Science Unit: ***Forest Ecosystem***

Lesson 6: ***Exploring a Forest – Fieldtrip to Lynn Canyon Ecology Centre***

School year:	2006/2007
Developed for:	Southlands Elementary School, Vancouver School District
Developed by:	Linda Hanson (scientist), Joanna Wood and Elizabeth Robertson (teachers)
Grade level:	Presented to grades 1 - 2; appropriate for grades 1-4 with age appropriate modifications.
Duration of lesson:	6 hours (including travel time, a 2 hour program with a naturalist, a lunch break and time for the tree identification activity)
Notes:	The Lynn Canyon Ecology Centre is located in North Vancouver (http://www.dnv.org/ecology/index.htm). Programs with a naturalist should be booked well in advance as they tend to fill up quickly. If students have not yet examined the parts of needle-leaf trees this should be done prior to this lesson (to prepare for the tree identification activity).
Worksheet note:	There are a scavenger hunt list and tree key specific to this lesson. The pictures in the tree key are from the Tree Book (referenced in this lesson) and available on line from the Ministry of Forests Website: http://www.for.gov.bc.ca/hfd/library/documents/treebook/index.htm.

Objectives

1. To learn how to use a dichotomous key to identify some native tree species.
2. To explore a temperate rainforest focusing on the structure.

Background Information

To better study the temperate rainforest we can break the structure vertically into sections: canopy, understory and forest floor. Each section of the forest contains distinct habitats and is occupied by different organisms. Each layer of the forest will present different advantages and challenges for its inhabitants. For example plants in the canopy receive direct sunlight while those in the understory and on the forest floor must contend with substantially lower light levels. Due to both sunlight exposure and increased exposure to wind, plants in the canopy must be more resistant to desiccation (water loss) than those in the relatively moister environments of the understory and forest floor. Some animals are able to move between the various layers of the forest in order to meet their needs and thus are less restricted by the forest structure. These animals will often use different layers of the forest to meet different needs.

Vocabulary

Canopy:	The uppermost layer of the forest. Consists of the “tree tops” which create a continuous layer of leaves and branches.
Understory:	The middle layer of the forest. Consists of shrubs and small trees that are below the canopy.
Forest floor:	The lowest layer of the forest. It consists of the soil as well as the leaf litter, detritus, ground dwelling plants and woody debris covering the soil.

Materials

- Backpacks/water/snacks
- Raingear, boots
- digital camera
- tree cuttings (leaves, cones etc.)
- Scavenger hunt lists, pencils & clipboards
- Tree identification handouts

In the Classroom (before the fieldtrip)

Introductory Discussion

1. Pull out some tree cuttings, ask the students if they can name any of them. Tell them they will be able to identify them all by the end of today's fieldtrip.
    - What characteristics of trees can we look for to help us identify them?
    - What kinds of plants and animals do you think we might see on our fieldtrip?
    - Discuss the different layers of the forest ecosystem (forest floor, understory, canopy).
    - What kinds of animals would live specifically in each layer of the forest? Why?
2. Short description of other items to discuss or review.
    - Use the tree cuttings and pictures to teach students how to recognize the major tree species they are likely to see on the fieldtrip. Have laminated handouts with major features for each group of students.
    - Divide the students into groups ensuring that each group has an adult leader.
    - Discuss safety rules and respect for natural environments.
3. Summary of instructions for science experiment/activity.
    - Students will first participate in a 2-hour workshop at the ecology centre (optional). Workshops can be booked for a variety of forest related topics.
    - After the workshop and a lunch break have students get back into their groups. Give each group leader a set of tree identification handouts and a scavenger hunt list.
    - If possible the groups should move through the forest in close proximity to one another to facilitate discussions.
    - As the students are walking through the forest they should look for items on their scavenger hunt list and use their tree identification handouts to try and identify some of the tree species they see.
4. Briefly describe safety guidelines.
    - Students must always stay with their groups.
    - Walk slowly and orderly through the forest, no running.
    - Listen to both your group leader(s) and the park employees.

Closure Discussion

1. What tree species did they see? What other organisms did they see?
2. Which species were most abundant?

3. What effect could logging or natural disturbances such as storms or forest fires have on the canopy? How would these changes affect the other layers of the forest?

References

1. British Columbia Ministry of Forests. 1999. Forests in Focus.
2. British Columbia Ministry of Forests. 2001. Tree Book. British Columbia Ministry of Forests. Available online at http://www.for.gov.bc.ca/hfd/library/documents/treebook/.
3. Pojar, Jim and Andy MacKinnon. 1994. Plants of Coastal British Columbia. Lone Pine Publishing.
4. Varner, Collin. 2002. Plants of Vancouver and the Lower Mainland. Raincoast Books.
5. http://www.dnv.org/ecology/rainforest/forest.html. The Temperate Rainforest. Website hosted by Lynn Canyon Ecology Centre. Accessed in April 2007.

Identifying needle leaf trees by looking at their needles

*species found in the Vancouver area

scales OR **needles**

Cedar

Western red cedar
Yellow cedar

needles in small bundles OR **needles not in bundles**

Pine

Shore pine
Western white pine
*Alpine larch has large bundles

needles not on stalks OR **needles on stalks**

Fir

Grand fir
Amabalis fir
Sub-alpine fir

needles have 4 sides OR **needles are flat (2 sides)**

Spruce

Sitka spruce

blunt needles OR **pointed needles**

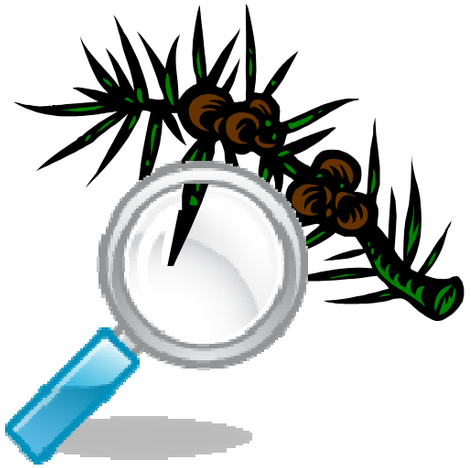
Hemlock

Western hemlock
Mountain hemlock

needles in 2 rows OR **needles around stem**

Pacific yew

Douglas-fir



Forest Scavenger Hunt

Scientists:

Date:

For each object write a letter in the location column to show where you saw it:

C = canopy, **U** = understory, **F** = forest floor

Object	Location	Object	Location
Cedar tree		Spider	
Pine tree		Beetle	
Fir tree		Earthworm	
Spruce tree		Millipede	
Hemlock tree		Snail	
Yew tree		Black slug	
Douglas-fir tree		Banana slug	
Broad-leaf Tree		Pill bug	
Pine cone		Ant	
Fern		Butterfly	
Shrub with berries		Dragon fly	
Moss		Bee	
Nurse log		Fly	
Woodpecker hole			
Tree with fire scar			
Eagle			
Hawk			
Stellar’s Jay			
Crow			
Singing Bird			
Bird’s Nest			
Mushroom			
Fungus			
Spider web			