

GRADE FIVE SPRING 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 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 75 min.

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 laminated cloud chart.
- Large cards labeled *producer*, *photosynthesis*, *consumer* and *decomposer*.
- Poison ivy ID sheets.
- Colored paper sheets for in classroom competition for resources activity.

ACTIVITIES:

- In classroom introduction to be led by Big Backyard volunteer—to last approximately 15 minutes.
- In classroom recording of sunrise, sunset and day length data.
- In classroom competition for resources activity.
- Walk outside to last approximately 60 min. Directed activities to include:
 - Observing and sketching decomposers.
 - Observing and sketching producers.
 - Looking as a tree as an ecosystem.
 - Wrap-up food web activity as a whole class.

NATURE WALK TO BE LED BY BIG BACKYARD VOLUNTEER

1. Have the children record the sunrise and sunset data and calculate the day length. Compare the day length to the previous walk's day length if possible.
2. What follows is a review of the seasonal changes, and the reasons for these changes, that we have been observing in the forest ecosystem around Estabrook this year. 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. (If the classroom has a pull-down map of the world or North America use it to show the where New England, the Gulf Stream and the Arctic are located.)

New England experiences some of the most dramatic seasonal changes as anywhere in the world. In most areas it is not unusual for the yearly highest and lowest temperatures to span an 100-degree range. Our location almost halfway between the equator and the North Pole makes it so our area is particularly sensitive to changes in the angle of the sun hitting the ground through the year—this is what causes the change of seasons.

The seasons that we experience are a direct result of the fact that the earth is tilted in relation to the sun. As the earth makes its year-long journey around the sun, areas where the most direct sunlight falls varies. In our study of the forest ecosystem around Estabrook we have been observing seasonal changes firsthand. Spring officially begins on or about March 21st. This is when the sun at the equator appears directly overhead and we have the same amount of daylight and nighttime hours. This is called the Spring or Vernal Equinox. In the spring we start to get the first waves of warm air from the Gulf Stream and the Gulf of Mexico, but very cold air masses can still come from the Arctic causing some of the most violent weather of the year. March is often wintry and April and May have rain followed by brisk sunny days. This often-changeable weather sometimes can leave us wondering what season we are in.

We know that the living things in our surrounding forest ecosystem are responding to the ever-increasing day length, not the daily weather or temperature fluctuations. Remember the winter survival strategies that we discussed on our winter walk (migration, hibernation, adaptation, dormancy and over

wintering as eggs or larva). When we are out today see if you can find evidence of animals returning to mate and raise their young, eggs that were laid in the fall now hatching and plants that were dormant in the winter now actively growing. Remember the cyclical nature of our ecosystem— growth, reproduction, preparation for winter, winter survival and back to growth.

Today as we go out, we will be focusing not only on seasonal changes but also on the relationships between the various living and non-living elements in the surrounding ecosystem. After all, an ecosystem is a constantly changing system of plants and animals that are interacting with each other and the non-living environment.

3. Use the large cards to review the concepts of *producer*, *photosynthesis*, *consumer* and *decomposer*.
4. Review the poison ivy ID cards.
5. Competition for Resources Activity. Have the children stand in a confined area ie. the rug. Now tell them that they all acorns that fell to the ground last fall, overwintered successfully, that is they were not eaten. Now they have started to sprout. They have sent out a taproot and have their first leaves. Trees and plants must compete for the things they need to survive. Sunlight, water and nutrients. Explain to the children that since they have now sprouted they are firmly rooted to their spot and they cannot move. Now show them the colored slips of paper— blue representing water, yellow representing sunlight and green representing nutrients. Scatter the slips of paper around where the children are standing. Now without moving they must try to pick up as many slips paper as they can when you say, “GO”. When they are done, ask if any of them got one slip of each color. Did they get the resources necessary for survival?
6. 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 actual temperature. 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.

7. Proceed to the far corner of the field by the fence and enter the woods along the ridge. Have the children locate and sketch 4 different producers on at least 2 different forest levels.
8. Now locate a rotting log or branch at least 4 inches in diameter (this can be done either up on the ridge or down below). Carefully roll it over. Have the children sketch at least 2 decomposers. **While they are sketching point out that the log encompasses the entire life cycle. The dead tree provides food and a home for creatures and plants that in turn help it to decompose into soil from which new trees will grow. When you roll over a rotting log, you are likely to see an assortment of slow moving pill bugs, sow bugs, slugs, earthworms and faster moving daddy longlegs, millipedes, centipedes, crickets and beetles. If you are lucky you might find salamanders as well. Your log might be host to tiny seedlings, mosses, mushrooms and fungi. You should be able to tell from the amount of plant and animal life whether the tree died only recently or long ago. Generally, the more life the log supports, the longer it has been in decay. (Ask: What is happening to the log? Is it firm and hard or soft and spongy? Why? Is it moist? Are there tunnels? Who made them? Remember that fungi, plants, animals and insects can all be decomposers.)** Have the children include sketches of the other living or once living things that they observe the decomposers interacting with.
9. Looking at a tree as an ecosystem. Have the group locate and sketch an appropriate tree. Now have them go back and look more carefully at the tree. Help them look at it not just as a tree but also as a source of food and shelter for living things—think of it as nature’s apartment building with a constantly changing population of animals and plants. Have the children sketch and /or write some observations of the relationships that they can see in this single tree ecosystem. Look for producers, consumers and decomposers. *Ask: Any fungi, lichen or animals living in or under the bark? Is there evidence of animals stripping the bark for food? Any holes in the trunk? Who or what may be living there? Any nests? Any flowers? Any seeds? Are the leaves or flowers being eaten? If so, by what? Any insect or galls?* These questions are just to help the children focus on the many interdependent relationships within the tree. Have them work separately at first and then have them come together to share their observations.
10. Return to playground area near school for the Food Web wrap-up activity to be done with the whole class. Explain to the group that we will now construct a food web. *Ask: What are the 3 non-living things that plants need to produce their own food?* Water, sunlight and nutrients. Have 3 children volunteer to represent these non-living things at the center of the food web by holding hands and forming a circle. *Ask: What are some of our forest producers?* Let some children volunteer to be what they come up with...an oak tree, fern, acorn, blueberry, poison ivy anything that is a producer in the surrounding ecosystem is fine. Have them hold on to the inner non-living circle.

Ask: What about the forest consumers? Again, have the children volunteer names of consumers. Plant eaters will hold on to the producers, where as the consumers that eat other animals will hold onto another consumer. *Ask: What about the forest decomposers?* Remind the children how important the decomposers are. They return the nutrients and minerals from dead and dying plants and animals back to the soil so that the whole process can start over. Now review the food web. *Ask: What would happen is a fire was to sweep through the forest and burn several of the producers?* Have those children sit down. *Ask: If these producers were gone, would this affect the other living things in our web? How? What are some other things that might affect our food web?* (Pesticides, development, climate change etc.) Emphasize that in an ecosystem everything is dependent on the other things and that it is a constantly changing system.

11. Return to the classroom.