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Leader Note:
Lessons are grouped by subject themes and are not necessarily in sequence.
Check the leader notes at the beginning of each lesson for sequence suggestions.
Kansas Mammals:
The Grazers and Browsers

What Members Will Learn . . .

About The Project
- The characteristics common to plant eating mammals
- Plant eating mammals that live in Kansas

About Themselves
- To observe and draw conclusions
- Observations are unique

Materials
- Skins and skulls set from Kansas Department of Wildlife and Parks Reference Center (see References), containing as many of the following furs, skulls, antlers, etc. from the following animals: deer (white-tail and/or mule), elk, bison, and pronghorn; reference books (see References).
- Old nature magazines (Kansas Wildlife and Parks magazines will have many of the pictures you need. Internet sites could also be used.)
- Scissors
- Pencils/pens
- 3”x5” or 5”x7” index cards

Activity Time Needed: 60 minutes

Activity
Herbivores are mammals that eat plant material: leaves, bark, roots, seeds, etc. These animals can be small creatures like mice or huge animals like bison.

Some interesting herbivore facts include:
- The fur on a deer is hollow, like a straw that is pinched shut at one end. This makes the fur light so that the deer can evade predators, but keeps them warm at the same time.
- The pronghorn is the fastest North American mammal with speeds of 55 mph!
- Water herbivores like beaver and muskrat, have an undercoating of very soft fur. This acts like a diving suit, keeping water away from the skin and allowing the animals to be in very cold water. Try to find this on one of those furs, and compare to a deer. Another interesting observation (that may be hard to make, depending on the condition of the furs) is that the two herbivores (muskrat and beaver) are squat, round animals, and are not built for speed like a carnivore would be (mink and otter).

Leader Notes
You may need to familiarize the group with the food chain (plants to herbivores to omnivores and carnivores to decomposers). You will have each individual choose one or two of the herbivores (or a group of two or three work together if your group is very large), and make an information card about that animal. The cards should include: common name; scientific name; natural community where the animal is usually found (prairie, urban park, etc.) What it eats; what kind of shelter it builds (if any); and any other interesting information you find about it.

You will need to lay out the furs of just herbivores (and any matching skulls, hooves, etc.) just before the meeting.
Let the youth brainstorm, then go over the distinguishing characteristics of mammals. Have each individual or group choose one of the furs (or more if a small group). Explain the information cards, and hand out supplies. Be sure to have enough reference books (or computers if accessing the Internet) so that the group members can get their information within 20 minutes or so.

Each individual/group should present their animal, discussing what they found. You can add in anything that you know about the animals, too.

Leave the information cards with the furs. Let the youth circulate and examine the furs by comparing and contrasting textures, thicknesses (maybe some are summer hides and some are winter), color, etc. Discuss some mammals that are not represented, like mice, etc.

- Rabbits have very porous skulls. All these holes act like shock absorbers when they jump and land. If these holes were not present, the rabbit would likely break its neck from the power of its jump.

- An uncommon herbivore found in Kansas that you may not have parts for is the porcupine.

Mammals are the group of animals that include dogs, mice, whales, beaver, and many more. They are part of a larger group of animals called vertebrates. This includes all of the animals that have a spinal column. Can you reach back and feel your backbone? All mammals have other characteristics, or features, that make them a mammal. Can you tell me something about a mammal that you think is common to all mammals?

All mammals have fur (even whales have chin bristles, which are their fur), give birth to live young (none lay eggs), nurse milk from their mother, are warm-blooded, and breathe air (whales must surface to breathe, unlike fish).

We are going to study one group of mammals that we have in Kansas. These animals actually belong to several different families, but we are going to group them by what they have in common. They all eat similar food, and have some similar physical features. We will call them the grazers and the browsers (the herbivores). As we study these animals, we will decide why they are called herbivores.
Dialogue For Critical thinking

Share
1. What animal did you develop an information card for? Why?
2. What was unique or different about your animal?

Process
3. What is a herbivore?
4. What are the common characteristics of Kansas herbivores?

Generalize
5. What observations did you make that were unique?
6. How do you like to observe animals? Why?

Apply
7. What will you do to improve your observation skills? Why?
8. How can you help others with their observation skills?

Going Further
Spend another session on herbivores (rabbits, mice, rats, etc.), or another particular group.
Take a field trip to observe or take pictures of a herbivore group.

References
Mammals in Kansas, Bee, Glass, Hoffman and Patterson (1981)
Skins and skulls set from Kansas Department of Wildlife and Parks (KDWP) 512 SE 25th Ave. Pratt, KS 67124-8174

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Reviewed by
Wildlife Review Team
What Members Will Learn . . .

About The Project

• The characteristics common to carnivores and omnivores
• Carnivores and omnivores that live in Kansas
• Make observations and draw conclusions based on their observations and those of others

About Themselves

• To observe and draw conclusions
• Observations are unique

Materials

• Skins and skulls set from Kansas Department of Wildlife and Parks Reference Center (see References), containing as many of the following furs, skulls, antlers, etc. from the following animals: deer (white-tail and/or mule), elk, bison, and pronghorn; reference books (see References)
• Old nature magazines (Kansas Wildlife and Parks magazines will have many of the pictures you need)
• Scissors
• Pencils/Pens
• 3”x5” or 5”x7” index cards

Activity Time Needed: 60 minutes

Activity

A carnivore is an animal that eats only meat, like mink or lion. More common however, are omnivores that eat both meat and plant material. We are omnivores and have teeth suitable for both biting off meat and also grinding up plants. If not much is known about an animal, its teeth may tell the truth about what it likes to eat.

Some interesting mammal facts include:

• Water mammals, like mink and otter (extirpated in Kansas), have an undercoating of very soft fur. This acts like a diving suit, keeping water away from the skin and allowing the animals to be in very cold water. Try to find the under coating on one of those furs, and compare to a coyote or raccoon. Another interesting observation (that may be hard to make, depending on the condition of the furs) is that the two mammals that hunt for their food (mink and otter) are long and sleek for better speed through the water. A mink is also fast enough on land to catch a cottontail rabbit.

Leader Notes

Have each youth choose one or two of the animals (or a group of two or three work together if your group is very large), and make an information card about that animal. The cards should include: common name; scientific name; natural community where the animal is usually found (prairie, urban park, etc.); what it eats; what kind of shelter it builds (if any); and any other interesting information.

You will need to lay out the furs (and any matching skulls, claws, etc.), just before the meeting.
Have each individual or group choose one of the furs (or more if a small group). Explain the information cards, and hand out supplies. Be sure to have enough reference books (or computers if accessing the internet) so that the group members can get their information within 20 minutes or so.

Each individual/group should present their animals, discussing what they found out about it. You can add in anything that you know about the animals, too.

Leaving the information cards with the furs, let the members circulate and examine all of the furs. Have them compare and contrast textures, thicknesses (maybe some are summer hides and some are winter), color, etc. Discuss some mammals that are not represented, like bats, etc.

- Skunks are striped differently just like people have different hair color. There are other types of skunks, but not all striped skunks look alike. If we look closely, not all coyotes are alike, either. There are variations in fur color — so animals have differences just like humans.

- One very unusual Kansas mammal is the opossum. It is the only North American mammal that is a marsupial (carries babies in a stomach pouch, like a kangaroo) and has a prehensile tail (like a monkey), that can wrap around a branch, etc. This mammal is also what we call an opportunistic feeder, meaning that anything that it finds, dead or alive, plant or animal, it will eat.

- An uncommon mammal found in Kansas that you may not have parts for is an armadillo.

Mammals are the group of animals that include dogs, mice, whales, beaver, and much more. They are part of a larger group of animals called vertebrates, which includes animals with a spinal column. Can you reach back and feel your backbone? All mammals have other characteristics or features. Can you name a common characteristic of a mammal? The distinguishing characteristics of mammals include: fur (even whales have chin bristles, which are their fur), live birth (all mammals bear live young, none lay eggs), nursing young (all mammal babies, including whales and bats, nurse milk from their mother), warm-blooded, and breathe air (whales must surface to breathe, unlike fish).

We are going to study one group of mammals that we have here in Kansas. If we look at the Latin classification system, these animals actually belong to several different families. But we are going to group them by what they have in common. They all eat similar food, and have some similar physical features. We will call them the carnivores and the omnivores. As we study these animals, we will decide why we have called them carnivores or omnivores.
Dialogue For Critical Thinking

Share
1. Was your animal card for a carnivore or omnivore? How did you know?
2. What was the most interesting fact that you found about your animal? Why?

Process
3. What is a carnivore? Omnivore?
4. What are some Kansas carnivores? Omnivores?

Generalize
5. What can you use to make observations? (Hint: Five senses)
6. What type of observation do you prefer? Why?

Apply
7. How can you improve your observation skills?
8. What type of observation do you think will be used the most in the future? Why?

Going Further
Visit a zoo or museum to identify carnivores and omnivores

References
Mammals in Kansas, Bee, Glass, Hoffmann, and Patterson (1981)
Skins and skulls set from Kansas Department of Wildlife and Parks Reference Center, 512 SE 25th Ave. Pratt, KS 67124-8174)

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Reviewed By
Wildlife Review Team
Owl Pellets

Ecosystems and Habitats

What Members Will Learn...

About The Project

• How owls swallow and digest prey
• That owl pellets may vary in size, shape, and general composition for individual owls and owls of different species
• The food habits of an owl based on the owl pellet
• The role of owls in a natural community

About Themselves

• How to master unfamiliar skills (observation and exploration)
• How to follow clues to make hypotheses

Materials

• Owl pellet display LK-94 from Kansas Department of Wildlife and Parks (KDWP) Reference Center
• Poster PP-95 (Great Horned Owl On Tree Branch), KDWP
• Poster PP-96 (Snowy Owl In Flight), KDWP
• Poster PP-97 (Screech Owl In Flight), KDWP
• Owl pellets (**collected by the youth or purchased) See References
• Activity Sheet # 2, Owl Pellet Observations
• Paper
• Tweezers
• Toothpicks
• Pencils
• Magnifying glasses/hand lenses
• Bird books for owl identification (See References)
• Permanent markers

Activity Time Needed: 60 minutes (60 minutes optional, if hunting own pellets)

Activity

Owls are one group of predatory birds found in Kansas. Like many other predatory birds, owls do not take the time to tear apart their meal, which consists — depending on the owl species — of insects, birds, reptiles and amphibians, and small to medium mammals. Instead, they swallow their food whole, and go on to hunt the next course.

Leader Notes

For general information on habitats, see Level I Activity, Can’t Do Without It.
Leader Notes
Discuss owls, and how they eat. Look at the owl pellet display, and talk about what was found in this owl pellet. Explain to the youth that they will have an opportunity to carefully take apart an owl pellet to determine what the owl ate, and maybe the type of owl. Pass out the paper and ask the group members to keep all of the bones and debris on that paper. Use Activity Sheet # 2, Owl Pellet Observations to record all observations or thoughts. Their dissecting tools are the tweezers and the toothpicks.

Taking apart the pellets is time consuming, but a fun adventure for the kids. The activity will spark many questions, but don’t be afraid to say “I don’t know” if you can’t find the answer in any of the references.

Challenge the youth to lay the bones out in a complete skeleton. End the activity discussing food chains.

Birds In Kansas: Volume I (see References) gives good accounts of the local habitats of these owls (this may be helpful if you are opting to collect the pellets yourself).

• For collecting pellets, look for any number of likely places, including under beams in barns, in abandoned silos, under large trees at the edges of fields, along a stream, wooded areas in parks, even under the supports for bridges and near natural areas. Look for fresh “white-wash” on the trees and ground (owls have white manure just like other birds). Many times, you can find a site and return several times to collect different pellets. Also, more than one owl may use a perch. If necessary, you can contact a zoo or nature center and ask for the pellets from captive owls, or order from Carolina Biological Supply (see References). If you collect your own be sure to dry the pellets in a 325 degree oven for 20 minutes. If you have a large group, you will probably not find enough pellets for everyone if you collect during a meeting. The youth will have to share or supplement by collecting on their own. You also have the option of not collecting at all as a formal meeting, but you will probably then have individuals who don’t have an owl pellet.

When the pellets are collected, the members will be taking them apart and analyzing what each pellet contains. They will have observations to make during the entire process.

Approximately 8-14 hours after dinning, the portion of their meal that could not be digested is coughed up and spit out. This compact mass consists of fur, bones, feathers, insect casings, and other indigestible material, and is called an owl pellet. Pellets vary in size according to species and the amount the owl ate. Every pellet is different. During this activity, the group will examine owl pellets and attempt to identify the contents, which give clues to the owls diet. By looking at pellets, the group can get an idea of how the owl fits into the natural community, and what some of their habitat requirements are.

Species of owls common to most of the state of Kansas include: Common Barn Owl (Tyto alba), Eastern Screech Owl (Otus asio), Great Horned Owl (Bubo virginianus), and the Barred Owl (Strix varia) in the eastern third part of the state. There are other owl species found in Kansas — but are more rare.
Dialogue For Critical Thinking

Share
1. Where did you find owl pellets, if you collected them?
2. How different were the pellets? Size? Shape, etc.?
3. What did you find that was recognizable?

Process
4. What do owls eat? How much was confirmed by the pellets?
5. Why do you think owls have this ability to form pellets?
6. What advantage would this technique give to owls over other birds of prey?

Generalize
7. How did this activity help your observation and exploration skills?
8. What other times do you have to examine clues after the event?

Apply
9. What will you do differently the next time you make observations or explore something?

Going Further
Visit a zoo or preserve to have a biologist to help you explore owl pellets.

References
Owl pellet display LK-94 from Kansas Department of Wildlife and Parks (KDWP) Reference Center
Poster PP-95 (Great Horned Owl On Tree Branch) from KDWP
Poster PP-96 (Snowy Owl In Flight) from KDWP
Poster PP-97 (Screech Owl In Flight) from KDWP
Owl pellets, available from science centers and catalogs such as Carolina Biological Supply
Owls, Zoobooks (Available from Kansas Department of Wildlife and Parks (KDWP) 512 SE 25th Ave. Pratt, KS 67124-8174)

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Reviewed by
Wildlife Review Team
Record or sketch anything that you find. Where was the pellet found originally? What time of year? Size? Shape? Type of owl?

<table>
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<tr>
<th>Item</th>
<th>Description/Sketch</th>
<th>Type of Animal Eaten?</th>
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What Members Will Learn...

About The Project

- The uniqueness of each habitat
- How to observe and collect data about habitats

About Themselves

- That observation is a way to understand what is usually taken for granted

Materials

- Pencils
- Clip boards (or cardboard, book, etc. to write on)
- Hand lenses
- Hula hoops or string circles (2-feet across)
- Activity Sheet # 3, Micro-Habitat Observations
- Posterboard
- Markers

Activity Time Needed: 60 minutes

Leader Notes

Your group needs to understand the basics of a habitat. A short review is needed. If the group does not have a good understanding of the components of habitat, you may need to review previous lessons (Can’t Do Without It, and Habitat Observation Walk from Level I).

The youth will be observing a type of habitat that is easily overlooked. You should choose an area with easy access. These could include a prairie, vacant lot, stream bank, ditch, wooded area (available in many city parks), schoolyard, cemetery, or other property in your community. Be sure that you have permission to visit the property you have chosen (if it is private property). This is an important concept to pass on to the group members – you need to ask permission before going onto property owned by someone else, whether it is an individual or a business. Discuss how to obtain permission.

Go to the habitat area. Approach quietly and observe the area. Record animals seen, plants you observe, trash, and anything else of interest.

Divide the members into groups of three. Pass out hand lenses, activity sheets, clipboards, and pencils; one set per group. Each group should also get a hula hoop or string circle. Groups should spread out to a different area of the habitat and toss their hoop or string, and study the area inside it. (Wherever the string fell, have the group gently pull it out into a circle without trampling the area inside the circle.) They will have to make allowances for trees and bushes. For example, if the hula hoop hits a tree and falls, the tree should be considered part of their circle. Stress to the group that the hand lenses are to increase their observation power and not for causing harm to any living things.

The group should first sit and observe. Can they see any signs of animals, like scat (manure), tracks, hair, insects (alive or dead), anthills, partially chewed vege-
What is the vegetation like inside their circle? Thick grass? Just a small dandelion and nothing else? Record observation on Activity Sheet #3, Micro-Habitat Observations.

If the youth observe ants or other insects, encourage them to watch and keep track of the animal’s movements. Are these “micro-creatures” looking for food, shelter, or protecting their area? Write down any observations.

Go back to the meeting site, and use a poster board and markers to make a list of all the observations by the different groups. Depending on where the groups spread their hoops out, there may not be different micro-habitats. Ask the individual what that tells them about the area. Is it an area with high diversity or low?

**Dialogue For Critical Thinking**

**Share**

1. What type of area did you use for your micro-habitat? Why?
2. How many creatures did you find?
3. What evidence did you find about creature use of the area?

**Process**

4. What did you learn about size of habitats?
5. What types of creatures share the same habitat?

**Generalize**

6. What influence did humans have on your micro-habitat?
7. What is your personal habitat like? Begin with your room and then expand to home, community, town, county, etc.

**Apply**

8. What did you discover about your habitat that other people may or may not have? Why?
9. How will your personal habitat change as you go through life? Why?

**References**

*Nature For Children of All Ages*, Sisson (1982); p. 167-170

*Sharing Nature With Children*, Cornell (1979)

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Wildlife Review Team
Micro-Habitats
Ecosystems and Habitats

Wildlife, Level III

Activity Sheet
# 3
Micro-Habitat Observations

Description of habitat: ________________________________

First observations of the “big” habitat:

___________________________________________________________________________________________
___________________________________________________________________________________________

Inside the hoop:
Signs of habitat (food, water, shelter):
________________________________________________________________________________________
________________________________________________________________________________________

Creatures observed (draw or name):

What are the creatures doing?

Other observations or signs or life:
What Members Will Learn...

About The Project

- Kansas mammals that depend on wetlands for survival
- Special adaptations that help mammals spend lots of time in the water
- Advantages and disadvantages of depending on wetlands for survival

About Themselves

- How much they value water quality and quantity

Materials

- Skins and Skulls of a beaver, mink, muskrat, otter (if available) and coyote from Kansas Department of Wildlife and Parks (KDWP). See References.
- Replitracks of a beaver, mink, muskrat, otter, and coyote from KDWP
- Pictures in books or magazines of a beaver, muskrat, mink, and otter (try to get pictures that show the animals body shape, ears, nose, etc.)
- Skulls of a beaver, muskrat, mink, and otter from KDWP

Activity Time Needed: 60 minutes

Activity

You have studied some of these while doing *Mammals of Kansas*, but now we will look at them a little closer. The mammals that live in and around water have special adaptations that make aquatic living possible. One unique adaptation is their fur. In addition to the long hair that we see on the animal, there is very short, soft, fuzzy hairs close to the skin.

The long, oily hair allows them to be aerodynamic and to shed water, while the fuzzy hair traps air close to the body when the animals go in the water. This keeps the water from actually touching the animal’s skin, which means that they stay warm, and always feel dry, even when in the water. One reason that pollutants like oil are dangerous to mammals is that it mats the fur so that the fuzzy hair isn’t fuzzy anymore and won’t hold air, so the animal dies of hypothermia from being in the cool water.

Leader Notes

Review *Kansas Mammal* lessons from Level II. Have the group closely examine the furs by smoothing back the longer hair to see the short, fuzzy fur. Have them compare the two types of hair.

Lay out the skins and let the kids examine them. Ask questions about the fur so that they discover the underlying insulating fur. Have them discuss what they think this is for, asking questions (if needed) to lead them to understand about the trapped air/warmth adaptation.

Have them observe the shapes of the animals using the furs (if a full fur is present) and the pictures. Are the animals all shaped alike? How are they similar and different? They should be able to see that the muskrat and beaver are rounder bodied, more like a mouse, while the mink and otter are long and slender. Why do they think that these animals might have different shapes? To help answer this question, go to the skulls and compare the teeth of each animal. Can you tell which animals eat meat and which eat vegetation. (Sharp, pointy teeth, like a dog or cat, shows that an animal eats meat; the flat teeth in the front of a beaver and muskrat mouth are for clipping vegetation and stripping bark from trees; so they eat plants.) How do you think this is connected to body shape? Which animal would be faster in the water? Which would be hard to see as it came towards you (if you were a fish)? The mink and otter are shaped to be fast and quiet in the water, so they can catch animals. The muskrat and beaver don’t have to be fast, because plants don’t run away (although these animals can move rapidly compared to us).

Look at the Replitracks. How are these feet made to help an animal in the water? How are they different from the coyote track? Discuss the other adaptations, like the ears and mouths.
Another adaptation is the ears. Water mammals have very small ears, which don’t slow them down in the water, and don’t catch a lot of water into the ear canal.

The beaver has more special features that adapt them to a watery life. A beaver’s mouth (the lips and cheek flaps) will come together behind the front teeth when its mouth is open. This allows the beaver to chew on wood underwater without drowning or swallowing water, which is pretty important for an animal that builds dams across creeks. The beaver has iron in the enamel of its front teeth which gives the teeth their rusty look and makes them strong enough to bite into a solid tree trunk.

**Dialogue For Critical Thinking**

**Share**

1. What water mammal was most interesting to you? Why?
2. Which Kansas water mammal have you seen the most? Where? When?

**Process**

3. What are some of the adaptations of water mammals for their habitat?
4. Why aren’t all water mammals shaped the same?

**Generalize**

5. What can you do to help maintain wetland habitat for water mammals?
6. How can people and water mammals share the same habitat?

**Apply**

7. What can be done to maintain wetlands for animals and still keep enough land available for agricultural production?
8. How can wetland water quality be maintained?

**Going Further**

If possible, have the kids visit a local wetland, zoo, wildlife exhibit, or museum to see live or mounted specimens.

**References**

Skins, Skulls, and Tracks Discovery Boxes available from the Kansas Department of Wildlife and Parks (KDWP), Great Plains Nature Center, or Quivira National Wildlife Refuge

*Mammals in Kansas*, Bee, Glass, Hoffmann, and Patterson (1981)

*Beavers for Kids*, Patricia Corrigan (1996)

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Wildlife Review Team
Warning Colors

Living in the Wild

What Members Will Learn...

About The Project
Animal techniques to deter predators
Patterns of protective coloring throughout the animal world

About Themselves
Become aware that humans mimic nature in daily life

Materials Needed
• Markers or crayons
• Paper
• Pictures of bees, wasps, monarch butterflies and other insects (field guides or magazines are fine)

Activity Time Needed: 60 minutes

Activity
Nature, especially the insect world, is filled with bright colors. Surrounded by these bright colors are some animals and insects that are dangerous; they sting, are poisonous, or are venomous. Some of these dangerous animals exhibit telltale warning colors. Consider bees and hornets, they are easily recognized by their yellow and black body colors. Our minds clue into this at an early age, and when anything yellow and black would fly around us, we became nervous. This is a survival instinct – by avoiding animals with those yellow and black colors, we avoided getting stung. The creature bugging us might not even be harmful. Some animals will mimic the warning colors of dangerous animals to give them added protection in life.

Monarch butterflies are wonderful to watch, but they and their caterpillars exhibit warning colors (orange and black, or yellow and black on the caterpillars). Why? They don’t bite or sting. But, they are poisonous to other animals that eat them. Birds may eat young monarchs and become sick. Afterwards, they associate the experience whenever they see an orange and black butterfly. The Viceroy butterfly is not poisonous, but it is orange and black, which thanks to the monarch, protects it from hungry birds. What makes the monarchs taste so terrible is that their caterpillars, which are yellow and black, feed on milkweed plants. It is the milkweed that makes both the caterpillar and the butterfly taste bad.

The yellow and black colors found on mammals serve more as camouflage. Tigers and leopards, for instance, are not worried about being eaten and have their coloring in order to hide, not frighten. Although their patterning is similar to that of some insects, it serves a different purpose.

Leader Notes
Divide the youth into small groups and pass out the paper and markers or crayons. Inform them that they are to come up with a picture of things that they see or use in daily life. This object must have the same colors as bees or monarchs or another dangerous insect that you have studied. The object must also stand for some kind of warning or special awareness. In this way, it is a direct mimicking of nature. Have them present what they came up with. You should expect to see things like stop signs, construction signs, school buses, crosswalks, fire extinguishers, etc..
For this activity, your group members will find ways that our human society mimics the warning colors of insects.

**Dialogue For Critical Thinking**

**Share**

1. What items did you think of that mimic nature? Why?
2. What items were special, but not necessarily a warning of danger?

**Process**

3. What are the common warning colors in nature?
4. What other physical features do animals use as warning signals or signals of intimidation?

**Generalize**

5. What other ways do humans mimic nature?
6. How are those nature mimics helpful to humans? When?

**Apply**

7. How can you use this nature knowledge to help others better understand the importance of nature and wildlife?

**Going Further**

Take a walk outside of your meeting area. Record the number of objects you see that have warning colors on them.

**References**

*Insects in Kansas*, (S131) Production Services Kansas State University, 24 Umberger Hall Manhattan, KS 66506-3402


*Insects 2*, Zoobooks (KDWP)


*Butterflies*, Zoobooks (KDWP)

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Wildlife Review Team
Consumptive Uses of Wildlife: Planning and Hosting a Discussion Panel

People and Wildlife

What Members Will Learn...

About The Project
- Consumptive versus non-consumptive use of wildlife
- Wildlife biology principles that govern wildlife management in Kansas
- Community resources relating to consumptive use of wildlife
- Economic opportunities attached to consumptive use of wildlife

About Themselves
- Opinions regarding consumptive use of wildlife based on information gathered from community resources
- Planning and organizing skills
- Relating to others

Materials
- Access to telephone
- Numbers of community resources
- Paper
- Pencils
- List of questions to ask
- Thank you notes
- Optional: Refreshments

Activity Time Needed: 2 – 60 minute meetings

Activity
Consumptive use means any use in which the animal dies, such as hunting, fishing (catch-and-release is non-consumptive), and trapping. Non-consumptive activities are activities such as photography, birdwatching, sketching wildlife, and others in which the animal is not harmed. Some consumptive activities are used as wildlife management tools in Kansas — helping to control populations, etc. Some are the source of revenue for communities, such as counties with numerous non-local pheasant hunters that buy a hunting license, stay in hotels, and eat in local restaurants. Non-consumptive use can provide revenue also, but not to the extent that hunting and fishing presently does.

Leader Notes
Your group will be setting up a panel discussion about consumptive uses of wildlife.

Your meeting should be a planning and calling meeting. The group members need to figure out whom to invite to be on the panel. A local employee of the Kansas Department of Wildlife and Parks is an excellent choice (look in the Public Service Pages of the phone book for local wildlife areas, etc. to call), plus someone who hunts or fishes. You may also wish to invite someone who participates in a non-consumptive activity. The group members should contact these people and set up a time when they can all attend a meeting. After the contacts have been made, (before the meeting when the panel group is present), go over some of the questions that they might want to ask, and the rules for the discussion (raise hands, be polite, etc.). This doesn’t mean that they can’t ask controversial questions, but tell the panel members ahead of time so that they are not surprised.

At the meeting when you complete Consumptive Uses of Wildlife: Hosting Community Representatives, the group members should be in charge of greeting the panel members, etc., but you can moderate the meeting.

Discuss the uses of wildlife in Kansas. Have any of them participated in any of these activities? Do they all think that it is okay to have consumptive uses of wildlife? Discuss some of the questions and issues of interest to the group members. From this, help them decide who should be on their discussion panel and contact them. The members may have to continue calling after the meeting. Set a date and time for the panel meeting, so they can schedule people.

Make sure a room is reserved where the panel discussion will take place. Inform the group members that when they host
community representatives that they may need to arrive a little early to prepare the room. Plan for refreshments. Decide if public or any media will be invited and prepare accordingly.

Remind the group members that this could be a controversial issue and that they should remember how to properly disagree.

Dialogue For Critical Thinking

Share
1. What resource people did you select for the panel? Why?
2. How difficult was it to get three or four resource people to agree upon a date, time and place?

Process
3. What is the difference between consumptive and non-consumptive use of wildlife?
4. What are the advantages and disadvantages of each type of use?

Generalize
5. What are your personal views on various uses of wildlife? Why?
6. Why is it important for people to discuss wildlife uses?
7. What did each of you have to do to plan and organize this panel discussion?

Apply
8. How can you use this planning process and discussion technique for other topics?
9. How might you involve the local public in the discussion?

Going Further
Have the group thoroughly discuss consumptive use of wildlife in preparation for the guest panel.

References
Public service pages of the phone book
Local chapters of Ducks Unlimited, Quail Unlimited, and other similar organizations

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Wildlife Review Team
What Members Will Learn...

About The Project

- Animals may become isolated or driven out of their historical ranges
- Human actions have increased the rate of extinction
- Problems of reintroducing extirpated animals
- The difference between extirpated and extinct
- The acceptable way to debate an issue

About Themselves

- How their actions affect troubled populations

Materials Needed

- Paper
- Pencils
- Member Handout #2, Scenario Cards
- Books or magazines relating to the scenario cards for the students to use as research materials

Activity Time Needed: 60 minutes

Activity

As you learned in the activity of Wildlife For Us, this activity is a debate. It is a review of how the debates should be handled.

Students will prepare arguments to support or refute a potential scenario that has been given to them. There are several important guidelines to be aware of: a) they cannot chose their scenario – they must take what is given to them, and must prepare an argument based on their best prediction of what will happen and not solely based on their emotional opinion, b) no rudeness is tolerated – each group listens while the other group presents their prepared argument without interrupting, booing, etc., c) while loud and enthusiastic discussion is expected, name-calling and anger are not – the kids must learn to talk about disagreements without escalating into anger, and d) each group is allowed to ask one question after the presenting group has finished their presentation.

There is a difference between the words “extirpated” and “extinct.” Extinction is a concept that people are most familiar. If an animal population dies out and exists no where else in the world, then it is extinct, and it will never exist again. The term extirpated means that an animal population is extinct in a portion of its historical area, but that there are other populations of the same species somewhere else in the world. An

Leader Notes

It will be your job to let the group members know the guidelines and to enforce them. A discussion period at the end of all of the presentations will give them a chance to vent their frustrations, discuss the issues, and evaluate the effectiveness of other presentations. Be prepared for this to be loud –but do not allow rudeness.

Your group members will be given scenario cards that have to deal with the issues of extinct or extirpated species. Be sure to go over these concepts first. They will act like a city council. The scenario will call into question not only wildlife issues, but social issues for the town that they represent such as economics and safety. They will have ten minutes to research and discuss their ruling on the scenario. Make sure they support their decision with facts.

Divide your members into two groups and tell them that they are going to portray the city council. Explain that they will have ten minutes to prepare an argument supporting or refuting the potential scenario on the card they receive.

Hand out the cards and remind them of the time limit. Let the groups work for ten minutes. Make sure they take advantage of the resource materials so that they can substantiate their choice on the scenario.

Let each group read their scenario out loud, present their ruling, and answer questions from the other groups.
example of an extirpated species in Kansas is the bison. The bison’s free-roaming, wild populations no longer exist in Kansas (there are many small groups on ranches now). But, there are free-roaming, wild populations of bison in Montana. Bison are extirpated in Kansas — but not extinct. Other examples of extirpated species in Kansas would be the black-footed ferret, grizzly bears, and wolves.

The reason why animals become extirpated is the same reason why many animals become extinct — loss of habitat. Habitat is usually lost because people use it or change it beyond what the animal can adapt to. The black-footed ferret was thought to be extinct until an isolated population was found in the western United States. A black-footed ferret family needs an enormous prairie dog town to survive. Most large prairie dog towns were destroyed or reduced in size by the cattle industry. If black-footed ferrets were to be reintroduced, then the prairie dog town would also have to be returned to their original size. There are many complications to the reintroduction of an extirpated species.

**Dialogue For Critical Thinking**

**Share**

1. Which scenario did your group receive?
2. What did you do to prepare for the presentation?

**Process**

3. How can reintroduction of extirpated animals be successful?
4. How are animals usually extirpated? Why?
5. What can you do personally to maintain habitat for endangered species?

**Generalize**

6. What are acceptable ways to debate issues?

**Apply**

7. What other ways are there to discuss current issues?

**References**

Scenario cards

Any books or magazines from the library on the subjects in the scenario cards

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Wildlife Review Team
Scenario 1:
Brought to the City Council by the “Prairie Protectors Environmental Coalition:”

We, the “Prairie Protector,” would like to see the prairies of Kansas returned to their natural beauty.

We have purchased 100 acres of land near Anywhere, Kansas that already has a small prairie dog town.

We plan to let the prairie dog town grow over the next five years.

We are approaching the City Council for preliminary permission to reintroduce black-footed ferrets on this land.

If the City Council approves, we will approach the Federal Government for final permission.

Approve? _____________________________

Is there anything wrong with this scenario?
_______________________________________
_______________________________________
_______________________________________
_______________________________________

Scenario 2:
Brought to the City Council by the “Better Beef Buyers of Kansas:”

We are aware that there is a plan to reintroduce the wolf in Kansas.

This is a natural predator of big game such as deer, but more importantly, we believe that the wolves will attack our livestock and be a danger to our families.

We have a petition signed by 500 people who are opposed to the reintroduction of wolves in Kansas.

We are approaching the City Council to ask for a ban on the reintroduction of wolves.

Approve? _____________________________

Is there anything wrong with this scenario?
_______________________________________
_______________________________________
_______________________________________
_______________________________________

What Members Will Learn...

About The Project
- The special designation made to animals in Kansas before they are listed as threatened or endangered

About Themselves
- How their actions affect troubled populations

Materials Needed
- 3” x 5” note cards
- Pencils

Activity Time Needed: 60 minutes

Activity

Kansas has a special designation for animals whose populations are declining, but are not low enough to put them on the threatened or endangered species list. S.I.N.C. species are Species In Need of Conservation (or species at risk – S.A.R). The reasons why species are put on this list are the same as why they are put on the threatened and endangered list. Here is some background information on threatened and endangered species as presented in previous exercises.

It is not always the addition of things to a species’ environment that causes their population to decline. More often it is the removal of the elements of the habitat that causes harm. Animals need adequate food, water, shelter, and space to maintain a healthy population. When one or more of these items are removed, the populations of animals suffer. Unfortunately, the actions of humanity have been blamed for reducing population numbers so that species are vulnerable to catastrophic events, and cannot bounce back from seasonal strains such as floods and droughts. There are many instances of this that can be found in the news, textbooks, or the Internet. It is often our drive for adequate human habitat that puts pressure on animal species.

The reason why animals are given protected status on the threatened and endangered species list is typically due to loss of habitat or extreme over hunting. Habitat is usually lost because people use or change the habitat so that the animal cannot adapt.

Leader Notes

Review Extirpated or Extinct in Level III, Missing Components, in Level II, and Can’t Do Without It in Level I.

In this activity you will need to arrange for a speaker from either a local nature center, a zoo which houses Kansas animals, or a wildlife biologist. All of these people should be aware of S.I.N.C. species. Let the speaker know ahead of time that the topic is S.I.N.C. in Kansas. Ask him/her to be prepared to talk a few minutes on the subject and then tell him/her that your group members will have prepared questions.

Before the guest speaker arrives, give your background information on S.I.N.C. species. Pass out a question card and a pencil to each member and have them write out a question to ask the guest speaker. Invite the speaker in and begin the presentation. After the presentation, have the group members ask their questions.
Dialogue For Critical Thinking

Share
1. Who did you invite to discuss S.I.N.C. in Kansas? Why?
2. What animals were discussed? Why?

Process
3. What is S.I.N.C.?
4. Why is this designation needed?
5. What is the best way to improve the status of a threatened species?

Generalize
6. What can you do to improve the habitat for threatened species?

Apply
7. How can you make other people aware of S.I.N.C. species?

References
Kansas Threatened and Endangered Species leaflet available from the Kansas Department of Wildlife and Parks

An Illustrated Guide to Endangered or Threatened Species in Kansas, Collins (1995)

Local nature centers or refuges

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Reviewed by
Wildlife Review Team
Wildlife Poetry

Outdoor Skills

What Members Will Learn...

About The Project
• Ways to express the complexities and beauty of nature
• Ways to observe nature

About Themselves
• How to convert their feelings and observations into a written form that can be appreciated by others

Materials Needed
• Pencils
• Paper

Activity Time Needed: 60 minutes

Activity

Poetry often brings with it a stigma of being “sissy.” This is usually because the poems people are exposed to deal with love and other emotional issues. Our poems will also involve emotions, but of a different kind. You will be asked to share your feelings about observations of nature.

Haiku: This is a poem that consists of three lines. The first line is made up of five syllables, the second line is made up of seven syllables, and the third has five again.

Example: The living oak tree
    Full of squirrel’s leafy nests
    Acorns on the ground

Cinquain: This poem consists of five lines. Each line has a specific task:
1. The title in two syllables.
2. A description of the title in four syllables.
3. A description of action in six syllables.
4. A description of feeling in eight syllables.
5. Another word for the title in two syllables.

Example: River
    Wide, rippled line
    Winding among the trees
    Sleepily shifting the sand bars
    Water

Acrostic: In acrostic poetry, the first letter of each line, when read vertically, spells something that gives more meaning to the poem.

Leader Notes

Your group members will have been exposed to writing activities in school by this age. (There is always the “what I did last summer” essay that teachers require.) They may not have been exposed to writing poetry.

When your members go outside to work on their poems, ask them to pick a small subject like a tree, flower, insect, etc., rather than just the broad concept of nature. You can choose to do as many forms of poetry as you like with them. When it comes time to give them a poetic form, go over it very carefully and give an example. If each line has an instruction, be patient and call out the instructions, line by line, until everyone has a chance to complete the poem.

Hand out the paper and pencils — you may need more than one sheet or opt to fold them in half like a booklet.

Go over the forms of poetry and give examples. If the members are having a hard time, choose one poetic form, or have them do a few examples in as a group before going outside. They may also want to write down the format of the poems, especially the haiku and the cinquain.

Tell them that when they go outside to observe a part of nature that they need to sit alone and respect the privacy of the other members. Creative thoughts will come easier without distractions. (There may not be a lot of “nature” in your area, so plan accordingly.)

Divide the group up and give them a time limit to complete their poems — ten minutes or so.

Regroup the members. Depending on your group you may want them to share their creations, but you should also inform them that their poems are their own private feelings, and that they are not obligated to share them with anyone.
Example: Rough
Old
Cracked
Knower of history

**Dialogue For Critical Thinking**

**Share**

1. How did you feel about being asked to write poetry? Why?
2. Which form of poetry did you prefer? Why?

**Process**

3. How does poetry refine your focus of nature?
4. Which form of poetry helped your observation skills? Why?

**Generalize**

5. What other forms of communication could be used to describe nature? When? How?

**Apply**

6. What other ways can you express your observations and emotions to others? Are these positive or negative?

**References**

*Sharing the World with Animals*, Zoobooks (Available from Kansas Department of Wildlife and Parks (KDWP) 512 SE 25th Ave. Pratt, KS 67124-8174)

*Sharing Nature with Children*, Joseph Cornell (1979)

*Journal of Nature*, Reader's Digest (1977)


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Wildlife Review Team
Mammal Track Molding

Outdoor Skills

Wildlife, Level III

What Members Will Learn...

About The Project

• How to identify mammals by their footprints
• How to preserve animal tracks
• Where to find animal tracks

About Themselves

• Observation and exploration skills

Materials Needed

For indoor option:
• Replitracks, available from the Kansas Department of Wildlife and Parks
• Plaster of paris
• Pie tins or old butter tubs (enough for at least one per student)
• Water
• Old bowl for mixing plaster
• Paper towels
• Toothpicks

For outdoor option:
• Plaster of paris
• Masking tape
• Strips of poster board cut 2-inches thick and 12-inches long
• Water
• Old bowl for mixing plaster
• Toothpicks
• Track identification books

Activity Time Needed: 60 minutes

Activity

Youth always seem to be interested in a mystery — tracks provide clues to the mysterious inhabitants of a habitat. Often we find tracks that are left by nocturnal animals, animals that are most active during the night. However, crepuscular animal tracks are also very common. These are animals that are active during the low light times of the day — sunrise and sunset. Crepuscular animals include rabbits and deer, while rac-

Leader Notes

This activity has two options, one can be done at anytime of year but the other can only occur after a period of good, soaking rain. For background consider Footloose and What Makes a Mammal, both in Level I.

This activity comes with two options. You may choose to check out a set of Replitracks from the Kansas Department of Wildlife and Parks and make your tracks indoors, at any time of year, during any weather. Or, you may choose to have this activity prepared ahead of time and pull it out when the conditions are best outdoors. The condition that is best for this activity is good, soaked, muddy ground. This occurs after a snowmelt, or after a two to three day rainy period during spring, summer, or fall.

For the outdoor option:

It is best if you can scout out a moist area that has tracks in it. This will save the frustration of walking all over, trying to find the tracks and lugging all the supplies. If possible visit a park or baseball field that has bare dirt or sand. Tracks will also appear in snow, but these prints will not hold up under the warmth and weight of the plaster.

You will want to make a practice cast before your meeting. Take one of the strips of poster board and tape it end to end to make a ring. Set the ring over the print that you wish to take. Mix plaster according to the package directions. It should be the consistency of cake batter. Carefully pour the plaster into the ring. It is okay if a little seeps out from under the ring. Take a toothpick and put your name or initials in the plaster before it sets. The plaster will get warm as it cures. Give it 15 minutes or so before lifting it off of the ground. At this time leave the poster board ring on — it can be removed after the plaster has cooled. When your group members do this, it is good to have help with the water and plaster.
Once the group members have their plaster casts, take the casts back to the classroom and identify the tracks. Common mammal tracks in Kansas are the raccoon, opossum, deer, dog, cat, and coyote.

For the indoor option:
Check out a set of Replitracks from the Kansas Department of Wildlife and Parks. The set will include directions on how to use them with plaster. There may be one or two kinds of rubber tracks in your Replitracks set — some that look like the animal stepped into the rubber and left a footprint, and some that look like an exact replica of the animal’s foot only in colored rubber. The procedure for creating a cast will depend on the kind that is in your set. There will be instructions in the set specific to the kind of rubber track you get. The pie tins or butter tubs are containers that you can fill if you have the “exact replica” type of Replitrack — the students will “step” their tracks into the plaster to make prints.

Choose which option you are going to do and prepare accordingly.

Ask the group what we can infer about a habitat based on the tracks found there.

Complete either the indoor option or the outdoor option according to the description above.

Identify and discuss the characteristics of the tracks.

Are there any characteristics that are similar in all of the mammal tracks?

What conditions would cause animal tracks to become permanent like the tracks found of dinosaurs?

Are there other methods besides plaster to preserve tracks?

Dialogue For Critical Thinking
Share
1. Did you observe tracks indoors or outdoors? Why?
2. Which method do you think would be the most enjoyable? Why?

Process
3. What characteristics are similar in all mammal tracks?
4. What conditions would allow the tracks to be permanent like dinosaurs?
5. What other ways could you preserve tracks?

Generalize
6. How do you save other things that you observe?
7. How can you improve your observation skills and your memory?

Apply
8. How can you share what you see and do with others?

References
Replitracks available from the Pratt or Wichita offices of the Kansas Department of Wildlife and Parks
Animal Tracker, Arnosky (1997)
Track Finder, Dorcas Miller (1981)
Pocket Guide to Animal Tracks Found in Kentucky,” (identification card) available from the Kentucky Department of Fish and Wildlife Resources

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coons and beaver are considered nocturnal animals. You may also come across prints of daytime (diurnal) animals too.

Some of our domestic animals have prints that are very much like their wild cousins. Dog prints, depending on their size, resemble foxes and coyotes (remember there are no wild wolves in Kansas). Cat prints may resemble young bobcats. Be sure to inform the students that not all the prints that they may encounter in nature come from wild animals. (Don’t forget that people make tracks too.)