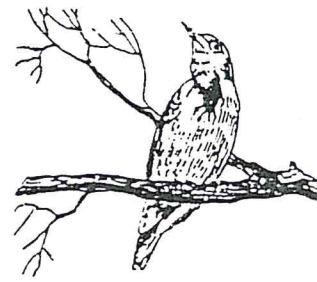


ON T.R.A.C.K.S.



Teaching Resource Activities and Conservation to Kansas Students

VOL. 1 NO. 2

KANSAS WILDLIFE & PARKS

SPRING 1990

On April 22, 1970 the world came together for a cause and to make a pledge. A pledge to save the earth. And they called it **Earth Day**. It's 20 years later and we still have strides to make in conserving and cleaning up our environment. Children will become the next generation to make crucial decisions concerning the Earth's welfare. We must teach them about the environment, how to correct our past mistakes and encourage them to keep striving for a clean, well-balanced world. On the 20th anniversary of this special day, plan to do something during Earth Week in your classroom, or better yet get your entire school involved. **Earth Day 1990-- You can make a difference.**

'**Earth Our Only Habitat**' is the theme for **Kansas Wildlife Heritage Month** in April. **Kansas Wildlife Heritage Month** is a cooperative effort by many of Kansas' conservation and education organizations to increase the appreciation and awareness of our wildlife and natural resources. All Kansans hold title to the destiny of our natural resources -- we all must assure that the living legacy of wildlife remains a valuable part of our Kansas heritage. This year's theme reminds us of the close relationship of all living things on our one great habitat -- earth.

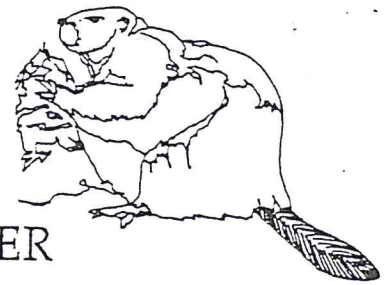
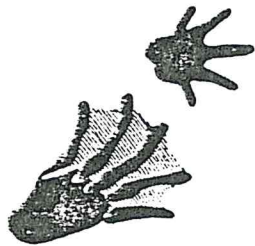
Many activities will be held in the metro area and the state to celebrate **Earth Day** and **Kansas Wildlife Heritage Month**. Give me a call at 894-9113 for more information. KCPT Channel 19 (PBS) will broadcast environmental programming now through April. For more information call Paul Francis at (816) 756-3580.

Plan activities and events to help celebrate **Kansas Wildlife Heritage Month** and **Earth Day**. Wonderful materials, including videos, filmstrips, learning kits and more, are available through Kansas Wildlife & Parks' Wildlife Reference Center. Look on the back page for details - order early. The National Wildlife Federation moved National Wildlife Week to coincide with Earth Week. The theme centers on **Earth Day** and emphasizes to make **Earth Day Every Day**. The National Wildlife Week Packet has lots of great information as well as neat posters.

POINTS TO PONDER

- Diaper Dilemma:** Laid end to end, the 18 billion disposable diapers thrown away in the U.S. each year could reach back and forth to the moon **7 times!!**
- Plymouth Dump:** If the Pilgrims had used aluminum cans at the first Thanksgiving, the cans would still be around today. Help cut waste by recycling your cans.
- Extra! Extra!:** It takes more than 500,000 trees to make the newspapers Americans read in one Sunday.
- Going, Gone??:** Rainforests vanish at the rate of 1 football field size chunk, every second!!





SPECIES SPOTLIGHT -- BEAVER

An amazing engineer, the beaver makes his home in Kansas. According to Lloyd Fox, furbearer project leader for Kansas Wildlife & Parks, Kansas has tens of thousands of these large rodents. Beaver can be found in every drainage in Kansas (every drainage with water, that is).

Beaver are active year-round at night. Trees provide both food and cover for the beaver. Larger limbs become parts of their dams and lodges or become food, stored for meals during the winter. Beaver switch to leaves, twigs and aquatic plants in the spring and summer. This large rodent can cut small trees, two inches in diameter, in less than a minute. Larger trees, up to five feet in diameter, may take several days.

Beaver are highly social animals in their own family groups called colonies. Generally a colony consists of the male and female, who mate for life, and their offspring of the previous two years. Once they are two, they hit the trail to find their own colony. Beaver use secretions from their scent glands to mark entrances and other locations within the colony.

Beaver have an interesting 'tool' attached to their foot. A modified toenail on the hind foot is split and acts as a grooming comb. This helps keep the fur clean and unmatted. Some old trappers even tell stories of beaver cleaning wood out of their teeth with this toe!!

Depletion of water and destruction of woodland habitat is the beaver's greatest threat.

Beaver Traits & Trivia

Scientific name

Castor canadensis missouriensis

Size

(largest rodent in North America)
 Total length 45-50 inches
 Tail length 9-13 inches
 Tail width 4-7 inches
 Hind foot length 6-7 inches
 Ear length approx. 1 inch
 Weight 40-60 pounds
 Food consumption . 1,500 to 2,000
 pounds per beaver per year

Reproduction (lowest potential
 of any rodent in North America
 Mating system monogamous
 (mate for life)

Reach sexual
 maturity 2-4 years old
 Breeding occurs March
 Gestation approx. 105 days
 Litter size 2-4 young
 Litters per year 1
 Time of birth March-May
 Birth weight 12-17 oz.
 Nursing suckle for
 up to 60 days
 approx. 10 times a
 day for 5-10 minutes

Mortality (long-lived,
 few predators and diseases)
 Life span 15-20 years
 Predators throughout the
 beaver's range wolves,
 bears, wolverines,
 river otter, lynx and lions
 Predators (Kansas) coyote,
 bobcat and man

Engineering Feats (second
 only to man)
 Lodges 6-8 feet high and
 20-40 foot in diameter
 Bank dens 30-150 foot long
 Canals 3 feet wide, up to
 6 feet deep and hundreds of
 feet long
 Dams 4 feet high and
 75 feet long; some dams more than
 1,000 feet long and 18 feet high at
 highest point;
 100-200 tons of material
 Ponds 25-30 acres
 Logging 200 trees per
 beaver per year
 Food cache 100 cubic feet of
 branches and twigs

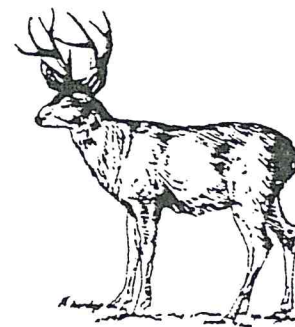
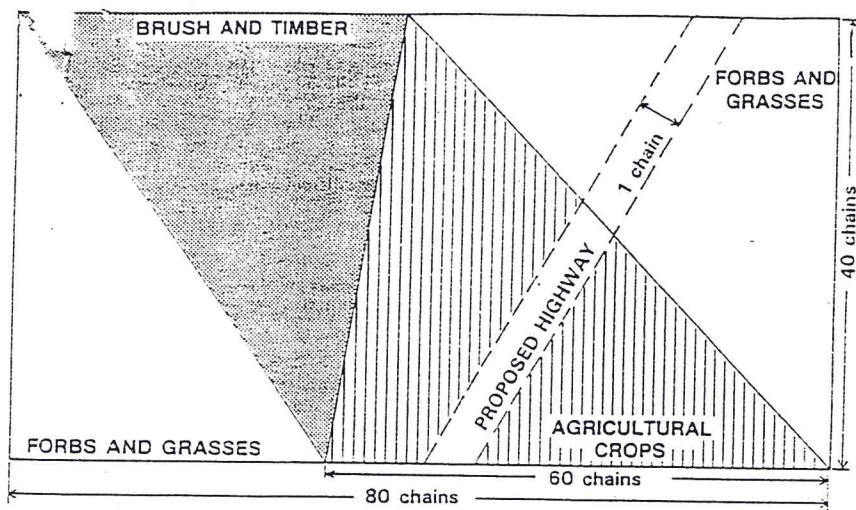
Deer--Population Biology

Math, Science

One pair of adult deer, living in good habitat, can produce two fawns per year. Fawns are born 50-50 males and females (bucks and does). Fawns mature at two years of age. How many deer would be in this herd at the end of five years?? Ten years??

If hunters harvest 10 percent of the mature bucks each year, how many will they harvest the third year?? The fifth year?? The tenth year?? Make a chart or graph of the herd growth and the harvest.

Discussion: What would be the herd size in 25 years?? Why are your figures not really "true-to-life"? What factors influence the deer herd?? What is the best management tool??



How Many Deer Can Live On This Land?? You Decide.

Using the information provided, students should calculate answers to the hypothetical problems listed. Given: (Hypothetical information)

One acre of agricultural crops can produce 6,500 pounds of deer forage per year.

One acre of forbs and grasses can produce 2,000 pounds of deer forage per year.

One acre of brush and timber (woody plants) can produce 1,500 pounds of deer forage per year.

(Forage: refers to vegetation taken naturally by herbivorous animals, both wild and domestic.)

One adult deer requires 5,475 pounds of forage per year, and for the purpose of this problem, 50 percent of this forage comes from agricultural crops, 31 percent from woody plants and the remainder from forbs and grasses.

NOTE: These figures are realistic, but will vary, depending upon local conditions such as rainfall.

PROBLEMS:

1. How many deer can be supported on the area shown? (Conversion factor: one acre=10 square chains.)
2. How could vegetation be manipulated if your goal was to increase the deer population?
3. What percentage of this deer habitat would be lost if the proposed freeway is built? How many fewer deer would there be on the area?
4. If the deer need agricultural crops, brush and timber, forbs and grasses, and vegetation, how many deer can live east of the freeway? What percentage of the total herd would the freeway eliminate?
5. What percentage of this deer habitat would be lost if summer homes were built, removing one-eighth of the brush and timber? How many deer would be eliminated by summer home development?
6. What vegetative changes would occur if brush and timber were harvested by clear-cutting? Partial cutting? What effects would these vegetative changes have on the total deer herd?
7. If you were a forest ranger, managing the brush and timber for timber production, and the deer herd increased, what effect might this have on new tree seedlings? What action would you recommend?
8. If the freeway was built, the summer homes developed, and the brush and timber partially cut, how big could the deer herd be? What is the percentage of reduction?
9. If you were a farmer managing your fields for crop production and the deer herd increased, what effect might this increase have on your crops? What action would you recommend?

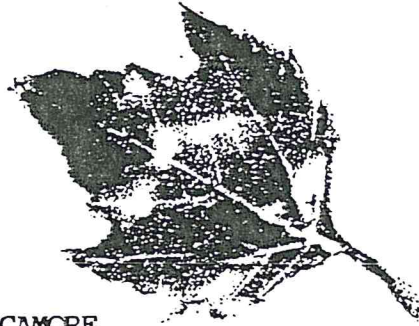
Expansion Ideas: Have students research deer and do an in-depth study of deer in Kansas. Study world population levels and discuss potential problems and solutions.

These and other secondary activities can be found in the 7-12 grade Partners with Wildlife Curriculum Materials. High Schools should have a copy of "Partners with Wildlife" at the school -- Additional copies can be checked out from the Wildlife Reference Center, LK - 59, pg. 25, for 3 weeks.

Spring Leaves

Art, Science, Social Studies, Language Arts

Did you know that planting just three trees (strategically located of course) around your home can help reduce your air conditioning bill significantly?? Trees are amazing. They add oxygen to the air, give us food and shade and make the world green. Kansas has many different kinds of trees. A fun way to learn the different kinds of trees in Kansas, as well as some general botany, is with the Trees of Kansas Leaf Replicas found in the Wildlife Reference Center Catalog, Learning Kit, LK - 66. Students can make their own leaf prints using the replicas and a stamp pad.



SYCAMORE



RED BUD

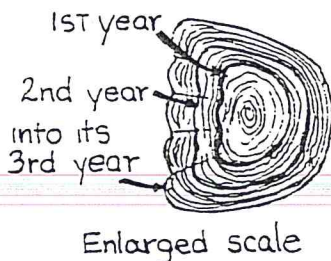
Expansion Ideas:

Make a mobile with the different leaf prints. Or have students develop a key to leaves in Kansas. Expand by having them key out the entire classroom of kids (i.e. blue eyes/brown eyes then divide it further). Discuss how trees/forests are being lost -- we lose the equivalent of a football field of rain forest, every second!! Plant trees!! -- on your school property or encourage students to plant some at home. For primary grades, Filmstrip, FS - 20 pg. 14, covers all the seasons.

As Old as the Hills (A previous Nature's Notebook by Joyce Harmon Depenbusch)

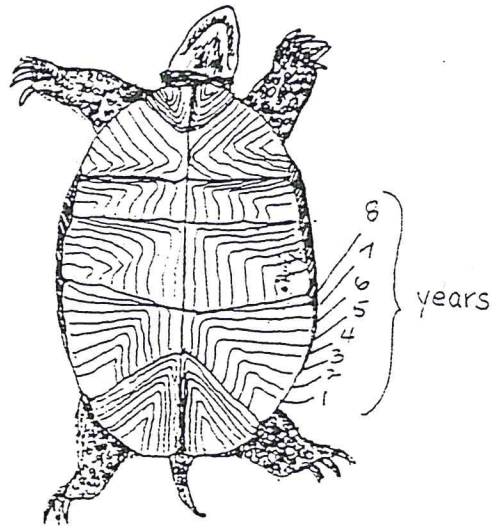
The Old Saying, "Don't look a gift horse in the mouth," hints at one way the age of an animal can be determined. Techniques used to age wildlife are more complicated than checking a horse's worn teeth, because wild animals won't stand still to be examined. Let's take a closer look at a few of the ways biologists discover how old wild animals are.

Aging certain wildlife and plant species is made easier by growth rings. The rings are formed when the tissue of the animal or plant grows rapidly for one part of the year and then very slowly, or not at all, during another part of the year. This change in tissue growth forms bands or rings that can be counted, with each one representing one year. The bands are also called annual lines or annuli. You may have counted the rings of a tree stump to age it. The growth rings of animals are similar.

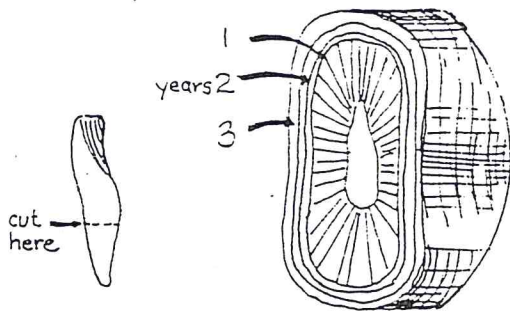


The scales of many fish have growth ridges, which are formed when the fish grows rapidly in warm weather and slowly in cold weather. Fisheries biologists count these ridges under a microscope. The ridges grow in the spring and summer. When the weather turns cooler, growth is slowed, causing the ridges to form close together. In winter, growth stops, leaving incomplete ridges. Fish can be aged by counting the dark bands left by the winter ridges. Some fish do not have scales, so bones, such as ear bones or vertebrae, are used to age them. Catfish have pectoral fins with spines that show growth rings when they are cut open.

Some turtles, such as the box turtle, have annual lines on the top shell, or carapace, and bottom shell, or plastron. Counting these lines gives an accurate age for turtles younger than five years and is fairly accurate up to 15 years of age, but this technique does not work for older turtles.



The growth rings of fresh water mussels, appear as ridges that are higher than the rest of the shell. These ridges are formed when growth is slow during part of the year.



To age deer, biologists check their front teeth, or incisors. A very thin slice of the tooth root is looked at under a microscope. The cementum, or outside cover of the root, has annual lines. The lines are formed during the winter, when the deer's body is adapting to the change in weather and diet. The body chemistry of male deer, or bucks, changes during the mating season, which is also called the rut. This may form false annual lines. Biologists can also get an estimated age by looking to see how worn the teeth have become.

Rams, or male bighorn sheep, have horns with prominent annual growth rings. These rings can be counted to age sheep with some accuracy. As the ram grows, his horns increase in size. They may live for as long as 15 years.

This Nature's Notebook is just one of several information sheets compiled in a bright yellow binder, There's Something Wild in Nature's Notebook which can be found in your school's library. The notebook was sent to each Kansas school librarian. For additional information, give me a call.

Take 'Em Out to: The University of Kansas' Natural History Museum.

The museum on campus at KU has wonderful displays and exhibits covering natural history. A 2,000-mile trip can be completed in a ten minute stroll through scenes from the arctic to the tropics in the Panorama of North American Plants and Animals. It is one of the largest diorama exhibits in the world. Live snakes, bees, and fishes of Kansas are very popular exhibits found on the sixth floor. The displays also show most Kansas birds, many in small seasonal dioramas. Museum personnel can present school programs at the museum or in the classroom. Traveling kits, with hands-on materials on topics such as birds, mammals and fish, can be borrowed from the museum for a small fee. The museum also offers weekend, summer and teacher workshops. For more information on programs, traveling kits and workshops call the Public Education Office at (913) 864-4173.



Spring Fishing Fever--We'll Teach Your Students!!(And could use your help)

Spring is nearly here, and so is the time to go fishing. In keeping with the season, Kansas Wildlife & Parks sponsors a free children's fishing clinic program in which fisheries biologists and trained volunteers provide lake side demonstrations and presentations regarding not only fishing, but general fish and aquatic ecology. So get your students involved by contacting John Reinke, the local fisheries biologist, at 894-9113 to schedule a date. And don't worry about equipment, because Kansas Wildlife & Parks supplies fishing poles, reels and even the bait. Just add water (and the children) and presto!, instant educational fun!!

All teachers willing to donate their time as a volunteer clinic instructor throughout the spring, summer and fall are encouraged to call John. Due to the amount of clinic requests, and other duties of the biologist, volunteer instructors are an essential ingredient in creating a successful children's fishing clinic program. So please call and help properly educate our anglers of the future.

WHAT KANSAS WILDLIFE & PARKS HAS TO OFFER:

Wildlife Reference Center: A marvelous collection of materials including videotapes, films, books, learning kits, computer programs, game kits etc., are available to all Kansas teachers on a free-loan basis. The only cost for you to use these materials is the return postage (library rate which is very inexpensive -- just 64¢ for a videotape, \$2.38 for 10 pounds of materials!!). Call me for your free copy of a catalog listing all the materials including age levels, lengths and a brief description. I can suggest excellent materials for use during **Kansas Wildlife Heritage Month**, like the marvelous video on Kansas' Jewel of the Prairie, Cheyenne Bottoms.

Curriculum Materials: Kindergartners learn the alphabet and how to count with raccoons, antelope and katydids; senior high students help determine the fate of an entire section of land. These useful materials for K-12 help teachers and students explore wildlife and natural resources in Kansas. The Curriculum materials stand on their own or can be incorporated into existing lesson plans. Most schools already have these materials -- look for them in your school library. Call if you can't find your school's set.

Nature's Notebook: Need a simple activity or worksheet?? You'll find it in Nature's Notebook. A compilation of these sheets in a bright yellow binder has been delivered to each Kansas school library. Some past topics: Snow Snakes, Flying Mousetraps, Telltale Tracks, From Eggs to Leggs and more. New ones are developed every couple of months. The Kansas City office has copies of these sheets available.

Classroom Presentations: I can conduct fun and educational programs in your classroom on a variety of topics regarding natural resources in Kansas and conservation in general. Some possible topics: endangered species, mammals in Kansas, Kansas wildlife, classification, or suggest a topic to fit in with what your class is studying and I'll see what I can do for you and your class. I have a variety of materials, mounted animals and in the future live snakes to bring with me if it fits in with the program.

For more information call or write:

Mary Kay Crall
Kansas Wildlife & Parks
9539 Alden
Lenexa, KS 66215
894-9113

Equal opportunity to participate in and benefit from programs described herein is available to all individuals without regard to the race, color, national origin, sex, age, or handicap. Complaints of discrimination should be sent to: Office of the Secretary, Kansas Department of Wildlife and Parks, 900 Jackson St., Suite 502, Topeka, KS 66612.

