SCIENCE NORTH SCIENCE NORD
SUDBURY, ONTARIO, CANADA

**Connections Between Animals & People - Beaver Habitats** **Grade 4**

# Post Activity

| Assessment | Activity |
|---|---|
| Cross-curricular | |

## Big Ideas
50 minutes

Plants and animals are interdependent and are adapted to meet their needs from the resources available in their particular habitats

Changes to habitats can affect plants and animals and the relationships between them

## Specific Expectations

2.3 Use scientific inquiry/research skills to investigate ways in which plants and animals in a community depend on features of their habitat to meet important needs

3.1 Demonstrate an understanding of habitats as areas that provide plants and animals with the necessities of life

## Description
The aim of this post-activity is for students to familiarize themselves with the beaver's habitat and put into practice beaver dam building.

## Materials
- Sticks
- Modeling clay
- Plastic container (shoe box sized?)
- Water
- Freezer

## Safety Notes
- Always enforce the buddy system when spending time outdoors
- Students should be careful when picking up objects in the forest – they should only be collecting twigs found on the ground
- Instruct students to carefully handle sticks to best avoid slivers or other injury

## Introduction

1. Discuss “Needs and Wants” with students (make a chart on the board of the students’ own needs vs. want – reach consensus about what really are needs vs. wants in their every day lives).
2. Once all true needs are on the board, ask students what an animal would need to survive where it lives. Then ask, more specifically, what a beaver needs.
3. Talk about where beavers live, what they eat, and how they make their homes.
4. Beavers live in freshwater within temperate forests throughout the northern hemisphere (North American beaver + Eurasian beaver).
5. Beavers do not eat fish – they eat plants.
6. Beavers build dams and lodges using wood and mud.
7. Define keywords like *habitat, structural adaptations, behavioural adaptations, etc.*.
8. Present or review the beaver’s structural adaptations and relate back to the video they watched in the planetarium - webbed hind feet, clawed front paws, waterproof membrane on the eye, castoreum on the fur, the fur itself (long and short hairs).
9. Explain what a behavioural adaptation is, and discuss the building habits of beavers. What kind of wood do beavers look for (deciduous trees)? Why and how do beavers communicate (slap their tail on surface of water)?

## Action

**Collect sticks to build a beaver dam (45 minutes)***

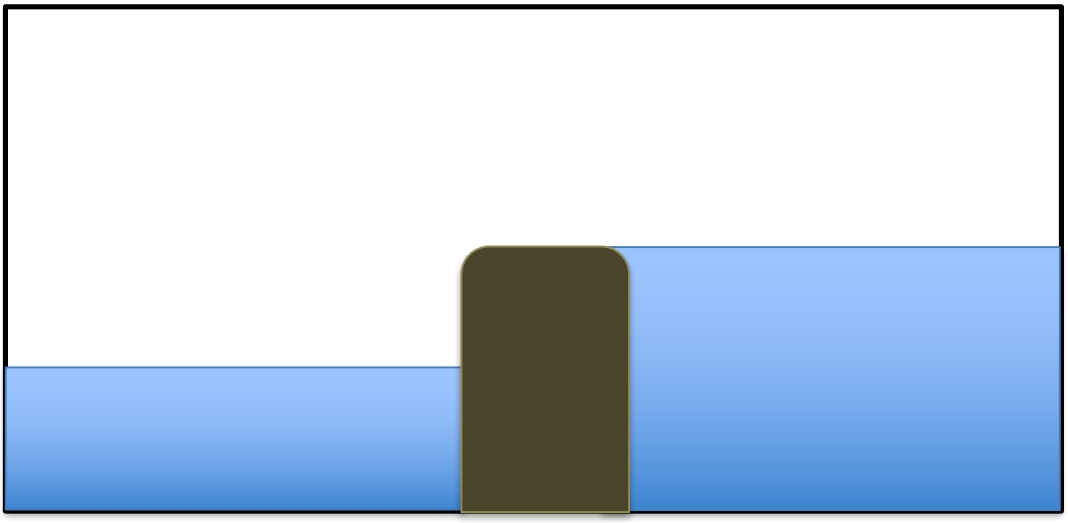
- To best immerse the students in this lesson, we recommend bringing your group outdoors to observe a forest habitat, ideally near a small stream where there may be beaver activity, and to collect sticks or twigs for building their own beaver dam.
- Prior to this nature walk, ensure students are prepared and dressed for the conditions.
- Instruct students on outdoor safety before proceeding to the chosen area (i.e. no running, pushing, or climbing, no wandering off alone, explore in pairs, do not touch anything if you don’t know what it is, stay away from flowing water, etc.).
- The main focus of this activity is to collect the twigs and other forest materials that will be used to build a model of a beaver dam and lodge. Each pair of students will have a bag in which to store these materials. Ensure the students only collect materials that are already littering the forest floor, and that they don’t pick any living plants.
- Each student will need to collect about a sandwich-sized bag’s worth of sticks.
- This can also be an opportunity to look for evidence of beaver behaviour.
- We recommend that the educator bring a medium-sized garbage bag for any litter found in the forest to encourage students to keep our natural environments free from pollution.
- After 20-30 minutes, bring the students back inside and put away all outerwear.

- ***If going outside this is not a possibility, the teacher may collect a sufficient amount of sticks, and bring them to class*

**Building the beaver habitat**

- Based on how many plastic containers you wish to use, split the class into groups (they can stay in the pairs assigned during the nature walk). Keep in mind, we will be exposing our habitat to winter conditions with the help of a freezer. This might limit you if you only have access to a small freezer unit. Alternatively, you could choose to freeze only one habitat model to use as a demonstration piece if freezer space is limited.
- Each group should have their sticks, a plastic container, and enough modeling clay to span the width of the plastic container
- In this beaver habitat model, the sticks will represent trees and the modeling clay will represent mud
- Using the modeling clay, create a base layer where you want to build the dam
- You can pile sticks on top, occasionally adding modeling clay to solidify this structure. You will want to make it so very little water would be able to come through. Patch up as many of the holes as you can. Only build up to half of the container's height.
- Once all the students have completed building their beaver dams, fill one half of the container with water. Check the permeability of the dam.
- If there are obvious leaks, try to fix it using more modeling clay and more sticks
- Once the permeability is ensured, you can fill the second half of the container halfway to the height of the dam (see diagram below)

- Side view of beaver dam model:



- Your students have now successfully built a beaver dam!

**What happens in winter?**

- Many students might think beavers build dams to catch fish, but this is not true because beavers are herbivores. They build dams to avoid the freezing of the water near their lodges. Lodges need to be accessible to beavers all winter long since they do not hibernate. Beavers spend the summer months gathering food to make a "feed pile" that is submerged

in the water, a short distance away from their lodge. During the winter months they rely on this feed pile to survive.

- After sharing this information, ask students on which side they would build their beaver lodges. They should build them on the side with more water. That way, some of the water will not freeze, and this will allow for safe passage back into the lodge as the opening to the lodge is underwater.
- The best way to demonstrate this is to get students to test it! After choosing one of the beaver dam models, put it into the freezer for 60-90 minutes. Depending on the size of the freezer and the size of your model, your freezing time will vary. Check the model every 30 minutes to assess the level of freezing. This is also a great opportunity to talk to students about how models have factors beyond the control of the scientist. In this case, it is very hard to mimic the winter conditions that lead to the freezing of a pond. In the false conditions of the freezer, the water in the model will start freezing from all directions, whereas in the environment the water freezes from the top down.
- Once ready, bring it to the class to show just how great beavers are at engineering their natural environment. Let the students break the ice on the lodge side of the container to see that there is still enough liquid water in there to allow the beavers to move freely from their lodge to their feed pile.

---

## Consolidation/Extension

- At the conclusion of this activity, speak to your students about the garbage they may have found scattered in the forest during their nature walk, or near any water sources.
- Talk to them about the importance of making sure our waste is recycled, or sent to the landfill to ensure it doesn't end up in the environment.
- Our waste has huge detrimental effects on the animals living in the same habitats as us. It is important to always practice environmental responsibility and stewardship, not only for the beavers, but also for the myriad of other organisms we share this planet with.