

# TRAILS. ONLINE.

Ecology on the Trail



## WEEK 4: ADAPTATION




# PRE-ACTIVITY



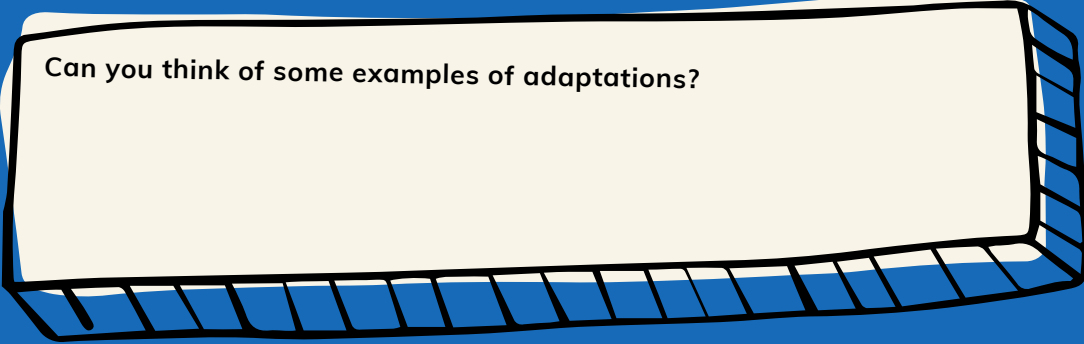
An adaptation is a special trait that a living thing has that helps it survive and thrive in its environment.

An adaptation can be physical or behavioral

- A physical adaptation is something about an animal's body or a plant's structure
- A behavioral adaptation is something that a living thing does



Can you think of some examples of adaptations?



Below are some examples of adaptations. Try and label whether they are a physical adaptation or a behavioral adaptation

Webbed toes to help swim:



Hibernation:

Bird songs to attract a mate:

Sharp teeth to eat meat:

Rattlesnake venom to subdue prey:

Squirrels storing cones for the winter:



# ANSWERS

Below are some examples of adaptations. Try and label whether they are a physical adaptation or a behavioral adaptation

Webbed toes to help swim:  
Physical adaptation

Hibernation:  
Behavioral adaptation

Bird songs to attract a mate:  
Behavioral adaptation

Sharp teeth to eat meat:  
Physical adaptation


Rattlesnake venom to subdue  
prey:  
Physical adaptation

Squirrels storing cones for  
the winter:  
Behavioral adaptation

Bonus Question: Do you think that adaptations help living things fill their niche (their role/job), live in their habitat (their home), and be a part of their ecosystem (their larger community)?

# STOP 1: WILDLIFE


We'll describe two different animals and their lifestyles. Think about what kind of adaptations would benefit this animal, and then try to guess which animals we are talking about.



Our first creature is semi-aquatic, meaning that it lives on land and in the water. They spend a lot of time underwater, swimming in lakes, ponds, and streams. Typically you'll only see them at dusk or at night, and they are active all year long. They are herbivores, meaning that they only eat plants. They can also cut down trees and they are great builders!

If this was your lifestyle, what kind of adaptations would you want? What sort of traits would be helpful in your everyday life?

Can you guess what animal this is?



This next creature is very large, and spends most of its time on land. It is a powerful swimmer and will munch on the plants that grow underwater. On land, its favorite treat is willow trees. This creature lives in the canyons year round and has no problem traveling through deep snow.

If this was your lifestyle, what kind of adaptations would you want? What sort of traits would be helpful in your everyday life, especially for navigating through deep snow?

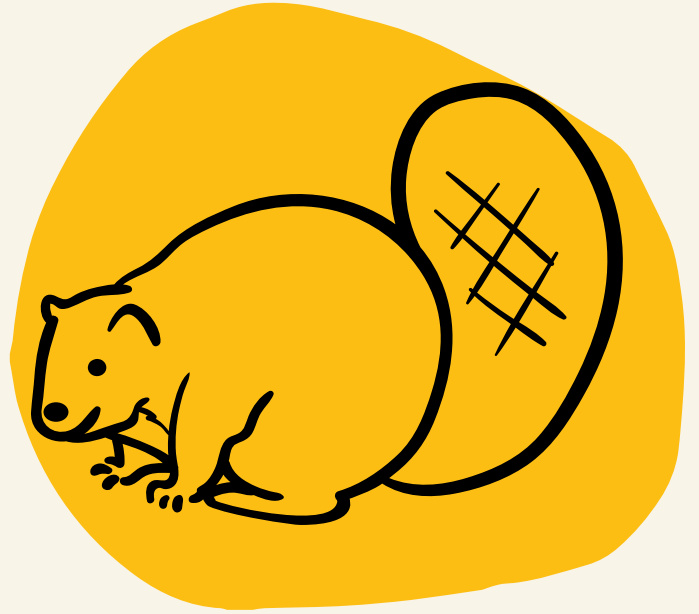
Can you guess what animal this is?

# BEAVER ADAPTATIONS

Our first creature is a beaver! Given a few of the beaver's adaptations, try to explain how these traits might be helpful.

A second eyelid that is clear:

Ears and nose that close like valves:



Large front teeth:

Webbed toes on their back feet:

Thick layer of underfur:

Wide, flat tail:

A gland that produces oil:

# BEAVER ADAPTATIONS

Given a few of the beaver's adaptations, try to explain how these traits might be helpful to a beaver.

## A second eyelid that is clear:

Like a pair of swim goggles, this clear eyelid helps a beaver see underwater while it swims.

## Ears and nose that close like valves:

The ability to close their nose and ears is helpful while they are swimming underwater.



## Large front teeth:

Long teeth act like a chisel to help them cut down trees! Unlike our teeth, beaver teeth never stop growing!

## Webbed toes on their back feet:

Webbed toes help the beaver be a more efficient swimmer. Think about when you swim - is it easier with your fingers together or spread out?

## Thick layer of underfur:

This helps keep them warm while swimming in cold water. Beavers are active year-round so this adaptation is particularly helpful during the winter!

## Wide, flat tail:

A beaver's tail is truly amazing! It stores fat in the fall and winter to help the beaver survive. In the summer, it keeps the beaver cool by releasing heat. While swimming, it acts like a rudder.

## A gland that produces oil:

This one might be a little tricky! Beavers produce an oil that they rub all over their fur with a grooming claw on their back feet. This waterproofs their fur to keep their skin dry and keep them warm.

Beavers even use their tail to communicate! Slapping the water surface can indicate that a predator is near.

# MOOSE ADAPTATIONS

Our second creature is a moose! Given a few of the moose's adaptations, try to explain how these traits might be helpful.



**Long legs:**

**Large hooves:**

**Nose flaps:**

**Hollow hair:**

**Prehensile upper lip:**

(Hint: "prehensile" means that their lips are capable of grabbing)

**Antlers:**

**Large ears:**

# MOOSE ADAPTATIONS

Our second creature is a moose! Given a few of the moose's adaptations, try to explain how these traits might be helpful.



## **Nose flaps:**

Like the beaver, a moose can close its nose while swimming or diving underwater to reach aquatic plants.

## **Prehensile upper lip:**

"Prehensile" means that a moose's lip is capable of grasping or grabbing. This helps the moose grab on to the plants it eats.

## **Large ears:**

Large ears allow the moose to have great hearing! They also have the ability to rotate their ears in different directions.

## **Long legs:**

Long legs help them walk over uneven terrain, navigate through deep snow, and swim! They also use their long legs for defense - one swift kick can deter a predator or other threat.

## **Large hooves:**

Large hooves act like a pair of snowshoes in the winter to help a moose walk through snow.

## **Hollow hair:**

Moose hair is hollow, which helps keep them warm in the winter and helps them float while swimming in the summer!

## **Antlers:**

Antlers can be used for defense, to compete with other males, and to show off to females. Scientists think they can improve a moose's hearing by catching sound waves and funneling them to the moose's ear!

Only males grow antlers, and they fall off every year to help them save energy during the winter!



## STOP 2- GEOLOGY

If a glacier carves a "U" shaped canyon and a river or stream carves a "V" shaped canyon, then what do you think happened here? (This area is flat and wide open).

This moraine was left where the glacier stopped, so it was formed by all of the rock and debris from out in front of the moving glacier. Do you think a glacier could create a moraine in other places? Think of what happens to the snow when you shovel or watch a snow plow.

# STOP 3 - TREES AND PLANTS



How could losing leaves in the fall be an adaptation for deciduous trees?



Conifer trees keep their needles all winter. What kind of adaptations do you think the leaves would need to have?



One of the largest living things on Earth can be found right here in Utah!

Pando, an aspen stand, is around 108 acres large. If a standard football field is 1.32 acres, how many football fields would it take to cover Pando?

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Figure 1. Aspens, Richfield Ranger District, Fishlake National Forest, Utah, United States. Image Aspen Overview 0172, by Mark Muir, 2005, retrieved from <https://commons.wikimedia.org/wiki/File:AspenOverview0172.JPG>

Can plants have behavioral adaptations? A behavior is a response to something that happens.

# STOP 4 - HISTORY AND HUMAN USE

Can you think of any ways that humans have adapted to visiting and living in the canyons? Think about our behaviors (the things that we do).

Is it a good idea to carve your name or initials into a tree? Why or why not?

## STOP 5: WATERSHED

When pioneers came to Utah, they used the resources here in the canyons to help them survive. They used the water to drink, they used the timber to build their homes, they let their livestock graze, and eventually they began mining for ore. The heavy use of these resources resulted in a canyon with few trees, little vegetation, and polluted water that was making people sick.

What would you have done to fix the problem of polluted water in the canyons?

Why do you think that dogs can be a problem in the watershed? Why is okay to have wild animals in the watershed, but not dogs?

## BONUS ACTIVITY

Let's grab some paper and a writing utensil and find a nice spot outside. Use your senses (but not your sense of taste!) to observe your surroundings. After taking a few minutes to gain some inspiration, write a poem! It can be short or it can be long. It can rhyme, but it doesn't have to. Maybe you want to give your poem the shape of some object you see outside. Maybe even try turning your poem into a song!

If you'd like to share your poem once you are done, ask permission from your teacher or your adult at home and have them help you send a photo or email to [education@cottonwoodcanyons.org](mailto:education@cottonwoodcanyons.org)! We'd love to see your creativity in action!



## POST-ACTIVITY

Choose one of the habitats you've seen in the canyons. What kind of adaptations would you want to have in order to live there? Describe or draw what you would look like with those adaptations.

## REFERENCES

Muir, M. (2005). *Aspens Overview 0172* [Digital image]. Wikimedia Commons. Retrieved from <https://commons.wikimedia.org/wiki/File:AspenOverview0172.JPG>