

# Science & Literacy Activity

**GRADES K-2**

## OVERVIEW

This activity, which is aligned to the Common Core State Standards (CCSS) for English Language Arts, introduces students to scientific knowledge and language related to structure and function. Students will read content-rich texts, visit the Bernard Family Hall of North American Mammals, and use what they have learned to complete a CCSS-aligned writing task, creating an illustrated text about how different animals use their body parts to help them survive.

### Materials in this packet include:

- Teacher instructions for:
  - Pre-visit student reading
  - Visit to the Bernard Family Hall of North American Mammals and Group Worksheet
  - Post-visit writing task
- Text for student reading: “Busy as a Beaver”
- Group Worksheet for the hall visit
- Student Writing Guidelines
- Teacher rubric for writing assessment

### Common Core State Standards:

W.K-2.2, W.K-2.8  
 RI.K-2.1, RI.K-2.2, RI.K-2.4, RI.K-2.7, RI.K-2.10

### New York State Science Core Curriculum:

LE 3.1c

### Next Generation Science Standards:

PE 1-LS1-1

#### DCI LS 1.A: Structure and Function

All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air.

### SUPPORTS FOR DIVERSE LEARNERS: An Overview

This resource has been designed to engage all learners with the principles of Universal Design for Learning in mind. It presents multiple ways for your students to engage with scientific concepts through reading, observing, discussing, and writing. While certain tasks may challenge individual students, we suggest that all learners participate in each part of the experience. In the paragraphs labeled “Supports for Diverse Learners” that supplement this activity, we have provided suggestions for how to adapt each section for students with different skill-levels. If any students have an Individualized Education Program (IEP), consult it for additional accommodations or modifications.

## 1. BEFORE YOUR VISIT

This part of the activity engages students in reading a non-fiction text about how beavers’ bodies help them survive. The reading will prepare students for their visit by introducing them to the topic and framing their investigation.

### Student Reading

Read “Busy as a Beaver” aloud to students. Have students in grades K-1 look at the images of beavers as your read the text aloud. Have students in grade 2 follow along as the text is read aloud.

As a class, have students create a T-chart based on the reading. Encourage students to list beaver body parts and describe how each part helps this animal survive. During discussion, remind them to use evidence from the text to explain their thinking, and to use specific examples.

### SUPPORTS FOR DIVERSE LEARNERS: Student Reading

- “Chunking” the reading can help keep them from becoming overwhelmed by the length of the text. Present them with only a few sentences or a single paragraph to read and discuss before moving on to the next “chunk.”
- Provide “wait-time” for students after you ask a question. This will allow time for students to search for textual evidence or to more clearly formulate their thinking before they speak.

## 2. DURING YOUR VISIT

This part of the activity engages students in exploring the Bernard Family Hall of North American Mammals.

### Museum Visit & Group Worksheet

Explain to students and chaperones that they will be divided into three teams: (1) Food, (2) Defense, and (3) Environment. Tell them that each team will visit various dioramas to observe, identify, and describe body parts related to their topic. Using the Group Worksheet, have chaperones guide small groups of students through a tour of the hall and record student observations that will be shared back in the classroom. Tell students that back in the classroom they will refer to these notes when completing the writing assignment.

### SUPPORTS FOR DIVERSE LEARNERS: Museum Visit

- Review the Group Worksheet with students, clarifying what information they should collect during the visit.

## 3. BACK IN THE CLASSROOM

This part of the activity engages students in an informational writing task that draws on the pre-visit reading and on observations made at the Museum.

### Writing Task

Distribute the Student Writing Guidelines handout, which includes the following prompt for the writing task:

Based on the article “Busy as a Beaver,” your visit to the Bernard Family Hall of North American Mammals, and your discussions, write an essay in which you:

- describe how three different animals use their body parts to help them survive
- include one or more examples of how each animal uses its body parts to:
  - o find food
  - o defend itself against predators
  - o protect itself from its environment

Support your discussion with evidence from your reading and the Bernard Family Hall of North American Mammals.

Go over the handout with students. Tell them that they will use it while writing, and afterwards, to evaluate and revise their essays.

Before they begin to write, have students use the prompt and guidelines to frame a discussion around the information that they gathered in the Bernard Family Hall of North American Mammals, and compare their findings. As a class, spend time reviewing each team’s worksheets. Make sure that all students have access to the content from all three groups, as they will need that information to address the writing prompt.

Referring to the writing prompt, have students underline or highlight all relevant passages and information from the reading, and their notes from the hall, that can be used in their response to the prompt. Instruct each student to take notes on useful information that their peers gathered as they compare findings. Students should write their essays individually.

### SUPPORTS FOR DIVERSE LEARNERS: Writing Task

- Re-read the “Before Your Visit” assignment with students. Ask what they saw in the hall that helps them understand how animals’ body parts help them survive.
- Allow time for students to read their essay drafts to a peer and receive feedback based on the Student Writing Guidelines.

## Sample T-Chart Based on "Busy as a Beaver"

Beaver body part	How this body part helps the animal survive
clear eyelids	seeing underwater / protecting eyes underwater
closable ears / nostrils	keeps water out
webbed hind feet / paddlelike tails	swimming / moving
fur coat	staying warm / staying dry
sharp teeth	eating / cutting trees for building dams and nests / protection from predators by creating dams and nests

## Student Reading

### Busy as a Beaver

Every animal has body parts that help it survive. Some parts help an animal find food or move around. Other parts might help it stay safe or build homes. Different animals are suited to live in different environments. Beavers can live on land and in the water. Let's learn about them.



© USDA

Like their squirrel cousins, beavers have thick fur that keeps them warm. Their fur coat is also oily and waterproof. This helps beavers stay dry in and out of the water.

It's hard to miss a beaver's big, sharp teeth. Beavers use their teeth to eat leaves, twigs, bark and plants. You might think a beaver's teeth would get worn down from all that chewing. But a beaver's teeth are always growing! And those teeth aren't just for eating. They're also tools for building homes! Beavers use their teeth to cut down trees and branches and carry them to the water. Then beaver families work together to build a nest. To add mud and rocks, they use their small front paws that look like little hands.

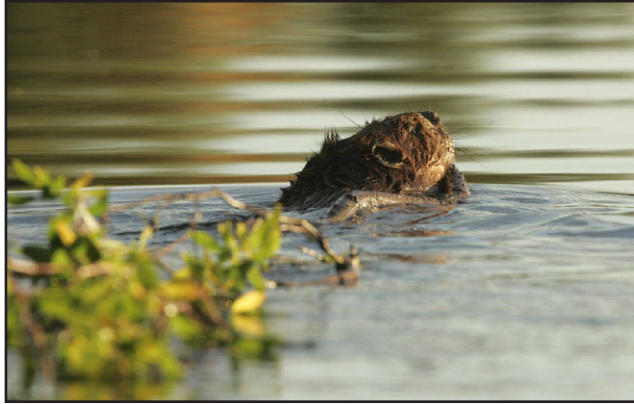
A beaver's nest is called a lodge. From the outside, a lodge looks like a big pile of sticks. Inside, there's a hollow den where beavers stay safe and dry. The only way into the lodge is underwater. This makes it hard for other animals to get in. Beavers look for calm water to build their lodges. Sometimes they build dams along a stream to hold back the water. Lodges and dams keep beavers safe from predators like coyotes, wolves, and bears.



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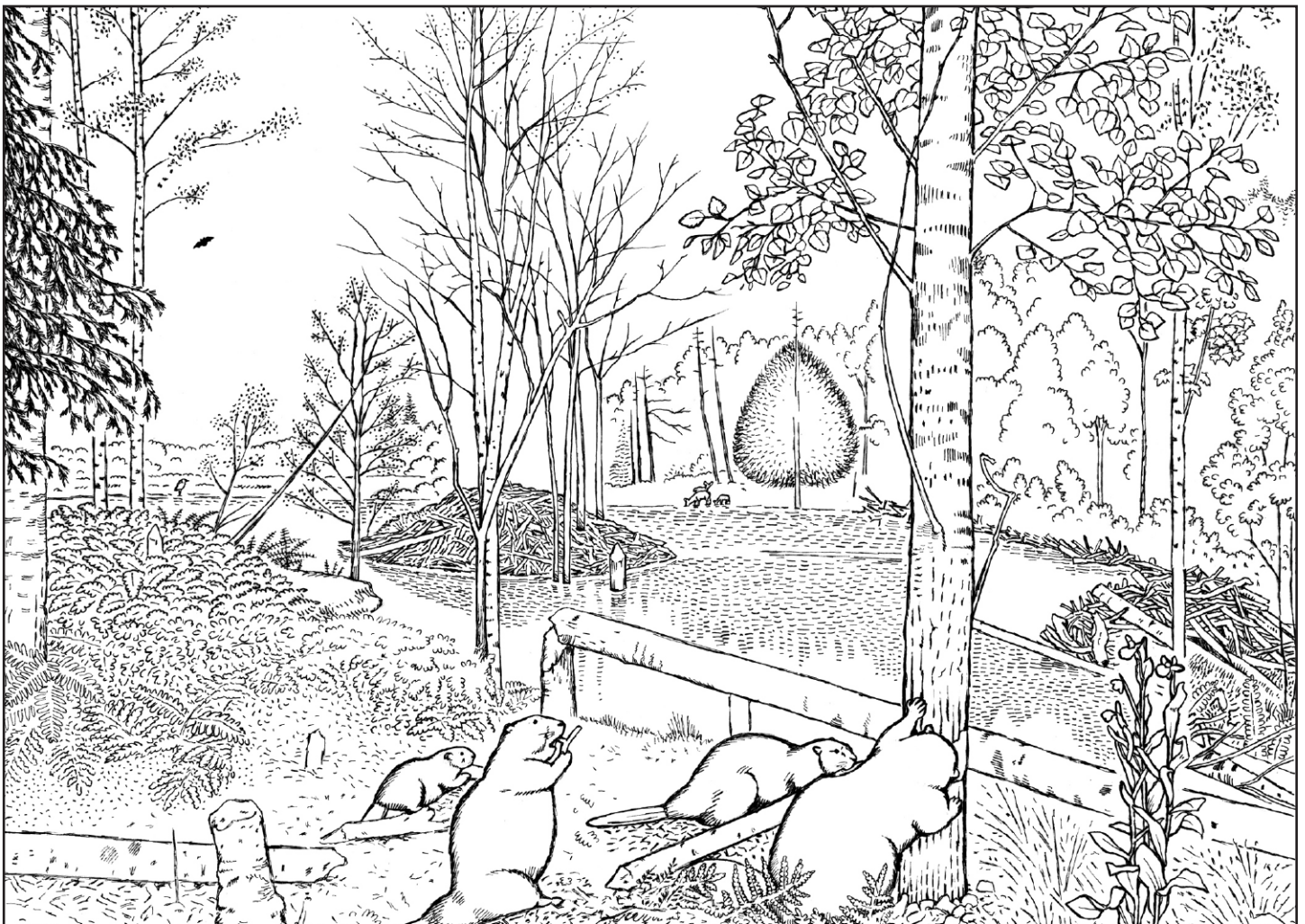


Beavers are very good swimmers. Their large webbed back feet act like flippers to push them through the water. They use their paddle-shaped tails to move in the right direction. These big, flat tails are covered with thick skin. The skin's scaly pattern makes the tail more flexible. Beavers can stay underwater for a long time. When they swim, their clear eyelids act like goggles. The clear lids protect their eyes and help them see underwater. Beavers also have ears and nostrils that shut to keep out water when they swim.



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Beavers stay busy chewing, building, and swimming all year long!



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## Student Worksheet: TEAM 1: FOOD

### Instructions for the chaperone:

1. Ask students to identify and describe what they see. Encourage them to be as descriptive as possible.
2. Solicit contributions from all students.
3. Record as many of their observations as possible.

Animal / Diorama	What body parts do the animals use to find food?	What kind of food are they looking for?
1. Grizzly bear		
2. White-tailed deer		
3. American bison & pronghorn		

If you have extra time, explore these dioramas:

- Alaska brown bear
- Canada lynx and snowshoe hare

## Student Worksheet: TEAM 2: DEFENSE

### Instructions for the chaperone:

1. Ask students to identify and describe what they see. Encourage them to be as descriptive as possible.
2. Solicit contributions from all students.
3. Record as many of their observations as possible.

Animal / Diorama	What body parts do the animals use to defend or protect themselves?	What might they need protection from?
1. Porcupine (in the fisher and porcupine diorama)		
2. Cottonmouth snake (in the black bear diorama)		
3. Moose		

If you have extra time, explore these dioramas:

- Nine-banded armadillo
- Spotted skunk and ringtail (cacomistle)

## Student Worksheet: TEAM 1: ENVIRONMENT

### Instructions for the chaperone:

1. Ask students to identify and describe what they see. Encourage them to be as descriptive as possible.
2. Solicit contributions from all students.
3. Record as many of their observations as possible.

Animal / Diorama	What body parts protect the animal from its environment?	What kind of environment does it live in?
1. Musk ox		
2. North American beaver		
2. Black-tailed jackrabbit & antelope jackrabbit		



## ANSWER KEY

## Student Worksheet: TEAM 1: FOOD

## Instructions for the chaperone:

1. Ask students to identify and describe what they see. Encourage them to be as descriptive as possible.
2. Solicit contributions from all students.
3. Record as many of their observations as possible.

Animal / Diorama	What body parts do the animals use to find food?	What kind of food are they looking for?
1. Grizzly bear	<i>(eyes, paws, claws, snout, mouth/teeth)</i>	<i>(fish, rodents, carrion, grasses, mosses, roots, tubers, bulbs, berries, insects, larvae, fungi, carrion)</i>
2. White-tailed deer	<i>(eyes, nose, mouth/teeth)</i>	<i>(leaves from blackgum trees, twigs, dried leaves, evergreen needles)</i>
3. American bison & pronghorn	<i>(eyes, nose, mouth/teeth)</i>	<i>(shrubs, small plants, grasses, cacti)</i>

If you have extra time, explore these dioramas:

- Alaska brown bear
- Canada lynx and snowshoe hare

## ANSWER KEY

## Student Worksheet: TEAM 2: DEFENSE

## Instructions for the chaperone:

1. Ask students to identify and describe what they see. Encourage them to be as descriptive as possible.
2. Solicit contributions from all students.
3. Record as many of their observations as possible.

Animal / Diorama	What body parts do the animals use to defend or protect themselves?	What might they need protection from?
1. Porcupine (in the fisher and porcupine diorama)	<i>(its legs and claws help it to climb high into tree. Its sharp quills protects it.)</i>	<i>(fisher and other predators)</i>
2. Cottonmouth snake (in the black bear diorama)	<i>(fangs)</i>	<i>(bear)</i>
3. Moose	<i>(antlers)</i>	<i>(other moose)</i>

If you have extra time, explore these dioramas:

- Nine-banded armadillo
- Spotted skunk and ringtail (cacomistle)

## ANSWER KEY

## Student Worksheet: TEAM 1: ENVIRONMENT

## Instructions for the chaperone:

1. Ask students to identify and describe what they see. Encourage them to be as descriptive as possible.
2. Solicit contributions from all students.
3. Record as many of their observations as possible.

Animal / Diorama	What body parts protect the animal from its environment?	What kind of environment does it live in?
1. Musk ox	<i>(squat, woolly bodies limit heat loss)</i>	<i>(ice-cold Arctic tundra)</i>
2. North American beaver	<i>(a dense, oily fur coat helps it maintain its body temperature in the water)</i>	<i>(land and water)</i>
2. Black-tailed jackrabbit & antelope jackrabbit	<i>(long ears and high legs help keep it cool)</i>	<i>(hot and dry desert)</i>

## Student Writing Guidelines

### Writing Prompt:

Based on the article “Busy as a Beaver,” your visit to the Bernard Family Hall of North American Mammals, and your discussions, write an essay in which you:

- describe how three different animals use their body parts to help them survive
- include one or more examples of how each animal uses its body parts to:
  - o find food
  - o defend itself against predators
  - o protect itself from its environment

Support your discussion with evidence from your reading and the Bernard Family Hall of North American Mammals.

**Use this checklist to ensure that you have included all of the required elements in your essay.**

- I included an introduction.
- I clearly described how three different animals use their body parts to help them survive.
- For each animal, I included one or more examples of how their body parts help them:
  - find food
  - stay safe
  - protect themselves from weather
- I used correct science vocabulary.
- I used information from “Busy as a Beaver.”
- I used information from the Bernard Family Hall of North American Mammals.
- I included a conclusion at the end.

## Assessment Rubric

Scoring Elements		<b>1</b> Below Expectations	<b>2</b> Approaches Expectations	<b>3</b> Meets Expectations	<b>4</b> Exceeds Expectations
<b>RESEARCH</b>	<b>Reading</b>	Does not reference information from the text.	Presents information from reading materials using facts, vocabulary, examples, or other references but may lack accuracy or relevance.	Presents information from reading materials using facts, vocabulary, examples, or other references but may lack relevance.	Presents accurate and relevant information from reading materials to inform or explain using facts, vocabulary, examples, or other references.
	<b>AMNH Exhibit</b>	Does not reference information from the exhibit.	Presents information from Museum exhibit content using examples, quotes, or other references but may lack accuracy.	Presents information from Museum exhibit content using examples, quotes, or other references relevant to the purpose of the prompt.	Accurately and effectively presents important information from Museum exhibit to inform or explain content using examples, quotes, or other references.
<b>WRITING</b>	<b>Focus</b>	Does not address the prompt.	Addresses the prompt, but significant sections of writing are off topic.	Addresses the prompt with minimal distractions.	Addresses the prompt with no distractions.
	<b>Development</b>	No detail is included to explain the topic.	Informs or explains by presenting details.	Informs or explains using accurate details.	Informs or explains by providing accurate and relevant information.
	<b>Conventions</b>	Lacks cohesion and control of grammar, usage, and mechanics appropriate to grade level.	Demonstrates an uneven command of standard English conventions appropriate to grade level.	Demonstrates a command of standard English conventions, with few errors as appropriate to grade level.	Maintains a well-developed command of standard English conventions, with few errors. Response includes language and tone appropriate to the purpose and specific requirements of the prompt.
<b>SCIENCE</b>	<b>Content Understanding</b>	Content is irrelevant, inappropriate, or inaccurate.	Shows uneven understanding of disciplinary content related to the topic.	Presents generally accurate disciplinary content related to the topic.	Presents accurate and relevant disciplinary content to enhance understanding of the topic.