

## **GRADE FIVE WINTER NATURE WALK**

### **Studying a forest Ecosystem through Nature Journaling**

#### **OBJECTIVES:**

- Recognize that the forest ecosystem is a constantly changing system of plants and animals interacting with each other and with the non-living environment.
- Realize the interdependency in the forest ecosystem.
- Make observations of seasonal rhythms and cycles.
- Discover the fun of nature journaling as a way of connecting with the surrounding environment.
- Review animal winter survival strategies and the concepts of *producer*, *consumer*, *decomposer* and *photosynthesis*.

#### **PREPARATION:**

- BBY coordinator should mark walk with surveyor's tape as necessary.
- Classroom coordinator should get sunrise, sunset and day length data for the day of the walk and record it on the board before the introduction. (Data available on-line or on the Boston Globe weather page.)
- Walk (combined indoor and outdoor) should last approximately 60 min. Don't stay out longer than the comfort level of the children allows.
- Be sure children are dressed appropriately.

#### **MATERIALS:**

- Each child should have a clipboard, pencil and worksheets to record their observations.
- Each group should have a plastic baggie with a thermometer, compass and crayons.
- Each group should have a ruler for recording snow depth.
- Each group should have laminated cloud chart, animal track and signs of animals eating plants sheets.
- Large cards labeled with winter survival strategies and cards labeled *producer*, *photosynthesis*, *consumer* and *decomposer*.

**ACTIVITES:**

- In classroom introduction to be led by Big Backyard volunteer—to last approximately 15 min.
- In classroom recording of sunrise, sunset and day length data.
- Walk outside with directed activities to last 30 to 45 min. Again don't exceed the comfort level of the children. Directed activities to include:
  - Record outside temperature—predicted and actual.
  - Record snow depth in field.
  - Record temperature of snow—predicted and actual.
  - Sketch clouds and brief description of weather.
  - Sketch tree silhouette.
  - Record evidence of animal activity (sketch and describe).
  - Locate and sketch area visited in the fall.

**NATURE WALK TO BE LED BY BIG BACKYARD VOLUNTEER**

1. What follows is an introduction to the winter survival strategies used by animals in the forest ecosystem surrounding Estabrook. This is to be covered in the classroom before going outdoors. To facilitate the comfort of the volunteer with this information, this can be read verbatim to the class.

**In the fall we observed the temperature getting cooler, the day length getting shorter and the leaves changing color (a sign that plants were getting ready for winter). Now, a few months later, we have had snow covering the ground and temperatures well below freezing. We have had to wear extra warm clothing and at times we have had to limit our time outdoors due to severely cold weather. How have these seasonal changes affected the forest ecosystem around Estabrook? Before we go out today, we will talk more specifically about the animals that live in the surrounding forest ecosystem and how they deal with winter.**

**Here in New England, animals have several different strategies for surviving during the winter months. (*Show cards with animals pictured to correspond with each example.*)**

**EXAMPLE 1**

- **I am a warm-blooded mammal (this means that I can regulate my body temperature).**
- **In the summer and fall I eat large quantities of food to build up a thick layer of fat to use as a source of energy in the winter.**
- **I am able to lower my heart rate, breathing, blood pressure and body temperature.**
- **I sleep in an almost unconscious state for the entire winter to conserve energy.**
- **I emerge in the spring and I am very hungry!**

*(Ask: Does anyone know what scientists call this strategy?)* **Scientists call this hibernation. In New England only three animals truly hibernate—the woodchuck, brown bat and jumping mouse.**

**EXAMPLE 2**

- **I am also a warm-blooded mammal and I eat large amounts in the summer and fall to build up a thick layer of fat.**
- **I find or make a warm burrow.**
- **I often take food into the burrow with me.**
- **I sleep only during the coldest parts of the winter.**
- **I may emerge on warmer days to search for food.**

*(Ask: Does anyone know what scientists call this strategy?)* **Scientists call this being dormant. In our area this would include bears, skunks, chipmunks and mice.**

### **EXAMPLE 3**

- **I travel to a different climate in search of food that is scarce when the ground is frozen and /or snow covered.**
- **I return in the spring to breed and eat before winter returns.**

*(Ask: Does anyone know what scientists call this strategy?)* **Scientists call this migration. In our area this would include geese, warblers, red-winged blackbirds, swallows and monarch butterflies.**

### **EXAMPLE 4**

- **I am cold-blooded (this means that I can not regulate my body temperature).**
- **I burrow into mud, soil or under rotting logs to protect my self from freezing.**
- **I can alter my blood to prevent it from freezing.**
- **I enter a death-like state.**
- **I emerge in the spring as the mud and soil thaw.**

*(Ask: Does anyone know what scientists call this strategy?)* **Scientists call this torpor. This is similar to hibernation, but it is what cold-blooded reptiles and amphibians such as snakes, frogs and toads do. The difference is that mammals can regulate their body temperature and can make adjustments during hibernation if needed to keep them alive. Cold blooded reptiles and amphibians can't regulate their temperature so they prepare themselves as best they can to survive the cold.**

### **EXAMPLE 5**

- **I grow a thick winter coat or, if I am a bird, I fluff up my feathers to insulate myself.**
- **I continue to eat the things I usually eat or I change what I eat all together to foods that are available in winter.**
- **I seek shelter to keep warm.**

*(Ask: Does anyone know what scientists call this strategy?)* **Scientists call this adapting. These animals are able to make changes in their body, diet and behavior that allow them to survive during changing weather conditions.**

**EXAMPLE 6**

- **I find a dry place, out of the wind—under dead leaves, in the soil or inside a rotting log—to spend the winter.**
- **I can change my blood so that it doesn't freeze.**

*(Ask: Does anyone know what scientists call this strategy?)* **Scientists call this diapause—it is an insect form of hibernation. Examples of insects that do this are termites, beetles and bees.**

**Some other insects survive the winter as pupae in a cocoon or chrysalis or a larva in a galls or under rotting logs. Most insects die and leave their eggs to overwinter and emerge in the spring (like moths, grasshoppers, spiders and mosquitoes).**

**As we go out on our walk today, we will be focusing on the animals that have remained and stayed active during the winter in our area. While providing certain challenges to finding food, snow also presents some new opportunities for local animals. For instance, deep snow can help deer reach their favorite buds, but at the same time it also decreases their chances of escaping predators. Winter's heavy snow and ice can temporarily bend and lower tree and shrub branches that would otherwise be out of reach to ground-feeding birds and browsers thus providing new sources of valuable food. Snow is also a good insulator. Good snow cover provides shelter for small mammals and it protects overwintering insects from drying and chilling winds. As we are outside, look for evidence of the numerous animals that have adapted ingeniously for winter and stayed active in our area.**

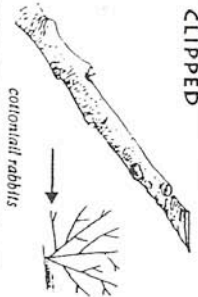
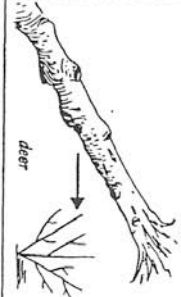
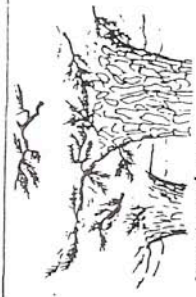

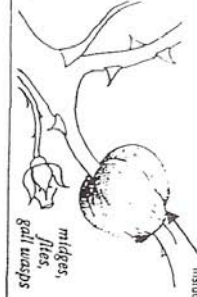
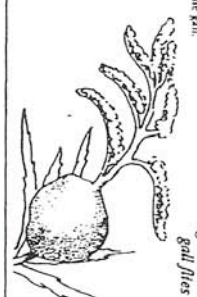
2. Now quickly review the vocabulary that was introduced in the fall walk, as one of the objectives is to have the children understand and be able to apply the concepts of *producer*, *photosynthesis*, *consumer* and *decomposer*.
3. Have the children record sunrise and sunset data and calculate day length. Compare the day length to the previous walk's day length if possible.
4. Break up into groups and proceed outside. As you are walking toward the field, have the children make a prediction of the outdoor temperature (the thermometer can be registering the actual temperature at this time). Have them record their predictions. Have them record the snow depth in the field. Have them record the actual temperature. If the amount of snow cover supports it, find a place to record the temperature of the snow (you can use a snow bank). While waiting for the thermometer to register, have the children make a prediction for the snow temperature and then turn their attention to the weather. *(Ask: What kinds of clouds do you see? What might these clouds tell you about the weather? Is there any precipitation? Any wind, if so, do you know what direction it is coming from? How does the weather today*


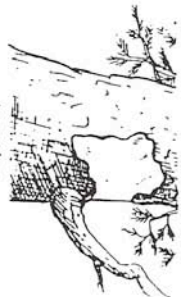
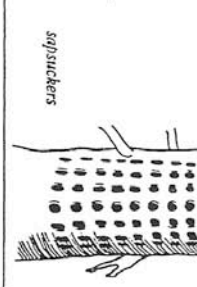


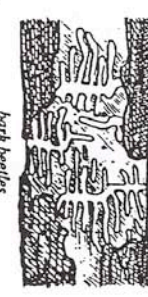
*make you feel?)* Have the children record their observations on their worksheets using quick sketches and/or descriptive words and phrases. **Find the thermometer in the snow bank and record the actual temperature.**

5. Have the children move closer to the tree line. Have them make a quick sketch of the shape of a deciduous tree (*Ask: Does anyone remember what a deciduous tree is? A tree that loses its leaves in the fall.*). They can each choose a tree and move closer to it for a better look, but not so close that they can't see the full tree and its shape. **Draw the full tree silhouette.** This is a great time of year to be able to observe the full shape of the tree. Each type of tree has a very characteristic silhouette. (*Ask: Do the tree branches point upward? Is the shape of the tree round or oblong? Do the branches cross each other? Where are the leaves now? Do you see any nests?*)
6. Now proceed to the far corner of the field by the fence and enter the woods along the ridge. As the group is walking along the ridge, down the hill and along the boardwalks below take note of any signs of animals i.e. Tracks, shelters etc. Be looking for evidence of animals searching for food and eating. In the area by the ponds, have the children think about what might be buried in the frozen mud or under rotting logs. Have them record their findings on the worksheet.
7. Have the children see if they can locate the area where they may have stopped in the fall to do a leaf rubbing. They were asked to remember the spot so they could find it now. If they are able to find it, have the children sketch the area now and record some things that will make it easier for them to locate the same place in the spring.
8. Return to school. Use caution when going up the stairs and into the school parking lot.

Who Eats What Guide

SIGNS OF ANIMALS EATING PLANTS *continued*

STEMS AND TWIGS	
<p><b>CLIPPED</b></p>  <p>cottontail rabbits</p>	<p><b>CHEWED</b></p>  <p>deer</p>
<p><b>PRUNED</b></p>  <p>porcupines, red squirrels, beetles</p>	<p><b>GNAWED</b></p>  <p>mice, voles</p>
<p><b>GALED</b></p>  <p>midges, flies, gall wasps</p>	<p>Look for insect larvae inside the gall.</p>  <p>goldenrod gall flies</p>

TRUNKS, LIMBS, AND LOGS	
<p><b>BARK STRIPPED</b></p>  <p>woodchucks, squirrels</p>	<p><b>PORCUPINES</b></p>  <p>porcupines</p>
<p><b>BORED</b></p>  <p>sapsuckers</p>	<p><b>DEER</b></p>  <p>deer</p>
<p><b>RABBITS, HORSES</b></p>  <p>rabbits, horses</p>	<p><b>BARK BEETLES</b></p>  <p>bark beetles</p>

**DIGGING, SCRATCHING, AND PECKING**



squirrels, opossums,  
porcupines, raccoons



woodpeckers



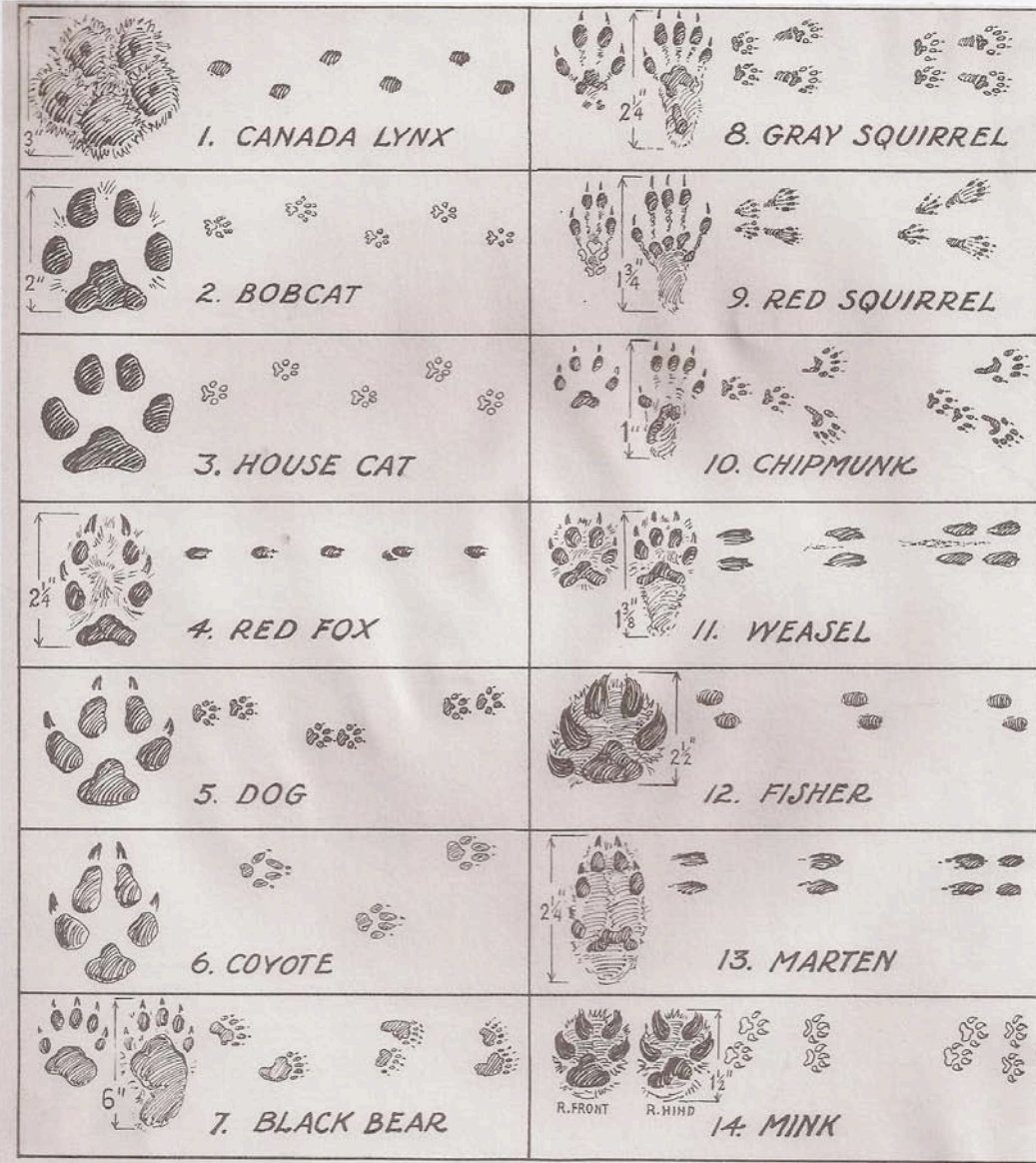
skunks, squirrels,  
chipmunks



skunks

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### ANIMAL TRACKS



Prepared by Klir Beck  
Revised 1975 by Cindy House  
Maine Dept. of Inland Fisheries and Wildlife



