

# WINTER WONDERS

## First Grade – Rahr Memorial School Forest

### ENDURING UNDERSTANDINGS

Animals have survival techniques that help them live in the winter elements. Snowshoeing is a winter sport. The depth of the snow is different in different areas.

### ASSESSMENT

Students will be able to demonstrate their understanding by explaining survival strategies used by Wisconsin animals in order to live through winter, identifying where the most and least amount of snow accumulates in an area, and using snowshoes to hike through the forest.

### WISCONSIN'S MODEL ACADEMIC STANDARDS

Science

A.4.5, B.4.1, C.4.2, C.4.5, C.4.6, E.4.5, F.4.1, F.4.2

Math

A.4.2, C.4.1, D.4.3

Physical Education

D.4.1, F.4.1

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### CLASS OUTLINE

- I. Set-up
- II. Sample schedule
- III. Introduction
- IV. Animals in winter
- V. Snow fun
- VI. Snowshoeing
- VII. Hike to beach - sensory experiences
- VIII. Conclusion
- IX. Clean-up

Safety

Optional Activities

Additional Information

Resources

School Forest map

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### MATERIALS

Introduction

- hot chocolate
- cups
- spoons
- water percolators
- "In the Snow: Who's Been Here" storybook

Animals in winter

- animal furs
- Winter Animal Bingo cards
- Animal Bingo clues
- bingo chips

Snowshoeing

- Snowshoes

Snow fun

- magnifying glasses
- laminated black paper
- overhead projector
- snow depth worksheets
- rulers
- pencils
- clipboards
- snow depth graph overhead
- snow depth graphs
- overhead pens
- Make a Snowflake poster
- paper
- scissors
- tin can
- tin can with insulating layer
- thermometer

## CLASS PROCEDURES

### I. Set-up

After scheduling a date with the School Forest secretary, teachers are responsible for filling out and submitting a field trip request form. Teachers may also schedule a time when the School Forest coordinator can meet with them at school to discuss the visit. Teachers will be asked to teach or co-teach one of the sections while the student groups rotate through the activities during the day. Teachers also have the choice to rotate through the stations with their classes. The School Forest coordinator may also be available to teach at one of the stations during the day. Preparation time will be needed to review the activity.

All of the materials needed for the activities will be set-up at the School Forest. Teachers will need to bring a few things from school: the School Forest keys, first aid kits, emergency contact information, extra clothing, and any additional materials they feel necessary for the class. Students will need to bring a bag lunch (with a drink and nothing that needs a microwave) and adequate clothing for the day.

### II. Sample Schedule

10	arrive at the School Forest
10 – 10:10	welcome and introduction
10:10 – 10:30	snack (hot chocolate can be provided) and story
10:30 – 11:15	rotation 1
11:15 - noon	rotation 2
noon - 12:30	Lunch
12:40 - 1:20	rotation 3
1:25 – 2:10	group hike to beach or rotation 4
2:15 – 2:25	conclusion
2:30	depart from the School Forest

### III. Introduction

The change of the seasons brings many new discoveries to explore. Today, we will examine how animals live through the winter, the properties of snow, and go snowshoeing. We will go on a few hikes and find interesting things. We will need to use our senses throughout the day. Read the story “In the Snow: Who’s Been Here?”

### IV. Animals in winter

#### A. Coping with the cold

The animals in Wisconsin cope with the cold using several different survival strategies. Ask the students to brainstorm ways that animals at the School Forest might deal with the cold weather. Discuss eating habits, predator-prey relationships, and sleeping areas. (For example: squirrels hide acorns in the fall so they have food throughout the winter; mice hide from predators by living under the insulating snow; and deer find sleeping areas in a group of evergreen trees because these trees keep more snow off of them, which keeps them warmer.)

You may also discuss migration and hibernation if you have time. At the School Forest, many of our birds migrate south for the winter so that they can find food, but we also have birds that migrate from the north to the School Forest area, like dark-eyed juncos. Snakes hibernate together in areas that are below the frost line or well protected from the cold. Why would a snake want to hibernate in an area where it is warmer? (Snakes are cold-blooded and cannot produce their own body heat.)

Ask students to imagine they are a squirrel. Now go outside and find a place where they could stay warm (as a squirrel) and look for food. Also, stop at the bird feeders (behind the Information Center) to watch for birds that may be present. While you are walking around, look for mouse holes in the snow. (Mice spend most of the winter in tunnels under the snow.)

B. Insulation experiments

How do animals stay warm in the winter? Test this by keeping a glove or mitten on one of your hands. Hold a ball of snow in the gloved hand and snow in your bare hand. Do this for 5 seconds. Notice how cold the snow makes each hand feel. Animals do not wear gloves or hats or even jackets, but they do have feathers and fur that keep them warm. Your glove, just like fur and feathers, protects from the cold. The skin on your hand is waterproof, but is not very good at protecting against the cold. Animal skin is the same way. Animals need their fur and feathers for protection.

For another experiment, fill the two tin cans with hot water. Measure the starting temperature. Put a cup on the top of the insulated tin can. Wait awhile and measure the ending temperature. Compare the temperature of the water in the tin can with an insulating layer (fur) to the tin can that does not have an insulation layer. Discuss your results.

C. Animal insulation touch and feel

Use the animal skin props to examine the thickness and texture of different animal fur. Students may *carefully* touch the furs. Discuss what it would feel like to wear a fur coat everyday, all year. Animal fur becomes thicker and warmer in the winter in order to provide more insulation. Discuss what type of animal the students would like to be at the School Forest.

D. Winter Animal Bingo game

Give each student a Bingo card and Bingo chips. Read the Animal Bingo clues describing a variety of winter behaviors and winter habitats. The class may share ideas and guess which animal each clue describes. When correct, they cover the appropriate animal's picture with a Bingo chip. Play until someone gets Bingo, or until all of the animals are covered up. Afterward, review the variety of habitats mentioned in the clues including: hemlock groves, treetops, brush piles, rotting logs, leaf litter, burrow under forest floor, tree stumps, hives, sunny south, snow-covered fields, tall pine trees, streams, mud under ponds, caves, and rocky hollows.

V. Snow fun

A. Flake shapes

Using the magnifying glasses, examine snowflakes outside. The pieces of laminated black paper can be used to catch or pick up snowflakes. (Wait until the paper has gotten cold for the best results.) How many sides do snowflakes have? How many points? Discuss the importance of looking at the little details such as snowflakes.

B. Where is the snow?

Use rulers to measure the depth of the snow in different areas (in the open, on a trail, under a tree, on the north side of a building, and the south side of a building) and record results. Now go back inside and make a bar graph of the depth of the snow in these different areas. What can we learn from the graph?

C. Make your own snowflake

If there is time, pass out paper and scissors and have students make their own snowflake. Discuss what they know about snowflake sizes and shapes. Follow directions for making a snowflake on the poster and in the Additional Information section of this lesson plan.

VI. Snowshoeing

A. Why do we use snowshoes?

Discuss why we might want to use snowshoes. (They help us stay on top of the snow, they make hiking easier in the winter, snowshoeing is good exercise, and it can be a fun activity.) The first snowshoes were created by Native Americans. They were made of wood and sinew. Now some snowshoes are still made of wood and some are made with aluminum, metal, or plastic.

B. Snowshoeing

The snowshoes are stored in the shelter south of the Ehlert Lodge (near the wildflower garden). The students should open the bindings completely, put the toe of their boot in the front of the bindings, and slide the heel of their boots into the back of the binding. Now, the binding can be closed around their boots. *You may need to help the students buckle their snowshoes so try to have extra adult help.*

When walking (or running) in snowshoes, there are a few things to remember:

- stay on snow (gravel and concrete can ruin the snowshoes)
- walk wide (like a duck)
- DO NOT step on uneven terrain or branches
- start slow
- give the person in front of you a lot of space

Take the students around the forest. If there is enough snow, play games in the dunes or open areas. Take your time and enjoy. Also, watch for animal tracks.

VII. Hike to beach

While hiking to the beach, notice seasonal changes and use your senses. Discuss what the School Forest looked like last time the students visited. Observe how the forest changes as you get closer to the lake. Explore using your senses by feeling different types of bark, listening to the sounds of the forest, and smelling the juniper bushes. Once you get close to the beach, remind students to stay close to you and not to go close to the water/ice. Does the lake look different? Did the temperature or wind change as you got closer to the lake? Feel the air on your face. What does the sand at the beach feel like under your feet? You may not want to stay at the beach for very long depending on the weather conditions. You can talk about what the beach looked like once you are back in the protection of the forest.

VIII. Conclusion

Winter is an incredible time to get outside and learn about nature. Review what the children have learned throughout the day.

IX. Clean-up

- Return supplies to building

- Take garbage out to dumpster
- Close windows, shut off all water, shut off all lights, lock doors, shut driveway gate
- Give the School Forest coordinator feedback on how to make this trip better in the future.

## Safety

While at the School Forest, teachers should carry first aid kits. You can bring these from your school or use the ones at the School Forest. The first aid stations can be found in the Ehlert Lodge office, ELC classroom, and the upstairs of the Krejcarek Building. Please report any safety issues to the School Forest coordinator.

Students should be supervised at all times. If you decide to go off trail, go in a clear area where branches cannot swing back and hit someone. Be aware of the plants you are traveling around so as not to pass by thorn-covered plants.

**Optional Activities** – These activities can be done if the weather is poor or if there is extra time during an activity. Please notify the School Forest coordinator if you plan to teach any of these activities.

***You may want to teach these activities at school after your School Forest trip as a follow-up.***

- A. Sketch a winter scene – Ask the students to sketch a winter scene as they imagine it at the School Forest or by looking out the windows. You may use cotton balls and other art supplies to create a 3-dimensional picture. Write a sentence on the drawing about winter. (Materials: paper, colored pencils, glue, cotton balls, pipe cleaners, scissors, items from nature, and other art supplies.)

- B. Animal Signs –

### Hike and find

Hike away from the buildings. Look for signs of animals: tracks, eat marks, scat, urine, bones, feathers, fur, and homes. Discuss how every type of animal leaves a different type of sign behind when it passes through an area. When you find an animal sign, use the Flash Guides to help you determine what animal was present. Before revealing the answer, discuss with the children what they can learn from the sign. Did a large or small animal leave it? What were they doing here? Where were they going? What type of animal was here: bird, mammal, or insect?

### Tracking

If you find a good set of tracks or a deer trail to follow, lead the students off of the main trail and follow where the animal went. Be careful of low branches as you pass through the woods. Discuss different forest areas and places that the animal may have been traveling. Teach the students how to identify a deer track and how to make their own deer track with their fingers in the snow or sand.

### Animal track art activity

Pass out rulers, paper, and crayons to all of the students. Ask them to use the flash guides and tracking books to help them draw an animal track to scale by using their rulers. They can color it and draw a picture next to the track of the animal that the track belongs to. Write a sentence about the animal and where it lives.

(Materials: rulers, paper, pencils, crayons, colored pencils, scissors, glue, tracking flash guides, tracking books, rubber track molds)

- C. Snow study- ask students to go outside and collect snow in a plastic cup. Bring the cup inside and have students mark a line on the cup of how much water they think will be in the cup after the snow melts. Set the cups aside and check on the melting process periodically. Examine your results once all of the snow is melted. How much water is present in a cup of

snow? Why is there less water then there was snow? What happened to the snow? What would happen if you put the cup back outside? (Materials: clear plastic cups, masking tape, markers, and snow.)

- D. Camouflaged critters- this activity can be done with or without snow present. Discuss what camouflage is with the students. Assign a “microhabitat” or a small area outdoors (a shrub, a tree, or a rocky area) to each small group of children. Have students examine their areas so that they can create a creature that will be well camouflaged for their specific area. Go inside and use the materials to create the critters. Then go place the critters in their microhabitats. (Do not hide them under anything.) All groups should then visit each microhabitat and try to find the critters. Ask creators to keep their hands behind their backs until it is time to reveal where their critter is hiding. Critter creators can point out their critters if they are unseen. Afterwards, discuss which creatures were easiest to find? Which were the most difficult? Why? Discuss the camouflage of real animals at the School Forest. Relate camouflage to an area where an animal lives. (Materials: sticks, toothpicks, pipe cleaners, tissue paper, construction paper, scissors, glue, and tape.)

Additional Information - see the following pages

#### Resources

- Lindelbach, Jenepher and Lisa Purcell. Hands-On Nature. Vermont Institute of Natural Science, Woodstock, Vermont. 2000.
- Rockwell, Robert E., Elizabeth A. Sherwood, and Robert A. Williams. Hug a Tree and other Things to do Outdoors with Young Children. Gryphon House, Inc. Maryland. 1996.
- VanCleave, Janice. Play and Find out about Nature: Easy Experiments for Young Children. John Wiley and Sons, Inc. New York. 1997.

Compiled by Patty Brodeen Maher, School Forest coordinator, updated July 2008