Science Unit: *Forest Ecosystem*
Lesson 5: *Decomposers - Terrarium*

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:	For older students the distinction between decomposers (chemical decomposition) and detritovores (mechanical/physical decomposition) can be introduced.

Objectives

1. To learn about the different types of decomposers found in the temperate rainforest ecosystem.
2. To build a temperate rainforest terrarium.

Background Information

See the Scientist in Residence Program Forest Ecosystem science unit, lesson: 4, *Decomposers – Nurse Logs* at http://scientistinresidence.ca

Vocabulary

Decomposer:	An organism that physically or chemically breaks down dead detritus.
Detritus:	Dead organic matter.
Fungi:	Organisms that obtain nutrients from other organisms or decaying matter by absorption.
Bacteria:	A single celled micro-organism.

Materials

- gravel
- potting soil
- moss
- small plants
- bark mulch (to simulate detritus)
- large pieces of wood, bark etc.
- small glass terrariums
- fine mesh/lid (to cover terrariums)
- spray bottle of distilled or rain water

In the Classroom

Introductory Discussion

1. What decomposers did we see on our forest walk last week? Where did we see them?
2. Inform the students that today we will be making a home for decomposers called a terrarium. A terrarium is similar to an aquarium (all of the students should be familiar with this) but it is for land animals/plants, not aquatic ones.

3. Brainstorm (on blackboard, whiteboard etc.)
    - What makes a good home? What is essential for survival? (food, shelter, water, space, air)
    - Discuss the requirements of living organisms named above (using pill bugs as an example). Use this as a springboard to briefly discuss the importance of each of the components that will go into the terrarium. What items should we have in our decomposers' terrarium?
4. Short description of other items to discuss or review.
    - Review the role of decomposers in the forest ecosystem and discuss why they are important
    - For older students: Discuss the differences between various decomposers that the students name (physical vs. chemical breakdown, location, potential food source). Ask what physical characteristics each type of organism might possess (mouth parts, claws, etc.) Use this discussion to review vocabulary.
5. Summary of instructions for science experiment/activity.
    - Older grades can build aquariums individually or in small groups, younger grades will watch the scientist create a single terrarium for the class.
    - Handout the worksheets and instruct the students to draw each item as it is placed into the terrarium. As items are placed in the terrarium have the students say why they are important.
    - Spread a 2.5 cm (1") thick layer of gravel over the entire bottom of the aquarium.
    - Cover the gravel with 5-10 cm of potting soil and a thin layer of bark mulch.
    - Plant 3-4 small plants in the soil. Discuss with the students the importance of microhabitats and use this as a springboard to determine the placement of the various objects within the terrarium.
    - Taking microhabitats into consideration arrange the moss, wood and bark in the aquarium.
    - Water the plants and lightly mist the entire habitat with water. Put on the lid.
    - Place the terrarium where it will receive lots of INDIRECT light (direct sunlight will cook the plants). Remind the students that they will need to (lightly) water/mist the plants on a regular basis.
    - The students can collect decomposers at the end of class or at a later date, whenever time permits.
6. Briefly describe safety guidelines.
    - Always treat living organisms with respect.

Closure Discussion

1. What decomposers could live here?
2. Where do you think they will spend most of their time?
3. How often do they think the plants will require water? What else will the plants need to survive?
4. Can terrariums provide everything that nature can? Have the students compare natural and manmade environments (make two lists on the blackboard).
5. Using specific examples discuss how each component of the ecosystem depends on the other components.

References

1. Haggard, Paul and Judy Haggard. 2006. Insects of the Pacific Northwest. Timber Press Inc.
2. Arthurs, Kathryn. 1974. Terrariums and Miniature Gardens. Lane Magezine and Book Company.

Scientist: _____

Date: _____

Building a Home for Decomposers

Observations: Draw and label the terrarium as we build it.

Decomposers are important because: