Science
2nd Grade

Lesson 4 - Science: Ecosystems | 130-145 minutes

Activity 1: Animals and Ecosystems Science Cards
Activity 2: Building a Beaver Lodge with Teamwork

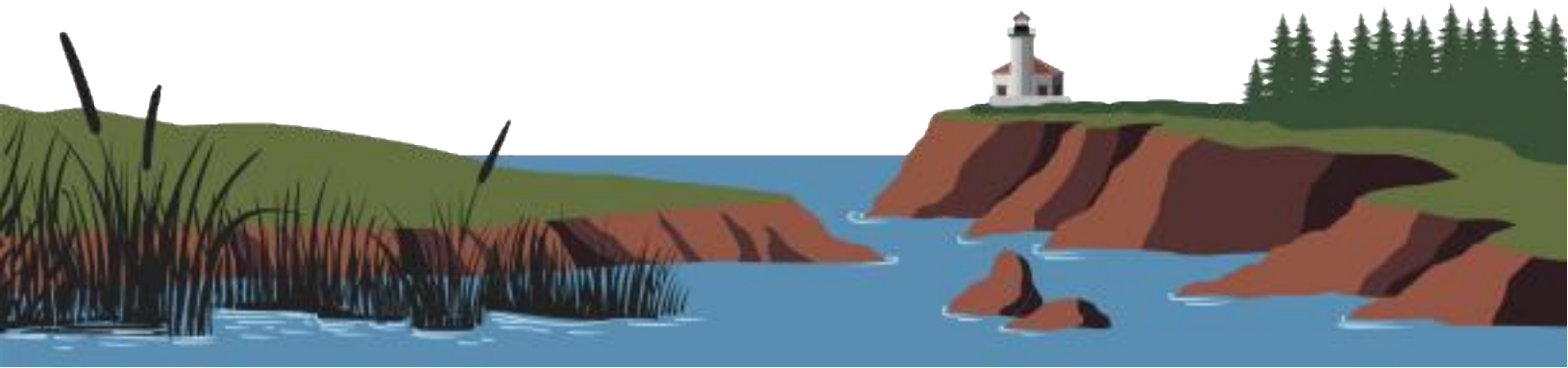
Summary:

Students explore how animals meet their needs within different ecosystems and how structures are designed to support living things. Through observing patterns in where animals live and collaboratively designing and building a beaver lodge, students learn that living things depend on their environment, and on working together, to survive. Through both lessons, students practice noticing, problem-solving, and teamwork as they make sense of how materials, structures, and places support life.

Key Discovery:

Living things learn from their environment and from one another to meet their needs and survive.

Standards	• Primary: 2-LS4-1, 2-ETS1-2 • Secondary: 2.ESS2.2, 2.ESS2.3, 2-PS1-1, 2-PS1-2
Materials	• Animal and Ecosystem Cards • Beaver Lodge Information Sheet • Beaver Lodge Student Worksheet
Vocabulary	• **Ecosystem**: A geographic area where living organisms interact with each other and their environment • **Shelter:** A structural formation that protects living beings from harsh weather, dangerous environment, or predators. This can be natural or man-made. • **Survive:** To continue to live, especially in times of difficult conditions. • **River:** A large, natural stream of freshwater that flows continuously along a channel or course. • Stream: Any continuous flow of water. • **Lake**: A large body of standing water that is surrounded by land. • **Forest**: A large area densely covered with trees and underbrush. • **Meadow**: An open, natural area with primarily vegetation and non-woody plants.



Setup & Logistics:

- Print several sets of slides 3-24 double-sided.
- Use heavier paper and laminate for durability if that is available to you.
- Decide whether cards will be kept whole or cut for matching activities before the lesson.
- Print the Beaver Lodge Student Worksheet

Language Extension:

Language Audio to be added soon.

Class Flow

Activity 1: Animals and Ecosystems:

Step 1: Notice and Wonder Card Invitation - Individual

- Invite curiosity and close looking. Students are not expected to know the answers yet.
- Sort the cards into two groups:
  - Animal cards
  - Ecosystem cards
- Read the cards to learn about each animal or place.
- Teacher Prompt: Think about:
  - What makes this animal special?
  - What does this animal need to live?
  - How is this ecosystem different from other places?
- Match one animal with the ecosystems where it would most likely live.
- After making a match, answer:
  - Where does the animal get water?
  - Where does the animal find food?
  - Where does the animal stay safe?
  - How much space might it need?

Step 2: Pairs or Small Group Card Invitation

- These games offer multiple ways to explore the same ideas. Choose what fits your students best.
- Option 1: Animal-Ecosystem Match
  - Shuffle the cards and place them face down.
  - Players take turns flipping over two cards.
  - If the cards match, the player keeps them and takes another turn.
  - If they do not match, return the cards to the same places and pass the turn.



- Option 2: Memory Match
  - Shuffle all the cards.
  - Make two piles: Picture Card pile & Description Card pile.
  - Players flip one card from each pile.
  - If the cards match, the player keeps them.
  - Whether or not a match is made, the turn passes to the next player.

Step 3: Reflect and Share

- Invite the students to name patterns and observations rather than the right answer.
- Invite students to share:
  - One match they made and why.
  - One thing they noticed about an animal or ecosystem.
- Teacher Prompts:
  - What did you notice animals needed no matter where they lived?
  - How were ecosystems similar or different?
- Closing Thought: Teacher might invite students to do further research and notice them in books, pictures, or places beyond the classroom.

Activity 2: Building a Beaver Lodge with Teamwork

Step 1: Preparation

- Prepare building materials stations.
  - Twigs, sticks, pipe cleaners, cardboard, clay, fabric, tape, etc.
  - Tray or base for each team
  - Large paper for planning and sketching
- Organize teams by size (4-6 students work well)
- Identify a space where lodges can remain intact across several days.

Activity 2: DAY 1 – Story, Discussion and Explore Curiosity

Step 1: Story and Discussion

- Share How Beaver Got His Tail (if unfamiliar).
- Introduce beavers as engineers who build carefully and collaboratively.

Step 2: Learn About Beaver Lodges

- Show the short video (Beaver Misconceptions (3:55): https://www.youtube.com/watch?v=g8x07AwJaEw) or show images of beavers and beaver lodges.



- Use the Beaver Lodge Information Sheet to introduce and locate each feature.
    1. Dry Living Space
        - Inside the lodge, above the waterline
        - Where beavers rest and stay warm
    2. Air Opening
        - A small opening at the top of the lodge
        - Allows fresh air to enter
    3. Underwater Entrance
        - Tunnel leading from the water into the lodge
        - Hidden from predators
    4. Underwater Escape Tunnel
        - A second tunnel exiting the lodge
        - Allows beavers to escape danger
    5. Food Storage
        - Located underwater near the entrance
        - Branches and bark stored for winter food
- Teacher Prompts:
    - Why might each part be important?
    - What problems do these features solve?

Activity 2: DAY 2 – Materials Exploration

Step 1: Teams

- Form teams and choose a team name.
- Emphasize shared responsibility and listening.

Step 2: Materials Exploration

- Invite teams (or partners within teams) to touch, test, and notice materials (bend, stack, compare..)
- Students use the Beaver Lodge Student Worksheet to:
    - Record materials and describe properties
    - Notice which materials are strong, flexible, or work well together
    - Think about what each material might help with.
- Guiding Questions:
    - Which materials are strong?
    - Which materials are flexible?
    - Which materials might work well together?

Step 3: Team Planning

- Teams use the Beaver Lodge Student Worksheet to plan their lodge:
    - Identify where the five lodge features will go
    - Discuss the materials they might use for each part



    - Sketch a simple design
- Plans are ideas, not promises.
- Teams may also use the worksheet to think about how they will work together.

Activity 2: Day 3 – Build, Adjust, Reflect

Step 1: Build

- Teams gather materials and begin building.
- Encourage:
    - Checking in with teammates
    - Trying ideas and adjusting when things don't work
    - Sharing tasks

Step 2: Pause and Notice

- Brief mid-build stop:
    - What is working?
    - What might need to change?
- Continue Building

Step 3: Gallery Walk

- Students observe other lodges.
- Invitation to notice:
    - Similarities and differences
    - Creative uses of materials

Step 4: Reflection

- Teams reflect together:
    - What went well?
    - What did we figure out?
    - What would we try next time?



Notes for Teacher:

Teamwork as Engineering Practice:

- In this lesson, students are not only building a model of a beaver lodge, they are also practicing engineering as a social process.
- Engineering at the second-grade level looks like:
    - sharing ideas
    - testing materials
    - noticing what works
    - making changes together
- Beavers do not build lodges alone. They work collectively, using shared knowledge of materials, space, and function. In the same way, students are encouraged to:
    - listen to teammates
    - contribute ideas
    - take on shared responsibility
    - adjust designs as problems arise
- This lesson values process over perfection.
  A successful lodge is not defined by how it looks, but by how students work together to solve problems and meet the design challenge.
- Closing Thought: Just like beavers, people learn by working together, trying ideas, and making changes along the way.

