



# What Makes a Mammal?

Appropriate Ages 8-12

Expected Time: 50 min

Students will learn about mammals that live in Nebraska and how their adaptations help them survive in their natural habitat.

This activity satisfies one of the required JNMN lessons needed to complete the Junior Zoology Master Badge.

## BEFORE YOU TEACH

### BACKGROUND KNOWLEDGE

Mammals are warm-blooded vertebrates that are distinguished by their production of milk used to feed their young. Mammals have special physical and behavioral adaptations that allow them to thrive. Some of these adaptations are common in all mammals and some are specific to just a few species.

### VOCABULARY

**Adaptation:** A special skill or feature which helps an animal to better survive in its environment. Adaptations could be physical features on an animal's body or behavioral traits.

**Trait:** A quality that makes one animal different from another.

**Mammal:** A warm-blooded animal, with a backbone that feeds its young with milk produced by the mother and has skin usually covered with hair.

### Learning Objectives:

Students will be able to describe the common traits that most mammals share.

Students will be able to explain how physical and behavioral traits support an animal's survival.

### NE Science Standards:

Grades 3-4

SC.3.9.3.D:

SC.4.6.3.B

### Did You Know...

In Nebraska there are 89 native mammal species, 4 introduced/invasive and 8 domestic/feral species.

Black-tailed Prairie Dog are a keystone species. They provide habitat for a multitude of other species.

There have been over 354 positive Mountain Lion sightings in Nebraska from 1991-2014

### MATERIALS AND PREP:

- Mystery Mammal Clues Worksheet
- Nebraska Mammal Cards
- 4 Skulls, otter, muskrat, bald eagle, possum
- Stuffed animals, Big Horned Sheep, Possum, Bison, Muskrat
- 4 Fur Pelts otter, muskrat, bison, mink or others

### Engage: 5 Min

Display the skulls, pelts, and stuffed animals by species and let the students touch and examine them.

Then introduce students to the fact that humans are also mammals and have a lot in common with the animals they will be learning about today. Leaders will have students independently brainstorm different ways we categorize things into groups. Examples could be colors, numbers, size, living or nonliving, patterns, etc. Next, ask them specifically how we can categorize animals. Examples could be color, fur or no fur, warm-blooded or cold-blooded, etc. Explain that there are 6 large categories that all animals can fit into: fish, mammals, birds, reptiles, and amphibians and invertebrates. Today we will be focusing on what makes a mammal a mammal.

### Explore: 10 Min

Give each student a piece of paper and utensils for drawing. Use the 'Mystery Animal Clues' Lesson Resource and explain that you will read one clue at a time. After each clue is read, students will take notes and draw the characteristics of the animal on their paper. The goal of the game is to create what they think the animal looks like based on all the clues given. For instance, if the clue is that this animal keeps its baby in a pouch, they would draw a pouch on their animal. The goal is for students to discover that the animal described is a real Nebraska mammal as more clues are given. Instruct students to keep their answers to themselves until all the clues are given. Repeat the activity with a few different mammals.



**Explain: 5 Min**

Have students share the similar characteristics they noticed all of the mystery animals had in common. Explain that each species of mammal has different traits, but they are all categorized by a few shared characteristics: have fur, have live births (not in an egg), mothers nurse their young, have lungs to breathe air, and are warm-blooded. Answer any questions that students have about what species are mammals based on those facts and clarify any misinformation.

**Extend: 15 Min**

Have students work alone, in pairs or in groups depending on the size of your class. Assign each student/group a "Nebraska Mammal Card". Instruct students to research their assigned mammal and come up with their own set of 4-6 mystery animal clues. One of these clues must be one of the shared mammal characteristics discussed in class. Make sure they keep their animal a secret from their classmates!

**Evaluate: 15 Min**

Each individual or group will read aloud their clues beginning with the least likely to guess clues. While the other groups/individuals try to figure out what Nebraska mammal they are describing. Once all clues are read, allow other groups to make their guesses. Have students identify the common characteristics of mammals that was described in the clues after each group shares. Have students identify traits that are not common to all mammals and ask them how those traits help the animal survive. Ex: For the White Tailed Deer, when predators are near, the white tail acts as an alarm flag. Define the term adaptation. If desired, go further in depth by identifying physical and behavior adaptations.

## Hands On Extension

**In the Lab: Classroom Experiment**

One thing mammals have in common is that they all drink milk as babies! Milk has fat molecules that help offspring grow fast and stay warm. Consider this chemistry experiment where the main ingredient is fatty and dense milk. The results from this mixture are jaw dropping. Dip a q-tip in dish soap, touch it to the surface of milk and watch the polarizing molecules race around. For more on this experiment visit: <https://www.youtube.com/watch?v=9XJbXy2PQhA>

**In the Community:**

Connect with a wildlife rehabilitation facility and learn about why some species of mammals are more likely to need care. Ask what conservation practices would help them avoid danger. Listen to the stories from experienced staff, both their successes and failures.

\*COMPLETING ANY ACTIVITY FROM THIS SECTION WILL COUNT AS YOUR SECOND ACTIVITY REQUIREMENT FOR THE ZOOLOGY MASTER BADGE.

**RESEARCH AND RESOURCES**

For information on the biodiversity of Nebraska's mammals, visit <http://outdoornebraska.gov/biodiversitymammals/>

For information on identifying Nebraska's mammals, visit <https://wildlife.unl.edu/identification>.

The University of Nebraska State Museum also offers a *Mammals of Nebraska Checklist, Key, and Bibliography* in Volume 23 of their bulletin. This guide serves as excellent practice using a dichotomous key for higher grade level students.




Mammals 5-8 Clue Card drawings


## Nebraska Mammals



Cyote



Red Fox



Mountain Lion



Mountain Lion





Mule Deer



Beaver





Bobcat



Weasel





Shrew



Tree Squirrel





Eastern Mole



Flying Squirrel





Raccoon



Badger





Black Tailed prairie dog





Woodchuck



13 Lined ground squirrel





Chipmunk



Deer Mouse





Pronghorn



Jack Rabbit



**What Makes A Mammal?**  
Leader Resource

# Nebraska Mammal Clues

## *Zoology Master: Mammals*

Use the resource below while teaching the 'Explore' section of the *Zoology Master: Mammals* lesson plan. To complete this activity, first choose the mammal you will be describing. Give students the clues one at a time by reading them out loud to the class. Have the students draw a different part of the animal that matches the clue. When all of the clues have been read, ask students if they have figured out what animal they were drawing! You can also have students ask questions about the mammal before or after you reveal what it is.

### **BIG BROWN BAT**

1. This mammal only weighs about 20 grams.
2. This mammal has brown fur.
3. This mammal flies at night time. (has wings)
4. This mammal uses echolocation and needs to be able to hear really well.
5. This mammal hibernates in large groups in the winter.

### **COTTONTAIL RABBIT**

1. This mammal lives in open grassy areas and hides underneath bushes.
2. This mammal has light brown fur.
3. This mammal hops instead of walking and can run 18 mph.
4. This mammal has long ears.
5. This mammal only eats plants.

### **BIG HORN SHEEP**

1. This mammal lives in large herds.
2. This mammal has thick, white fur.
3. It snows a lot where this animal lives.
4. This mammal uses echolocation and needs to be able to hear really well.
5. This mammal has hooves made for walking on steep cliffs.

### **WHITE-TAILED DEER**

1. This mammal has hooves made for walking through forests.
2. This mammal has reddish brown fur.
3. This mammal has white spots as a baby.
4. The males of this mammal have antlers.
5. This mammal can run up to 30 mph

### **PORCUPINE**

1. This mammal is a rodent and can eat tree bark.
2. This mammal has black, white, and grey fur.
3. This mammal can climb trees.
4. This mammal is round and walks low to the ground but can weigh more than 30 pounds.
5. This mammal has sharp quills they use to defend themselves.

### **EASTERN FOX SQUIRREL**

1. This mammal is small can be found in trees or on the ground.
2. This mammal has reddish-brown fur.
3. This mammal eats nuts and seeds. They store them underground for the winter.
4. This mammal has a big fluffy tail.
5. This mammal only eats plants.

### **COYOTE**

1. This mammal is about the size of a dog.
2. This mammal has greyish-tan fur.
3. This mammal is most active at dusk and dawn.
4. This mammal is an omnivore, eating small mammals as well as fruit.
5. This mammal can run at speeds up to 40 mph!

### **STRIPED SKUNK**

1. This mammal has a long fluffy tail.
2. This mammal has black and white fur.
3. This mammal scares its predators with a stinky smell.
4. This mammal eats mostly insects.
5. This mammal lives in dens it digs for itself.