Doomed For Extinction?

THE KANSAS SCHOOL NATURALIST
Kansas State Teachers College
Emporia, Kansas

Vol. 14
No. 3
February
1968
The Kansas School Naturalist

Published by
The Kansas State Teachers College of Emporia

Prepared and Issued by

The Department of Biology, with
the cooperation of the Division of Education

Editor: John Breukelman
Associate Editor: Robert J. Boles

Editorial Committee: Ina M. Borman, Robert F. Clarke,
Gilbert A. Leisman, Bernadette Menhusen,
David F. Parmelee, Carl W. Prophet

The Kansas School Naturalist is sent upon request, free of charge, to Kansas teachers, school board members and administrators, librarians, conservationists, youth leaders, and other adults interested in nature education. Back numbers are sent free as long as supply lasts, except Vol. 5, No. 3, Poisonous Snakes of Kansas. Copies of this issue may be obtained for 25 cents each postpaid. Send orders to The Kansas School Naturalist, Department of Biology, Kansas State Teachers College, Emporia, Kansas, 66801.

The Kansas School Naturalist is published in October, December, February, and April of each year by The Kansas State Teachers College, 1200 Commercial Street, Emporia, Kansas, 66801. Second-class postage paid at Emporia, Kansas.

"Statement required by the Act of October, 1962: Section 4569, Title 39, United States Code, showing Ownership, Management and Circulation." The Kansas School Naturalist is published in October, December, February, and April. Editorial Office and Publication Office is 1200 Commercial Street, Emporia, Kansas, 66801. The Naturalist is edited and published by the Kansas State Teachers College, Emporia, Kansas, Editor, John Breukelman, Department of Biology.
DOOMED FOR EXTINCTION?

The environments of the world in which plants and animals live are in a constant state of change. Sometimes the changes are fairly rapid, as seen by man's influence during the past few hundred years. More often, however, they have occurred gradually over periods of thousands and millions of years as a result of changes in the elevation and climate of the land. Whatever the time intervals involved, plants and animals must adapt to these changing conditions or become extinct.

Geological extinction, or what is sometimes referred to as natural extinction, has been almost a general rule through the ages. Excellent fossil records of many long-gone species have been discovered. These extinct forms ranged from little invertebrates, such as trilobites, to giant armored fishes, flying reptiles and dinosaurs, toothed birds, and giant mammals, such as the hairy mammoth.

PREHISTORIC KANSAS FORMS

Millions of years ago, what is now Kansas was covered by a great shallow inland sea. As the land slowly increased in elevation the sea withdrew, creating entirely new environments to be faced by living things. Marine forms, such as the trilobite, disappeared, leaving behind only their fossil remains as evidence of their presence here. There have been no known living trilobites for millions of years.

Following the recession of the sea waters, the land was marshy and warm for a great period of time. This type of environment permitted the profuse growth of many of the ancestral forms of today's plants. As the swamps dried up, these water-loving plants disappeared, leaving only their impressions in the petrified "mud balls" known as coal balls that are often uncovered during the mining of coal in southeastern Kansas. Many of these plants have been described and carefully detailed drawings made through the painstaking work of paleobotanists, such as Dr. Gilbert Leisman, of Kansas State Teachers College. One of these ancient relatives of modern-day plants, which has been given the name Lepidodendron, grew to a diameter of two feet and a height of one hundred feet. Though no living members of this genus are found today, plants which probably evolved from it may be found.

Environmental conditions that favored the primitive fern-like plants were also suitable to the development of reptiles. For some one-hundred and fifty million years reptiles were the dominant form of animal life on the earth.
Some, like the giant *Brontosaurus*, were about as long as two railroad boxcars, and weighed as much as a dozen modern-day elephants. Size alone is not enough to cope with changing environmental conditions, and this great beast, along with its cousins, such as *Tyran­nosaurus*, *Triceratops*, and all the rest, left only their fossils as evidence of the time they spent on this planet.

Some primitive reptiles took to the air as a way of life. Gliding over the landscape, their turkey-sized bodies buoyed up by twenty-five-foot wingspreads, they apparently existed primarily upon fishes which they caught in their long, toothless jaws. One can only surmise as to the environmental stresses which brought about the extinction of the pterosaurs.

From the chalk beds of western Kansas have come the fossil remains of giant marine reptiles, such as the *Mosasaurus*. Their stream-lined, powerful bodies, huge jaws armed with many long, sharp teeth, and four feet developed into efficient paddles, suggested an animal well-adapted to its watery environment. Its disappearance from what are now the plains of Kansas can be easily explained, but not so easily can we explain why all members of this group disappeared from the seas all over the world.

Whatever the causes of their disappearances, the world will never again see these animals or plants as living forms, for the genetic codes, or sets of “plans” which directed their development, are forever lost.

Toward the close of the Mesozóic Era, or “Age of Reptiles,” as it is often called, the first mammals appeared on the earth. At first tiny, rat-like forms, they evolved into many diverse shapes and sizes in the next era, the Cenozoic. Like the reptiles, some of the forms became huge animals, such as *Baluchitherium*, the wooly rhinoceros, hairy mammoth, and the giant bison. Some of the mammoth skeletons that have been unearthed in Kansas are of mighty elephant-like creatures that towered as much as fourteen feet at the shoulder. Their giant, sweeping tusks were even larger than those of their
living descendants, the African elephant.

Fossil evidence indicates that, unlike the dinosaurs which pre­ceded man by many millions of years, some of the extinct mam­mals were contemporary with man. The first human inhabitants of the New World are believed to have crossed into America from the Old World over a land bridge that existed in the region of the Bering Strait during the Great Ice Ages. In this area, Alaska and Russia are, even now, separated by a distance of less than 100 miles. Spear points made of flint have been found with the bones of these mammals, indicating that man, even with the primitive weapons then at his disposal, was successful in pursuing and killing them.

Man clearly had nothing to do with the extinction of the dino­saur, and it is doubtful that he had the equipment, or was present in sufficient numbers, to cause the eventual extinction of the great mammals mentioned above. A more logical explanation is that they were unable to adapt to meet the changing conditions of their environment, and were replaced by more modern forms that were better equipped to meet the new conditions. Extinction was neither sudden nor universal, and undoubtedly involved thousands, and even millions, of years.

THE IMPACT OF MAN

The struggle for food, a home, room to live, and mates is a problem that must be faced by all animal life. These basic drives of necessity result in competition and often death. However, it is doubtful that they, in themselves, have often resulted in the extinc­tion of a species—until along came so-called “civilized” man.

Bison; American Buffalo

The early Indians who oc­cupied what is now Kansas exist­ed primarily by hunting, with the bison, or American buffalo, the basis upon which much of their economy was built. It furnished most of the necessities of life, such as food, shelter, and fuel. The In­dian had little effect upon the ani­mals of the area, as his numbers were few and his primitive hunt­ing methods did not permit the slaughter of great numbers of ani­mals.

A relative newcomer on this planet, geologically speaking, modern or “civilized” man is the only species that has the knowl­edge to devise means of whole­sale destruction and alteration of habitats. The effects of such ac­tivities upon the plant and ani­mal life has been on a scale and at a pace never before seen on this planet.

When the first pioneers arrived on the western plains, great herds of buffalo, estimated in the millions of head, made their annual migration south to north and back again across the wide ex­panse of grassy prairie. Losses
due to disease, injury, adverse climate, predation by wolves and bears, and hunting by the Indians were replaced each spring when the buffalo cows dropped their calves, a “status-quo” that had existed for many centuries.

The early settlers, like the Indians, used the buffalo for food and clothing. In addition, “professional” buffalo hunters armed with powerful rifles followed the herds, slaughtering the animals for “sport,” their hides, and at times for just their tongues. The remainder of the carcass was often left to feed the vultures or to decay. Bones of the once great herds littered the prairie. In fact, they were so abundant that wagon loads of bones were collected and shipped east for fertilizer and bone charcoal.

One man was reported to have shipped 3,000 box cars of bones from Dodge City in two years. Between 1868 and 1881 $2,500,000 worth of bones were shipped from Kansas.

The last wild buffalo in Kansas was believed to have been killed at Point-of-the-Rocks, west of Dodge City, in 1879. So, within the lifetime of some Kansans living today, the last of the once mighty herds were extirpated from the area. Fortunately, a few individuals were left to perpetuate the species, and today we have several thriving herds in parks, zoos, and refuges in the state so that our children may still see this majestic animal alive.
Though the killing of the buffalo was often wanton and thoughtless, it should be pointed out that, even though such slaughter might have been prevented, the ecology of man in the state today is such that the great herds would have to have been destroyed. Not even the most ardent conservationist will argue that the great herds of yesteryear could still be allowed to wend their slow, deliberate way across today's farms, railways, highways, and cities. Thus, it is only the method of extinction of the wild buffalo population, and not the extinction itself, which we may deplore.

**Deer and Antelope**

When Dr. Brewster Higley wrote his well-known song, "Home On The Range," near Smith Center, Kansas, in 1873, he included the words "... where the deer and the antelope play . . ." These words were true for the early days of our state, but the plowing of the land, introduction of great herds of cattle, and excessive hunting resulted in the disappearance of deer and antelope from the boundaries of the state. Both were considered to be extinct, or nearly extinct, in Kansas at the start of the century. The increase of trees and shrubs along the waterways, better conservation measures and land usage, hunting regulations based upon sound biological practices, and a restocking program have resulted in the reestablishment of these animals within the state.

From the canyons of the Oklahoma Panhandle and the rugged terrain of southeastern Colorado, the black-tailed or mule deer slowly spread to the east. They may now be found over much of the western one-third of the state, and, since the reopening of a deer-hunting season, offer sport and venison for the Kansas hunter.

As the mule deer moved into the state from Oklahoma and Colorado, so did the white-tailed deer re-enter the state from the Ozark hills of western Missouri and northeastern Oklahoma. This deer prefers timber and the edges of woods, thus the timbered floodplains of streams and rivers furnished both an avenue for the extension of range and a place to live. Today this is the more numerous deer species in the state, and over one thousand are killed each year by gun and arrow during the open season. It is a highly prolific species when the necessities for survival are available. Hunting is a necessity if the deer population is to be kept within the carrying capacity of the land. Only a strict control of its numbers will prevent the deer from increasing to the point where it will not only cause extensive crop damage, but will literally "eat itself out of house and home."

Not everyone is happy with the return of the deer, for as they in-
crease in number, so do the accidents involving deer and speeding vehicles. The annual number of deer killed by automobiles on the highways has in recent years exceeded five hundred. Only the extremely difficult task of educating the public to be "deer conscious" while driving at night, and the less difficult task of controlling numbers by regulated hunting will reduce or stabilize the number of automobile-deer accidents. We can only hope that population pressures in our growing nation will not get so great that the deer will again be extirpated from the state.

At one time the antelope ranged over western Kansas as far east as the west edge of the Flint Hills. Its favored food was browse plants such as sagebrush, with weeds a second choice, and grass a third. Thus it may seen that it was not in any serious competition with domesticated herbivorous cattle. However, it is an animal of the open prairie; therefore, fences and plowing, along with modern rifles, doomed it for extinction in the state. The last report of the original herds was of three seen in Stanton County in 1912. These, and the small herd that was later seen in northwestern Kansas, may have wandered into the state from the open prairies of Nebraska, Wyoming, or Colorado. In the last few years a number of antelope have been introduced into western Kansas, and appear to be doing well. Whether they will be able to increase in the face of predation, especially from dogs, and poaching, remains to be seen.

**Jackrabbits**

Few of the people who see the large black-tailed jackrabbit hop across the highway as they speed across the state know that once another species, the white-tailed jackrabbit, was common in western Kansas. A mammal of the open prairies, the white-tailed jackrabbit began to disappear from this area when the settlers started to break up the virgin sod to plant cultivated crops. Heavy hunting for its fur from which to make felt further reduced its numbers. Originally it ranged over most of the grasslands of western Kansas, but now it may be seen as an occasional visitor in the extreme northwestern part of the state, if at all. Though still to be
found in some of the states to the northwest, it is doubtful that this interesting animal will ever again make this state its home. The pressures of increasing human populations, with the demand for more cultivated crops for food, suggest a further decrease in suitable environment in the future. One of the last specimens from the state, collect in Thomas County, and mounted by the Kansas State Teachers College taxidermist, Richard Schmidt, in 1929, can be seen in the College Museum.

**Bears**

The mighty grizzly bear once ranged over the western two-thirds of what is now Kansas. Hunted to extinction over most of its range, the grizzly bear is now restricted to a few remote parts of Yellowstone National Park and Glacier National Park. No legislation would have saved this ferocious mammal from being extirpated from Kansas, for it is wholly incompatible with humans and domestic animals. With the killing of two girls in Yellowstone National Park during the summer of 1967, public sentiment and fears may demand the complete eradication of the grizzly bear from the United States. E. Raymond Hall, in his Handbook of Mammals of Kansas, states, "Where grizzlies and men occur together fatal conflicts are inevitable and I for one hope and pray that if it becomes necessary to choose between man and bear in the Yellowstone National Park we can choose bear and exclude man from these last sanctuaries of the grizzly, for he was the grandest of all North America's modern mammals."

The black bear was reported to have lived throughout the state until 1880, and there are accurate accounts of its living in the gypsum caves of Comanche County. Though not as large nor as dangerous as the grizzly bear, the black bear is still a formidable animal, and may kill larger domestic animals when hungry. Several black bears have been killed within the past few years in southeastern Kansas where they probably moved into the area from the Ozark Mountains. Should the black bear, like the deer, once again become a part of the Kansas fauna, it would no doubt be restricted to the rough, wooded, and rather sparsely populated stripmine region of southeastern Kansas.

**Elk**

Only one hundred years ago several thousand elk, or wapiti, could be seen in a single herd in Kansas. This huge deer, which once roamed throughout the state, was still reported as being common in western Kansas as late as 1875. Preferring grass more than any other deer, the wapiti and man's grazing animals were incompatible. For this reason, and also because of over-exploitation for sport and its flesh, the animal
disappeared from the state. Originally a mammal of the plains, it is now restricted to mountainous areas, especially those of some of our National Parks. Like other members of the deer family, it is prolific. It sometimes becomes necessary to reduce the elk population to the carrying capacity of the environment to protect it from starvation and disease. With man's elimination or reduction of its natural predators, hunting is not only possible, but necessary, to control the elk population. However, there is little chance that the elk will ever again freely roam the plains of Kansas.

**Wolves**

Pioneer legends abound with stories of the wolf packs that followed the migrating herds of buffalo across the prairies. The howling of the wolf sent chills up the spine of many a lonely traveler of the early 1800's. Weighing up to 125 pounds, the gray wolf required large amounts of meat in its diet. With the decline of the buffalo herds, the wolf turned its attention to the flocks and herds of domestic stock. Outraged at the thought of losing valuable animals to the predation of the wolf, man quickly retaliated. An easy victim to poison and the rifle, thousands of wolves were killed between 1800 and 1869, and the gray wolf was soon extirpated from the state's borders.

Reports may still be heard of hunters sighting or killing red wolves in southeastern Kansas. Biologists of the Kansas State Teachers College examined two such reported specimens. One proved to be a large police dog gone wild and the other a possible dog-coyote cross. Both weighed over 70 pounds. As there is no specimen of a wolf taken in Kansas in any museum, any exceptional "coyote" captured in southeastern Kansas should be taken to a biologist at one of the colleges or to the Kansas game protector for examination, just on the possibility that the animal might be a red wolf. Though the coyote will probably be with us for a long time yet, the wolf must now be placed among the missing, along with the grizzly bear and the elk.

**Mountain Lion**

At one time the mountain lion, also known as the puma or cougar, occurred throughout what is now Kansas. Because its principal food was the deer, and, because it was hunted intensively, the mountain lion, like the wolf, disappeared from among our native fauna. Large and powerful, the mountain lion is capable of...
killing domestic animals, and often preyed upon the colts of the pioneers and cowboys. It survived much longer in the face of man's efforts to eradicate it than did the grizzly bear. The last verified record of one being killed was in 1904, nine miles north of Hays. Each year reports are received of sightings of mountain lions, or of hearing their eerie cries, or seeing their tracks. Undoubtedly most, if not all, such reports are untrue. However, with the return of the deer to the state in considerable numbers, it may be that the wide-ranging mountain lion may again appear in Kansas. One can only guess whether such an appearance would be as a transient or as a permanent resident of the state, though the mostly unwarranted fear of this large mammal would make the former appear to be the more probable.

**Prairie Dog Towns**

Many of the older residents of Kansas can remember the extensive prairie dog towns of western Kansas, with their active, happy, and interesting little inhabitants. Only 65 years ago it was estimated that they occupied as much as two to two-and-one-half million acres in the state. This area was reduced to a few thousand acres by 1957, while today only small colonies of this member of the squirrel family remain. Easy to eradicate with modern poisons, an inviting target for the "varmit rifle," a competitor for the grasses needed by our livestock, and their homes a refuge for rattlesnakes and a danger to the legs of horses and cattle, the prairie dog may be expected to decline in numbers. It can only be hoped that some nature-loving farmers and the Forestry, Fish and Game Commission will see fit to set aside several areas of short-grass prairie for the preservation of this interesting animal.

**Whooping Crane**

One of the most thrilling stories of our battle to save an endangered species from extinction is that of the whooping crane. This largest of all North American birds, standing more than five feet in height, with its white body, black-tipped wings, and long, slender legs, was reduced in numbers until at one time only 13 living specimens were known to
exist. Nesting far to the north and wintering on the gulf coast of Texas, the birds often pass through our state. Sometimes mistaken for snow geese, more often just thoughtlessly shot, their trip from north to south and back again is one of constant danger. Perhaps no other endangered species has been the subject of such an intensive educational program of conservation. The program has slowly borne fruit, and more than 40 of these magnificent birds wintered on the Arkansas National Wildlife Refuge in Texas in 1967. The future looks better for the whooping crane today than it has for many years.

Prairie Chicken

Once common throughout southern and western Kansas, the lesser prairie chicken has become quite rare. A victim of modern agricultural practices, it, like the white-tailed jackrabbit and the prairie dog, may be expected to decrease even more in the future. With the population of the United States now more than 200 million, and the population of the rest of the world rising at an even faster rate, it seems to be only a matter of time until the grasslands required for the survival of birds such as prairie chickens will have to be plowed up for the growing of crops to feed the populations of our country and the rest of the world. It will not be hunting within the laws laid down by the biologists of our Forestry, Fish and Game Commission that will bring about the extinction of such species.

American Eagle

Our founding fathers chose the bald or American eagle for our national bird. The proud way it holds its head, the piercing, fearless eyes, and the freedom it displays as it sails gracefully through the skies symbolized to them the spirit of this new country. Its lofty position as our national bird has not been sufficient to prevent a steady and alarming decline in numbers. Shooting by thoughtless or inconsiderate individuals has taken some toll, but two other factors have contributed even more to this decrease. Preferring to perch upon high, leafless branches, where it can command a clear view of the surrounding countryside, it has substituted the modern utility pole with its powerlines for a perch as the trees have been cut away. Spreading its great six-foot wings to maintain its balance upon alighting or upon take-off, it often touches two of the high voltage wires at the same time. Many of the eagles reported to the Kansas State Teachers College taxidermist have been victims of self electrocution. The second cause of the decrease in numbers appears to be indirectly due to the use of modern insecticides, especially DDT. Accumulated in its body from the bodies of its prey, the insecticides finally reach
American Eagle

a level at which they prevent the hatching of the eagle’s eggs. It will indeed embarrassing should we have to explain to our grandchildren that we, through our activities, brought about the extinction of our own national bird.

Passenger Pigeon

Early settlers along the east coast of the United States left numerous accounts of the great flocks of passenger pigeons that literally blackened the sky. It has been estimated that they may have at one time made up to one half of the total bird life of the United States. They occurred in such numbers that no one at that time could foresee their rapid decline and eventual extermination. Restricted in their environmental requirements, lacking in adaptability, and forced to compete with its introduced relative, the common pigeon, they found the destruction of the timberlands for lumber and farm land too great a handicap; no living specimen of this beautiful native bird exists today. Though market hunters, through the killing of wagon-loads of passenger pigeons, helped to greatly reduce the original population, it is questionable whether even stringent conservation laws could have saved it in the face of the encroachments of civilization.

Eskimo Curlew

Prior to 1915, the Eskimo curlew was an abundant migrant through Kansas. Classed as a game bird, the curlew was heavily hunted. Its great decrease in numbers, and perhaps even extinction, has been blamed primarily upon the hunter. Whatever the causes, Kansas lost not only a beautiful and interesting species, but also a highly beneficial one, because harmful insects had been an important part of the bird’s diet. The last Eskimo curlew recorded in the United States was shot on April 15, 1915, at Norfolk, Nebraska. There is still a faint hope that a few specimens may still be alive somewhere.

Fishes

Though fishes have been successful in surviving on earth longer than the other vertebrates, some species have found man and his activities impossible to live with, and have disappeared from the Kansas scene. One such species is the lake sturgeon. A large, slow-growing fish, sometimes reaching upwards of 200 pounds, it required clean, rather clear water for survival. It also
moved upstream for spawning purposes. Pollution, silting as a result of land cultivation, and the construction of dams that obstructed spawning runs have all contributed to the disappearance of this valuable species from the state.

CONSERVATION

These are but some examples of what has happened, is happening, and may be expected to happen to our wildlife. Of what use is a prairie dog? Why be concerned with the disappearance of the passenger pigeon? Of what value is a bald eagle? Why be concerned at all with the endangered wild life species? There is no single answer. Economic, aesthetic, recreational, and scientific values are most often cited. If we cannot, or will not, save threatened animals or plants, would we be able to save one that might be essential to our survival? In trying to save these organisms might we not learn some principles that might prove valuable in insuring the survival of man himself?

Conservation—wise use of resources—is a worn and trite expression. As happened in the “cry wolf” story of your childhood, most people pay little attention or no attention when someone calls for measures to save and preserve our wildlife. We can only hope that we have in Kansas and in the United States enough educated, concerned, and involved people to see that the barn is locked before the cow is stolen, that something is done for the endangered forms before it is too late. You, as a teacher, are probably our most influential force in this regard. Through careful guidance and good teaching, you influence more than anyone else the conservation ideas and ideas of the future generation.

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Bechtel, Ernest E. How to Know the Mammals Iowa. W. M. C. Brown Company, 1951.


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THE PICTURES OF DINOSAURS, page 4, are reprinted from Vol. 12, No. 1, Dinosaurs. The newspaper picture of a Kansas buffalo hunt appeared in Vol. 9, No. 2, Kansas Natural History in 1863. The pictures of the jackrabbit, page 8, the coyote, page 10, and the eagle, page 13, were drawn by Dr. Beles for Vol. 14, No. 1, Your Ecology 10. The picture of the prairie dog on page 11 was also drawn by Dr. Beles.

THE COVER DESIGN, drawn by Dr. Beles, shows the population trend of the whooping crane during the past decade. The population data are by courtesy of the Fish and Wildlife Service, Albuquerque, New Mexico.
THE 1968 WORKSHOP IN CONSERVATION will be conducted in two sections, from June 6 to June 28, and from July 1 to July 12, inclusive. As in the past several years, the Workshop will cover water, soil, grassland, wildlife conservation and conservation teaching.

There will be lectures, demonstrations, discussion groups, films, slides, field trips, projects, and individual and group reports. You may enroll for undergraduate or graduate credit.

The first section is open to any interested person; there are no prerequisites. Since the second section is devoted almost entirely to the production of teaching aids (e.g., preparation of copy for an issue of The Kansas School Naturalist), enrollment is limited to those who already have an established interest in conservation education and who have some teaching experience.

For other information write the director, Thomas A. Eddy, Department of Biology, KSTC, Emporia, Kansas, 66801.

AVAILABLE BACK NUMBERS


The complete list of previous numbers is published in the October issue of each year. Many of the out-of-print issues may be found in school and public libraries of Kansas. All of the above back numbers are free of charge, except Poisonous Snakes of Kansas, which is sold for 25¢ a copy, postpaid.

*Out of print in the original form, but available in a condensed version.