SECRETS OF THE WOODS

Activity 31

AGE LEVEL = 10 and up
DURATION = 60-90 min.
LEARNING STATION = Forest
RELATED ACTIVITY = ¨ Ecosystem Chorus

WHEN =

UNDERSTANDING: The forest community is made up of producers, consumers and decomposers working in balance with each other. The forest ecosystem includes the forest community and nonliving factors such as soil, sun, water, wind and air.

MATERIALS:
For each child:

- Pencil and paper
- Clipboard (see Activity A)
- Flagging
- Data sheet
- Several 37.2 ft. lengths of rope
- Photo-sensitive paper or photometer

For the group:

- Field guides
- Magnifying lenses (optional)
- Thermometers
- Small shovel

PREPARATION: Locate a forested area that will be easy to work in, one that doesn't have too many low shrubs and small trees, and isn't too fragile. If possible, find an area with a stream and some openings where sunlight penetrates the forest floor.

LESSON:

Warm-up: Review ecological community concepts (plants and animals living together and interdependent within a defined area.) Then review the concept of an ecosystem.

Explain that the group will be scientists exploring a forest ecosystem, by studying a small part of it. Show them the rope and explain that a circle with a radius of the rope's length (37.2 ft.) equals one-tenth of an acre (see diagram). Show them the other materials and data sheets.

Divide the group into teams of two or three. Help them set up the learning circles with the rope. (You might wish to set these up ahead of time as part of your preparation.)

Activity: Give the teams their assignments using one of the following methods: 1) Each team completes a section of the data sheet and gathers data at each of the learning circles. 2) Each team completes all of the data sheet at one learning circle. 3) Each team completes a data sheet at each learning circle. Help the children explore the following and record their data:

A.1. Topography -- Is the ground level? How hilly is it?

A.2. Temperature -- Measure the temperature at ground level, in the soil, and part way up a tree.

A.3. Air -- Is it windy? What direction is the wind blowing? How hard is it blowing?

A.4. Sunlight -- How much penetrates the forest floor? Is there a difference in how many and what type of plants grow based on this factor? (You can use photo-sensitive paper or photometer to measure the relative amounts of sunlight.)

A.5. Soil -- Dig a small hole and feel the texture by rubbing a small amount between the finger tips. Is it sandy, clayish? How does it smell? What is its color? Is there evidence of animals living in it? How wet is it?

A.6. Water -- Is there a body of water, and if so, does its presence affect plant life? Does the soil seem wetter 10 feet from the water as compared to 25 feet?

B.1. Plants (producers) -- List all evidence of plant life. Are trees broad-leaved or conifers? What is the percentage of mature trees, saplings, shrubs and flowers?

B.2. Animals (consumers) -- List all evidence of animals. Are there homes, droppings, food scraps, tracks, bones, fur, broken branches? Don't forget to look for signs of human presence as well.

B.3. Decomposers -- List all evidence, including rotten logs, fungi, ants, beetles, etc. (Note: Some decomposers may also be listed as animals.) Dig through the top layer of leaves on the forest floor. These leaves fell in the past year. The next layer, partially decomposed, fell the year before. How many years does it take before leaves are no longer visible?

Wrap-up: Gather into a sharing circle and have each team report its findings.

OPTIONS AND FURTHER EXPLORATIONS:

1. Using clear acetate sheets and colored markers, make overlays showing the interrelationship of ecosystem components. Each component should have a unique color. For example, surface water would be drawn in blue; mature trees in brown; grasses and flowers in green; strong sunlight in yellow. Draw each component on a single sheet, making sure that all sheets are oriented in the same direction and are of the same scale. Project the sheets on an overhead projector.
2. Create a miniature forest ecosystem using a large terrarium.

FOREST ECOSYSTEM DATA SHEET

Date _____ Group Members' Names _____

Location _____ _____

Plot Number(s) _____ _____

Plot Size _____ _____

A. Nonliving Factors:

1. Topography: Flat ____ Gently Rolling ____ Steep ____

2. Temperature (record at three sites for each location)

	Site 1	Site 2	Site 3
Ground level	_____	_____	_____
In the soil	_____	_____	_____
Part way up a tree	_____	_____	_____

3. Wind: Speed ____ Direction ____

4. Stand Density (Sunlight):

____ Dense (60%+ sky blocked by foliage)
____ Medium (40-60%)
____ Sparse (20-40%)
____ Open (less than 20%)

5. Soil:

Texture

____ Sandy (primarily large grains)
____ Silty (primarily medium grains)
____ Clayish (primarily very fine grains)
____ Loamy (combination of all the above)

Organic Material Present?

____ Yes
____ No

Moisture

____ Very dry

____ Moist

____ Very Wet

6. Water:

Temperature ____

Type

____ Pond/Lake

____ Stream/River

____ Swamp/Wetland

____ Other

B. Living Factors:

1. Plants (producers)

Forest type: Hardwood ____ Softwood ____ Mixed ____

Dominant plant species:

Trees	Shrubs	Wildflowers
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Comments on plant life: _____

_____

2. Animals (consumers) -- signs or sightings:

Mammals	Birds	Insects	Other
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Comments on animal activities: _____

_____

3. Decomposers

What evidence is there that decomposition is taking place? _____

_____

_____

Other comments: _____

_____

_____