



Science Unit: *Forest Ecosystem*

Lesson 4: *Decomposers – Nurse Logs*

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: 1 hour and 15 minutes
Notes: The activity portion of the lesson will take place in Pacific Spirit Park.
Bug viewers can be used in place of magnifying glasses. Both of these items can be purchased from Dynamic Aqua Supply (www.dynamicaqua.com, under microscopes).

Objectives

1. To learn about temperate forest ecosystems focusing on decomposition and the forest floor.
2. To find and identify important decomposers in the temperate forest ecosystem.
3. To examine nurse logs.

Background Information

Both the forest floor and nurse logs are major sites of decomposition in the temperate rainforest. Similar to making compost in the garden at home, decomposition is aided by moisture, oxygen and biotic activities (the actions of living organisms). Decomposers physically or chemically break down dead organic matter recycling the contained nutrients and releasing them back into the soil. Thanks to decomposers these nutrients become available for other organisms. Due to the highly favorable growing conditions provided by rotting logs/stumps they tend to become nurseries for growing seedlings, hence the name nurse logs.

Vocabulary

Decomposition: The process of breaking down dead organic matter (detritus) in order to recycle nutrients. This process can be either physical or chemical.
Decomposer: An organism that eats detritus. These organisms physically or chemically break down dead organic matter.
Nurse log: A dead/decaying log or stump that acts as a source of nutrients for new seedlings or other plants to grow on.

Materials

- rain gear
- pencils/worksheets/clipboards
- magnifying glasses or bug jars
- digital camera
- spoons for digging/collecting insects



In the Classroom

Introductory Discussion

1. Today we are going to learn about forest composting.
 - Who has a compost bin at home? How does a compost bin work? What is compost good for?
 - Why might composting be important in natural environments? (recycle nutrients back to the soil) Explain that natural composting is referred to as decomposition. What material needs to be decomposed in the forest?
 - What organisms help decompose forest debris? (List on board) Provide examples of other decomposers the students are likely to see in the forest (pill bugs, worms, slugs, fungi, earwigs, beetles etc.). Have pictures of the organisms if possible.
 - Why are they important? Discuss how decomposers recycle nutrients from dead organisms and make it available to growing organisms such as tree seedlings.
 - Discuss how nurse logs play an important role in this process. Discuss the role of nurse logs in the forest ecosystem. Ask students how nurse logs can be formed both naturally and by humans and have the students look for evidence of each type while walking through the forest.
2. Short description of other items to discuss or review.
 - Discuss respect for the natural environment.
3. Summary of instructions for science experiment/activity.
 - The activity will be conducted in Pacific Spirit Park or another suitable forest location.
 - Divide students into small groups prior to leaving the classroom.
 - Assign each group to a different nurse log. Have them use their hands, spoons and magnifying glasses to carefully study these mini-ecosystems. Ask them to write down (or check off on a list) the various decomposers that they see. Have them draw pictures of the organisms once they return to the class.
4. Briefly describe safety guidelines.
 - Students must stay with the class at all times.
 - Students should walk slowly and quietly while in the forest.

Closure Discussion

1. Have students discuss their findings (types and abundance of different decomposers).
2. What organisms did they observe growing on the nurse logs?
3. What conditions appear to be needed for decomposition?

References

1. Haggard, Paul and Judy Haggard. 2006. Insects of the Pacific Northwest. Timber Press Inc.



Extension of Lesson Plan

1. Make a class compost bin to observe rates of decomposition.
2. Read "Log in a Forest."

Forest Decomposers

Scientists: _____

Date: _____

Forest walk observations:

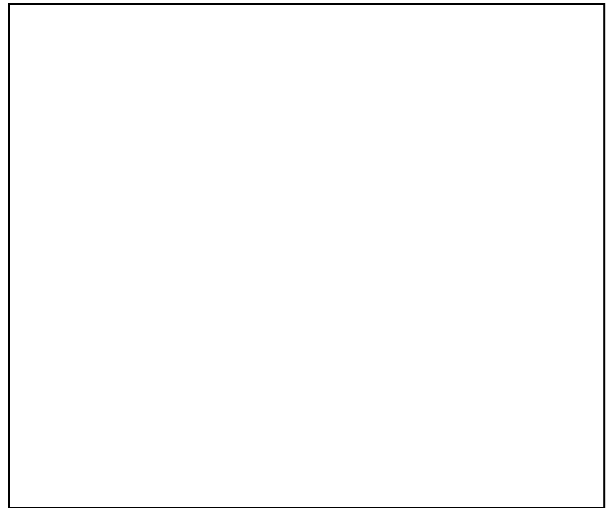
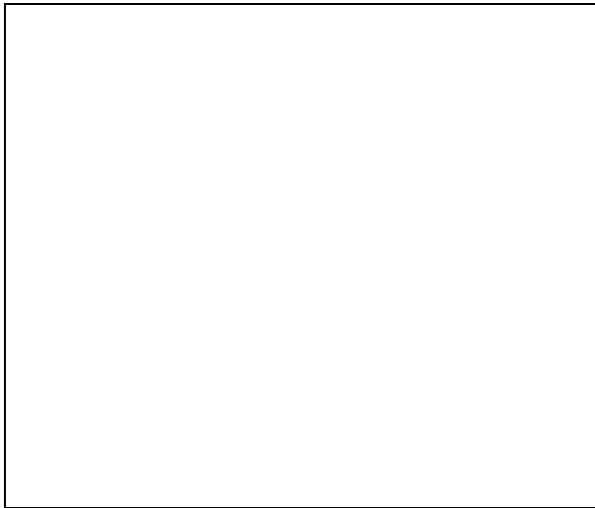
Decomposer	Tally (make a tally mark for each one you see)	Total
Beetle		
Earthworm		
Millipede		
Snail		
Black slug		
Banana slug		
Pill bug		
Maggot		
Earwig		
Termite		
Ant		
Mushroom		
Fungus		

Scientist: _____

Date: _____

Decomposers and Nurse Logs

Observations: Draw two decomposers that you saw in the forest.



Fill in the blanks:

Decomposers eat

Detritus is small pieces of dead

