Who Lives Beneath the Snow?

LESSON

GRADE LEVEL:
K-3

CATEGORY:
Earth Ecosystems and Ecology

TOPIC:
Snow environments, benefits of snow, snow as habitat

LENGTH:
- 10 minute story-telling
- 20 minute diorama making
- 10 minute assessment

MATERIALS:
- *Storybook Who Lives in the Snow?* by Jennifer Berry Jones
- Shoebox - one for each group
- Cotton, paper, or Styrofoam pieces
- Scissors
- Chalk or tempera paint and brush
- Twigs, dried weeds, evergreen sprigs, cones
- Modelling clay or small animal figurines of local winter wildlife (coloured pictures will work as well)

SETTING:
Indoors

GROUP SIZE:
Any

SUBJECT AREAS:
Language and Visual Arts, Science, Social Studies

KEYWORDS:
Habitats, insulation, subnivean, supranivean, intranivean, predator, prey

Overview

Students make shoe box models of how small animals live under the snow in winter to help them recall and remember a story of life in the snow.

Objectives

Students will be able to:

1. Name one animal that lives under the snow in winter
2. Reason why small animals stay under the snow in winter

Making Connections

Snow plays an important part in an ecosystem. Many plants and animals depend on snowfall patterns for survival, reproduction, and food because snow insulates plants and provides protection from harsh winds and cold temperatures. Snow pack levels in mountain areas play a role in providing a steady source of drinking water in the late spring and summer as it melts slowly.

Background

Many small animals rely upon a blanket of snow for winter survival. When the snow reaches 6 to 10 inches in depth, mice, voles and shrews can live in this subnivean (below the snow) world by tunneling through snow and feeding on seeds of plants, bark from trees and shrubs, and even storing small amounts of food. Their tracks are often seen across the surface of snow.

When they are on top of the snow, they are vulnerable to predators such as ermine (a weasel), hawks and owls. If you notice tracks on the snow that lead to a small holes (sometimes called mouse-holes) that is the entrance to the subnivean layer. These vents also allow carbon dioxide to escape so the small animals do not suffocate without oxygen under the snow.

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Snowshoe hares and grouse take advantage of the snow by snuggling into it for protection from cold and winds. Snow also allows hares to reach higher up on trees and shrubs to feed providing them with a source of food normally out of reach.

Procedure

1. Read the story "*Who Lives in the Snow?*" by Jennifer Berry Jones. Review the following vocabulary words if appropriate: subnivean (below the snow), supranivean (above the snow), intranivean (within the snow), predator (hunts and kills other animals for food), prey (animals killed by predators for food), and insulation (material or combination of materials which retard the flow of heat).

   Find out what students already know about animals that stay in the local area during winter. What are some of the ways animals that do not migrate to warmer environments stay warm all winter (thicker coats, puffing up feathers with air, moving to sheltered forested areas, etc.)? How might very small animals without specialized fur or feathers keep their bodies warm? Do students think snow provides extra warmth like a blanket? Can students design a simple experiment using plants to show how snow provides a layer of insulation over the plants that are under snow?

2. Use what the students remember about the story and reread parts of it to create a class or group dioramas of snow habitats using shoeboxes. Colour the inside of the shoebox with chalk or tempera paint. Lay a shoebox on its side and cut away the roof and replace it with a piece of white paper or cotton cut to size (recycled Styrofoam could also be used) for the snow. Allow paper or cotton to extend about 1/4 to 1/2 inch beyond the surface it is replacing. Hold it in place with toothpicks, tape, or glue. Decorate the area under the snow with twigs, dried weeds, and bits of evergreen. Some of the small twigs could be poked through the Styrofoam snow as if the snow did not cover them. Make animals out of clay or playdough or use small animal figures and place them where they belong, either above or below the snow.

3. Go outside after a large snowfall and measure the depth of snow. Look for tracks and mouse holes in the snow and nibbled plants. Try to figure out who may have made the tracks and nibbled the plants based on what they learned in the story.

Assessment

Use the left over individual parts from the dioramas and place the parts into a bag. Have enough items for each student in the group. Start with small groups story circles and build up to whole class story retelling as the students become skilled in recalling and oral story retelling.

Sitting in a circle each student takes an item from the story bag one by one. When they have pulled out an item they should tell everyone what the item is and if they remember what part of the story it is from. Students may struggle with this at first, when this happens allow other students to help with remembering. Once the item is identified and its role in the story remembered, place in the center (they can recreate the diorama if they wish). No responses are incorrect. As students become confident in verbally describing their memories of the story, encourage them to relate the item to the story the best way they can which might be orally or by placing it in the diorama. Repeat this exercise each time you read the story to the class before one of the activities or use the dioramas.

You may wish to structure this activity by rotating between groups of students making dioramas, story listening and retelling and/or looking for tracks outdoors.

Extensions

- Take students outdoors after snowfall to look for tracks. Take pictures or sketch tracks in snow and try to figure out who has been there. Start with student footprints. Can they match up the bottom of boots and shoes with their tracks in the snow. Look for other types of tracks and try to figure out what made them, machine or animal and if so what machine (car snow tires, cats, dogs, birds, mice, etc).

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