




## Winter Inquiry

### Pre- and Post Trip Activities

Grades K-2 (Adaptable for Grades 3-5)

To help your students get the most out of their time at the Green Mountain Audubon Center, we strongly recommend that they be introduced to some key questions and vocabulary before the program and have opportunities to reflect on and synthesize what they learned here after their visit. We understand that our program can fit into your teaching in many different ways and hope that you will find the following suggested activities helpful as you prepare for and wrap-up your trip to the Green Mountain Audubon Center.

For activities that focus on **scientific inquiry and/or investigation**, look for the .

### Recommended Pre-trip Activities

#### Inquiry: Winter Questions

*All Grades*

Brainstorm with students what they know about winter in Vermont and the questions that they have about winter, snow, animal survival, plants, etc. Keep a list and refer back to it after your trip to the Audubon Center so that students can fill in their new knowledge and add to questions. Bring some of your questions to the Audubon Center to ask your Teacher/Naturalist and guide your Winter Discovery!

#### Journal for the Seasons

*All Grades*

Have students start a field journal to record changes in the natural world as we move through winter into spring. Before coming to the Audubon Center, take students out in the schoolyard and have them record some observations about the winter world: weather, snow depth, animal signs, etc. One way to structure this is to give them a scavenger hunt. You can also pick a quiet spot close to school to return to each week or month to watch as it changes through the seasons. Give students the opportunity to take notes, record small experiments, sketch, write poetry, and paste in pictures. If you are short on time during the school day, have students pick an outdoor spot to journal about at home.



#### Investigation: How quickly can snow melt?

*Grades K-2*

*Objective:* Students use their bodies to melt a baggie of snow.

*Materials:* Small zip-lock bags filled half-way with snow (1 per child)

*Procedure:* Give students snow baggies and ask them to use their bodies to melt the snow as quickly as possible. Compare whose melted the fastest. Which parts of the body were the warmest? How long would it take the snow to melt if we didn't touch it? Will there be snow at the Audubon Center for your trip? How will you keep yourself warm on your trip?

*Resource:* For a detailed lesson plan, see **Melt it Quick!** in *Small Wonders*, VINS, 2005, p.150.

## Investigation: What is snow made of?

Grades 2-5

*Objective:* Students observe and measure the conversion of snow to water.

*Materials:* Clear quart containers with lids; rulers; several scales or balances.

*Procedure:* Ask students what snow is made of. Discuss how they could test their ideas. Give each pair of students a jar. Have students fill the jars with clean snow. Tape rulers to the side of the jar and ask students to mark the level they predict the water will come up to when the snow melts. Predict how long it will take the snow to melt and check on the snow periodically until all of it has melted. Record the time and the level of the water in the jar. Discuss what took up most of the space in the snow (air), and how this composition makes snow such a good insulator (compare snow to a down jacket). Think about the Vermont animals you are likely to see signs of at the Audubon Center and how they might benefit from the insulating properties of snow (tunneling in the subnivean layer, making dens).

*Resource:* For a detailed lesson plan, see **Snow Melt** in *Project Seasons*, Shelburne Farms, 1995, p. 137.

## Investigation: How cold is snow?

Grades 3-5

*Objective:* Students discover the insulating effect of snow and understand that temperature varies according to snow depth.

*Materials:* (per group) Thermometer; meter stick; paper; pencil; clipboard.

*Procedure:* Have the groups collect the following data in the schoolyard: (a) air temperature; (b) temperature at the bottom of the snowpack; (c) temperature at the top of the snowpack; temperature in the snow pack 2 inches from the top of the snowpack; (d) depth of the snowpack. Test these parameters in different areas around the schoolyard: under trees, near buildings, in the open. Compare results in the classroom (in every case, temperatures should be close to 32°F near the ground). Discuss how snow acts as an insulator to protect plants and animals in the winter. Look at the weather conditions in Huntington. Is there snow at the Green Mountain Audubon Center? How might the current conditions be impacting the animals and plants that live on the property at the Audubon Center?

*Resource:* For a detailed lesson plan, see **Blanket of Snow** in *Project Seasons*, Shelburne Farms, 1995, p. 139.

## Track Stamps

Grades 4-5

*Objective:* Students learn about various animals' tracks by making stamps and prints of their tracks.

*Materials:* *Forest Animal Track Templates* and animal tracking cards from *Project Seasons* (copied sheets for each small group); scissors; Dr. Scholls foot and shoe padding from a drugstore or art foam from an art supply store; ink pads or paint; small (2.5" x 4") blocks of wood).

*Procedure:* Brainstorm which animals you might see tracks and signs of at your upcoming trip to the Audubon Center (remember that some animals are dormant or hibernating, so you are only likely to see the ones that are active). Have students cut out their favorite animal track from the template and trace it onto the padding or foam. Have everyone cut out their track and adhere it to a block of wood. Test out the tracks using ink or paint. Give each student a tracking card and challenge him or her to use the stamp to create a pattern that shows how his or her animal would move.

*Resource:* For a detailed lesson plan, see **Track Stamps** in *Project Seasons*, Shelburne Farms, 1995, p. 163.



## Recommended Post-trip Activities

### Trip Review

*All Grades*

Look over the list of questions students generated before coming to Audubon. Can students answer any of these questions now? Do they have new questions to add to the list? If they had time, what could they do to answer the questions that they still have? Have students summarize the highlights of their trip to the Audubon Center or draw a picture of something that captured their interest in their field journals.

### Inquiry: Schoolyard Discovery Hike

*All Grades*

What winter habitats exist in your schoolyard: forests, fields, planted shrubs and trees? What animals are using them and how? Are these likely to be the same or different species than the ones you learned about and saw signs of at the Audubon Center? Head outside for a Discovery Hike in your schoolyard. Note any tracks and signs of animals. Compare your findings to the habitats and species at the Audubon Center. Have students record their observations in their journals.

### Winter Bird Feeders

*All Grades*



Bird feeders are great places to watch animals in winter – including squirrels! Have students make simple bird feeders to hang outside your classroom winder or take home. Watching the feeders every day or week can be a great observation activity; notice which birds visit the feeder, how they behave, and when migrants start to return in the spring.

### Track Stories

*Grades 2-5*

*Objective:* Students use their knowledge of animal behavior and relationships to make predator-prey stories.

*Materials:* *Track Story* pictures (copy for each student) and *Track Story* narrative from *Into Winter: Discover a Season*; track stamps; paint; ink pads; markers; tracking cards; large sheets of paper (rolls of newsprint work well).

*Procedure:* Show student the *Track Story* picture. Ask them to use what they learned about tracking at the Audubon Center to identify the characters in the story and make guesses about what happened. Read them the *Track Story* narrative. Ask them to create their own track stories using the track stamps they made or by drawing the tracks a large sheet of paper. Tell them to be sure to include the “place” by adding habitat, as well as the prints and patterns of their animal tracks. Have students try to solve the mysteries of each other’s track stories.

*Extension:* Have students write a narrative of their track story.

*Resource:* For a detailed lesson plan, see **Track Stories** in *Project Seasons*, Shelburne Farms, 1995, p. 169.

### Investigation: Winter Sleeping Sites

*Grades 1-5*

*Objective:* Students make predictions about and test where animals can find the warmest places to hibernate or be dormant in winter.

*Materials:* Film canisters; a trowel or small shovel; liquid gelatin; thermometer.

*Procedure:* Review how different Vermont animals are adapted to deal with winter (hibernation, dormancy, migration, staying active) and how snow acts as an insulator. Take students into the schoolyard and ask them use natural materials to create the best den they can for an animal that will be sleeping through the winter. Give each student a film canister half-filled with liquid gelatin to place in his or her den. As a control, place one of the “animals” in the open. Come back in one hour to see whose “animals” have gelled and whose have stayed warm. Discuss the differences in results and which materials make the best insulators.