

Title: Forest Ecology or Who Lives Here?

Grade Level: Grades 4, 5 and 6.

Content Areas: Science, geography, language arts, math and art.

Time Allotted: 2 ½ hours

Academic Standards: New Jersey Core Curriculum Standards: 5.1.A.1-4,B.1.1-3,C.1-2; 5.3.A.1,B.1,C.1; 5.4.A.1,B.1; 5.5.A.1-2,B.2; 5.8.A.1-2,B.1-3,C.1-2; 5.10A.1-2,B1-2.

Abstract: Poricy Park Conservancy is located in a suburban area that encompasses a temperate mixed hardwood forest zone also containing fields, trails, streams, marsh and ponds where wildlife inhabit. We want to understand how Abiotic and Biotic elements along with changes and cycles have an effect on the diversity of the flora and fauna in the area. We will be going outdoors to investigate what is found in the park especially in a forest. There will be four-foot square quadrats in various locations close to each other so the children will not be too far apart. Each quadrat will enclose a tree along with plants and signs of animals such as tracks, scat, holes and more. We will use instruments to record abiotic data including air and soil temperature, pH, and type/condition of the soil. We want to collect and record data, and draw or sketch a picture of the unit site that will help us see what is there now and continue our research year to year to see what changes occur and how we can help sustain the biodiversity that is needed to ensure a thriving healthy community.

Goals:

- To understand that forests habitats consists of a diversity of animals and plants and the nonliving elements in the environment.
- To understand that biodiversity is important for sustaining and enabling the life there to continue.
- To understand the contribution that abiotic elements, such as climate, soil, water, space, and shelter have on the populations and communities that live in a forest.
- To see if we can find evidence of animal life within a forest, such as tracts, scat, detritus, holes, nests, chewed branches, bark and leaves, etc. and record this data for future use.

Performance Indicators: Children will use measurement instruments, as air and soil thermometers, pH meter, and compass to record findings. Field guides and charts will help identify what is in their unit. They will draw or sketch a diagram of the unit they work in, as well as use the compass to help with creating and /or filling in a map they make of the area. They can take digital pictures also.

Background Information: We will spend 20-30 minutes in the classroom to review and learn about anything new that the children need to know of the forest and what forest ecology is. Ask questions of them and see if discussions trigger an interest in what we will be doing.

“Today we will learn about the ABC’s of a Forest.” “What’s that you ask?” Continues with questions and discussions as: A is for abiotic – what does that mean? What do the non-living things in a forest have to do with a forest’s health and ability to thrive and survive? B is for biotic – what does that mean? Can you name some of the living things existing in a forest? Is it good to have a few species or populations or is it better to have many? Do you know what diversity means? How about biodiversity? Is it a good thing? Why or why not? C is for changes and cycles – what do we think that is? You have changed since you were born and you continue to change not just year to year but even minute by minute cells in your body are growing and changing – that’s a good thing! What about a forest? What changes can you think about? (Mention and discuss as many as the children can think of or that time allows). Discuss cycles also – carbon, water, rock etc. Let the children know about succession – in a forest (also a pond goes through changes). In a forest everything has a role to play, a niche to fill and we are going outside to explore our surroundings and take down data to understand how all this works together to make up our forest ecology.

Materials: Posters, pictures, books, field guides, charts, magazines and other visuals, backpack with pencils, markers, clipboard, paper, data sheets, magnifying glass, scissors, air and soil thermometers, pH meters, compass, binoculars, forceps, spoons, collection containers, masking tape, clear contact paper, birdseed, and ink.

Instructional Procedure:

1. When the children arrive at the nature center and are greeted they will then be asked to proceed into the classroom where we will begin with an introduction to Forest Ecology. See if the children can define what Ecology means, give them some help if needed. Discuss what a forest is. We have a “temperate” (ask what that is) forest here in Middletown. How does that determine what lives in this forested area? What other types of forests are there? What are their climates like? What animals live in ours? How about a boreal forest? A rain forest? (any others?) Today we are going outside to look at our forest environment and collect data on what lives there, the biotic life, the flora and fauna, and the abiotic elements and/or what the conditions are like out there. This may help us to know what and why the animals that live there do. You have a backpack with the materials you need and as we hike and stop you may be recording the information on your clipboards and bringing it back to the classroom. We will then enter this in a binder. This will serve as a baseline for future reference, and be on hand for others to read, study and compare with any information they collect while working on this same project.
2. When we go outside to the units that are set up in the forest you will be in groups of 4 or 5. A 4 foot square quadrat is set up that will contain plant life and maybe signs of animal life. Record the answers to the data sheets provided using any field guides you think are helpful. Try and identify the plants, and if you have a tree inside the unit check with your field guide to find its name. Use your air and soil thermometers and pH meter to record this data. Look for tracks, scat, holes or other evidence that insects or animals have been inside your unit. When you are done turn over the rotting log near your unit looking for any insects, fungus or other interesting things inside. Record any data you find and sketch diagrams of what you see for our data book. Make sure you label everything you think is important.

3. Find the track tube with the number of the unit you worked on. Open it, take out the aluminum plate, and with the help of an adult gently with the spoon or forceps brush any seed away that may be there, cut the contact paper from the top near the inked felt pads. Take the contact paper and place it on the sheet of white paper face down, labeling the top of the paper with the number of the plate so we can see any animal tracks that are there to identify. We will then place another sheet of contact paper on the plate with inked felt pieces at either end, put birdseed in the middle and place the plate back inside the track tube for tomorrow's class.
4. On our hike back keep a lookout for plants, native and invasive, that we can identify and learn about. Watch for wildlife, both that we see and also signs left behind to piece together what our forest environment has abiding in it.

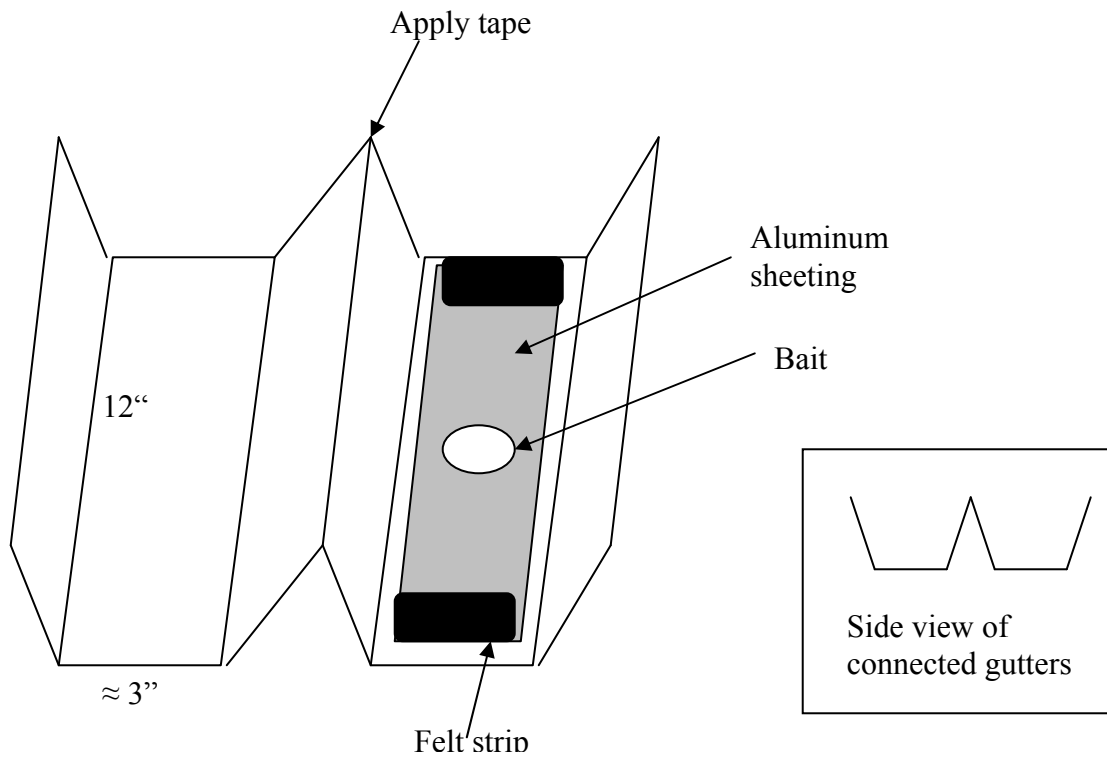
Assessment: Return to the nature center spend 10 or 15 minutes entering the data, identifying the tracks and then have a wrap-up discussing what we did for the morning (or afternoon). Ask and answer questions pertinent to our topic. We will have a chart that much of the pertinent information is recorded for the children to compare how/what others found on their day of exploration. End the day with a story or poem.

Connection to Other Content Areas: Language arts fills the day by way of stories, reading and writing elements, remembering detail and connecting ideas and facts together. Math is involved with reading the instruments and recording these facts, we can even do averaging if we look at numbers from other classes' data. Geography may be covered with our hikes. We will be walking on flat and hilly terrain; (Does that have an effect on what lives in the forest? Can we see signs of erosion? If so why would that happen? What effect might this have on the plants and/or animals?) If there is time use a compass to find directions and/or locate different places we passed and possibly draw a map of the area. The children will have the opportunity to draw or sketch pictures of plants and animals they come across or find interesting.

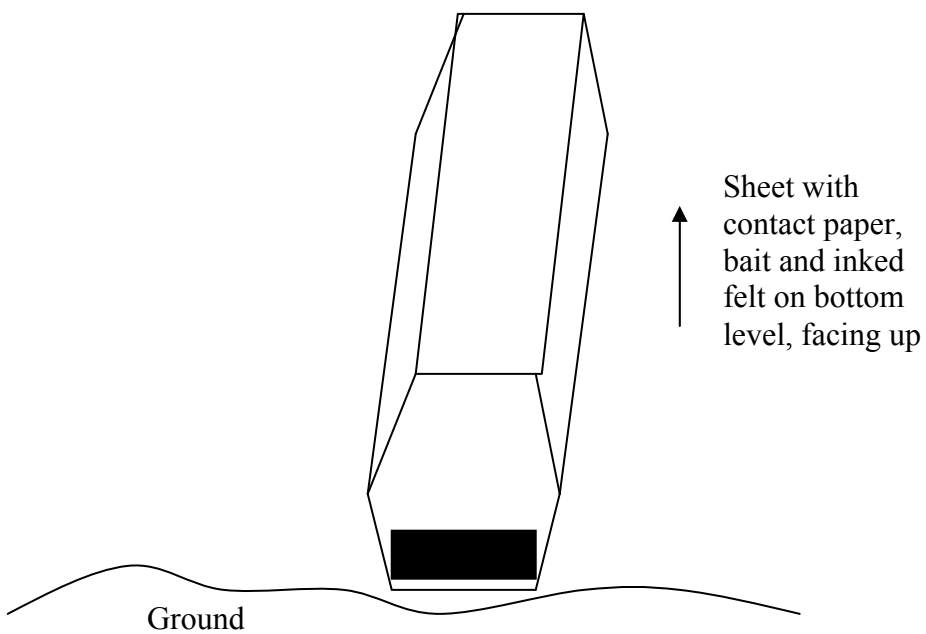
Extensions: Look up additional information on forests in urban, suburban and rural areas to find out what wildlife is found there. Find out how these are the same and different even though the climate is the same. Why? How can we help keep our forest healthy and well for future generations?

Acknowledgements: The Earthwatch Expedition on New York City Wildlife led by Dr. Catherine Burns was most helpful with this lesson, supplying information about small mammals along with the construction and use of track tubes. There is background information used from classes taught at Poricy Park and also the Park itself is a source of invaluable natural resources.

A) Construction



B) Deployment: Top gutter closed over top of bottom gutter to create open tube.



Forest Unit Data

Unit # _____

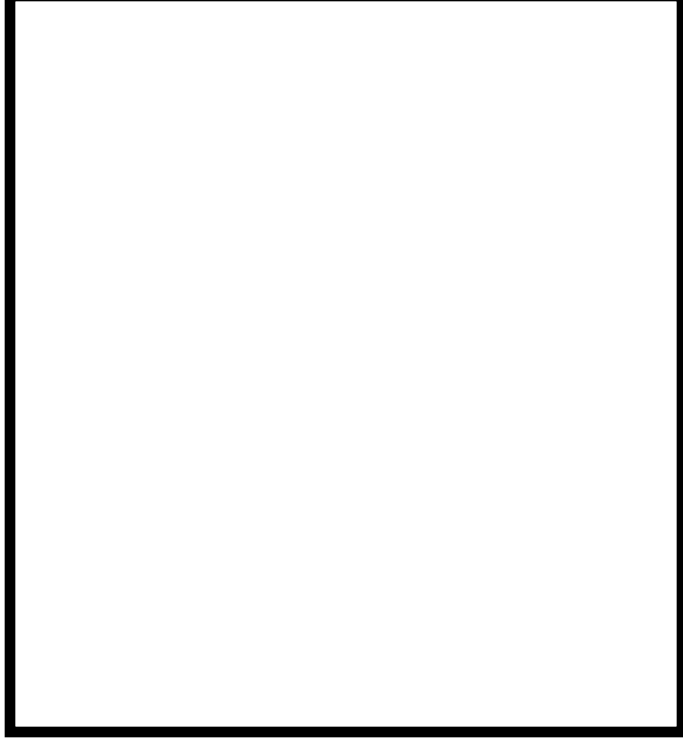
Group Name: _____

Date: _____

____ Soil Temperature

____ Air Temperature

____ pH



Describe the forest
where you are standing.
Use 6 adjectives
(Describing Words):

- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____
- 6 _____

In the square above, draw a picture of your unit