The Green Stuff

trees and plants

ADOPT A TREE

Focus To learn about a tree using guided inquiry and independent investigation.

Group Size Entire class

Time Required 30 minutes

Materials
Clipboard
Pencils (*lead or colored*)
Cispus stickers
Student Handouts:
Tree Adoption Forms
Tree Adoption Certificate

Physical Setting Wooded area with a variety of trees (*along one of the trails at Cispus)*

Process

1. Choose a tree to adopt.

2. Find a spot about 50 ft. from your tree and sit down to observe it. Notice the shapes and colors. Then, get up and touch the tree and examine it very closely. Record any signs of changes made by insects, larger animals or man. Decide the type of tree it is: coniferous or broadleaf, evergreen or deciduous.

3. Complete the ***Tree Adoption Forms***. First, make a sketch of your tree. You might want to detail parts that you particularly like (bark texture, leaves, roots).

4. Next, observe the area around your tree. Describe or name the types of plants that live around it.

5. Describe the types of animal life found on or near your tree. Describe the colors, sizes and any interesting features. Make a sketch of each animal you found.

6. Record your tree's name.

Tree Adoption Forms

Closely observe your tree. Describe any animal or insect signs (holes, webs, nests, droppings, feathers, etc.) that have been left on your tree. Make a sketch of your tree, including all of the details that make it unique:

Observe the area around your tree. Record its location in the plant community. Circle one in each category

TALLEST or **SHORTEST** **CROWDED AREA** or **OPEN AREA**

IN SUNLIGHT or **SHADED**

Did you find any man-made evidence? Describe:

Determine the type of tree you have. Circle two of the four types.

CONIFEROUS or **BROADLEAF** **EVERGREEN** or **DECIDUOUS**

Describe the kind of plant life around your tree:

LOCATION	COLOR	DESCRIPTION/SKETCH

Describe the types of animal life found near your tree:

SIZE	COLOR	DESCRIPTION/SKETCH

Tree Adoption Certificate

Date: _____Type of Tree: _____

Estimated age: _____Size:_____

Unusual details:

Your Given name for the tree:_____

Seal the tree adoption
by giving your tree a **big hug**
and attaching a
Cispus stamp

ALPHABET SALAD

Focus To teach plant identification.

Group Size Entire class

Time Required 30 minutes

Materials Loose samples of available plant material

Physical Setting Covel Creek Trail or Braille Trail

Process

Introduction:
Begin with an introductory lesson in plant identification. For information about plants at Cispus, *Plants of the Covell Creek Trail* is available in the office.

Activity:
1. Divide the class into two equal teams.

2. Place various samples of the available loose plant material into two piles.

3. Teams compete to be the first to separate the plants alphabetically by their proper names (Western red cedar, as opposed to cedar).

Discussion:
Follow up by re-identifying the contents and confirming that they've been properly sorted.

CREATE A TREE

Focus To gain an understanding of the different parts of a tree and how they work together.

Group Size Entire class

Time Required 20 minutes

Materials No additional materials

Physical Setting An open area , clearing on a trail

Process *The idea is to create a tree and its elements using people as the building blocks. Read the instructions to the students as they go through the activity--explaining the roles of the different elements as they are created.*

1. One child volunteers to be the **Heartwood** of the tree. He/she will stand up straight and sturdy, ready to support the following layers of the tree. To symbolize the heartwood, the child will thump her/his chest, simulating the sound of a beating heart.

2. The next element is the **Cambium** layer, the distinct, formative layer that lies between the Heartwood and the bark. It's here that water and nutrients flow up and down the tree, within the vascular tissues of the xylem and phloem. To represent the cambium, three or four children will clasp hands to form a ring facing inward, and surrounding the Heartwood. To show the flow of nutrients through the tree, the cambium will move their clasped hands, saying "UUUUUUP" and "DOWWWN" to match the movement of their hands.

3. Surrounding the cambium on a tree is the protective outer layer called **Bark**. To act out bark have six or more students surround the cambium layer, hook elbows (to symbolize a protective barrier) and face outward. These students will "BARK", like a watchdog, further symbolizing the protection bark provides a tree with.

4. Now the **Roots** must be made, so the tree can gather nutrients and water. Five or more students lie down with their feet pointing away from the tree circle and their hands to their sides. To simulate the intake action of the roots the children wiggle their feet and hands and make loud slurping noises.

5. The last elements are the **Branches** and **Leaves.** They are needed to acquire sunlight and produce energy through photosynthesis. To symbolize branches the remaining students put one arm on a Bark student, and have the other outstretched toward the sky, wiggling fingers on the free hand are their leaves. These students will "HUMMM" to represent the process of photosynthesis. If there are a lot of students, have those remaining be leaves by joining a hand to the branches and stretching the other to the sky. The branches will "RATTLE" and the leaves wil make the photosynthetic "HUMMM".

Variations:
Add the element of wind into the game and make the tree sway. Pretend the sun is shining brightly and have the leaves humm louder, then have the weather become overcast and start to rain. Use your imagination and have fun!

IN THE NURSERY

Focus To learn about the *re-cycle* of the forest through field study.

Group Size 15-20 students

Time Required 30-60 minutes

Materials Field study notebook (*Discovery Journal*)
Drawing pencils
Measuring tape.

Physical Setting Braille Trail, Covell Creek Trail, or Yellowjacket Ponds Trail

Process

THE NURSE LOG:

In our living world all plants and animals are part of the cycle of life. A nurse log is a perfect example of this cycle. Moisture and decay soften the wood, providing a fertile environment for new plant growth. The size, quantity and variety of plants growing on the nurse log tell us much about the forest. Signs of animal life can be found in and near the log.

Take the students to a nurse log to discuss and answer the following questions. Descriptions and questions in this unit can be either used in a verbal question-answer format or as written responses from the students.

1. Describe the setting your nurse log is located in:
   a. How close to a stream is it?
   b. How deep in the forest is it located?
   c. How much sunlight does it get and during which part of the day does it receive the sunlight?
   d. Is part of the nurse log more exposed or protected than another part?

2. Describe the log itself:
   a. How long is it?
   b. What is its diameter?
   c. Are the ends vertical, or do they show evidence of decay and erosion?

3. Fungi:
   a. Do you see any mushrooms on the log? If so, describe them.
   b. Where are the mushrooms growing?

4. Mosses and lichens (simple green plants):
   a. Are mosses and lichens growing on the log? Where are they? On dry or moist areas? Shady or sunny areas?
   b. What colors are the lichens and mosses?
   c. Do you see spore caps? What color and shape are they?

5. Ferns:
   a. Are there any ferns on the log?
   b. If so, where do you see them?
   c. Are they in fiddleneck state or do they have spores on the underside of the fronds?

6. Flowering Plants:
   a. Do you see any flowering plants?
   b. If so, describe them. Are they fully leafed out? Are the flowers in bloom? What colors are the flowers?

7. Woody shrubs:
   a. Twin flower, blackberry, salal, and vine maple are often rooted in nurse logs. Do you see any of these?
   b. Where are they located?
   c. Describe their growth characteristics (vine, erect, other)
   d. Do you see any other types?

8. Trees:
   a. Have trees taken root in the nurse log?
   b. What kinds of trees are they?
   c. How large are they?
   d. On which part of the log are they located?

9. Animals:
   a. What kinds of animals, or evidence of them, do you see living in, on, or near the nurse log?

10. Soil in the making:
   a. How have the plants and animals you've identified helped to decompose the fallen tree and change the wood into new soil?

11. The tree that was:

Now that you have studied the nurse log in detail, try to imagine how it looked as a standing tree.
   a. How tall was it?
   b. How old?
   c. What plant life grew under it?
   d. Did birds have nests in its branches?
   e. What caused it to fall?

Compare your nurse log to either a newer or older nurse log, or a stump.
   a. How are they alike?
   b. How are they different?
   c. How do the kinds of plant life compare?

The Nurse Log

Labeled close-ups

KING OF THE FOREST

Focus To use guided inquiry in investigating old growth forest.

Group Size Entire class

Time Required 2.5 hours (*45 minutes travel each way included from the Cispus Center*)

Materials
25' measuring tape
Writing utensils
Handout:
King of the Forest worksheet
The Wild Wild World of Old-Growth Forests teachers guide *(available in the Cispus office)*

Physical Setting Old growth forest setting (**Quartz Creek Big Trees**)

Process

Activity 1: GETTING THERE

1. From the main entrance of the Cispus Center turn right onto Cispus Road. This is road 76. Follow it to the Iron Creek campground area where it intersects with road 25.
2. Turn right and drive for less than a mile, then turn left onto road 26.
3. After driving about 8 miles look for road number 2608. Turn right. This is the turn-off to Quartz Creek Big Trees. Drive a little over a mile on this gravel road.
4. Park in the area provided and follow the barrier free trail for a short walk to this marvelous grove of trees. The "ooo's," and "ahhh's," should start now.

Activity 2: THE LESSONS

1. There are many activities that can be carried out here. Use the exercise provided on the ***King of the Forest*** handout, or select those you like from ***The Wild Wild World of Old-Growth Forests*** (The Wilderness Society teachers' guide).

King Of The Forest

1. The "King" of the forest is usually the biggest and oldest plant or animal in a forest community. **WHO** is the King in this forest community?

2. **WHAT** other kinds of plants and animals share this forest community? How many other different kinds of plants share this community?

3. **HOW** might the members of this community assist each other?

4. **HOW** many feet around is the big tree closest to you (measure about 4 ft. from the forest floor). How many kids will it take to reach around the tree if you're all holding hands?

5. **ESTIMATE** the age of this tree:

6. **HOW** do you feel being around these majestic trees and their community? **WRITE** what comes to your mind as you think about these trees.

7. **WHAT** other animals probably interact with this forest community?

NAME THAT PLANT!

Focus To reinforce knowledge of plant identification. *This game dovetails nicely with **Alphabet Salad.***

Group Size Entire class

Time Required 20 minutes

Materials Loose samples of available plant material

Physical Setting A forest with available plant material

Process *If **Alphabet Salad** was not played beforehand, or if the students have little knowledge of plants, begin with a lesson on plant identification. For information about plants at Cispus, Plants of the Covell Creek Trail is available at the office.*

1. Separate students into two teams.

2. Pile ***Alphabet Salad*** or other loose samples of available plant materials into one space. Students then line up 15 meters away from the pile.

3. When the instructor names a plant, two students (one from each team) race to find a sample of that plant and return with it . The first back, with the correct plant, scores a point for their team. Try to trick'em! Frustration is a fantastic teacher.

SPRING WILDFLOWER WALK

Focus To illustrate several adaptations of wildflowers to a dense forest environment.

Group Size Entire class

Time Required 20 minutes

Materials This sheet, field guide, or Plants of the Covell Creek Trail *(available at the Cispus office)*

Physical Setting The Braille Trail

Process

This walk was written in May and includes flowers in bloom at the time. Of course, it can be done in other seasons with other flowers, illustrating the strategies of blooming early or late, or in combination with other plants.

The walk begins at the end of the Braille Trail. All around on the "understory" or forest floor level is a lush carpet of:

1. **Wood Sorrel** or **Oxalis** (***Oxalis oregana***)
The giant clover-shaped leaves are on a horizontal plane to better catch the sparse sunlight filtering down through the forest canopy. They have a white, peppermint striped flower about an inch in diameter.

mixed in with the oxalis are:

2. **Anemone** (***Anemone deltoidea***)
Here found interspersed with the Oxalis, is the Anemone's flower spike. The white 1-2 inch flower stands up above the broad Oxalis leaves and competes for sunlight. Its leaves are also horizontal to the ground. The three oval, tooth-edged leaves form a ring around the stalk.

3. **Inside-Out Flower** (***Vancouveria hexandra***)
The small (half-inch) white flowers hang over off of a spike above the oxalis level. The leaves are shaped like a duck's webbed foot. Why do you think this flower is called "inside out"? What advantage might there be in this position? Facing upward, the flowers might be more easily found by pollinators, or catch moisture in the flower "cup".

3. **Vanilla Leaf** or **Bat Flower** (***Achlys triphylla***)
These large (6-10 inch) leaves are shaped somewhat like a moose's antlers and stand above the oxalis level. The leaves are horizontal groupings of three that are spread to catch the sparse sunlight. The flower spike, with its tiny white flowers, stands 1-1 1/2 feet above the forest floor to be visible to pollinators.

References

Mathews, Daniel Cascade-Olympic Field Guide. Raven Editions, 1988.

Whitney, Stephen. Western Forests (Audubon Society Nature Guideseries). Alfred A. Knopf, 1985.