once found an eagle and horned owl incubating together on the same nest in Florida.

The Owl's Eggs and Young

Following courtship and selection of a nest site, the female lays one to four dull-white, oval-shaped eggs. In Kansas, two or three eggs in the nest are the general rule.

Incubation starts with the first egg and the young hatch at intervals about 35 days later. The female sits on the eggs through out the wintry days of February and early March. So dedicated are the females in incubating their eggs, they have been observed on the nest covered with ice and snow. In fact, female horned owls have been found frozen on their nest. The young owls remain in the nest for eight or nine weeks, leaving about mid-May. Many times the youngsters actually leave the nest before they are able to fly. The parents are generally nearby and continue to feed the owlets for some time. Later, as short flights progress into longer ones, the young owls forsake the nesting area to hunt on their own.

Feeding Habits

Nearly anything that moves might be the best way to describe the great horned owl's list of food items, since only the larger carnivores escape the owl's attacks. Ranging from mice to skunks, the owl's menu includes squirrels, rats, rabbits, woodchucks, shrews, gophers, bats, ducks, herons, jays, starlings, hawks and even other owls. Fresh water items such as muskrats, fish, crawfish, frogs, snakes and large insects round out the menu. One researcher found the bodies of 113 rats beneath a great horned owl's nest. Several years ago in central Kansas, I climbed to a nest which contained the remains of six pocket gophers—common agricultural pests.

"Eating crow" is nothing new to the great horned owl as the black bandits occasionally end up on the owl's list of food items. In winter, when crows congregate at night in large roosts, the big owl finds them an easy meal. One Canadian naturalist found a pair of owls which were feeding nightly on crows from a large roost. Periodically, the researcher would find crows flying about blindly, their eyeballs frozen. Apparently, after the great horned owls made their nocturnal raids, the crows were reluctant to tuck their heads back under their wings and return to sleep. Instead, they remained alert, keeping their eyes open for the owls. As a result, the freezing temperatures quickly froze their eyeballs.

Years ago, in the days of market hunting, great horned owls were known to attack live decoys which were then legal. Since the decoys were tethered, they represented an easy meal for the owls.

After devouring its prey — bone, fur, feathers and all—the owl regurgitates these indigestible portions in the form of a pellet. Biological examination of these pellets reveal the owl's feeding habits.

Hunting Ability

What makes the great horned owl such an efficient hunter? Strength, eyesight, hearing and specially-adapted plumage are all part of the answer.

The owl's strength, especially the vise-like grip of its talons, is legendary. Each of the bird's legs has a powerful tendon running down the leg and around the heel of the foot.

When the owl hits its prey, the legs are drawn up automatically from the impact. The tendon clenches the toes, driving in the needle-sharp talons. So powerful is this clutch that almost nothing short of death will cause the owl to release its hold. Ronald Austing, co-author of "The World of the Great Horned Owl," told of a medical student who attempted to take a captive owl from its perch. Startled, the owl sank its talons deeply into one of the student's hands. His hand was released only after the owl's powerful leg tendons had been cut.

The owl's strength and endurance is further illustrated by the following incident from A. C. Bent's "Life Histories of North American Birds of Prey." Bent writes of a farmer who observed a horned owl flying away from a pole trap with the trap on one leg, the chain having been broken during the owl's struggles. A week later, the same thing happened and the owl left with a trap on the other leg. It was later seen flying around with traps on both legs. Even so, the bird was able to live for several weeks until one of the chains caught in a fence and the bird was shot.

Even though its great strength is an asset, extraordinarily keen eyesight is probably the owl's greatest aid in locating its prey. Owls have forward-facing eyes with binocular vision which gives a three-dimensional effect and allows accurate depth perception. This is important for birds of prey which pursue fast-moving rodents. In addition, owls' eyes are equipped with a large number of "rod" cells which gather light. Their eyes also contain a large amount of what scientists call "visual purple." This substance acts as a light converter and enables the owl to see objects in what may appear to be total darkness to human eyes. In one experiment, an owl was able to capture prey when the existing light was equivalent to that given off by an ordinary candle burning one-half mile away!

Contrary to common opinion, owls can see in the daylight and the great horned owl often hunts during cloudy days.

Sharp hearing also aids the owl in its nightly hunts. The bird's eardrums, largest in the bird world, provide it with hearing so acute it can pinpoint its prey in total darkness. In one test, an owl was able to consistently capture its prey in a totally darkened room, the floor of which had been covered with leaves. When mice were released, the noise they created in the leaves, guided the owl unerringly to the rodents.

In addition to keen eyes and sharp hearing, the owl has thick soft feathers which act as sound mufflers, thus enabling the owl to approach most prey silently. With all these adaptations, for night hunting, it's obvious why owls are such competent hunters. In fact, this excellent hunting ability has prompted some falconers to train owls, hunting with the big birds on moonlit night and cloudy days.

The long-eared owl, although similar in appearance to the great horned, is actually much smaller. In fact, the long-eared occasionally ends up as food for the great horned owl.

J. C. Morgan, game protector from Lincoln, submitted this unusual photo which shows him holding a dead horned owl clutching a field rat. The owl was struck by an auto after swooping down over the road to take the rat. Even in death, the owl's powerful talons refused to relinquish their grip on the rat. Biological studies indicate more than 90 percent of the owl's diet consists of rodents.

The Owl's Enemies

Although the owl's voracious appetite coupled with his strength make him a formidable figure in the woodland ecology, he is not totally immune to other predators.

In Kansas, bobcats, coyotes, foxes and 'coons will occasionally prey on young, unattended owls or even wounded adults. Several years ago in Canada, a lynx and a great horned owl were found lying dead in the snow. Apparently the lynx had planned on making a meal of the bird and had somehow managed to swallow one of the owl's legs. Fighting back desperately in efforts to free itself, the owl had slashed at the lynx with its free talon until the cat's throat was deeply cut. The lynx in turn, had inflicted a great deal of damage on the bird. Apparently the cat died first and the owl, unable to free its leg, died shortly afterwards.

Porcupines also represent a threat to the great horned owl since the animal's quills can be deadly. Cases have been reported where owls killed porcupines then died later as a result of deep penetration by the quills.

Snakes, common prey items for the great horned owl, often turn the tables on the big birds. Blacksnakes especially, with their constrictive strength, can give the horned owl a struggle. Naturalists have recorded at least two cases where owls caught blacksnakes only to have the reptile wrap its coils tightly around the bird. In

both cases the owl was exhausted and had observers not intervened, the battle might have gone poorly for the owl.

Crows, legendary enemies of the owl, offer no real threat to the bird and for the most part are simply a form of constant irritation since they harrass owls on sight. In at least one instance though, the crows were more than just irritation to a pair of young owls. Biologists Frank and John Craighead in their book, "Hawks, Owls and Wildlife," wrote of adult crows throwing young owls out of the nest after the adult owl had left. The Craigheads returned the young owls to the nest but several days later found the owlets dead at the base of the nest tree.

Hawks, too, can occasionally give the horned owl a rough time. In California, one observer reported flushing a female horned owl from a nest which contained two young. She was immediately attacked by a pair of red-bellied hawks. While one hawk pursued the owl, the other seized one of the owlets from the nest and ate it.

In most encounters though, the great horned owl has the best of it. Francis Herrick, in his book, "The American Eagle," mentions an incident where a great horned owl killed a bald eagle after the two had been placed in a cage together.

Even man is not immune to the owl's wrath. Numerous researchers have been attacked when attempting to check nests or band young owls. Incidents like this have given the owl a reputation as being "feather for feather, the toughest bird around."

With relatively few enemies and its excellent hunting ability, the great horned owl can sometimes live to a ripe old age. An unpublished masters thesis at the University of Kansas tells of a great horned owl which lived in captivity for 20 years. Ron Austing mentions a captive horned owl which lived for 68 years. There is even an unconfirmed report of one owl which reached the age of 100!

Fierce, staring eyes and feathered ear tufts or "horns" characterize the great horned owl. The bird's extremely sharp vision and acute hearing enable it to capture prey at night, even in total darkness.

Effect on Wildlife Populations

We've all heard the farmer or sportsman who claimed horned owls were responsible for the lack of game in his area. However, studies and research by wildlife biologists simply don't bear this out. Most of the owl's diet consists of rodents. Game species killed are mostly weak or unfit birds and animals taken off the top of surplus wildlife populations. A two-year study by the Craigheads on the horned owl's diet revealed more than 92 percent of the bird's food was made up of mice, rats, gophers and other destructive rodents. This is due to the fact that most raptors prey on what is readily available. Rodents, with their prolific breeding potential are much more numerous than game species. Hence, the owls simply have more opportunity of taking rodents than game. Chances are, the farmer's lack of game on his land can be traced to inadequate food and cover, not predation by owls.

Because of this, most biologists have long advocated the owl's protection.

The Owl's Future

We now have a law protecting the great horned owl and this represents progress. But we need more! We need more farmers and sportsmen understanding the owl's importance in the environment and realizing the bird's value as a constant check on exploding rodent populations. There's hope though because in addition to the bird's ecological and beneficial values, more and more people are "turning on" to esthetic values which the horned owl represents to them. Dr. Paul Errington, Iowa State University ecologist, put it nicely when he wrote." . . . we have in the great horned owl, a superb predatory type, one of glorious wildness in a time when wildness becomes more and more priceless with each encroachment of human populations on what wildness we have left. The hooting of a horned owl in a winter evening is reassurance to me that real wildness still exists, and I am thankful to live where I can hear it."

When more people see the bird in this light, the great horned owl will truly be-protected at last.

Tuttle Creek Reservoir

By R. ROSS MANES
Photos by Ken Stiebben

Tuttle Creek Dam, a 7,500 foot long, 157 foot high mound of earth, stone and concrete, is located just six miles north of Manhattan, Kansas. The capitol city, Topeka, is only 60 miles to the east, and another state's capitol, Lincoln, is 130 miles north. For the thousands of people residing in these cities, and in the surrounding countryside, access to Tuttle Creek Reservoir is a simple matter. State highway 13 crosses the dam itself, and K-16 crosses the lake at Randolph, about 18 miles north of the dam.

The waters of Tuttle Creek Reservoir come down Fancy Creek, Swede Creek, Carnahan Creek, and other tributaries with equally fascinating names, but for the most part the water comes down the Big Blue River from southern Nebraska. Beneath the surface of this 16,000 acre lake the rubble of several small villages now provides homes for bass, crappie, channel catfish, and "yellow" catfish so big that even pictures of them are too heavy to carry. Visitors to the area can tramp a scenic nature trail, fish tree studded coves or rocky shores, wander among the mouldering ruins of an abandoned town, and later take a shower at deluxe facilities that enhance some of the campgrounds liberally scattered around the lake.

The reservoir derives its name from Tuttle Creek, a tiny drainage that enters the lake on the west side, just above the dam. Water now covers the floor of a narrow valley walled by steep sloped hills and occasional limestone bluffs. The valley was created by the random meanderings of the Big Blue as it wound its way to the Kansas River. Some of the old meanders of Blue River and the channels of feeder streams can still be traced, here-and-there, using the skeletons of the great elms, oaks and cottonwoods that grew along their banks.

Many of the people that lived in and around the small towns along the Blue River drainage left the area, moving to cities or to farms in other parts of the state. The people who stayed near-by can tell you about the towns of Cleburne at the mouth of Swede Creek, Stockdale, submerged in Stockdale Cove, and Randolph. Randolph was situated at the mouth of Fancy Creek and was, of course, quickly covered with water when the flood gates were closed. Actually, there's little left of these villages, since they were demolished before flooding occurred. Randolph, however, was rebuilt on a hill above the lake and is now a town with a fine school, neat homes and as good a custard pie as I've ever found in a restaurant. There are half-a-dozen other small towns in the lake, each with something to contribute to a person's thoughts while dozing in the sun on a grassy hill overlooking the water.

Tuttle Creek. Reservoir came into being because Blue River was, according to a publication of the U. S. Army Corps of Engineers, "—one of the largest contributors to floods in the Kansas River." Although the project under which Tuttle Creek Dam was constructed was authorized in 1938, construction did not begin immediately and the dam was not completed until 1962. A part of the Kansas River Basin reservoir system, the reservoir is unquestionably of great value for flood control, but for more than a million people residing within a hundred miles of the area it is probably more important as a source of recreation.

At conservation pool, or multipurpose pool, there are nearly 16,000 surface acres of water backed-up ap-

Crappie are always favorite fish and Tuttle Creek Reservoir, located six miles north of Manhattan, has been a crappie hotspot for years.

Excellent marina facilities at Fancy Creek and Spillway provide boat rental, boat storage, bait, gas and food.

proximately 23 miles above the dam. More than 110 miles of rugged, scenic shoreline surround the lake. To meet the terrific recreational demand created by the lake, 12 public use areas have been developed. Facilities at these areas range from nothing more than toilets at Overlook public area to virtually "shopping center" proportions at Fancy Creek. Located on U. S. highway 77, Fancy Creek area is so well developed and convenient that visitors from Nebraska sometimes outnumber the Kansans there.

Showers are available at River Pond, Spillway, Fancy Creek, Randolph and Stockdale areas. Marinas at Fancy Creek and Spillway provide boat rental, boat storage, supplies of bait, gasoline and picnic foods, along with most all other requirements. Nearly all the areas have a boat ramp, picnic tables, a water supply, and camping facilities. Areas which were developed and are administered by the State Park Authority require the payment of a nominal fee. Amounts are posted at the entrance to the State Park areas.

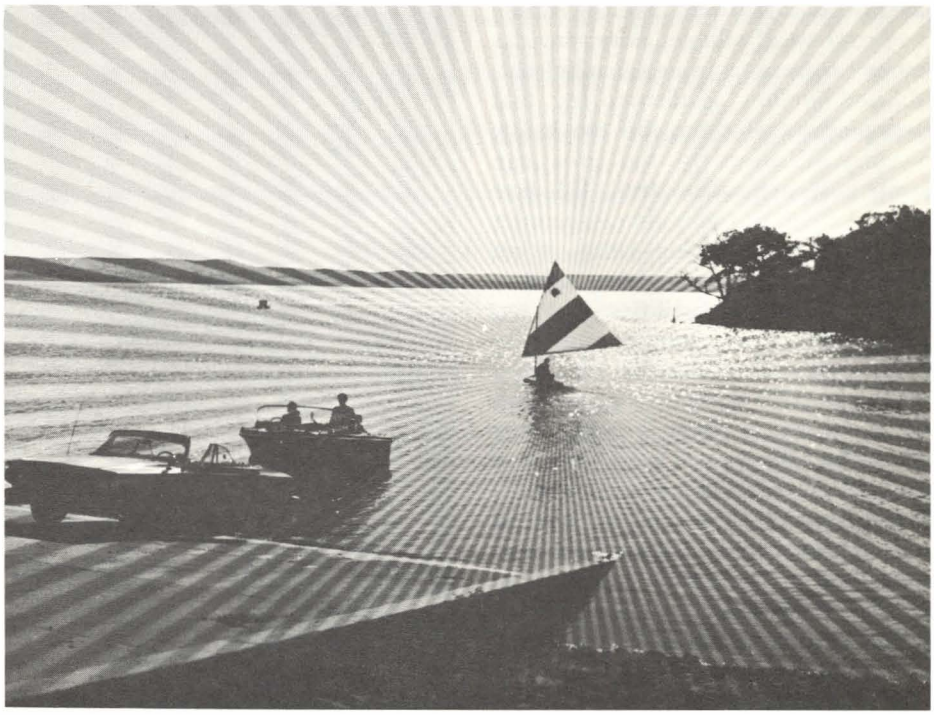
Tuttle Creek Reservoir offers an abundance of swimming, boating and fishing. Because of the excellent boat storage available, lots of open water and reliable breezes, the lake has become a favorite spot of Kansas and southern Nebraska sail boaters. Their colorful sails can be seen almost anywhere on the lake throughout the warmer months.

The Kansas Forestry, Fish and Game Commission has stocked Tuttle Creek with walleye, northern pike, largemouth bass, white bass, crappie and bluegill. With little or no competition for the vast expanse of newly flooded fish habitat, these species should have thrived to compliment existing populations of flathead and channel catfish. In fact, excellent catches of crappie have, and do, occasionally come from the lake. But, fishing has not been all that was expected, and Commission biologists say that the waters of Tuttle Creek are troubled.

Blue River, the primary source of the lake's water, carries a heavy burden of silt from southern Nebraska and northern Kansas farmlands. First time visitors to the lake are likely to be excited by a distant view of sparkling ripples, only to be disappointed by the murky water a closer inspection reveals. Unfortunately, the lake is rarely clear.

Populations of many species of game fish remain low, severely limiting fishing success. Silt suspensions, better known as muddy water, can exert several influences on game fish populations. If the condition is se-

Sailing, motorboating, fishing, water skiing, camping, picknicking and swimming—all are popular at Tuttle Creek.



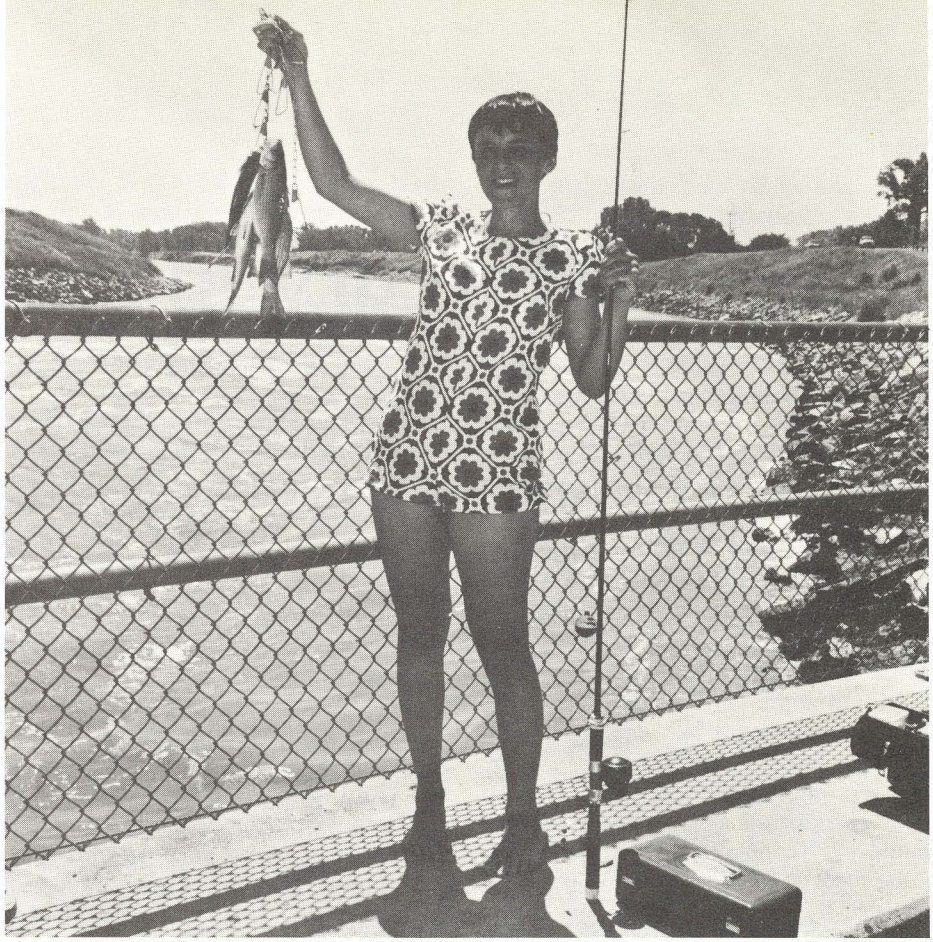
vere, the effects can be direct. Silt settling to the bottom may cover and suffocate the eggs of bass and bluegill. In really severe cases, adult fish may be killed by suffocation when their gills are coated by clay particles. In other instances the effects may be indirect. Long periods of dingy water prevent the growth of microscopic plant life by keeping out essential sunlight. This plant life, called phytoplankton, feeds tiny forms of animal life called zooplankton, which are fed upon by very small game fish. Forage fish such as shad require excellent numbers of plankton, and without them can't survive and reproduce to feed schools of white bass and crappie. Test netting of Tuttle Creek Reservoir has indicated that some of these conditions may exist in the lake.

Normally a large reservoir serves to clear the water of a muddy stream. Meeting the backwaters of a lake, the stream is forced to slow, stop, and eventually drop its load of silt. The upper end of a lake frequently becomes an area of mud flats and shallow water, but the main body of the reservoir remains clear and productive.

Fish and Game Commission biologists have suggested that the flow of water through Tuttle Creek be controlled to permit clearing, as is done in some other lakes. The idea is not to eliminate fluctuations, but to regulate the flow so that there will be extended periods of higher, clearer water. Actually, some fluctuation is desirable in most impoundments since pulling the water below shoreline vegetation occasionally makes forage fish more available to game fish. This not only encourages rapid growth in the game fish, but also helps control populations of rough fish which tend to expand too rapidly.

There is some disagreement among representatives of the Corps of Engineers and fisheries biologists regarding the feasibility and effectiveness of controlling water levels in Tuttle Creek Reservoir. Commission biologists maintain that it has worked elsewhere and should be tried here.

If the fishing picture is not as bright as it might be at Tuttle Creek, the area has still more to offer. Two years after completion of the dam, the Forestry, Fish and Game Commission negotiated a 25-year agreement with the Corps of Engineers giving the Commission control of over 12,000 acres of land and water. As a result, north of the K-16 bridge, Kansans with an inclination to go hunting will find numerous black and yellow signs reading "Public Hunting Area." These signs designate large areas of government land which are open to public hunting. With the exception of three public use areas and two waterfowl sanctuaries, all clearly marked, all the government land on the upper lake is available to hunters. Hunting pressure on the public areas is frequently very heavy, but game populations continue to be generally good. Like most other good things, fine hunting is no accident.



Fishing at the dam's spillway is popular and productive too, as this young anglerette proves. In addition to crappie and white bass, the lake's fish population includes channel and flathead catfish, walleye, northern pike, largemouth bass and bluegill.

Under the terms of the agreement with the Corps of Engineers, the Fish and Game Commission in 1964 initiated a wildlife habitat program on the licensed wildlife lands. The program utilizes a share-crop arrangement with local farmers which, in effect, gives wildlife the landowners share of various beneficial crops. In addition to the food left standing in the fields, additional cover is established by planting field borders to grass-legume combinations or woody plants. Cottontail rabbits and bobwhite quail really prosper under these conditions, along with a few smart old ringneck pheasants. Whitetailed deer and fox squirrels inhabit the wooded areas surrounding agricultural fields and with the seasonal visitors such as dove and waterfowl make up a variety guaranteed to delight any nimrod.

Game animals are not the only ones to benefit from the Commission's habitat improvement program. An assortment of shorebirds and a colorful array of songbirds enjoy the area, inviting bird-watchers to bring binoculars and observation records. Wildlife photographers will find the area particularly rewarding.

Boaters, fishermen, hunters, photographers, amateur historians, or those seeking solitude, all will find something at Tuttle Creek.

Mercury in Kansas

By FARRELL BREWER

A hit parade has been established for polluters and mercury is one of the front runners. This toxic material has been detected in the Great Lakes and in streams and rivers throughout the United States and Canada. In Montana, so much mercury has been found in game birds that the state's health department has declared them unfit for human consumption.

Why, one might ask, has mercury been recognized as a serious pollution menace? To answer this question we must look at some of the tragic effects caused by mercury when it enters man's food cycle. In the fall of 1969 Ernest Huckleby obtained floor-sweepings from a granary. Some of the grain had been treated with a methyl mercury fungicide. Huckleby fed the sweepings to 17 hogs he was raising and several became ill. He chose one that appeared to be well, butchered and froze it, and began feeding it to his family. Several weeks later three of his family became ill. The diagnosis, when finally established, was acute mercury poisoning. An examination of the hog's side meat revealed it contained 27 parts per million (ppm) of mercury. The Food and Drug Administration has established a tolerance safety level of 0.5 ppm mercury in food for human consumption. As one can easily see, the side meat of the hog should not have been eaten, but it was. The three children suffered irreparable brain damage and a child, born after the mother had eaten portions of the hog, suffered convulsions after birth, even though the mother was not visibly affected.

This was not an isolated case. In the early 1950's the Minamata Bay disaster alerted the Japanese to the sequence. Mercury discharged from industrial waste into water—concentration in fish—chronic poisoning in 88 people and 18 deaths. This lesson however was not taken to heart. In 1964 the Agano River in Niigata, Japan was contaminated by mercury from industrial waste and 26 persons became ill and five died.

Why is mercury pollution such a serious problem? The answer is simple. It is a threat to man's health. It has been established that effects of man's consumption of the toxic methyl mercury can cause severe damage to the central nervous system and can even be fatal.

The most likely avenue for mercury to reach man is through consumption of contaminated shellfish, finfish or meat. He may also be affected by breathing mercury fumes or through direct skin contact with mercury.

Since scientists have decided that mercury is a serious problem and cause for great concern throughout the world, let's examine the effects it could have for Kansas.

The major sources for mercury pollution in Kansas are treatment of seed grains with mercurial fungicides and industrial pollution of aquatic environments. Through these avenues our game birds and fish can become contaminated and rendered unfit for human consumption. Realizing this, the Kansas Forestry, Fish and Game Commission activated a program headed by Stephen Capel, game biologist at McPherson, to determine to what extent the game birds and fish of the state have been affected.

The pheasant is a game bird vigorously pursued by Kansas hunters and was selected as the subject for the mercury contamination study in game bird species. Samples were collected just prior to the hunting season to obtain a better idea of the contamination levels hunters would be facing when they ate birds taken during the season. The collection of the birds was accomplished by game protectors and biologists. Samples of breast tissue, taken from 90 birds in 24 counties averaged 0.097 ppm mercury concentration. This is much lower than the safety tolerance level of 0.5 ppm, prescribed by the Food and Drug Administration. However, four of the birds taken during the study were found to contain excessive levels of mercury. Two of these contained three to four times the level pronounced safe by the FDA. These pheasants were collected from widely separated areas, and follow-up studies suggested they had been feeding on concentrations of mercury-treated seed grain—seed which had been spilled when a grain drill was being filled or excess grain which had not been disposed of properly. For example, one of the birds was taken approximately 200 yards from treated seed grain that had been emptied from a grain drill and not properly covered to prevent birds and animals from eating it.

One of the bright spots in the study was that the lowest mercury levels were in birds collected from the major pheasant range (the western third of Kansas). Twenty birds taken from the northwest portion of the state were analyzed and averaged 0.033 ppm of mercury. This level is consistent with the "blackground level" or the amount of mercury which occurs naturally in the soil and in small organisms.

In analyzing overall findings of the study the biologist stated that there is no cause for concern over the safety of eating pheasants taken in Kansas. However the commission has plans to further investigate the four areas where high residues of mercury were found in pheasants to determine if

they were chance situations or if there are a few localized areas of concern.

While game birds in Kansas were found to contain a safe level of mercury some hot spots of mercury contamination were found by biologists conducting the survey of mercury in the fish populations in Kansas waters.

Biologists contend that abnormally high amounts of mercury in aquatic environments are a result of the disposal of industrial waste containing mercury compounds. This mercury escapes during the manufacture of a variety of goods, such as paper products, plastics, electrical equipment and various raw chemicals.

During the collection phase of the study this spring, fisheries biologist and game protectors gathered 159 fish from 14 locations throughout the state. Most samples taken were lower than the tolerance level established by the FDA. However some samples approached or exceeded this standard.

Of the 14 sampling sites, only three were found to yield fish that were considered to be above or near the tolerance level. White bass from the Arkansas River near Arkansas City contained 0.632 ppm of mercury while white bass taken from the Kansas River at the mouth of the Wakarusa River near Eudora contained 0.482 ppm. White crappie taken from Cowskin Creek in Sedgwick County registered 0.415 ppm while green sunfish from the same location contained 0.515 ppm.

Samples of fish were analyzed for mercury content in conjunction with a grant by the National Science Foundation to Dr. Charles Creager, physics professor at Kansas Wesleyan University, Salina, and supplemented by Commission funds. The pheasant study was financed by the commission. Dr. Creager prepared tissue samples of both pheasant and fish and forwarded them to a private laboratory in Columbia, Mo., where the most accurate technique available for detection of mercury in biological samples, the neutron activation process, was used.

It has been established that there is some mercury contamination in game birds and fish life in Kansas. What does this mean to hunters and anglers? Since fish and game birds are not a regular diet item, there is little cause for concern — even if catches come from waters moderately contaminated with mercury wastes. For example, in order to exceed an average safe intake level in total food of 0.05 ppm of mercury per day, it would be necessary to eat a quantity of fish flesh amounting to 80 pounds per year, all of it containing the allowable maximum of 0.5 ppm. Since no more than 60 percent of each fish consists of edible flesh, this would represent more than 133 pounds of undressed whole fish.

This does not mean, however, that we should stop being concerned about the mercury pollution problem. We must keep constant vigil on this toxic metal. Mercury will always be mercury in some form since it does not break down as some pesticides do. Every time mercury is added to our environment there is a build up.

In the 1971 session of the Kansas Legislature, a bill was passed which prohibits discharge of any substance containing mercury or any compound or derivative of mercury in any quantity which is or may become injurious to the public health into the waters of the state.

This is one positive step forward in mercury pollution control, but there are ways individuals can also aid in the fight.

Hopefully mercury pollution from agricultural sources will soon be a problem of the past. Non-mercurial fungicides are being developed to replace the dangerous mercurial forms. As it stands now, mercurial fungicide supplies that exist within state boundaries may be used but this type of fungicide may not be shipped across state lines. Even with this bright spot in the future there are existing supplies within Kansas and persons using mercurial fungicides are asked to observe the following recommendations when handling them.

Do not treat more seed than is necessary. If you should underestimate your requirements, use the drill box treatment method for the few bushels you are short. Be extremely careful not to spill treated seed around the drill box, grain bins or in any other area. If seed is accidentally spilled, cover it well with soil. Do not leave treated grain on the surface of the soil in the field where birds and mammals can pick it up. Cross-seed headlands to insure all seed is covered. If you have any treated seed left over, either burn or bury it. Also, bury all used seed treatment chemical containers. Never feed treated grain to livestock even though the actual amount of mercury added to the environment by seed treatment is small when compared to industrial sources. It is a problem mainly because seed-eating animals and birds will eat treated grain in farming areas when it is available.

The Commission has already taken a strong stand on mercury pollution by banning the use of organic mercury compounds on all Commission owned, leased or managed lands.

Mercury pollution, its causes and effects have been discussed and now we must ask who is responsible.

The answer to this question is also an easy one, although perhaps not easy to accept. Everybody is responsible for pollution, as is anyone who sprays or treats his lawn or garden for weeds or pests; or who pours phosphate detergents down the drain or who drives a car with an internal combustion engine. It is extremely easy to pass the buck and blame agriculture, pulp mills, forestry and a host of other industries, forgetting that an industry is nothing more than a composite of individuals with a common interest. This is not to say that industries are not responsible for pollution but rather that the true blame rests squarely on the shoulders of every one, collectively and individually.

In conclusion it can be said that no widespread epidemic of mercury poisoning is underway in Kansas or in the United States, perhaps in a large part because eating habits do not include large amounts of fish and game.

However, prudence would dictate that intensive efforts be made to reduce industrial mercury wastes, to utilize less toxic agricultural fungicides and to pinpoint and reduce all other sources of mercury contamination of the environment.

Farm Pond Stocking

By VERL STEVENS
Fish Hatchery Superintendent

To many sportsmen, the coming of fall is anxiously awaited for the opening of hunting season. Fall is also welcomed by the farmpond owner who will be meeting the fish distribution truck from the Fish and Game Commission on it's annual delivery trip with small fingerling fish.

Pondowners in the state of Kansas make application and receive at no cost, fish to stock small private ponds. These ponds are of various assorted sizes, shapes and have been constructed for a variety of reasons. Most ponds which have been stocked were initially built to supply water for livestock. However, recently, many watershed lakes and irrigation tailwater pits are receiving fish.

In order to obtain fish from the Fish and Game Commission's hatchery it is necessary for the pond owner to fill out a formal application card. If more than one pond is to be stocked, a card should be filled out on each pond. Application cards may be obtained from the Forestry, Fish and Game Commission headquarters at Pratt.

There are three basic requirements which the pond must meet before it can be stocked with small hatchery fish. All ponds stocked must have a surface area of at least one-fourth acre since any pond with less area would not provide adequate space for fish growth. The pond must also have adequate depth or a reliable water supply to maintain fishlife during average periods of drought conditions and winter ice cover.

The third requirement is that the pond may not have an existing fish population. It has been the Department's experience that fishing is generally not improved by adding small hatchery fingerling fish to waters which already contain fish populations. The survival of the small fingerlings is normally very low, since many of them are eaten by the larger fish and others are unsuccessful in competing for food and space with the fish already existing in the pond.

Ponds and lakes which contain fish populations will need to be rehabilitated by use of fish toxicant or drainage to eradicate all fishlife prior to restocking with hatchery fish. If information is requested, the Fish and Game Commission can provide instructions for the use of fish toxicant.

The application card must be filled out completely and correctly prior to processing or it may have to be returned for additional information. Information submitted on the application should be to the best of the applicant's knowledge to insure that he will have good fishing in the pond. If the length, width, pond depth and surface acres of water are incorrect, the number of fish furnished may be inadequate to stock the pond if the owner states that the pond is smaller than it is or on the other hand if he overestimated the size the pond will be overstocked and the fish will not grow rapidly and may become stunted at a below-harvestable size.

The Department's hatcheries provide channel catfish, largemouth bass and bluegill for farmpond stocking. The pondowner may request the species of fish which he would like to have stocked in his pond. Any combination of the three species may be requested, however, a channel catfish and bluegill combination is not recommended. Bluegill serve as forage for largemouth bass but can be lots of fun if they are large enough.

When signing an application requesting fish for stocking, the landowner and tenant agree that for a period of ten years, the following requirements and conditions will be in effect; (1) all persons, with the exception of the landowner, tenant, and their immediate families living with them, who fish the waters are subject to fishing license requirements in effect on other state waters; (2) all laws of the state and rules and regulations of the Forestry, Fish and Game Commission relative to fishing methods, limits and seasons shall be applicable to the water; and (3)

Ralph Eubanks and his two grandsons display a string of largemouth bass and channel catfish, taken from a Commission-stocked farm pond.—*Photos by Ken Stiebben.*

state game protectors will have free and peaceable access to the property for law enforcement purposes.

Many times the question comes up concerning the rights of the pondowner in determining who can fish in impoundments stocked by state fish hatcheries. Fish are propagated at the State Hatcheries with funds obtained through the purchase of fishing licenses by sportsmen of Kansas. Therefore, pond and lake owners who obtain fish have the obligation and are expected to grant permission for additional fishing by persons other than their own families and relatives. However, the pondowner's and tenant's right to determine who shall have access privileges on the property is recognized.

With recent advancements in the field of fish feeding, many applicants ask about the possibilities of supplemental feeding of the fish. Artificial feeding is not necessary and is not generally considered worthwhile in ponds stocked at the standard hatchery rate.

The number of fish allotted per acre of water is based on the poundage of fish which a pond of average fertility can support; therefore, the natural fish foods produced in the pond should be adequate for satisfactory fish growth. Should the pondowner decide to initiate a supplemental feeding project, additional channel catfish could be purchased from a commercial fish dealer and stocked at the rate of 500 to 1,500 per surface acre. This should make the feeding project worthwhile and also provide additional production and excellent fishing.

A three-pound channel on light tackle can put up quite a fight. In addition to channel catfish, the Fish and Game Commission stocks largemouth bass and bluegill to provide the pond with a balanced fish population.

Applicants receiving fish from the state hatchery will receive notification by mail several days in advance of the date on which the distribution trip has been scheduled. The pondowner will be informed of the date, time and place he is to meet the delivery truck. The applicant will also be advised of the number and size of containers that he should bring for transporting the fish to his pond.

Nearly 2,000 farmponds are stocked with fish in Kansas each year. One has but to fly over our great state and look at the number of anglers using these ponds to really appreciate what a boost they are giving fishermen of Kansas.

APPLICATION FOR FISH

(Fill out and return to Fish and Game Commission, Pratt, Kansas 67124)

Name of applicant_____ Telephone_____ County_____

Town_____ Mailing address_____ Date_____

Location of pond or lake: Quarter_____ Section_____ Township_____ Range_____

Source of water: Springs ☐ Run-off ☐ Water depth_____ Width_____ Length_____

Date pond or lake was built_____ Surface acres of water_____ Was water previously stocked_____

Does this water presently contain fishlife?_____ If so, what kind?_____

This water is located_____ miles_____ and_____ miles_____ from_____, Kans.

Kinds of fish desired: Bass ☐ Bluegill ☐ Channel Catfish ☐ _____ ☐

In consideration of the Kansas Forestry, Fish and Game Commission recognizing this application and furnishing me with fish for stocking the above described water, or approving and assisting me in the securing of stock from federal agencies, I hereby agree and pledge that anyone fishing this water will be required to have in his possession a current Kansas fishing license; further, that all laws of the state and rules and regulations of the Forestry, Fish and Game Commission relative to fishing methods, limits and seasons shall be applicable to the above described water; that state game protectors shall have free and peaceable ingress to the property for law enforcement purposes and said water shall not be considered as exempt private water. This agreement and waiver shall be effective for a period of 10 years from the date hereof as provided for by law.

×_____

(Signature of Landowner)

×_____

(Signature of Tenant)

TO BE SIGNED BY BOTH PARTIES IF LAND IS LEASED

WRITE ON THIS SIDE OF CARD ONLY
DO NOT FOLD—DO NOT BEND

Controlling Predator Damage

By VIC McLERAN
Photos by the Author

When Bob Henderson was 10 years old, he trapped muskrats from a little creek near Harper. Later, after moving to Wichita, he box-trapped rabbits and sold them during the war years when there was a shortage of meat.

Today, as wildlife damage control specialist for Kansas State University extension service, his trapping instructions to farmers and ranchers indirectly account for more than 500 "bad apple" coyotes annually. Logging about 40,000 miles per year, Henderson travels the entire state assisting stockmen with predator problems.

A Kansas native, Henderson received his B. S. and M. S. from Fort Hays State Teachers College and for awhile was employed by the Kansas Forestry, Fish and Game Commission as a biologist's aide and beaver trapper. He later moved to South Dakota where he worked as district game manager with the state Fish and Game Department. In 1968, he returned to Kansas in his current position.

Although many predator problems deal with "outlaw" coyotes, Henderson also teaches farmers and ranchers how to trap stock-killing dogs, bobcats, foxes and coyote-dog crosses that might be causing problems.

Any farmer or rancher who has problems and wants assistance, should contact his local county agent or state game protector. They will contact Henderson who then notifies the farmer when he will be in the area.

Some farmers are under the impression Henderson will trap coyotes for them. This is not the case. Henderson merely instructs stockmen in effective trapping techniques. After arriving on the scene, Henderson usually inspects the damage and trys to determine the type of predator involved. He then attempts to locate a trail the predator has been using.

Coyote Tracks

As soon as he finds coyote signs, Henderson points out the difference between dog and coyote tracks.

"Coyote tracks are similar to dog tracks but are longer and narrower and more oval or egg-shaped than a dog's. They generally fall more nearly in a straight line and are spaced from 18 to 22 inches apart. Also, a coyote track shows only two claw marks, one on each forward pad. A dog track shows four, one on each pad. Bobcat tracks, while similar to dog tracks, show no claw marks."

Stock-killing Dogs

Henderson says he points out the difference in tracks since free-running dogs are often responsible for depredations blamed on coyotes. Although coyotes are not altogether innocent, the control specialist believes more than 25 percent of losses blamed on coyotes are actually caused by dogs.

"The old family dog that spends all day around the farm house may actually be a killer at night," he warned.

"We had a case near Eureka where dogs were killing calves. After some instructions, Mr. Linn Braden, the rancher who was experiencing the loss, trapped two dogs and had no more problems."

Trapping Technique

After locating a trail coyotes or other predators have been using, Henderson selects a spot several feet upwind from the trail according to prevailing winds. Since the method most often recommended by Henderson is use of the steel trap, he instructs the farmer how to make a double-trap post set. This involves burying two traps adjacent to a scent post. The scent post can be a cow chip, clump of grass or a small log and is doused with coyote urine. Coyotes establish scent posts about like dogs and when one approaches the post, he's usually caught in one of the traps.

Henderson feels the steel trap is best for several reasons. "If an animal not responsible for the damage is caught in the trap, it can be released with minimum injury. Then too, the offset jaws of the trap don't break the coyote's leg. This is important since if the bone is broken, coyotes can actually twist out of the trap." Henderson sells traps and other necessary equipment to farmers at cost.

Dale Josefiak, Rozel rancher and Bob Henderson, predator control specialist, examine a calf's wound, believed caused by either free-ranging dogs or coyotes.

Henderson and Josefiak inspect a coyote which answered the control specialist's call. Henderson says even though most coyotes prey mainly on rodents, an occasional "outlaw" coyote will learn to prey on livestock.

Predator Calls

Another method which Henderson teaches is use of the predator call. Hiding himself in an area known to contain coyotes, the control specialist uses a commercial predator call which imitates the cry of an injured rabbit. The coyote or other predator, hearing the sound, believes something has captured a rabbit and moves in, hoping for an easy meal. Although normally cautious and wary, a coyote seems to lose all fear when coming in to a call. Henderson has used it in Canada, Mexico and numerous states with a great deal of success. He's called in eagles, owls, foxes, free-running dogs and bobcats.

Sitting on a hillside south of Rozel with Henderson and Dale Josefiak, area rancher who was experiencing predation damage, I watched the control specialist call up three coyotes in about 10 minutes. Moving to another location several miles away, he called up two more.

As with the traps, Henderson sells the calls at cost to farmers and ranchers who express interest in this type of control. He also spends time instructing them in proper use of the instrument.

Predation and Prevention

Henderson points out that in most cases, the actual damage is done by only one or two individual or "bad apple" predators since the majority feed mainly on rodents.

"Coyotes, like most predators, are opportunists, catching what is most available or abundant," Henderson explained. "Normally, this means mice, rats, gophers and a few rabbits. Occasionally however, a coyote learns it's easy to take a new-born lamb or calf. After doing this successfully the coyote will return if the opportunity is still present. After the individual offender is eliminated, most losses cease." This is another advantage to the program, since the predator trapped is usually the individual causing the problem.

Through a lack of precaution, some farmers actually encourage depredations by predators. This is why Henderson believes prevention is the best cure. "Keeping livestock in protected areas at night, staying alert during lambing or calving season and constructing good fences can go a long way in reducing predator losses," said the trapper.

Results of the Program

The extension service program of hiring a full-time predator control specialist has resulted in substantial savings to Kansas taxpayers. The old bounty system, eliminated in 1969, was costing taxpayers around $100,000 annually. The current program's cost to taxpayers is less than $20,000.

Although many farmers are skeptical at first of Henderson's methods, most change their minds after seeing the results. A recent survey by the Extension Service, indicated 58 percent of livestock producers who had received Henderson's training reduced losses to zero. Another 36 percent reported reducing losses substantially. Only 6 percent indicated no loss reduction.

Don Schumacher, Pottawatomie County farmer, lost $2,000 worth of pigs before learning to trap. Following Henderson's instructions, he took six coyotes and suffered no further losses.

Richard Dowell, Kiowa County rancher, reported $1,610 in sheep losses. As a result of the control specialist's short course in trapping, Dowell caught 20 coyotes and his losses dropped to $460.

Albert Greiner, another Kiowa County rancher, trapped 42 coyotes following Henderson's formula. He reported his sheep loss was cut in half.

With some ranchers, coyote trapping becomes almost an obsession. One rancher near Haviland liked it so well that in 18 months, he took more than 150 coyotes.

Farmers and ranchers in Kansas who received training from Henderson in fiscal year 1968-1969, reduced predator losses from $20,000 to $4,000—a savings of $16,000. Animals taken included 425 coyotes, 6 wild dogs, 2 bobcats and 4 foxes.

Bob Henderson has come a long way from that little creek near Harper where he set his first trap. The knowledge and experience he's gained in almost 30 years of trapping have paid off in cash values for a lot of stockmen.

Next time you have a predator problem, give him a call. Like they say—experience is the best teacher, and when it comes to predator control, Bob Henderson has the experience.

Josefiak, who had been experiencing some calf losses, makes a trap set under Henderson's watchful eye.

Quail and Pheasant Seasons Open Concurrently

New Season Opener

By LELAND M. QUEAL
Game Biologist

Opening day of pheasant and quail season in 1971 will take on a new appearance. For the first time since 1932, when ringnecked pheasants became legal hunting targets, the hunting seasons for these two popular game birds will open on the same day throughout the state.

In the past, pheasant season invariably opened earlier in the fall than quail hunting. However, opening dates varied considerably. In more recent years, opening dates became more standardized with pheasant season opening the second Saturday of November and quail hunting starting a week later.

Minor changes in this standard practice became effective in 1965 when the area outlined in Figure 1 experienced a concurrent opening date for pheasant and quail season. Beginning in 1969, all of Kansas east of U. S. 81 had concurrent opening for these two species.

Why, after a long history of opening pheasant and quail seasons on separate dates did the Forestry, Fish and Game Commission choose to alter this practice? How will the change affect farmers and ranchers who control the land on which most of the game is raised and most of the hunting takes place? How will the hunter, who supports the Commission with license fees, benefit from this change? These are questions that many are sure to ask in the future.

The Commission acted on a recommendation for concurrent opening of hunting seasons made by the Game Division as early as September 1969. The basic recommendation was based on the premise that concurrent openers will reduce peak hunting pressure in most areas and provide opportunity for more "mixed-bag" hunting, while at the same time, maintaining opportunity for several trips afield during the season.

Reduce Hunting Pressure

At first glance, it may appear to many people that opening these seasons concurrently would result in more hunting pressure. It might seem logical that when you add quail hunters and pheasant hunters together, hunting pressure must increase. But this is not the case.

In 1969, the most recent season for which all records are complete, there were 228,830 hunting licenses sold in Kansas. Based on post-season surveys, approximately 10% of the license buyers did not hunt for some reason. Of the remaining 208,330 licensees who actively hunted, 145,200 or 69.7% hunted pheasants and 159,000 or 76.6% hunted quail. Approximately 108,000 or 52% of all active hunters hunted both pheasants and quail.

Distribution of pheasants and quail is not the same. The major range for pheasants is the western third of the state (Figure 2) with a lesser population in central and northeastern Kansas and virtually no birds in the southeast. Quail, on the other hand, reach their highest numbers in the east, with decreasing populations occurring as one proceeds westward (Figure 3).

With separate openers it was possible for the 108,000 hunters who hunted both species to spend opening weekend in their favorite pheasant areas and then be present at some other area on the quail opener. This hunting pressure was in addition to those who traditionally hunted on opening day of one season or the other, but did not hunt both.

With concurrent openers for these species, a hunter will have to make a choice of whether he wishes to open the season in western Kansas with pheasants the prime consideration, in the eastern part of the state for quail or in the central portion where moderate success for both species can be expected.

The immediate result should be a more widespread distribution of hunters and reduced hunting pressure in most areas of the state during the opening weekend. It is anticipated that this reduction in peak hunting pressure will be greatly appreciated by rural landowners. In the long term, better relations between landowners and hunters should result, and the greatest benefit to the hunter will be continued access on private lands when permission to hunt is actively sought.

Mixed-bag Hunt

A secondary benefit will be greater opportunity for the hunter to participate in "mixed-bag" hunting on opening day. Many hunters consider the bag limit to be a goal. Frequently, if they are not successful in attaining a full bag limit, they are disappointed in the hunt, forgetting other favorable aspects such as pleasant companions, good dog work and the pleasure of a day afield. When only one species is the target for the day, this disappointment at not achieving the full bag limit may be intensified. A mixed-bag hunt can do much to make a day's outing more enjoyable.

While reduced hunting pressure

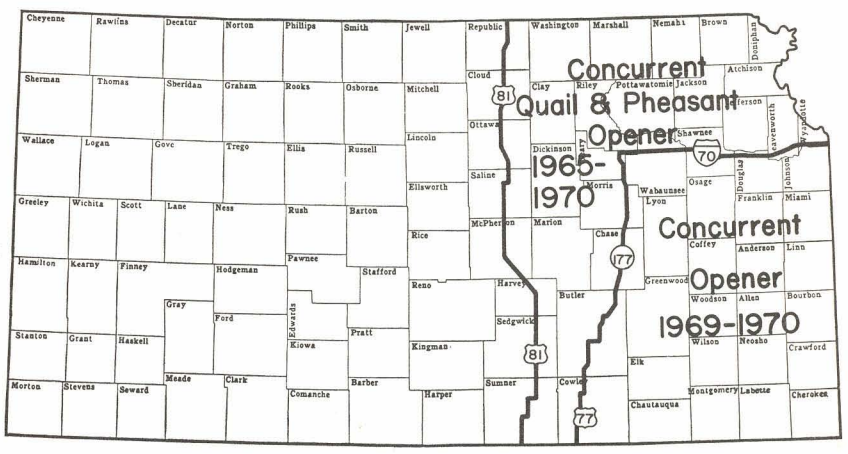


FIGURE 1

should result in better landowner-sportsman relations, the effect on game birds will be much less pronounced. The bulk of the hunting will still occur early in the season when the birds are more abundant and generally easier to find. However, concurrent opening dates may have the effect of reducing the total pheasant harvest if a great many "one weekend" hunters chose to remain in eastern Kansas to hunt quail rather than make their usual trip west. The total quail harvest is not expected to change much as a result of the change in opening dates.

Concurrent Openers Not New

While the statewide concurrent opener will be a new innovation for the Kansas hunting scene, it is not unique among several states. In fact, Kansas is one of the last states to retain separate season openers for both quail and pheasants. Of 47 states holding quail or pheasant seasons in 1969, 37 or 79% had seasons opening concurrently with other major upland game species.

Twenty-nine states had pheasant seasons in 1969. Eighteen opened quail and pheasant concurrently. All except Kansas had seasons that opened concurrently with either quail or grouse (partridge). Ten states had regulations which authorized openers for quail, pheasants and grouse (or partridge) on the same day. Twenty-one states also opened their squirrel or rabbit seasons concurrently with quail or pheasant.

Attitudes in Kansas

People resist change. This is typical whether it concerns social measures, taxes, street names or a multitude of other items, including hunting regulations. Being aware of inherent resistance that might be encountered with a change in the opening of hunting seasons, the Commission directed the Game Division to determine attitudes of both hunters and landowners toward such a change.

A total of 10,810 hunters licensed in 1969 were contacted in September 1970, with a questionnaire requesting their preference of the several possible

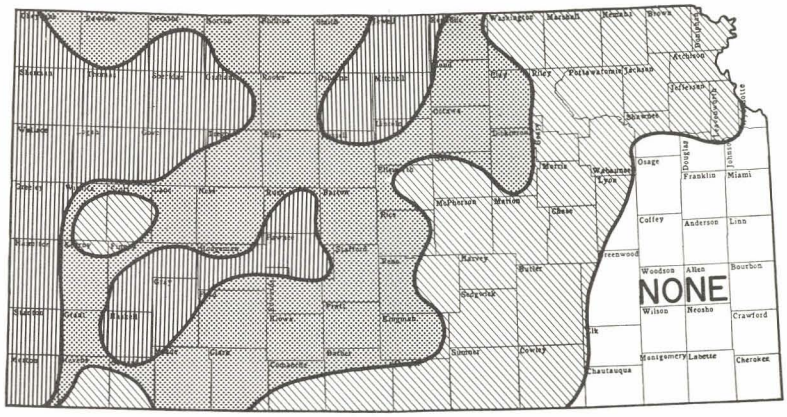
FIGURE 2

GENERAL PHEASANT POPULATION DENSITIES IN 1970

Highest

Medium

Low



combinations of opening dates for upland bird seasons. More than four thousand sportsmen returned the brief questionnaire. Results were as follows: 33.8% desired concurrent season opening dates for prairie chicken, pheasant and quail seasons; 22.6% wanted pheasant and quail seasons to open concurrently; 33.8% wanted it to remain the same as at present; and 9.8% had no particular preference in regard to opening dates. Eliminating those with no preference, about 62% indicated they wanted at least pheasant and quail to open together. It is doubtful that the balance of the hunters will be greatly concerned about the change when made aware of the reasons which were considered when making the decision.

Two percent of the farmers and ranchers in each county were contacted in a similar survey. A mailing list was made available from the Agricultural Stabilization and Conservation Service.

On a statewide basis, 24.9% indicated a preference for concurrent openers for all three major upland game birds; 9.7% wanted only quail and pheasant together; 37.4% wanted the season to remain the same; and a surprising 28.0% expressed no particular preference. Eliminating those with no preference, about 48% wanted at least quail and pheasant together and 52% wanted it to remain the same.

Among landowners in the western two-thirds of the state (west of Washington, Riley, Geary, Morris, Chase, Butler and Cowley counties), about 56% wanted to have at least quail and pheasant seasons open together. This is the area where the change in season openers would be most noticeable, as this is the area that has never experienced concurrent opening game bird seasons.

In the eastern third of the state, responses were quite different. Only 35% wanted quail and pheasant to open concurrently and 61% indicated they wanted it to remain as at present. However, for eastern Kansas, "as at present" already means concurrent openers for both species. This has occurred over much of the region since 1965 and for the entire area since 1969. No consistent problem or complaint over these partial concurrent openers has resulted during the ensuing years.

So, the 1971 season on pheasants and quail will open concurrently on November 13 and Kansas hunters west, as well as east, of U. S. Highway 81 will have the opportunity for "mixed-bag" hunting. But, by far the most important benefit will be a reduced peak load of hunting pressure on opening weekend, a situation which should appeal directly to rural landowners. The hunter should find it equally desirable by reducing competition for favorite hunting areas on opening day.

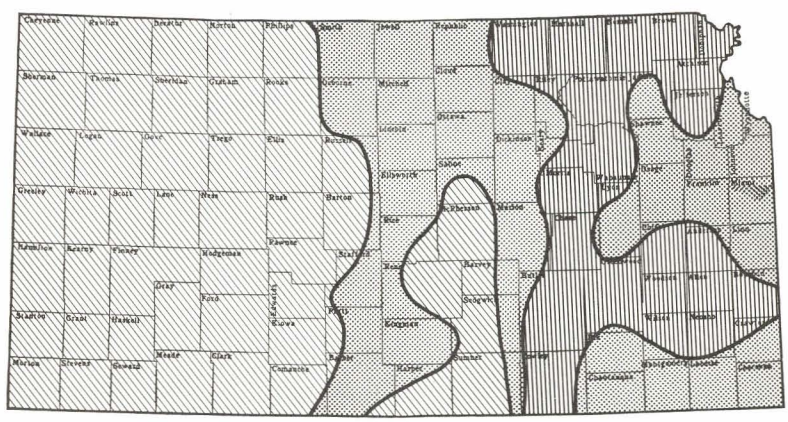
FIGURE 3

GENERAL QUAIL POPULATION DENSITIES IN 1970

Highest

Medium

Low



Glimpses of Kansas Wildlife

Bobwhite Quail

Photo by Ken Stiebben

By LEROY E. LYON

King of Kansas' game birds—that's the Bobwhite Quail.

In nearly every way the bobwhite has proved himself worthy to wear the regal crown though in size he is nearly the smallest of all game birds. To hunters who seek him in the fall and to farmers who observe coveys in their yards, he is indeed a most favored bird and an acquaintance of nearly every Kansan.

Perhaps nothing has earned the coveted title more than the loud, distinguished call for which the bobwhite is named. Anyone who has ventured outdoors in spring and early summer is familiar with the cheery whistle "ah-bob-white!," a signal that a male is seeking a mate.

Few birds can match the bobwhite's sporting characteristics but the bobwhite does not reserve his kingly qualities for sportsmen alone. His food habits make him extremely valuable for landowners since, in spring and summer, he consumes large numbers of grasshoppers and other insects. About one-seventh of his annual food consumption consists of insects. Weed seeds are also important in the year-around diet as are grasses, sedges, fruits, and waste agricultural grains.

Found throughout the state, bobwhites are most abundant in eastern portions but in western areas are found only in choice local habitat, particularly along stream courses. Generally bobwhites reign supreme wherever food, shelter and nesting cover occur in close proximity. The preferred habitat of the bobwhite is a mixture of grassland, cropland, brushy areas and woodland interspersed to provide abundant areas of "edge"—those margins where two or more cover types come together.

The Kansas bobwhite is a small, six to seven ounce bird of feathered beauty. Except for the mourning dove, bobwhites are the smallest of Kansas' upland game birds.

The bobwhite's feathers contain a mixed pattern of brown, chestnut, buff, black and white. The males, by their white eye stripe and black and white throat pattern, are easily distinguished from the buffy marked females.

Gregarious birds during most of the year, bobwhites stay in small groups called coveys. When evening comes, the little flock roosts on the ground squatting in a circle with tails pointing toward center and heads facing out. If some wandering predator discovers them in the night they can scatter in all directions like an exploding bombshell assuring that most will escape.

With the first hint of spring, coveys break up and mate selection begins. Courtship is a colorful ritual which becomes more intense as spring advances. A pair is formed when a hen accepts a cock by allowing him to mate. The two are then inseparable for the rest of the breeding season. In Kansas mating usually begins in April and by early May, coveys are completely broken up.

Two weeks to a month or more after courtship begins, mated pairs make their nests. A majority of nests—shallow depressions in the ground lined with grass or other vegetation—are most often found in dead, weedy growth of the previous year.

One white egg is laid nearly every day until an average of 13 or 14 have been laid. It takes from two to three weeks for a hen to complete her clutch. Incubation does not begin until all eggs are laid. During egg-laying and incubation periods, the cock stays nearby serving as a sentry.

The nesting period is one of great danger from natural hazards and as a result many nests are destroyed by torrential rain and hail, predators and farming operations. But renesting is common in the quail world if the nest is destroyed before or early in incubation.

After 23 or 24 days of incubation, the eggs hatch and chicks become lively as soon as dry. The nest is then deserted.

A bobwhite pair will not raise more than one brood a summer but will accept and care for strays from other broods. Because of this, coveys with chicks of mixed ages are occasionally seen.

As chicks mature their gregarious nature becomes more evident. There is a greater interchange of individuals and groups from one covey to another so that eventually coveys are seldom a family group but a mixture of several families. This mixing of coveys intensifies in early autumn with quail moving around the countryside in what is called the "fall shuffle"—a mixing of birds among different broods.

Healthy bobwhites which survive summer must still face old age from which there is no escape. Even under good conditions the life span of a quail in the wild is very short, 8½ months on an average.

Since food and cover can support just so many quail through harsh winter months, quail numbers are gradually reduced by natural mortality until by spring only a few are left to carry on the bobwhite's earthly reign. Normally less than 60 percent of the October population will survive to the following spring. This loss is fairly constant whether there is hunting or not. This explains why the season is set in early fall so that as much as possible of this natural mortality can be salvaged for human use.

To consider not harvesting these birds so as to build up more birds in the future just doesn't work. The annual turnover is a way of quail life and unlike wheat or other crops of the land bobwhites cannot be stockpiled. To have more quail it is necessary to improve the carrying capacity of the winter habitat so as to carry over more breeders. These, in turn, provide a larger annual surplus or turnover—hence more birds for harvest.

While regulated hunting does not impair quail populations or threaten the future of the bobwhite in Kansas, recent trends toward clean farming of land have had detrimental effects on the bird's welfare and threaten to reduce suitable habitat in the future. Continued disregard of the year-around requirements of the bobwhite for food and cover will mean reduced bobwhite populations in the future.

Thus, while the bobwhite may be the "king," he is at best just an earthly monarch who is dependent upon man for his survival. If his empire is to continue and if the majestic call of the bobwhite is to be preserved for future generations he must have the help of all Kansans.

Kansas Wildlife Federation

By TED CUNNINGHAM

Photos by Bob LaShelle

Some 22 years ago a small group of dedicated and concerned sportsmen met to discuss problems relating to fish and game in Kansas. Out of this meeting was formed the forerunner of the Kansas Wildlife Federation, Inc.

The Kansas Association for Wildlife, or K. A. W., was organized to work for the propagation of fish and wildlife and to protect the natural resources of Kansas. K. A. W. was the first organization in the state to show a concern for clean water and in its formation mentioned the need for pollution control and abatement.

Soon after its conception K. A. W. began to work toward better Farmer-Sportsmen relations in regard to hunting in Kansas. The main concern was for the gunners who took to fields each fall and had no regard for the property of others. Back in the mid 50's work was started to educate sportsmen in manner of hunting, gun safety, and the need to ask permission before hunting. Trespass was a concern then as now.

The Kansas Association for Wildlife grew slowly in its early years and remained fairly small in membership for a number of years. After a few years the organization formed an affiliation with the National Wildlife Federation in Washington, D. C. and became a part of some 2,000,000 voices crying for change and working for those changes. The name was changed to the Kansas Wildlife Federation, Inc., and was registered with the Secretary of State. K. W. F. was recognized as the state affiliate of the National Wildlife Federation, and so remains to this day.

Some 10 years ago, to promote fishing in Kansas, the Federation held the first state fishing contest in the state. The prime objective was to get Kansans interested in Kansas fishing. From a small beginning the contest has grown to the largest held each year in the state. The first contest attracted some 24 contestants and today well over 100 fishermen and fisherwomen vie for trophies and prizes for state championships in four divisions of the contest. In the 9 year history of the contest there has never been a drowning or serious accident.

In 1965 the Federation was successful in getting legislation passed that absolved landowners from liability injuries from trespass on their property. This bill is known as the Farmer Liability Law and was a hallmark for Kansas farmers and hunters.

Some time after the Federation was organized a publication was started for all members. Today the *Kansas Sportsman* is mailed monthly to some 6000 members across Kansas and the nation. The *Sportsman* contains news of affiliate activities and also actions and programs of the Federation.

The Federation today is made up of some 45 organized local affiliate clubs and a great number of sustaining members. The sustaining membership provides the necessary finances for the operation of the Federation. The original Board of Directors has grown to 19 members, consisting of the President, 3 Vice Presidents, 12 Directors and 3 Directors-at-Large. A full-time Executive Director is now employed to direct the affairs and programs of the organization. An Advisory Board made up of 8 individuals is also part of the Federation. The Advisory

Former Lieutenant Governor, John Crutcher (left), presents the "Conservationist of the Year" award to Robert J. Robel, Kansas State University biology professor. Each year, KWF sponsors an award program designed to honor outstanding contributions in the field of conservation by individual citizens.

Board consists of experts in fish and wildlife, legislation, education, biology and ecology, news publications, and parks and camping areas.

The Kansas Wildlife Federation works in cooperation with the Kansas Forestry, Fish and Game Commission in matters relating to fish and game and is the largest organized voice of Kansas sportsmen in the state.

Legislation is another prime function of the Federation in Kansas and in Washington. Much work is done with certain Kansas Senators and Representatives and the state Administration to provide for enhancement of the environment and a better quality of life for all citizens. K. W. F. has been involved in a number of bills that are aimed toward the above goals. Among them are bills for air and water quality, protection of unprotected hawks, solid waste management, safe boating laws, establishment of a National Prairie Park, protection of Kansas rivers and streams from unwarranted channelization, and certain changes in fish and game regulations.

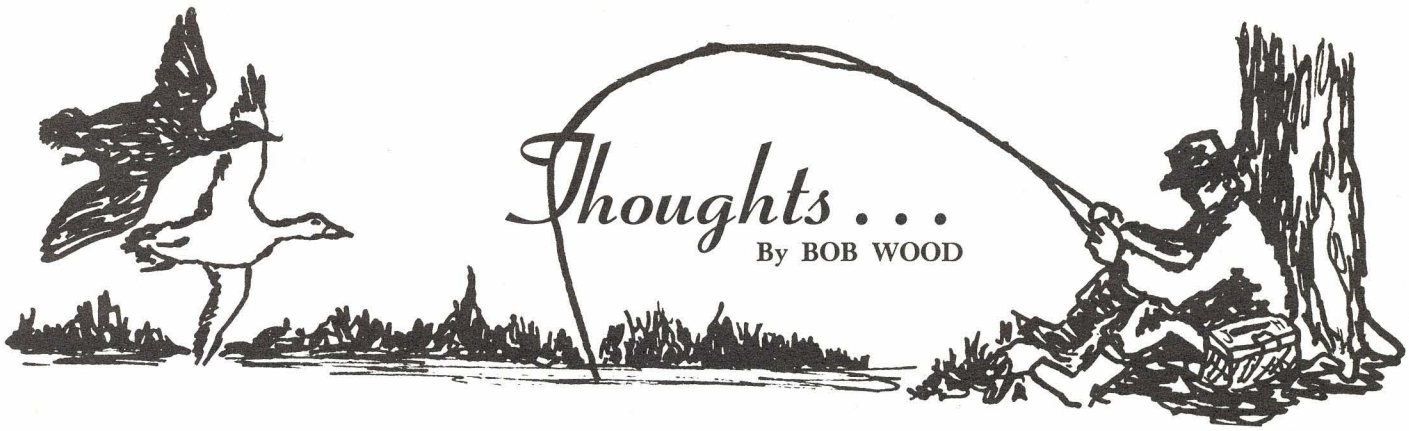
The Kansas Wildlife Federation has pledged its membership to work toward goals that will benefit each citizen of Kansas and the nation. The federation stands for a "Klean Kansas." Films, slide series and speakers are furnished to any group at no cost. Information on pollution abatement and control is given to all who ask, and write for information. Each year packets are mailed to more than 2000 schools that give a rundown on national progress for the past year. This information is part of the mailing of National Wildlife Week materials and is provided at no cost. A great amount of time is spent with young people of the state. The Federation is working towards a public education system that will be used in Kansas schools. Thousands of pieces of handouts are given each year to schools, and to those who attend the Kansas City and Wichita Boat Sport and Travel shows. Displays are set up in local and county fairs as requests are received and processed.

Jim Ogan (left), and Bill Getz, members of Neptune's Competitors, a Kansas City diving club, display a four-pound carp. They were participating in another event sponsored by KWF—the annual spear-fishing contest held last year at Milford.

The Federation believes in working with all phases of local and state government and together we are striving for wise use of our land and natural resources. We recognize the importance of agriculture to Kansas and do not want or expect restrictive legislation that will provide benefits to all citizens for a better environment. We recognize the role of industry in our state and expect it as well as agriculture to conform to what will improve and enhance the quality of our entire state. We recognize the desperate need for co-ordinated efforts by all citizens to combat the many pollution problems in Kansas and we realize that all groups including agriculture, industry, legislators, sportsmen, and the general public must come together with a meeting of the minds and will if we are to move toward improvement of our Sunflower state.

Membership in the Kansas Wildlife Federation, Inc., is open to any individual or organization in Kansas and we want and welcome new membership and ideas. K. W. F. is proud to be in Kansas, we are proud of our great state and its citizens and we renew our pledge to work toward the improvement of our state for each Kansas citizen, now and in the future.

Myron Schwinn (right), of St. George and Raymond Schroeder, Topeka, empty a chest full of fish prior to the weigh-in at Milford Reservoir, site of the 1969 state fishing contest. KWF sponsors the contest annually at different reservoirs throughout the state.



Thoughts . . .

By BOB WOOD

Those of us in the wildlife field have been encouraged during the past several years by growing public awareness of our environment. Finally, people are beginning to hear the message wildlife ecologists have been trying to relay for 40 years. The message that we are all a part of an intricate life support system and a malfunction in a part of that system endangers us all.

Unfortunately, as is often the case when man discovers something has been going wrong, overreactions are eminent. One such, is the increasing anti-hunter attitude advocated in the name of conserving wildlife.

This is not to say some aspects of hunting are not damaging to both animal and sport. Many find it impossible to justify endangering wild animal populations to satisfy a commercial desire by human fashion. Commercial demand for limited wild animal products can soon bring an animal to its knees of existence. An ample illustration is evident with the American alligator and the spotted cats of South America and Africa.

But still, just as it may be unjustifiable to condone some commercial hunting activities, it is equally unjustifiable to condemn sport hunting of recognized game animals as a destroyer of those animals as species. In no case, is there a game animal, hunted under sporting conditions, that has its population endangered by that hunting. Never, has an animal hunted strictly for sport, become extinct as a result of that hunting. To the contrary, many animals protected and hunted as game, have been perpetuated and increased in number as a direct result of their game status.

Just for a minute, set aside all moral pros and cons of hunting and look at sport hunting from an ecological point of view.

Within any life community, organisms and nonorganisms interact with each other. In simplified terms, we can view life as a continuous cycle. Plants grow by consuming nutrients from soil. Herbivorous animals by consuming plants. Carnivorous animals grow by consuming both plants and animals. Upon death, all return as nutrients to the soil—life blood of the community's system. Our cycle is complete.

Where does man fit in? Being an omnivorous animal, he consumes both plants and animals. In this day, man's predatory actions on other animals are largely limited to domestic stock. But, periodically and under controlled conditions, he permits himself to join the wild predator population and hunt certain animals he has classified as game. Through self-regulation by written law, man-the-predator, the sport hunter, limits his kill to that which a game population can safely support.

Man-made laws are reinforced by natural laws which are even more protective. In studying predator-prey relationships, it has been found that predators are inclined to self-regulate their numbers in relation to abundance and vulnerability of their prey. This self-regulation tends to limit predatory kill and prevents elimination of any prey population. Man is no different than any other predator! As game becomes less abundant and/or less vulnerable, fewer hunters take pursuit.

It is also important to remember the sport hunter joins existing predator populations. He is not an entity unto himself. All predator activity works simultaneously and is self-compensating for increased predator numbers.

Further, no single *kind* of prey mortality works alone. Effects of total prey mortality influences the activity of all predators. The key word to remember is *vulnerability*. When a given prey species is reduced in number to the point predators no longer find them vulnerable, hunting effort is directed elsewhere. With wild predators, their effort turns to other more available prey. With man-the-predator, effort stops since he is not dependent on wild prey for sustenance.

What we witness is natural law governing animal behavior. These facts are irrefutable and the natural law unbreakable. In an ecological sense, sport hunting by man, under its existing controls, is functioning and can continue to function as a natural part of our ecosystem. Prohibition of sport hunting will serve no constructive purpose toward more effective preservation of our wildlife resource. Indeed, such prohibition would deter, if not prevent, effective wildlife conservation by eliminating operating funds of most conservation agencies.

Our next consideration, What now of ethics and customs?

Readers' Response

Steals Billieu's Copy—"Just finished reading 'Sinister Spinners' in the May-June issue of your magazine. I found it to be not only thoroughly entertaining, but full of very pertinent information. May I suggest you do one on poisonous snakes found in Kansas? Please enter a subscription for me to your magazine, so I won't have to steal Bill Billieu's!—**Britt Brown, Vice President, Wichita Eagle-Beacon.**

We'd sure hate to see Eagle-Beacon Outdoor Editor Bill Billieu, lose his copy of KANSAS FISH & GAME. So, we've included your name on the subscription list. Future articles are planned for copperheads, rattlesnakes, scorpions and tarantulas.

—The Editors.

Copy for Scout Troop—"I've just seen the May-June issue of KANSAS FISH & GAME and would like to have a subscription. Wondered if it would be possible to obtain a copy of the May-June issue as I would like my son's scout troop to see the article on poison spiders."—**T. J. DePew, Prairie Village.**

Beautiful and Informative—"Would appreciate your adding my name to the list of those receiving KANSAS FISH & GAME. I think it is a beautiful and informative publication. Hope I'm not too late to receive a copy of the issue with the article on the spiders."—**Geraldine Liebert, Coffeyville.**

Looking Forward to More—"Just read the May-June issue of KANSAS FISH & GAME and am looking forward to many more. Especially liked the 'Sinister Spinners' article which was interesting and very educational."—**Herbert E. Chance, Garden City.**

Didn't Know About It—"A friend of mine gave me one of your magazines recently, and I really enjoyed it. I've hunted and fished in Kansas for 18 years and didn't know you put out such an interesting magazine. The cost of hunting and fishing licenses doesn't seem so high now, since I know I can receive a magazine like yours."—**Roland Dieckgrafe, Wichita.**

Outstanding Magazine—"Please put my name on the mailing list to receive KANSAS FISH & GAME. I read with great interest the article on bass plugs Kansas fishermen use most. Thank you for an outstanding magazine."—**Don Miller, Coffeyville.**

Squirrel Hunter—"The 'Bushytails' article in your May-June issue was useful to me as a squirrel hunter in clearing up the mystery of fewer squirrels the past two years. The article was educational and down to earth. Hope you have more like it." —**Duane Mercer, Carbondale.**

Bushytails Informed Him—"Please add my name to the mailing list for KANSAS FISH & GAME. Had it not been for the 'Bushytails' article, I would have gone on thinking squirrel season started in July or August."—**Henry L. Lockett, Erie.**

Wants Credit Due—"We are writing in regard to the recent issue of your magazine which had an article on Milford Lake. In it, there was a picture of some flathead catfish caught by Mick Crawford of the Bait Shop in Wakefield. However, there was no mention of him or his shop in the article or below the picture. This infuriated us and we decided to bring it to your attention and ask that you give the credit due Mick in your next issue."—**Mrs. Mick Crawford, Wakefield.**

OK.—**The Editors.**

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.

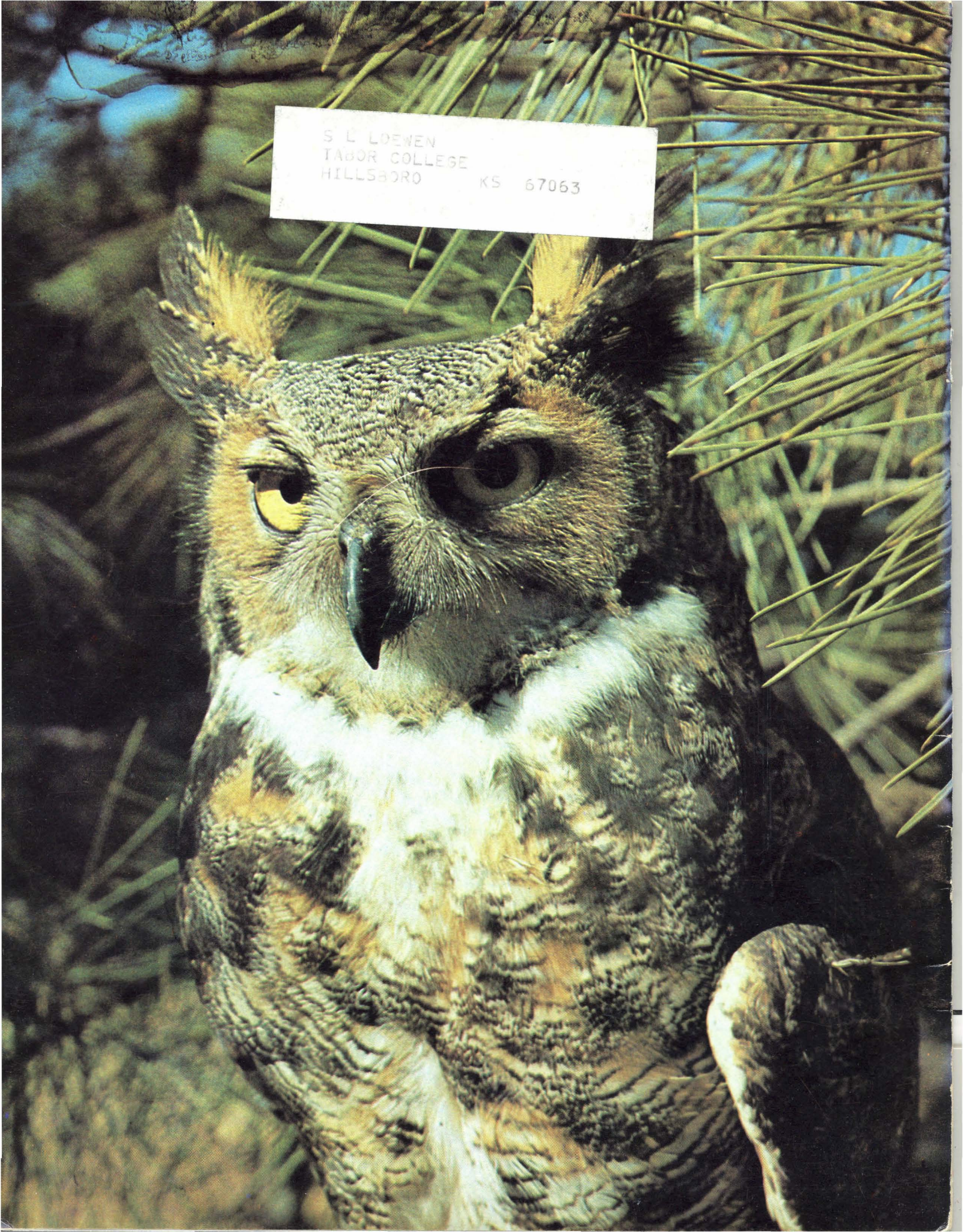
Change in Age Requirement—"Congratulations on a fine magazine. 'Of Frogs and Froggin' is an example of a real good article, well written and interesting. You say all that is needed is a valid Kansas fishing license for people between the ages of 16 and 65. Does this mean that persons under 16 and over 65 don't need a license? If so, when did this law go into effect?"—**Henry Wagner, Shawnee Mission.**

McLeran is still wipin' the egg off his face over that one! The legislature, in its last session, lowered maximum age requirements for hunting and fishing licenses from 70 to 65. However, this change does not take effect until January 1, 1972. Until then, if you are aged 16 through 70, you will need a license to hunt or fish in Kansas. My mistake.—**McLeran.**

Agrees With Wood—"I fully agree with Bob Wood's THOUGHTS column in the July-August issue of KANSAS FISH & GAME. Motorized off-the-road vehicles are encroaching the wilderness. Truly concerned hunters and fishermen should unite with conservation organizations to promote legislation that would limit the use of these vehicles."—**F. G. Williams, Parsons.**

Every Home Should Have One—"I recently read the May-June issue of your magazine. The article about 'Sinister Spinners' was quite timely since spring is the time when all people are most likely to meet up with spiders. It gave such a great deal of information about the brown recluse and black widow spiders that every home should have one."—**Gertrude Pettyjohn, Toronto.**

Son Received an A—"Our oldest son used your magazine as the basis for a paper in the science fair at Junior High. It was entitled 'Conservation and Management of Kansas Wildlife'. He received an 'A' on the paper. Really look forward to our copy of KANSAS FISH & GAME."—**Kenyon F. Marten, El Dorado.**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