KANSAS FISH AND GAME

Vol. XV January, 1958 No. 3



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A black-tailed jackrabbit female, heavy with young. (Photos by the authors.)

The Kansas Jackrabbit

(Report from a co-operative research program between the Kansas Forestry, Fish and Game Commission, the Department of Zoology and Agricultural Experiment Station at Kansas State College.)

The sight of a jackrabbit loping across a western Kansas pasture may cause varied emotions in different people. To some, the jackrabbit is a symbol of the wildness which was once so characteristic of our western prairies. To sportsmen it is a game animal which furnishes rifle and shotgun sport in large quantities. However, to the vast majority of the populace it is a scourge to the farmers' crop fields and should be killed at every opportunity and by any method or means at hand. To observant people who have had association with the jackrabbit, it is an interesting mammal and one so familiar that some of its habits have become well-established facts. Opinions about much of this animal's natural history, however, are often conflicting and subject to considerable error. For instance, the term "rabbit" which is so widely applied to the animal is a misnomer. Because young jacks are born fully haired, with their eyes open and requiring relatively

By F. H. BRONSON and O. W. TIEMEIER

little parental care, they should more accurately be called "hares". The cottontail and swamp rabbit are the only native mammals in Kansas which can correctly be called rabbits.

To obtain information about the jackrabbit, its natural history and the causes behind increases in its numbers, a comprehensive study was begun in July of 1956 by staff members of the Zoology Department of Kansas State College working in co-operation with the Kansas Forestry, Fish and Game Commission. This study is continuing and is the source of information presented in this article.

The common jackrabbit in Kansas is the black-tailed jackrabbit. These animals may be found residing in almost any habitat type where the vegetation is sparse. They are particularly fond of heavily grazed short or mixed grasslands. Where cultivation has infringed upon these favored areas, excessive crop damage may result.

In the western and central counties the number of these hares has increased to pest proportions during the recent five-year drought period. It is also in this region of the state where jackrabbits are heavily hunted both for sport and in retaliation for their nocturnal forages to the farmer's wheat, mile and alfalfa fields.

There is a difference in the size of male and female jackrabbits. Adult males range in weight from 4½ to 7½ pounds and average 5½ pounds while adult females have a weight range of from 4½ to 8½ pounds and average 6½ pounds. The average adult male is 21 inches long and females are about one inch longer. The largest specimen collected during the study period was an eight-pound, seven-ounce female which measured 24 inches from the nose to the tip of the tail.

Most people, thinking in terms of cottontails, usually overestimate the number of young produced by jackrabbits. The breeding season in western Kansas extends from late January through the month of August. The number of young in a litter ranges from one to five with litters containing five being only rarely found. The average number of young in a litter is two or three; however the first litter of a season is usually of a smaller size than the later litters. While studying a population of these animals in the sand-hill region of southern Kearny County in 1957, it was determined that the females in that population produced an average of three litters during the season with an average of 2.7 young in each litter. This resulted in an average seasonal production of eight or nine young for each adult female in the population. Theoretically it would be possible for one female jackrabbit to produce as high as 14 or 15 young in one season but this high figure is probably reached by only a few individuals and the average production figure is considerably lower. The young average six to seven inches in length when born and are probably not deposited in nests. Females apparently suckle their young for about two or three weeks and young jacks travel on their own by the time they reach the age of four or five weeks. The smallest individual that was shot while foraging apart from an old female was 13 inches long and weighed one pound and seven ounces. This animal was approximately four weeks old. Adult length is reached in about six or seven months and the young produced in one season are usually not sexually mature until the following breeding season.

A common question asked by sportsmen and farmers of western Kansas is "Why do jackrabbits increase in numbers so greatly during certain years?" In an attempt to answer this question, experimental field work has been conducted in Kearny County since mid-1956. Although the answer to such a question is complex, many factors which effect the rise and fall of jackrabbit populations have come to light during the course of

these field investigations. A popular theory is that a reduction in the number of predators, principally coyotes, results in an increase in the number of jackrabbits. It has been generally concluded in most wildlife studies that predation has much less effect on a prey population than is popularly supposed. Covotes, while preying heavily upon jackrabbits, probably cannot be considered as being primarily responsible for controlling a jackrabbit population. It has also been determined by the Kearny county study that the larger hawks prey only upon younger jackrabbits and are not effective controlling agents on these animals. A more probable explanation for increases in the number of jackrabbits lies in a theory which states that the jackrabbit is an "animal weed." This theory—an outgrowth of research work done in Arizona-indicates that the effects of droughts and overgrazing upon vegetation favor an increase in the number of jackrabbits



Kearny County milo field in 1956 showing locally heavy crop damage done by jackrabbits.

just as under similar conditions the perennial grasses in pastures are replaced by weeds. Stated in other words, drought and overgrazing after the habitat in such a manner that the capacity of a region to support jackrabbits is increased. The actual mechanism of an increase in numbers upon this explanation lies in either increased production of young or an increase in the rate or survival of the animals, probably the latter.

The Kearny County study has determined the following factors which have influenced changes in numbers of jackrabbits in the western counties: (1) Jackrabbits, to be numerous in an area, need an adequate food source and a more or less undisturbed brush or grassy area which can be used as a daytime resting area. (2) While there was an increase in the number

of these animals during the drought, this increase appeared larger than it actually was because during certain periods the animals migrated to specific localities and became concentrated in these areas. Concentration and migration of the animals make them much more noticeable not only by their presence but because of the great amount of crop damage done by them. (3) These migrations were caused by the combined effects of drought and overgrazing upon the habitat. In some instances the animals concentrated because of a lack of food while at other times the animals migrated to certain areas to obtain suitable habitat for daytime resting areas. (4) Heavy crop damage has been limited to regions where a concentration has occurred. (5) The increase in number of jacks in an area probably results from a lower rate of mortality of the animals rather than an increase in the number of young produced.

The relationships between jackrabbit numbers, the amount of rainfall, the natural food supply and the amount of crop damage were determined on the Kearny County study area. In this area jackrabbits were concentrated in the vicinity of crop fields throughout the winter but were concentrated in the summer months only as long as rainfall amounts were too slight to produce a natural food supply. number of animals near milo or wheat fields remained high through the summer of 1956 and until the spring of 1957 when sufficient precipitation fell to produce an ample food supply. The number of jacks on the study area then dropped by 65 percent as the animals dispersed back into the areas from which they had originally migrated in search of food. The number of jackrabbits on the area remained low and stable through the summer and early fall of 1957. The difference in the amount of damage to milo and alfalfa fields because of this lack of concentration is evident. In some milo fields up to 90 percent of the plants in the outside rows had been eaten in 1956 while these same fields showed little if any damage in the fall of 1957.

It has become evident as the study of the jackrabbit has progressed that much more experimental field work is needed before intelligent management practices can be determined. It is probable that any future large-scale management of these animals will be based upon sound conservative land usage, if feasible, because land abuse in combination with drought conditions has been highly influential in bringing about increases in the number of jackrabbits.

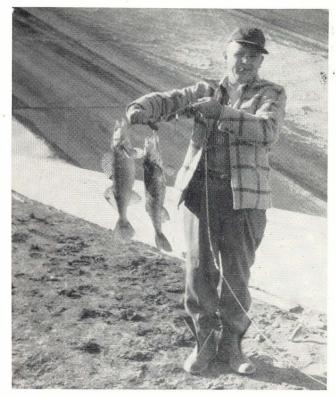
The scaup duck sometimes dives to depths of 20 feet for food. They use only their feet in swimming under water.

On Our Cover

About 95 percent of the ducks you see on the front of this magazine are the popular mallard. This heavy concentration was photographed at Meade County State Park from a specially prepared blind during the month of December. Although there were many ducks on the state lake located in the park, the one and one-half acres of water pictured here is one of the ponds located north of the lake used for fish propagation. An estimated 5,000 noisy mallards were estimated to be on this small body of water on the day the picture was taken. It would have been hard to throw your hat into the pond without hitting a duck.

Duck hunting in western Kansas ranged from good to excellent this fall with heavy concentrations reported. Eastern Kansas didn't fare quite so well on ducks but had good goose hunting during the first and middle parts of the season.

State lakes and refuges serve as resting and holding areas for migrating waterfowl which range into the surrounding areas to feed. Without such protected spots, many ducks which stay in the state for long periods during the hunting season would, doubtless, leave for other areas to the south.



The walleye stocking program of the Fish and Game Commission has been paying off in a big way at Cedar Bluff Reservoir this fall. J. C. Rogers, Oakley, holds a stringer with two fine specimens, both measuring 23 inches in length. These walleyes were taken below the spillway on November 24. Rogers used large minnows for bait.

Four State Lakes Have New Regulations

The four State Lakes which were opened to fishing on January 1, 1958, were placed under separate regulations by the Forestry, Fish and Game Commission in its December meeting. The lakes affected are Cowley County State Lake, Logan County State Lake, Butler County State Lake No. 1 and Scott County State Lake.

Cowley and Logan County State Lakes are new impoundments and were opened to fishing for the first time on New Year's day. The remaining two lakes, Scott and Butler No. 1, were rehabilitated two years ago and are now fishable once again.

The new regulation limits the taking of Channel Catfish and Largemouth Black Bass to six (6) each per day or six (6) of a combination of both species. This regulation will remain in effect at the four lakes mentioned above until July first of this year. After that date, the state-wide regulations will be in effect at these impoundments.

The Commission feels that the new creel limits will help maintain good fishing at these lakes for a longer period of time provided that they are observed by the fishermen.



"A fine quail season" was the verdict of most hunters this last fall. Heavy cover conditions throughout the state made hunting a little tough but the hunter who had a good dog had plenty of shots. Charles Reed who lives five miles east of Stockton stands in an early season snow to display his limit of bobwhites.

Cheyenne Bottoms Dedicated

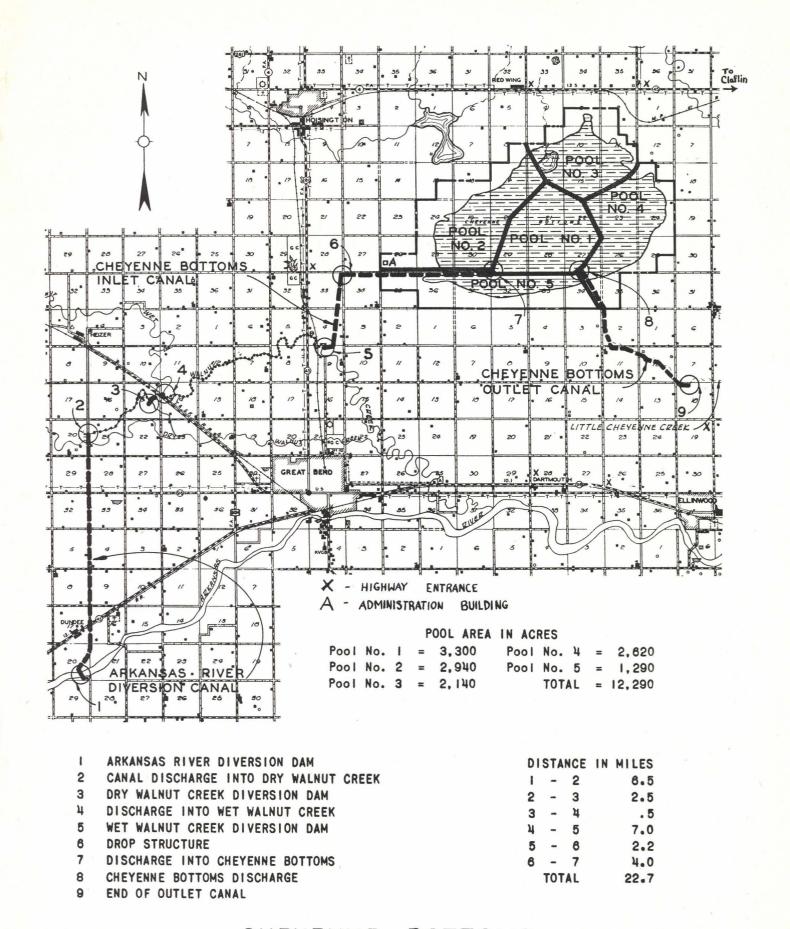
State and national conservationists, government officials, and many interested sportsmen gathered in Barton County on Sunday, October 13, for the formal dedication of the Cheyenne Bottoms Waterfowl Refuge and public shooting area. The dedicatory program was arranged and promoted by a committee composed of members from cities and towns in Barton County, working in co-operation with the Cheyenne Bottoms Sportsmen Club. The expected attendance at the long planned ceremony was reduced due to rain and dropping temperatures, however, all events were held on schedule.

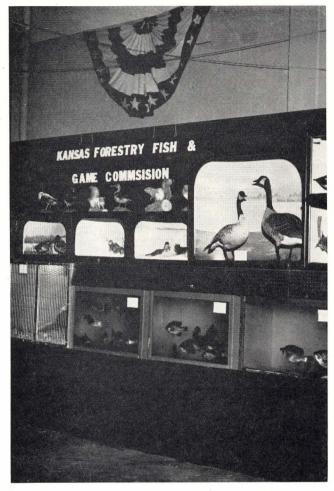
An inspection tour of the Cheyenne Bottoms, made through steady rain, was held during the morning with Dave Leahy, director of the Forestry, Fish and Game Commission, in charge. The dike road surrounding refuge pool number one was traveled with the Waterfowl project and its operation being explained to those making the tour. Luncheon was served in the administration building of the refuge at noon with a large crowd participating.

At 1:30 p.m. ribbon cutting ceremonies were conducted at the three main entrances to the refuge and at the diversion dam on the Big Arkansas river near Dundee. Rain again made conditions uncomfortable, however, representatives of each area the entrances' serve participated in the ribbon cutting events.

The main ceremony and program was held in the 4-H Fairgrounds building at Great Bend with Ford Harbaugh, member of the Forestry, Fish and Game Commission, serving as master of ceremonies during the program. Introduced for short talks were Governor George Docking, Lieutenant Governor Joseph Henkle, Senator Frank Carlson and other dignitaries. Highlighting the program was the dedication address by Robert M. Rutherford, representing the United States Department of the Interior. In his dedicatory address, Mr. Rutherford paid a tribute to all the men who had a hand in building the great waterfowl project.

Work first started on the huge Cheyenne Bottoms Waterfowl Refuge and shooting area in the 1930's. It is a project constructed by the Kansas Fish and Game Commission in co-operation with the Fish and Wildlife Service of the Department of the Interior. Now complete, it is one of the foremost game refuges on the waterfowl migratory route between the Canadian border and the Gulf area. It is indeed a conservation project that all Kansas sportsmen can be proud of.





Kansas Sports, Boat and Travel Exhibit

Visitors at the Kansas Sports, Boat and Travel show in Wichita on February 12 through 16 will see an exhibit by the Fish and Game Commission such as the one pictured above. This picture shows only a small portion of the exhibit which will contain live fish, game birds and animals and mounted displays of Kansas Wildlife.

The first Kansas Sports, Boat and Travel Show was held in 1954 and in succeeding years has grown in size and interest to become one of Kansas' largest industrial shows. It is expected that the show this year will attract 30,000 or more sports-minded people. Of interest to the visitor will be many exhibits by the manufacturer and dealers of sporting, boat, and travel equipment. The exhibits will display the most up-to-date equipment available.

Representatives from many of the favorite vacation spots throughout the midwest will be on hand to assist those persons wishing to plan present or future vacations. The show also presents exciting sports entertainment by outstanding sportsmen.

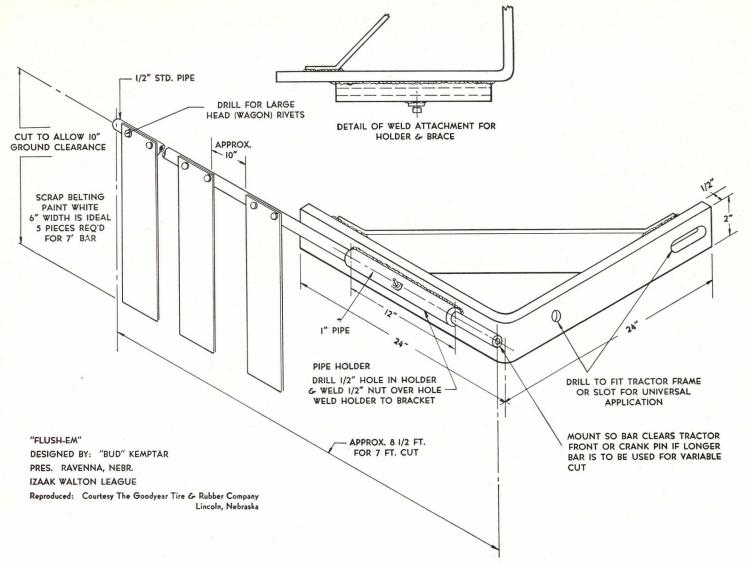
The Fish and Game Commission has had an exhibit at past Kansas Sports, Boat and Travel Shows which was of interest and an attraction to many visitors. Those who attend the show this year are urged to stop at the Fish and Game exhibit and visit with department personnel in charge. These men enjoy discussing hunting and fishing or exchange tales of the great outdoors. It is always good to meet old friends again and to make new acquaintances.



An ever popular exhibit is this building maintained on the grounds of the Kansas Free Fair at Topeka. This scene was typical during the five day run of the exposition during September. The Forestry, Fish and Game Commission also has a permanent display in the grandstand building at the Kansas State Fair at Hutchinson. (Photo by Gordon Eliot.)



Ralph Calvert and Chick Hendricks, both of WaKeeney, had a good case of goose fever on the 10th day of November. The result was these three fine Hutchins geese which were taken while hunting at Cedar Bluff Reservoir. Waterfowl numbers were high at Kansas' largest reservoir during the 1957 hunting season.



Flushing Bar Reduces Wildlife Loss

By BUD KEMPTAR, Ravenna, Nebraska, National Vice-president of Izaak Walton League of America, Inc.

Would you deliberately—during nesting season—destroy the game that all of us are so anxious to see protected? If your answer is no, which it undoubtedly will be, this article should be of interest to you whether you are a farmer, a sportsman, a wildlife club member, a 4-H'er, or an F. F. A. student.

Most game birds killed during normal mowing operations in Kansas and Nebraska, as well as in other states, are hens and young birds which, obviously are essential to maintain and increase the game population.

The large mortality from mowing is not evident at the time it happens, but is reflected in the fall of the year when a reduced pheasant, and game population is all that remains available for harvest by sportsmen.

The Ohio Research Unit on Wildlife recently found that 106 hens, or 58 percent of 183 nesting pheasant hens in 590 acres of alfalfa, were killed during a mowing season. In Nebraska our research work, for three

years checking, showed that under normal mowing conditions at high speeds, 7 out of 8 nesting hens were either killed or maimed, some losing 1 or both legs.

This is alarming, even without considering the toll taken by natural causes, predators, and highway traffic.

Nevertheless, the situation need not be as grave as these facts indicate. That is if sportsmen, farmers, wildlife clubs, State Game Commissions and students, stress the use of a flushing bar during mowing operations. Such a device can materially reduce the loss of pheasants and other game using these fields for nesting or feeding.

The above mentioned individuals and groups can play important roles in game protection and propagation by constructing easily built flushing bars, either as individual or group projects and by taking them to nearby farmers, even helping to install them if necessary. They will not only be helping themselves to improved hunting in the fall, but will also build better understanding and co-operation between farmers and sportsmen.

The flushing bar I have designed has proved very successful in reducing game bird and cottontail rabbit losses during mowing operations.

On several hundred acres checked in a 3 year period, we found that 98 percent of hens on nests were flushed, this giving them a chance to renest again and raise their young. On quail, we found the percentage about the same as on pheasants. About 80 percent of the young cottontail rabbits, were chased out of hay before the sickle reached them. On the basis of reports turned into me, the flushing bar has also proved itself very successful in flushing prairie chickens, where such birds were present.

Flushing bars are not new. There have been many attempts made in the past to reduce mowing losses from power mowers. Another study made in 1948 and '49 in Woods County, Ohio, produced encouraging information. A comparison was made in game mortality with and without a flushing bar under similar conditions. It was learned that, when a bar was used, the adult hen pheasant mortality was reduced 45 percent, the young pheasant loss 70 percent and young rabbit kill 80 percent. During the work carried out in Ohio they used a flushing bar made from 2 x 4 board, with cables hanging downward and weights attached to the ends. This bar was mounted on the front of the tractor.

The bar I designed is some what different. It is made of ½ inch pipe 8½ feet long for 7 foot mowers, and has 6 inch wide rubberized belting as flaps. These are riveted on the pipe 10 inches apart, and clear the ground about 10 inches. The flaps are painted white and will work back and forth in hay before the sickle cuts the swath. The pipe slips into a \% or 1 inch pipe welded on a bracket that fastens to the front end of the tractor. There should be a setscrew, or pin to hold the smaller pipe in the larger one. This can be done by drilling a hole in the larger pipe and welding on a tap, using a bolt for the lock. To remove, just loosen the lock and pull out the bar with flaps attached. The bracket is very simple to remove, and the dismounting takes very little time. Just one bolt and tap and one large screw are used. The bar can be put on or taken off in less than five minutes. The flushing bar on most tractor mowers is from 8 to 11 feet ahead of the sickle and guards, thus giving the game plenty of chance to get clear.

The cost is about \$7 for new material but scrap material works just as well. If you do not have a welder, the price of welding is about all it would cost you to make the bar.



September 28 was a good bass fishing day for J. H. Whited of Hutchinson. The five largemouth's above were taken from Woodson County State Lake on that date. Sorry, we have no information on lure or size of fish but we'll bet the largest one will run 16 inches or over.



Even a hard-working lawman finds time to fish on occasion. Ellis County sheriff Clarence Werth and his brother Alvin Werth strung a total of seven walleyes on November 24 below the spillway at Cedar Bluff Reservoir. The fish ranged from 17 to 23 inches in length and the catch was made on large minnows.



THE STATE LAKES OF KANSAS . . . second of a series

Located in Southwest Kansas, the waters of Meade County State Lake are seldom placid due to the almost ever-present wind. A rocky shoreline prevents this lake from being constantly turbid by preventing wave erosion.

Meade County State Lake

By GEORGE VALYER

To the average Kansan, thoughts of the western one-half of the state would bring on visions of a flat plain dotted with farms and small towns and interlaced with dry washes. While this is true of some areas, this picture is not indicative at all of some of western Kansas.

Most of the major east-west highways in the state bypass the more scenic areas. One has to get off the main roads to find the hills, valleys and unusual formations which are worthy of note. Certainly this is true in the case of our subject in this article.

Meade County State Lake and Park is located seven miles south and five miles west of the town of Meade on state highways 23 and 98. The casual visitor is immediately impressed by the change in terrain as he descends into the valley which contains this popular park. Upon entering the gate, one notices the beautiful groves of trees shading picnic tables and camping areas. Beckoning invitingly are the breeze-rippled waters of Lake Larrabee, named for the man who was primarily responsible for the establishment of this

park. Lee Larrabee of Liberal, who served as a member of the Forestry, Fish and Game Commission for nearly 25 years, was active in the initial lake building program of the commission which was begun in 1926.

Of the 1,240 acres which now comprises the Meade County State Park, 920 acres were originally purchased in 1927. The land was part of what was then known as Turkey Track Ranch and through which flowed Stumpy Arroya, a never failing water supply. This stream is fed by a number of springs many of which are on the park property. In the spring of 1928 the dam to form the lake was completed and fish were stocked in the lake that fall. Six fish rearing ponds were also constructed at that time.

In 1934 and 1935 a depression spawned CCC camp was established at the park and improvements were made to the lake. Also, additional fish rearing ponds were constructed. This camp remained active till 1942. In 1940, the CCC enrollees began construction of the permanent buildings on the grounds which house the pheasant rearing facilities of the Commis-



The new shelter house at the north end of the lake nestles in a grove of trees. An artesian well seen in the foreground is three-hundred feet deep and flows at the rate of 100 gallons per minute.

sion. These buildings, including a concession and bath house located at the southwest portion of the lake, were designed by the U. S. Park Service and are of



Located near the headquarters area is a large bird display part of which you see pictured here. Note the wild pheasant to the right of the pens.

Spanish design with adobe construction. The adobe blocks were manufactured on the site and of materials near at hand. A sand beach was also established near the concession.

A favorite picnic grove near the hatchery buildings now boasts a beautiful native-stone shelter house which was completed in the fall of 1957. Its location is near an artesian well which pours out an estimated 100 gallons of water a minute.

In the fall and early spring of the year, many ducks use the lake and rearing ponds for loafing and resting during migration.

Other attractions abound at Meade County State Park. A portion of grassland is fenced off as a biggame refuge and contains buffalo and elk. A large flock of peafowl roams the area and deer are frequently seen within the confines.

Needless to say, fishing is one of the biggest attractions. The lake is considered one of the best in southwest Kansas for channel catfish, drum and bass. Boats are available for rent during season and a launching ramp provides access for those who tow their own craft behind their car.

Whatever your reason for being out-of-doors, be it camping, fishing or just sight-seeing, Meade County State Lake and Park offers abundant opportunities for outdoor recreation. Spring, summer or fall, you're bound to find something of interest.

The goldeneye is commonly known as a "whistler" because of the loud, high-pitched whir of its wings, which produce a curiously resonant effect when a flock is on the move.

A running antelope carries most of its weight on its front legs. Its hind legs serve as supports, and don't hit the ground as forcefully.

The feet of pronghorn antelope are padded, and thus the animals suffer little from sore or tender feet, even though they may often run on abrasive rock outcrops.

Though elk calves nurse throughout their first summers, calves probably begin feeding on vegetation before they are a month old.

Mature antelope of both sexes express anger or anxiety by an explosive snort or "blow" similar to the blow of a whale.



The Muskrat . . . Ondatra zibethicus

Kansas wildlife

water level.

All Kansans who have lived near a marsh or swamp are well acquainted with the muskrat and the dome shaped winter houses they build. They are also well known to Kansans who frequent our creeks, rivers and streams, however, here the muskrat usually prefers to burrow into the banks to construct its home. The entrance to these burrows is at or below the water level with a dry nest chamber back in the bank well above

Yes, muskrats are to be found in most all the waters of Kansas, be it lake, stream, marsh or swamp. They, as most of you know, are true rodents and are the largest member of the rat family, some measuring almost two feet long. They are a large robust rat with short legs of which the hind pair are much the larger and are partially webbed between the toes. The tail is long, scaly, sparsely haired and flattened latterly. This tail is said to be of great use in swimming, working like a propeller as they swish it back and forth. Their ears are scarcely visible through the heavy fur.

The pelage of the muskrat is very thick and is composed of the two types of hair. There is the outer coat which is an attractive rich glossy brown. It is called guard hair and is rather thin. Also, there is an undercoat of hair that is extremely dense and waterproof. There is little seasonal variation in the color of the

By MARVIN D. SCHWILLING

pelt. Young rats, however, are much grayer in color until they reach maturity.

The muskrat has been appropriately named since it has a pronounced musky odor that is secreted by the well developed perineal glands. In the beaver these glands are enormously developed during the breeding season and are known as castors. The secretions are often used in the manufacture of perfumery. Actually, man does not fully understand the purpose of these glands, but it is believed that they serve to attract a mate during the breeding season.

Of course, those of you who are trappers know the value of castor bags (castoreum) as an ingredient in animal scent lures. Castoreum too has its place in history, as it was used a century or more ago in medicines which were reputed to cure sundry diseases.

The muskrat has long since replaced the beaver as the banner of the fur trade. Their almost nation wide distribution, great numbers and large reproductive potential, have given them the ability to maintain their numbers even where heavily trapped. Thus, today, it is the most important furbearer to the fur trade.

Muskrats are trapped in 47 states and approximately 10 million pelts reach the market each year, most of which are used in the manufacture of ladies coats. The pelts are processed into Hudson Seal and sold

under that name. The pelts are first sheared to remove the long guard hairs, and then dyed black.

The price paid for the pelts of muskrats has varied from 8 to 25 cents in 1910 to \$4 or more around 1920. In addition to the fur value, the carcasses are often sold in the markets around large population centers as "marsh rabbits." In these areas the trappers realize an additional 15 to 25 cents for the carcasses. The flesh is said to be delicious and has a taste much like the finest flavored duck. I personally know of only a few instances of Kansans who eat marsh rabbits. It seemingly is not accepted by us as food, a situation similar to the opossum, seldom eaten in Kansas, but considered a delicacy in the South.

Muskrat farming is conducted extensively, but few muskrats are raised in confinement. A large number of breeders have experimented with the production of captive muskrats without much success. A few breeders have been at least partially successful. There have been instances where a single pair of year old muskrats have produced 22 young in one season.

In Kansas, muskrats probably breed from late March or April until at least August. The average litter consists of 6 or 7 young and the gestation period is about 30 days. From this one can more easily understand how muskrats are able to increase so rapidly in favorable years or when new habitat is made available.

The food of the muskrat is largely vegetation, chiefly aquatic plants. They also show a preference to apples and various vegetables and sometimes leave the water to search for them. Their diet at times may also include animal food such as mussels, fish, and salamanders, and birds when they can be obtained.

Just how quickly muskrats respond to, and are able to populate, a newly constructed marsh has been seen on the Forestry, Fish and Game Commission's recently constructed Marais des Cygne Waterfowl Refuge. Here large low areas were diked around to form permanent marshes. The first water entered one of these areas (436 acres) in the fall of 1955. No muskrat houses were observed that fall and winter. By the fall of 1956 water had not yet completely flooded the area and only three muskrat houses were known. The marsh filled from rainfall in June and July of 1957 and by the middle of November this same year, over sixty muskrat houses could be recorded. The muskrat population in such waterfowl areas often must be controlled by trapping lest they destroy too much vegetation that could be utilized by ducks as food.

Muskrat populations in Kansas were seriously reduced during the past few years due to the prolonged drought conditions. Until this spring, many of our marsh areas, ponds, and streams were dry, thus eliminating the muskrat habitat. Now that more normal

weather conditions are again with us, the population of this fur-bearer is expected to make a healthy increase. Fortunately, this rodent has such a wide distribution and is so prolific that the species can stand occasional periods of drought and the heavy annual trapping toll exacted of it.

Young cattle make tracks that are often similar to those of adult elk.



Here is a view of the new concession house at Crawford County State Lake No. 2 near Farlington. At the time the photo was snapped, the building was still under construction with the window frames and interior yet to be installed. This building replaces one which was destroyed by fire in the late spring of 1957. The view is from the heated fishing dock which was the first to be placed in operation in the state. The concession at this popular lake is operated by Mr. and Mrs. James Marsh. (Photo by Von Schriltz.)



Maybe the dead of winter is no time to talk about fishing in the "dog days" of August but the above picture is guaranteed to raise the fishing fever of any angler. Former game protector John Garison holds a string of channels caught in the Elk river near Howard on August 17, 1957.

Total weight was 24 pounds.

Know Your Friend the Game Protector



Clyde Ukele, 32, is another World War II veteran on the staff of game protectors for the Forestry, Fish and Game Commission. He entered V12 training as a Naval Air Cadet in 1943, later receiving a medical discharge. He then entered the Army Air Corp and served with the 8th Airforce as turret gunner, completing 30 missions over Germany.

Clyde was born in Ogallah and attended the Wa-Keeney schools. Being an expert with woodworking tools, he was employed as carpenter for several years.

He is the game protector for Decatur, Norton and Phillips counties and lives at Norton.

Clyde and his wife Myrtle have four children, two boys and two girls.

His hobbies are woodworking, hunting and fishing.

In galloping, the whitetail deer uses the "rocking horse" gait, common among large animals, in which the hind feet swing far ahead of the front-foot tracks. The mule deer usually runs with a bounding, rubber ball action, all four feet coming down together, hind feet behind.



Alvin Michel, 38, a veteran of World War II, entered the Fish and Game Commission's Game Protector Service in 1955. "Shorty" as he is commonly called by his many friends, was born in Lakin and has lived in that vicinity all of his life. His four years of military service with the U. S. Army include two years overseas duty in Europe.

Previous to his employment as a state game protector he served as sheriff of Kearny county and as police chief at Lakin. He is now assigned to the game protector district comprising the counties of Hamilton, Kearny, Stanton, Grant, Morton and Stevens, with headquarters at Lakin.

His family includes his wife, Dorothy, and son, Jim. "Shorty" is a pilot and thus his hobby is flying. He is also fond of hunting and fishing.

The Golden Plover is one of the most outstanding of all migrating birds. It nests on the Alaskan tundra in summertime, and with the approach of cold weather, makes a non-stop flight of 2,400 miles to Hawaii. In late spring it returns to Alaska.

Fishing in Kansas

By HELEN RENNIE

(EDITOR'S NOTE: Helen Rennie and her husband, Ward, who live at Montezuma, Kansas, are ardent fishermen as the following article will attest. One of their favorite fishing spots is Clark County State Lake where they annually take their share of both large and small fish. (See previous magazines for pictures of their catches.) This article by the senior feminine member of the Rennie family was published in the hope that others will gain a measure of their enthusiasm for angling in Kansas.)

If you enjoy fishing in Kansas, I wonder how many times you have been confronted with this query.

"Why don't you fish at _____?" and then they will name any one of a number of popular out of state fishing places. Then they go on, "really you should go there. If you ever did, you would never again dunk a bait in Kansas waters."

This always infuriates us. We have fished in other states. We always loved each one because we love fishing. But, we live in Kansas; our work is here; we pay taxes here. Why should we wait a whole year between trips when we can take advantage of some excellent local fishing opportunities. With only a few hours preparation, and assembling some half a million articles, we can be on our way to a lake close by several times a season. We never come home empty handed but what if we did?

I can think of no finer way for families to do things together than on frequent fishing trips. All hands can find some medium of interest. The very instant that a wriggling bluegill, or a shiny crappie finds his way to the hook of a youngster's line, that child is, from that time on, an avid convert. Angling used to be a man's game, but now it is a family affair.

Father used to be able to palm his less attractive gear off on the little woman, had she temerity enough to invade this holy of holies he thought his own. But that is no more. The lady fisherman chooses her tackle as meticuluously as she does her clothes, maybe even more so. She knows that at the lake, she will be judged solely on her piscatorial prowess. Many of our lady anglers are attractive but, if they do not also possess a skill for lacing finny beauties on the stringer, their pulchritude isn't as effective as it might be in a cocktail lounge.

In Kansas fishing places, as is the case everywhere, we have unpleasantness to contend with. We have to tolerate that pestiferous species, the litterbug, who seems to have our fishing spots on his list of favorites. He is unmindful that the area that he desecrates is, for the most part, paid for and maintained by sportsmen. He glibly watches his children throw rocks into the water to disturb fishing nearby. He lets them lay to later scar and scrape the bottoms of incoming boats. He is promiscuous with his beer cans, tissues, paper

plates, chicken bones and trash. He leaves disorder and confusion wherever he goes.

Of late years, Kansas fishermen are facing a newer nuisance, a very formidable one. With powerful motors and indiscreet handling, the inconsiderate boater is surely courting regulations so rigid that even the most conscientious boater will be hampered in sane manipulation of his small craft. State lakes, however, have regulations as to horsepower, and boat usage.

Here in Kansas we have a simplicity and wholesomeness in our choice of fishing spots that are easily accessible. The quiet, somber hills, the wide grass covered prairies that surround our fishing lakes and streams, have a robust heartiness that presents us with a challenge. Here we fish uncrowded, with ample opportunity for that quiet, dignified relationship of man to his fellowman. Or the more simple one of man to his God.

Fishing in Kansas can be just what we make of it. Just as all things that we do are dependent on no one but ourselves. It can be so satisfying that we can make the whole world want to tie up its boat to one of our crappie bushes. Then, when that day comes, we will know no more of prejudice, intolerance, political differences, hate, scientific supremacy, or selfishness.



This pleased hunter is Tom Nulton of Hays. He proudly displays his limit of Red Head ducks taken on November 4 at Cedar Bluff Reservoir.

ARRESTS—AUGUST, 1957

V	0.00		Date	
Name and address	Offens No fishin		of offense	Fine
Judy Anderson; Claffin Frank H. Blaha; Salina		g license g license	8-18-57	\$5.00
Earlie Barksdale; Coffeyville			8- 4-57 8-18-57	5.00 5.00
Charles P. Peoples; Junction City			8-17-57	5.00
Mrs. W. B. Nelson; Manhattan			8-19-57	5.00
Leoy Medley; Butler, Mo.			8-20-57	10.00
Claude Woods	No fishing	g license	8-20-57	10.00
LeRoy Ford; Kansas City, Mo.			8-20-57	10.00
Melvin Chenoweth; Burlingame			8-24-57	5.00
Albert McCarthy; Kansas City			8-18-57	5.00
Cecil Smith; Wells			8-28-57	5.00
Hardy Ingram; Dodge City			8-29-57	5.00
Rev. Edward Banks; Kansas City LeRoy A. Plante; Damar			8-13-57	5.00
Bob Leiter; Hays			8-22-57 8-25-57	10.00
Michael J. Sockovich; Kansas City, Mo			8-31-57	$5.00 \\ 10.00$
Orlando Schmidt; Kansas City, Mo.			8-27-57	10.00
Norma Bollinger; Quinter	No fishing	g license	8-31-57	5.00
Mrs. Bill Byrum; Larned			8-26-57	5.00
Merle R. Coop; Yorksville, Ill.			8-26-57	5.00
Anna Taylor; Dodge City			8-29-57	5.00
Warren A. Culley; Salina			8- 9-57	5.00
Ben Unruh; Hillsboro			8-17-57	5.00
Phillip Gusma; Copland Donald Lee Davis; Indianapolis, Ind.			7-27-57	10.00
Floyd Herman Larson; Garfield			8- 4-57 8- 3-57	10.00 5.00
Melvin Zerger; Hutchinson			7-12-57	5.00
Cecil Henderson; St. Joseph, Mo			6-29-57	5.00
Aaron D. Hurley; Tulsa, Okla	No fishing	g license	8-10-57	20.00
Wayne Watson; Wichita			8- 1-57	5.00
George Willis; Assaria			8- 1-57	5.00
L. C. McQuillan; Baxter Springs			8-10-57	5.00
Micharl Clark; Larned			5- 8-57	10.00
Sanfort Smithson; Treece Cecil Calvert, Jr.; Hays			8- 3-57	5.00
Tony Joe Befort; Great Bend			8-11-57 8-17-57	5.00 5.00
Harold Penner; Wichita			8-18-57	5.00
Don Moore; Wichita			8-17-57	5.00
Raymond Routledg; St. Joseph, Mo	No fishing	g license	8-18-57	10.00
Marie Toplin; Kansas City, Mo.			8-13-57	5.00
Mrs. Wesley Davenport; Kansas City, Mo			8- 6-57	5.00
Mr. Wesley Davenport; Kansas City, Mo.			8- 6-57	5.00
Russel E. Mills; Kansas City Samuel Wigfall; Kansas City			8- 5-57	5.00
Freddie Lee Donald; Kansas City		g license	8- 4-57 8- 4-57	10.00
Vergil Talley; Junction City		g license	7-21-57	$10.00 \\ 5.00$
Leland Openlander; Junction City			7-21-57	5.00
Jerry Lee Carter; Salina		g in area in state lake not designated for swimming	8-10-57	5.00
Ed Roseberry; Salina		g in area in state lake not designated for swimming	8-10-57	5.00
Hugh W. Tyfe; Salina		g in area in state lake not designated for swimming	8-10-57	20.00
Larry Delbert Horn; Wellington		of illegal seine	8-20-57	10.00
Henry Beck; Stockton			8-22-57	15.00
W. C. Fields; Almena Charles Hillyer; Edwardsville		more than two rods and lines in state lake	8-24-57 8-25-57	10.00
William M. King; Kansas City, Mo.			8-11-57	25.00 10.00
Charles Zezza; Rakin, Pa.			8-19-57	5.00
M. B. Faber; Cambridge		sh by illegal means (gig)	7-15-57	10.00
Kenneth Harshfield; Wichita	Shooting	and taking pheasants in closed season	6-10-57	75.00
Roscoe D. Austin; Topeka		and taking squirrels in closed season	8-18-57	10.00
Joe G. Beard; Topeka		and taking squirrels in closed season	8-18-57	10.00
Joseph Leroy Cummings, Jr.; Topeka			8-18-57	10.00
W. F. Gauger; Leavenworth		accoon during closed season	8- 4-57	10.00
Gene Gauger; Leavenworth Elmer Rodrick; McPherson		accoon during closed season	8- 4-57	10.00
W. C. Whitney; Valley Center		of illegal number of trotlines and bank lines	8- 2-57 8- 2-57	10.00 10.00
Ernes Dooley; McPherson		of illegal number of trotlines and bank lines	8- 2-57	10.00
Kenneth Benton Turner; Wichita		of illegal number of trotlines and bank lines	8- 3-57	10.00
Robert Gentry; Lawrence	Operating	a fish trap	7-23-57	10.00
Don Libengood; Lawrence	Operating	a fish trap	7-23-57	10.00

ARRESTS—SEPTEMBER, 1957

		Date	
Name and address		of offense	Fine
James Parks; Kansas City	The state of the s	8-21-57	\$10.00
Harvey Waytt; Hutchinson	No fishing license	8-24-57 9-15-57	5.00
	No fishing license	9-13-37	5.00 7.55
Pauline Bott; New York, N. J.	No fishing license	9-12-57	5.00
Gene E. Cunningham; Wichita		9 -1-57	25.00
Howard L. Baughman; Arkansas City	No fishing license	9- 2-57	10.00
William Thomas; Hutchinson		9-29-57	5.00
Marvin Davis; Great Bend	No fishing license	9- 8-57	5.00
Wm. Halloway; Beloit		9-15-57	5.00
	No fishing license	9- 1-57	12.45
James J. Thomas; Kansas City	No fishing license	9-26-57	10.00
	No fishing license	8-24-57 9- 1-57	5.00 10.00
LeRoy Ford, Jr.; Kansas City		8-18-57	5.00
John A. Haley; Farmington, N. Mex.		9-22-57	5.00
Godfrey Woods; Kansas City	No fishing license	9-30-57	10.00
Oscar Bedford; Kansas City, Mo.	No fishing license	9-29-57	10.00
Ray Williford; Kansas City, Mo.	No fishing license	9- 2-57	5.00
Clifford R. Crump; Pomona	No hunting license	9-14-57	10.00
Delbert E. Truesdell; Hutchinson Richard Condit; Great Bend	No hunting license	9-21-57	5.00
Jan Howell; Belpre	No hunting license	9- 8-57 9- 1-57	10.00
Harvey Cooper; Garden City	No hunting license	9- 8-57	5.00 10.00
Vernie Holden; Lawrence	No hunting license	9-22-57	10.00
Lawrence Ogle; Lawrence	No hunting license	9-22-57	10.00
Leonard Conner; Grandview, Mo	No hunting license	9-22-57	25.00
Gene McCorkendale; Stanley	No hunting license	9-14-57	25.00
Everett Barnes; Lawrence	No hunting license	9-22-57	10.00
Sally Frame; Manhattan Joe Tomaseli; Pittsburg	No hunting license	9- 1-57	5.00
Joe Tomasen, Tittsburg	stream	9- 8-57	10.00
Fred F. Liebou; Wichiita	Operate illegal number set lines within 200 yards from mouth of		
B. C. Wickham; Wichita	stream Operate illegal number set lines within 200 yards from mouth of	9-28-57	20.00
b. C. Wickham, Wiema.	stream	9-28-57	20.00
James W. Shrock; Eureka	Operate set lines within 150 yards of dam	9- 1-57	14.00
Melvin Ratzlaff; Newton	Operating illegal number of set lines, failed to attend lines within 24	0.15.55	
Richard L. Wolivor; Newton	hours, fishing without a license. Operating illegal number of set lines, failed to attend lines within 24	9-15-57	20.00
Titliata II. Wolfor, Terronia	hours, fishing without a license	9-15-57	20.00
Henry Dirk, Jr.; Lawrence	Shooting game birds not in flight	9- 1-57	20.00
Richard McCoy; Lawrence	Shooting game birds not in flight	9- 1-57	10.00
Ralph Burlingame; Edwardsville	Operate illegal number of trotlines	8-31-57	30.00
Lonnie Crooks; Stillwell Daryl Vernon Drew; Edwardsville	Hunting during closed season	9-14-57	15.00
S. L. Overton; Topeka	Trespassing	9- 1-57 9-14-57	20.00
Dan West; Topeka	Trespassing	9-14-57	25.00 25.00
Rudolph Ramirez; Topeka	Trespassing	9-14-57	25.00
Rex Hubbard; Topeka	Trespassing	9-14-57	25.00
Leroy Murray; Junction City	Trespassing	9-21-57	5.00
Paul Edward McCracken; Monett, Mo.	Misrepresentation	8-31-57	25.00
William Cardwell; Lincolnwood, Ill. Wesley R. Crowe; Fort Riley	Misrepresentation Violations of park rules and regulations	8-31-57	25.00
	Violations of park rules and regulations.	8-31-57 8-31-57	10.00
Louis E. Stevenson; Fort Riley.	Violations of park rules and regulations.	8-31-57	10.00
Willard F. Massey; Fort Riley	Violations of park rules and regulations	8-31-57	15.00
Dave E. Wagener; Fort Riley	Violations of park rules and regulations	8-31-57	10.00
Dan Hennes; Beloit	Violations of park rules and regulations	9- 1-57	5.00
Ralph S. Hofoed; Fort Riley	Violations of park rules and regulations	8-31-57	10.00
Edward W. Renker; Fort Riley Dean Davis; Meade	Violations of park rules and regulations	8-31-57	10.00
	Violations of park rules and regulations	9- 1-57 9-16-57	25.00 5.00
John Brown; Hoxie	Violations of park rules and regulations.	9-14-57	15.00
David Douglas Junghan; Manhattan	Violations of park rules and regulations	9- 1-57	5.00
James G. Kilbel; Fort Riley	Violations of park rules and regulations	8-31-57	10.00
Stanley Post; Meade	Violations of park rules and regulations	9- 1-57	15.00

ARRESTS—OCTOBER, 1957

		Date	
Name and address	Offense	of offense	Fine
Andrew Steele; Topeka	No hunting license	8-24-57	\$50.00
Richard W. Spanier; Ellenwood	No hunting license	10 - 12 - 57	5.00
E. E. Hull; Anderson	No hunting license		25.00
Laurin Wilhelm; Lawrence	No hunting license		10.00
Robert Curtis; Wichita			10.00
Jonnie Lawson; Wichita	No hunting license	10-21-57	10.00
Leon Burdine; Wichita	No hunting license	10-21-57	10.00
James Lee Wright; Wichita	No hunting license	10-21-57	10.00
John Carter; Kansas City	No hunting license	9- 7-57	10.00
John B. Francis; Kansas City	No hunting license	10 - 12 - 57	25.00
Donald Storrer; Eureka	No hunting license	10-26-57	5.00
Earl E. Smith; Tulsa, Okla.	No fishing license	10-19-57	5.00
C. L. Bilyew; Wichita	No fishing license.	8-31-57	10.00
Boyce L. Mobley; Wichita	No fishing license	8-31-57	10.00
Eugene Mothershed; Independence	No fishing license	10-16-57	5.00
Benton W. Ebling; Shawnee	No fishing license	8- 4-57	5.00
Henry Kolman; Muncie	No fishing license	7-28-57	1.00
Oscar Ray Johnson; Muncie	No fishing license	7-28-57	1.00
Oswell E. Williams; Kansas City	No fishing license	9-15-57	10.00
Joe Clark; Kansas City, Mo	No fishing license	9-15-57	10.00
Walter Kirby; Topeka	No fishing license	9- 1-57	5.00
George Milton; Junction City	No fishing license	7- 1-57	5.00
Dewey Alspaw; Salina	No fishing license	10- 1-57	5.00
Jackie Harris; Hutchinson	No fishing license	10- 1-57	5.00
Gerald Morency; Hutchinson	No fishing license	10- 1-57	5.00
Charles Brown; Kansas City, Mo	No fishing license	9-28-57	5.00
Mrs. Lawrence Moore; Missouri	No fishing license	10-12-57	5.00
Mr. Lawrence Moore; Missouri	No fishing license	10-12-57	5.00
Louis Echrich; Hutchinson	No fishing license	10-12-57	5.00
	Hunt in restricted area, Cheyenne Bottoms game refuge		10.00
	Hunt in restricted area, Cheyenne Bottoms game refuge		10.00
Roy C. Garner; Great Bend	Hunt in restricted area, Cheyenne Bottoms game refuge	10 - 17 - 57	10.00
Lee Roy Way; Great Bend			10.00
	Hunt in restricted area, Cheyenne Bottoms game refuge		10.00
Gene Hensley; Wichita	Hunt in restricted area, Cheyenne Bottoms game refuge	10-27-57	10.00
	Hunt in restricted area, Cheyenne Bottoms game refuge		10.00
Guffrey E. Carver; Wichita			10.00
	Hunt in restricted area, Cheyenne Bottoms game refuge		10.00
	Over daily bag limit of ducks		10.00
	Over daily bag limit of ducks	10-12-57	10.00
Raymond Negus; Kansas City		7-27-57	10.00
Geo. E. Howell; Wichita	Have set and operate limb lines and trotlines in excess of the lawful		
Dall Day of Marks	limit	9-29-57	20.00
Bill Duvual; Wichita	Have set and operate limb lines and trotlines in excess of the lawful limit	9-29-57	20.00
Richard I Wolivor: Newton	Have set and operate limb lines and trotlines in excess of the lawful	3-23-31	20.00
idenard B. Wonvor, Newton	limit	9-16-57	20.00
D. M. Kellerman: Great Bend	Kill Pied-Billed Grebe		10.00
Joseph L. Cummings; Topeka			50.00
Jerry McGill; Winfield			50.00
	Violations of park rules and regulations		25.00
Philip Lee Jackman; Wichita			5.00
	Violations of park rules and regulations		10.00
	Kill prairie chicken in excess of daily bag limit.		10.00
	Hunt and possess doves in closed season		50.00
W. Robert Brown; Abilene			se dismissed
Clyde Sanders; Cottonwood Falls			se dismissed
Walter DeWitt; Marion			se dismissed
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