

Mammals

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What makes mammals important?

If you have ever been out on a hike, drive, camping trip, or just playing in your backyard you've likely seen mammals. A mammal is an animal that breathes air, has a backbone, can control and maintain its body temperature, and grows hair at some point during its life. Squirrels, deer, rabbits, bears, and humans too are all examples of mammals. Mammals play important predator and prey roles in the ecosystem. Mammals are also cool because they adapt and evolve in response to the environment they live in! Mammals in cold climates have insulating layers, a thick coat of fur or a thick layer of fat, that helps retain body heat and keep the animal's body temperature constant. Mammals that live in deserts or really hot dry places survive by special adaptations such as growing large ears that release more heat from their bodies. Other adaptations for survival in extreme climates include hibernation (a state of winter dormancy) or estivation (summer dormancy). These responses make it possible for the animal to conserve energy when food supplies become scarce. Other physical adaptations include wings on bats so they can fly to catch insects or really long and fast legs on pronghorns so they can outrun predators!

Like plants, mammals can also be native, non-native, and invasive too. Native species are animals that originated and live in areas without any humans. Introduced species, or non-native species, have been brought to their current location by humans, and often become invasive for the environment. Like you, other plant and animal species may live far from where they first started. Those that live in the same place that they are originally from are called native species. Native species are considered to be native only if they originated in their location naturally (without the involvement of humans moving them). Usually, non-native species evolve and adapt to living in a certain environment, but this is not always the case. Introduced species, or non-native species, have been brought to where they are by humans, either accidentally or on purpose. Once a species has become too widespread, often unwelcomed in an environment, it is said to be invasive.

In the lesson content below, you will learn more about mammals, what they do in the ecosystem, native and non-native mammals in this area, and why they are important. You will also get to define some very important terms, create a field journal, and then participate in a fun activity! By the end of the lesson you should have lots of knowledge to answer the question above!

Vocabulary

Invasive Species

An invasive species is an organism that causes ecological or economic harm in a new environment where it is not native.

Native Species

A native species is indigenous to a given region or ecosystem if its presence in that region is the result of only natural processes, with no human intervention.

Non-native

A non-native species is an animal that is not indigenous or native to a particular place.

Introduced

An organism that is not native to the place or area where it is considered introduced and instead has been accidentally or deliberately transported to the new location by human activity.

Hibernation

Hibernation is a way that some animals deal with cold winters when food isn't available. They curl up in a safe place and stay there until winter ends. When they hibernate they barely breathe, and their body temperature is near the freezing mark so that they can conserve energy. Then when it becomes warm again they return to their regular activities.

Estivation

Estivation is the opposite of hibernation. It is how some animals deal with hot dry summers when there isn't much water available. They curl up in a safe place and stay there until the hot dry period ends. Their breathing rate, heart rate and metabolic rate decrease to conserve energy under these harsh conditions. When the conditions become good again, then they wake up.

Evolve

When an animal evolves that means they change or develop slowly often into a better, more complex, or more advanced form. Evolving doesn't happen in an animal's lifetime, it happens throughout many generations.

Adapt

When an animal adapts that means it is becoming adjusted to new conditions. This happens quickly and during the lifetime of the animal.

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Questions

1. What is a native species?
2. How can you identify the native species in your area?

Examples of Native Species

Go to <http://fieldguide.mt.gov/> for a full field guide of Montana specific wildlife, plants, invasive species and more.

American Bison

Class: Mammal

American bison are large hooved mammals, and are similar in appearance to cattle and true buffalo. They are broad and muscular with shaggy coats of long hair. Adults grow up to 6 feet 7 inches in height and 11 ft 6 in in length for.

Grizzly Bear

Class: Mammal

Grizzly bears are large and range in color from very light tan (almost white) to dark brown. They have a dished face, short, rounded ears, and a large shoulder hump. Grizzly bears weigh upward of 700 pounds. The males are heavier than the females and can weigh up to 1,700 pounds.

Black Bear

Class: Mammal

The black bear is about 4 to 7 feet long from nose to tail, and two to three feet high at the shoulders. It has small eyes, rounded ears, a long brown snout, a large body, and a short tail.

Elk

Class: Mammal

There are a few distinct color patterns to look for when identifying elk. All elk will have a light beige “rump patch” and lighter bodies with darker legs and necks. An elk’s body will vary between seasons from a shade of light copper in summer months to light-tan during winter and spring.

Mountain Lion

Class: Mammal

Mountain Lion coloring is plain but can vary between individual lions, even siblings. Their coat is typically colored like that of the lion, but ranges from silvery-grey to reddish. Some may have lighter patches on the underbody, including the jaws, chin, and throat. Mountain lion kits are born spotted, have blue eyes, and have rings on their tails.

Mountain Cottontail

Class: Mammal

Mountain cottontails are a species of rabbit found throughout Montana. This species is grey or brown with white tails. They are a small rabbit and you can distinguish them from others because they have a pale brown nape on the back of their head.

Red Fox

Class: Mammal

Red foxes have long snouts and red fur across their face, back, sides, and tail. Their throat, chin, and belly are grayish-white. Red foxes have black feet and black-tipped ears that are large and pointy. One of the most noticeable characteristics of the red fox is the fluffy white-tipped tail.

Beaver

Class: Mammal

The beaver is dark brown. It has a tail that looks like a paddle. A typical beaver can weigh about 30-60 pounds, so a really big beaver could weigh almost as much as you! Their tail is very thick and will cause a loud SPLASH when the beaver dives into water.

Grey Wolf

Class: Mammal

The wolf has very dense and fluffy winter fur, with a short undercoat and long, coarse guard hairs. Their winter fur is highly resistant to the cold. Wolves in northern climates can rest comfortably in open areas at -40°C (-40°F). They adapt by placing their muzzles between their rear legs and covering their faces with their tail. Wolf fur traps heat better than dog fur, and does not collect ice when warm breath is condensed against it. Wolves usually have some hairs that are white, brown, gray and black.

Examples of Non-Native Species:

Eastern Fox Squirrel

Class: Mammal

Their fur is rusty yellowish-brown color with a pale yellow to orange belly and a bushy tail bordered with fulvous-tipped hairs. These squirrels like riparian cottonwood forests and more open forests that aren't dense with vegetation.

House Mouse

Class: Mammal

The House Mouse is one the most commonly found mice. Their large ears are nearly bare and their fur is short with a grayish brown color on top and an underside can be brown, gray, or even whitish. Their tails are also long and scaly rather than haired.

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Activities

1. Mammal Fact Cards

- Brainstorm different Montana native mammals with students.
- Write the mammals on scraps of paper and put them in a hat.
- Have pairs draw a mammal and conduct research on its habitat, appearance, adaptations, and its predators.
- Using their research, have them create fact cards about their mammal. They may want to draw a picture or find photographs to include on their cards.
- Pairs can present their fact cards to the class.
- Have pairs compare and contrast their mammals with another mammal by using a Venn diagram.

2. Guess the animal from its footprint

Print off pictures of each animal (the internet has plenty) and help your student match them with their footprints. When finding pictures, try to get the animal's foot in the photo to help your student work out the correct footprint match.

Field Journal Prompts

Write a few sentences and/or draw a picture to show how much you learned!

1. Why are mammals important in an ecosystem's food web?
2. What makes a mammal a mammal?
3. Write about three different native species that live near you. How do they stand out?
4. How can you tell a grizzly bear from a black bear?