



# Beaver Fever

This activity center is part of the **Water Protection** theme.

## What's the purpose of this activity?

Students will be introduced to the unique adaptations of the North American Beaver (*Castor canadensis*) to their aquatic environment. Students will investigate the interdependence of these large rodents to their aquatic habitat with the use of metaphors, props and discussion.

## Key messages:

- Beavers are industrious creatures and are well adapted for their role as an aquatic mammal.
- Beavers are considered furbearers and are the largest North American rodent
- Beavers play an important role in the dynamics of the forest ecosystem.

## Materials:

- Beaver Pelt
- Beaver Skull
- Beaver Track (rubberized)
  - Small with finger like digits is the front track
  - Large with webbing between toes is the hind track
- Beaver Scat (ruberized)
- Dried Castor Gland (in container)
- Beaver Puppet (if available)
- Metaphors:
  - Carpenter's chisel
  - Bottle of oil and/or pair of long johns and/or a pair of mittens)
  - Swim fin(s)

- Comb
- Steering Wheel and/or pictures of directions (left, right)
- Whistle
- Cooler
- Swim goggles
- Sink plug
- "No Trespassing" sign

## Activity Set Up:

1. Lay out props on table.
2. Be extra cautious ensuring that the items, particularly the pelt, do not get wet.

## What will I be doing?

Helping children learn about beavers and their aquatic adaptations.

1. Give a brief introduction to the beaver using some of the background beaver facts (given at the end of this document) and lead into its unique environment that it creates ...
  - Beaver create their own aquatic environment/habitat by stopping moving water with a dam and creating a pond.
  - This provides them safety/protection (as you have learned or will learn at "Just Dam It").
    - Beaver are very well adapted for their aquatic habitat
2. Ask the students "**What is an adaptation?**"
  - An adaptation is a change or adjustment that has occurred over time to a species behaviour, physical appearance or structure to help it become more suited to an environment.
3. Explain that they will be looking at some props that seem to have nothing at all to do with beavers but that they are metaphors ...
  - Ask the students "**What is a metaphor?**"

- A metaphor is something (a word or object) that represents or is a "substitution" for another idea or object.
  - It is a comparison.
4. Hold up an object (prop) and ask the students, **"What does this have to do with beavers?"**
- Also prompt them to think how this may help them in/with their aquatic lifestyle to initiate more discussion
  - Give students a bit of time to come up with ideas for each object/prop/metaphor that you hold up
  - Then go into the explanations using the identified beaver object.
  - You may find that it helps going in the order suggested.

## Props & Explanations:

### Prop: Carpenter's Chisel

#### Explanation:

- Show **beaver teeth** (use skull)
- Associated Facts:
  - Beaver teeth continuously grow
  - Beaver teeth have an orange pigment on the outside which is a harder enamel than the white enamel on the inside
  - Therefore, as beaver chew into the wood of trees, the inside of their teeth wears faster than the outside, forming a chisel like shape
  - A perfect woodworking tool to help them fell trees!

### Prop: Bottle of oil/pair of long johns (or pair of mittens)

#### Explanation:

- Show **beaver pelt**
- Associated Facts:
  - The beaver is a furbearer which means that it has 2 layers of fur
    - Gently stroke the fur on the pelt opposite the grain and show the students the cottony under fur (insulative layer)
    - Stroke the fur back into place to show the longer guard hairs

(which help protect the under fur from water, snow, etc.)

- Beaver produce oils which they groom into their fur
  - Beaver spend a lot of time grooming themselves to keep the oil dispersed throughout their pelt
- Oil helps to waterproof things including the beaver's guard hair
- This waterproofing keeps the underfur dry and able to keep the beaver nice and warm, like a good pair of long johns!

### Prop: Swim Fin

#### Explanation:

- **Beaver track (hind)**
- Associated Facts:
  - Their webbed feet help them swim by propelling/pushing them through the water
  - Just like when we swim with swim fins on!

### Prop: Comb

#### Explanation:

- Show **beaver pelt and beaver track (hind)**
- Associated Facts:
  - Their webbed feet not only help them swim but it has a specialized split toenail on the 2<sup>nd</sup> toenail on its hind foot
  - This split toenail acts like a comb that they use to groom their fur, keeping tangles out and helps disperse the oil!

### Prop: Steering Wheel (or pictures of directions)

#### Explanation:

- Show photo of beaver and/or use beaver puppet if available and point to **tail**
- Associated Facts:
  - The tail acts like a rudder of a boat when swimming, helping to steer the animal in the direction it wants to go
  - This is especially helpful when it is dragging branches through the water

### Prop: Whistle

#### Explanation:

- Show photo of beaver and/or use beaver puppet if available and point to **tail**
- Associated Facts:

- The tail is also used to warn others, like blowing a whistle to draw/get attention
- The beaver will slap it on the water to warn others of danger

area.

Finish the session by emphasizing that all of these adaptations aid the Beaver in getting the best out of its habitat and living in an aquatic environment. These adaptations allow the Beaver to be very good at living a watery lifestyle!

**Prop: Cooler**

**Explanation:**

- Show photo of beaver and/or use beaver puppet if available and point to **tail**
- Associated Facts:
  - The beaver's tail also serves as a fat storage depot in fall and winter
  - Like us storing food in a cooler!

**Prop: Swim Goggles**

**Explanation:**

- Show photo of beaver and/or use beaver puppet if available and point to **eyes**
- Associated Facts:
  - Beavers have a transparent (see through) membrane which covers and protects the eyes while they swim underwater

**Prop: Sink Plug**

**Explanation:**

- Show photo of beaver and/or use beaver puppet if available and point to its **mouth**
- Associated Facts:
  - There is a furry patch inside the mouth, at the back, which closes when they are carrying branches or eating under water
  - This prevents them from swallowing water!
- Now point at the **ears and nose**
- Associated Facts:
  - Beavers also have valves in their ears and nose which close while under water to keep water out!

**Prop: "No Trespassing" sign**

**Explanation:**

- Show dried castor gland (in container)
- Associated Facts:
  - Beavers are territorial and deposit a scent from their castor glands to warn other beavers to stay away.
  - It is a way to protect their resources such as food, to help them survive.
  - The castor gland is found in both males and female near their rump

**Additional Background Information:**

**Beaver Lodge Facts**

- The scientific name for the beaver here in Ontario (North America) is *Castor canadensis*
- Trees up to 15cm can be cut/chewed down within 50 minutes
  - But it can fell trees up to 40cm in diameter
- The thickest tree cut by a beaver was recorded to be 1.2m wide (4ft)
- Average number of trees cut by an adult beaver in one year = 216
- Why do beavers cut down tree?
  - To obtain leaves, buds and bark for food
  - To obtain branches for the construction of dams and lodges
- The largest rodent of North America
  - Adult body length = 60-90cm (2-3ft)
  - Adult body length including tail = 1.3m
  - Adult weight = 18-36Kg (40-80lbs)
  - Tail length = 23-33cm (9-13in)
- Heaviest beaver recorded = 50Kg (100lbs)
- The beaver's tail is covered with leathery scales and sparse, coarse hairs
  - A tail of a large beaver can be up to 30cm long, 18cm wide and 4cm thick
- The front feet are small in comparison to its hind feet and do not have webbing
  - The toes have long sharp claws suited to digging
  - These paws are very dexterous, almost like hands, and with them the beaver can hold and carry sticks, stones and mud
  - These paws allow the beaver to work objects into their dams and lodges and pack mud around them
- Beavers live in colonies
  - Consisting of 4-8 related individuals
  - This colony is normally dominated by a female
  - The male and female of a colony stay together until one dies, up to 20 years
- Calls:
  - Mumbles

- Low whines
- Hiss or nasal blowing when angry
- Cry when frightened
- Signs:
  - Will leave "mud pies" on their trails on which they leave paw prints and the oily deposit of castor oil
- Food:
  - Summer:
    - Aquatic vegetation:
      - Water lilies
      - Arrowhead
      - Watercress
      - Duckweed
      - Yellow arum
      - Cattails
      - Sedges
    - Grasses
    - Leaves
    - Berries
    - Ferns
  - Winter
    - Bark and twigs of aspen, birch, poplar, mountain maple, willow
- Average lifespan = 4-5 years
  - Up to 16 years in the wild and 23 years in captivity
- Predators:
  - Wolves
  - Bears
  - Lynx
  - Otters
  - Coyotes
  - Wolverines (in northern ON)
- Capacity to hold breath underwater for up to 15 minutes!
- Average swimming speed = 4km/hr (2.4mph)
  - But can swim up to 10km/hr (6mph)
- Age of oldest beaver fossils = 12 million years old
- Estimated population in ON = 1.5-2 million
- The beaver is an active animal and is one of the few animals besides humans that are capable of altering its environment to create and maintain a suitable habitat for itself!

## Clean Up Procedures:

At the end of the day make sure all items for the presentation are carefully placed back into the bin and sealed. If there is any item that is wet, please let supervisors know and leave the wet item separated from the others, perhaps in a plastic bag. Leave the site as you found it for the next day's volunteers.