Trees and Things

I. Grade Level(s): 5th and Above

II. Objectives:

1. The children will record observations made while participating in the activity.
2. The children will identify characteristics of a tree.
3. The children will identify their trees as deciduous or evergreen.

III. Materials & Supplies

A. Gathered by the teacher

tape measure, newsprint, crayons, paper bags, magnifying glasses, plastic sandwich bags

B. Kit(s) to use from Env Learn Center:

Trees, Insects

IV. Pre-Planning

Divide children into groups and set up adequate adult supervision. Discuss vocabulary: deciduous, evergreen, overstory, understory, smooth, toothed, lobed, complex leaf, simple leaf

V. Estimated Time for Activity: 1 to 1-1/2 hours

VI. Procedures:

1. The children will be divided into groups of 4 with 1 adult per group.
2. The groups will be assigned trees in the area located around the outdoor classroom.
3. Begin by having the groups measure the circumference of their tree; record on attached sheet.
4. Using the newsprint, make a rubbing of the tree's bark. How does the bark feel? Record.
5. Looking at the overstory of the tree, identify the different colors of leaves. Record.
6. Gather leaves off of the ground under the tree. Place these leaves in a plastic sandwich bag. Each group should have 2 leaves.
7. Using the leaves that were gathered, identify the edges of the leaves on the tree (smooth, lobed, toothed, needles). Record.
8. Identify the leaf as being simple or compound. The adult in each group will remind the children of the characteristics of each. Record.
9. Using the magnifying glasses, observe the types of insects that are on or near the tree. Record.

10. Identify any animals that might be living in or around the tree. Record.
11. The children will walk under the tree, list three words that describe the sounds heard. Record.
12. Using prior knowledge and the information collected, identify the tree as being deciduous or evergreen. This discussion will take place within the groups. Record.

VII. Follow-Up Activity

1. As a large group, discuss the similarities and differences of the two groups of trees.
2. Collect items found under the trees in the paper bags. Sort these items.

Submitted by: Lee Ann Colburn
School: Matthews Elementary

A Leaf's Hidden Colors

I. Grade Level(s): 3rd - up

II. Concepts:

1. There are other colors in a green leaf.
2. In the Spring and summer chlorophyll covers up the other colors found in a leaf.
3. In the fall, leaves turn colors because the chloroplasts decrease the amount of chlorophyll manufactured.

III. Materials & Supplies -- Gathered by the teacher/students

fresh green leaves, nail polisher remover, jars with foil, coffee filters, newsprint or paper towels, pencils or sticks, tape, cm ruler, scissors, foil.

IV. Pre-Planning

1. Discuss leaves and their components.
2. Discuss: chloroplasts, chlorophyll, stomata, photosynthesis, pigments.

V. Estimated Time for Activity: 45 minutes

VI. Procedures:

1. Divide group into pairs. Each pair will have a bottle of nail polish remover, jar with foil, pencil or stick, tape, and 2 leaves.
2. Tear the 2 leaves into small pieces and crush. Put the leaves in the jar.
3. Add nail polish remover until the leaves are covered. Let stand for 15 minutes without any movement.
4. Next, measure and cut a strip of white paper towel, coffee filter, or newsprint about 2 cm wide and long enough to just touch the liquid from the top of the jar.
5. Tape the strip of paper to the pencil/stick. Place the pencil/stick over the top of the jar so that the paper just touches the liquid. Cover with foil.
6. Let the paper soak up the liquid for about 15 minutes. Observe.

VII. Follow-Up Activity

1. Make observations. What colors, other than green do you observe?
2. Conduct the experiment again using different colored leaves.
3. Take the strips of paper and examples of the leaves to create a bulletin board.
4. Have the students research chromatographs and write their findings in a report.

Submitted by: Judy Middlebrooks
School: Matthews Elementary

Leaves and More Leaves

I. Grade Level(s): 3rd and Up

II. Concepts:
1. The basic vein structure of leaves is pinnate, palmate, and parallel.
2. The margin structure of leaves is smooth, serrated, and lobed.

III. Materials & Supplies -- Gathered by the teacher/students
Leaves with as many different vein and margin structure as possible, newsprint, 15 ink pads and ink.

IV. Pre-Planning
Gather leaves or go on a nature walk.

V. Estimated Time for Activity: 30 minutes

VI. Procedures:
1. Explain what pinnate, palmate, and parallel veins look like.
2. Explain what smooth, serrated, and lobed edges look like.
3. Go on a nature walk allowing student to point out different vein and margin structures.

VII. Follow-Up Activity
1. Provide the students with a bag of leaves. Label the vein structure & margin structure of each leaf.
2. Make a leaf print. Place leaves on a stamp pad with the lower epidermis down. Cover the leaves with a piece of newsprint, then gently rub the paper until the leaves are fully inked. Transfer the leaves to a sheet of blank paper. Cover them with clean newsprint and rub hard to make a clear print. Remove the newsprint and the leaves and examine the prints. The students can identify, label, and display their leaf prints.

Submitted by: Judy Middlebrooks
School: Matthews Elementary

Study of Winter: Characteristics of Trees

I. Grade Level(s): 7 - 12

II. Concepts:

1. Trees can have distinct features other than leaf blossoms or fruit.
2. Identify markings/parts of a woody stem.
3. Bark on trees have distinguishing characteristics.
4. Trees may either be deciduous or evergreen.

III. Materials & Supplies

A. Gathered by the teacher

Labeled diagram of a woody stem showing its parts.

B. Kit(s) to use from Env Learn Center:

Trees

IV. Pre-Planning

Teacher should have explained specific characteristics and markings of woody twig: (1) terminal bud, (2) bud scales, (3) bud scale scars, (4) axillary buds, (5) node, (6) lenticels, (7) internode, (8) leaf scar, and (9) bundle scar.

V. Estimated Time for Activity: 45 - 60 minutes

VI. Procedures:

1. Lead students along trail to identify deciduous and evergreen trees.
2. While on trail, identify different kinds of bark. Students could make a sketch or a rubbing.
3. Return to conference area.
4. Teacher could have an assortment of woody twig samples previously collected.
5. Have students draw/sketch samples of various kinds of woody twigs and label parts.

VII. Follow-Up Activity

1. Have students search for any woody twigs with different markings.
2. Have students think of any different characteristics they can observe in winter.

Submitted by: Margaret Wickline
School: Northside High School

Shoe Box Study of Trees

I. Grade Level(s): 4th

II. Objective:
To provide a visual aid for students to help in recognizing 5 trees and the differences and similarities of each.

III. Materials & Supplies

A. Gathered by the teacher
Shoebox, 5 pieces of poster paper to fit in each shoebox, 5 pieces of drawing paper cut to fit on top of cardboard, tree I.D. key, leaf from 5 trees, bark, wax paper, crayons.

B. Kit(s) to use from Env Learn Center:
Trees

IV. Pre-Planning

V. Estimated Time for Activity:

VI. Procedures:

1. Select one type of tree to represent each of the 5 basic shapes (oval, round, square, oblong, and triangular).
2. Draw a picture of each of 5 different trees. Color the tree.
3. Glue pictures onto cardboard. Glue a bark sample beneath the picture. Glue wax paper leaf below bark.
4. Upon return to school, have each student write a short history of each tree.
5. Glue history at bottom of cardboard.

VII. Follow-Up Activity

1. Create a bulletin board display using shoeboxes.
2. List all trees selected; make a graph to show type/number selected.
3. Cover name. Give each tree a number. Have students identify them.

Submitted by: Rachel Love
School: Buhl Elementary

Let's Get Sensible

I. Grade Level(s): K - 2nd

II. Concepts:

1. Students will identify and collect leaves common to our area.
2. Students will use their five senses as they are actively involved in a nature walk.

III. Materials & Supplies

A. Gathered by the teacher

ziploc bags

B. Kit(s) to use from Env Learn Center:

Trees, First Aid Kit

IV. Pre-Planning

1. Display on a bulletin board pictures and leaves from trees and talk about different trees that are common in our forests.
2. Display a simple bulletin board of the five senses (see the attached sample).

V. Estimated Time for Activity: 2 - 3 hours

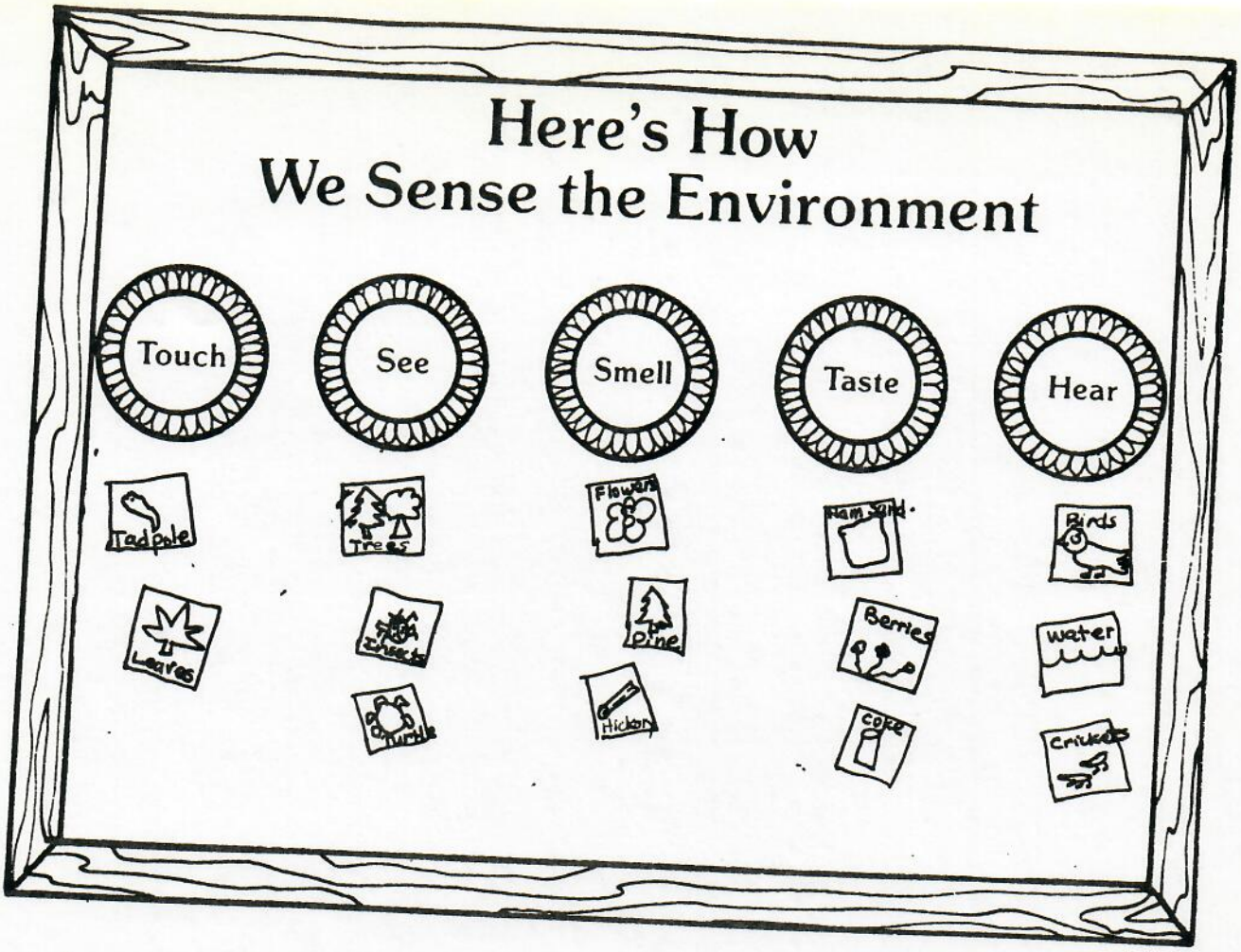
VI. Procedures:

1. Take the class on the nature trail at the Environmental Learning Center. Have the children listen for the sounds they hear in the environment. As you walk, point out the smell of pine, pond water, etc. Have the children touch different tree trunks. Note the differences in the colors and textures of the bark on the trees. Point out the different trees that are common to our forests and backyards (Oak, Maple, Sweetgum, Dogwood, Sassafras, Hickory).
2. The children can collect samples of leaves in the ziploc bags as you walk the nature trail to have when they return to the classroom. They should collect a variety of shapes and sizes.

VII. Follow-Up Activity

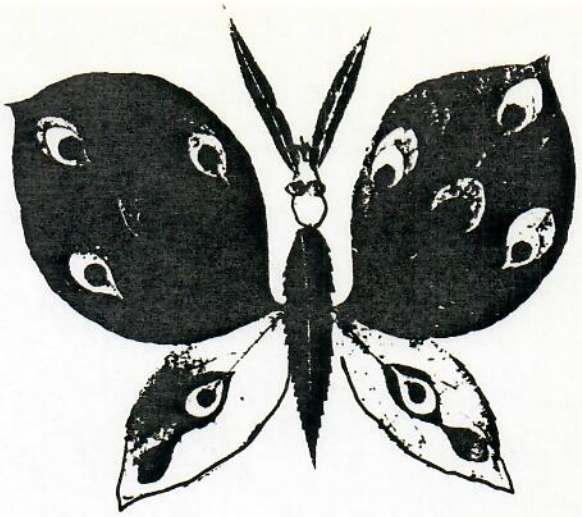
1. The children should draw an activity for each of the 5 senses to display on your bulletin board.
2. Children will display their collection of leaves and design an animal or other scene (see attached designs).

Submitted by: Sonya Snyder
School: Englewood Elementary



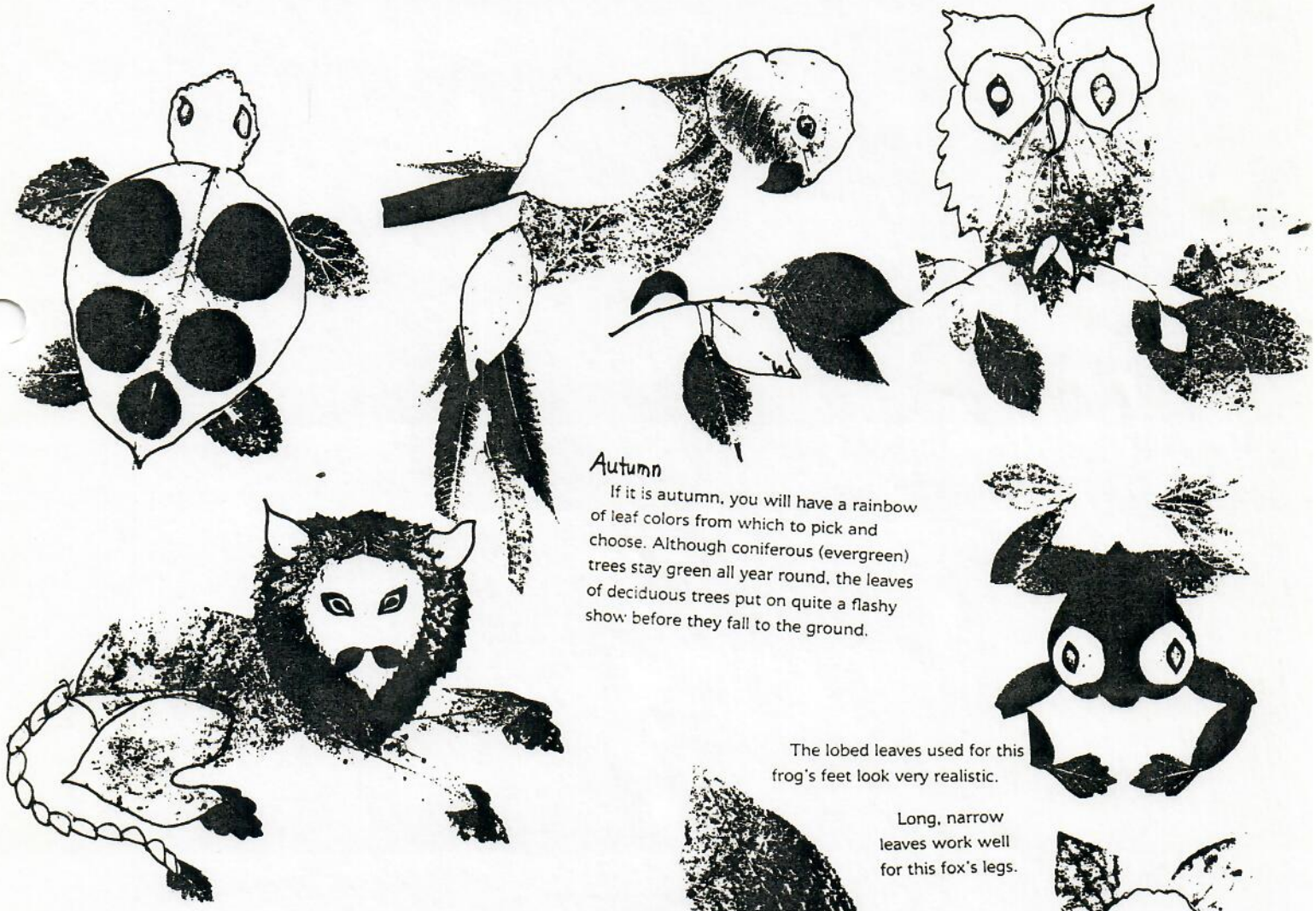
Write the 5 Senses on paper plates. Tell the children that when they go to Camp Horne they will use all their senses to experience the outside environment. When the children get back to class, they will draw pictures to illustrate the Senses.

LEAF! Designs



By combining nature's bounty of color in new and creative combinations you can bring your animals vividly to life.

Contrast is an important technique to use. Do you see how the owl's bright yellow eyes stand out against the deep green of his body? Yellow and green are contrasting colors because they are so different from each other.

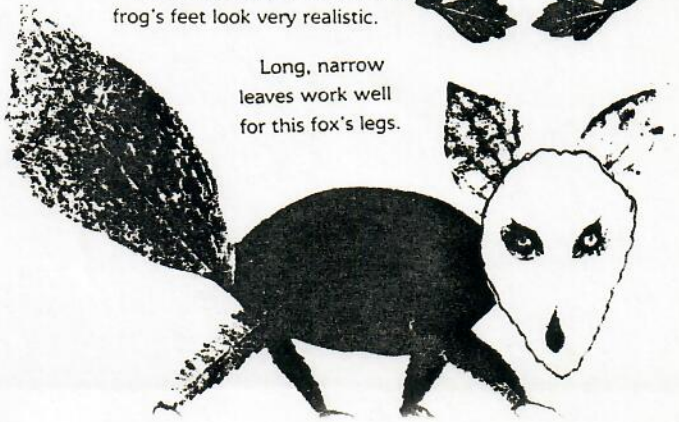


Autumn

If it is autumn, you will have a rainbow of leaf colors from which to pick and choose. Although coniferous (evergreen) trees stay green all year round, the leaves of deciduous trees put on quite a flashy show before they fall to the ground.

The lobed leaves used for this frog's feet look very realistic.

Long, narrow leaves work well for this fox's legs.



LAYERING

Once you have collected leaves of all colors, shapes, and sizes, you can layer them to create animals that need a more complex design.

The different colors and sizes in this collage blend together to form the flowing, majestic look of this lion's mane.

TUSCALOOSA COUNTY SCHOOL SYSTEM
BLACK WARRIOR COUNCIL B.S.A.
ENVIRONMENTAL LEARNING CENTER

Touch A Tree

I. Grade Levels: K-6

II. Concepts:

1. Trees have unique characteristics.
2. Trees can be identified by bark, leaves, size, shape and sometimes, by smell.

III. Materials & Supplies

A. Gathered by the teacher

a blindfold or large paper bag for each pair of students.

B. Included in "Trees" kit

field guide to trees, tree i.d. cards

IV. Pre-Planning

1. Review vocabulary appropriate to age of group:
   tree, roots, branches, leaves, stems, bark, evergreen, deciduous
   girth, trunk
2. This activity works best as a follow-up to other tree identification activities that might be done at Camp Horne. Plan to identify trees using a key and make bark and leaf rubbings prior to this sensory activity.

V. Estimated Time for Activity: 20 - 30 minutes

VI. Procedures:

1. Select an area with many trees spaced closely together. Set parameters so that students stay where your voice can be heard easily.
2. Have students choose partners. One student will be the leader and the other student will be blindfolded. After completing the activity, partners will switch roles and repeat the activity.
3. The leader spins the blindfolded partner three times, and then carefully guides him/her to a tree. The blindfolded student places both hands on the tree while the leader stands nearby.
4. When all blindfolded students are at a tree, lead them through the following exploration of the tree:

   Wrap your arms around the tree and give it a big hug. Is your tree thick or thin? Put your nose to the tree and smell deeply. Does it have a smell? Slowly walk around the tree and feel it with your hands. Does it feel rough or smooth? Do you feel limbs or branches sticking out? Does it have cracks? Feel as high as you can reach. Now move your hands to the base of the trunk. Are moss or tiny plants growing on the bark? Find where the tree goes into the earth; feel the ground

around the tree trunk. Do you feel any roots? Are there any other plants growing nearby? Now move your hands to where you first touched the tree.

5. Have the leaders guide the still blindfolded students back to the starting point. Once there, instruct the blindfolded students to remove the blindfolds. They should begin feeling nearby tree trunks in an attempt to find the tree they were just exploring. The leader states whether the partner is correct or not. When the tree is found, the leader should ask how the partner knew this was the same tree.
6. Switch roles and repeat the activity.

VII. Follow-up Activities:

1. Students may make bark rubbings of their tree.
2. Have students make observational drawings of their tree.
3. Have students use field guides and tree identification cards to identify their tree.

Submitted by: Connie Chambers
School: Maxwell Elementary

Source: Science Experiences by Jack Hassard, Addison-Wesley Publisher

Wild Edibles
Submitted by: Sandra Townsend

I. Grade Level: 8th Grade American History

II. Objectives:

1. The students will identify plants eaten by Native Americans
2. The students will display the ability to refrain from eating these plants since so many plants have poisonous "look alikes" in nature.
3. The students will sketch as many wild edible plants as they can find and label the plants.

III. Materials and Supplies

A. Gathered by the teacher

Sixteen sheets of plain white paper
Four markers or sketch pencils
Four hard surfaces like clipboards or books

B. Included in "Wild Edibles" kit

field guides for wild edibles
wild edibles cookbook (for teachers to get recipes for follow-ups)

IV. Pre-planning.

1. Discuss lifestyles of Native Americans including how they migrated across the Bering Strait in search of food. Emphasize how the Native Americans had to eat the foods they could locate easily.
2. Find in your library or the public library a book on wild edibles. Identify for the students some of the plants like wild ginger, wild hydrangea, etc. Point out the particular parts of the plants that were eaten.
3. Caution students not to eat any plants from nature since some plants have poisonous "look alikes." Explain that the Native Americans had much practice in identifying the plants whereas they are amateurs in this process.

V. Estimated Time of Activity:

60 -90 minutes depending on the amount of time needed for other activities

VI. Procedures:

1. Divide a class of students into four groups. Have groups select a recorder (preferably a person who can draw recognizable shapes). Give four sheets of paper, drawing pencils, A field guide, and a hard surface to each group.
2. Explain that groups must stay on the nature trail at all time.
3. Instruct students to begin a search for as many wild edibles as they can find. They must stay together as a group. You might want to reward the group who finds the most by having the other students prepare a Native American feast for the winning group.

VII. Follow-up Activity

1. Students may prepare a Native American feast and invite younger children to participate
2. Students could make collections around their neighborhood and make comparisons between different neighborhoods.
3. Invite a resource speaker such as a Native American, archaeologist, or anthropologist to discuss diets and cultures of Native Americans.

Beautiful Balance and Symmetry

I. Grade Level(s): lower primary (1st - 2nd)

II. Concepts:

1. Symmetrical objects are those that may be divided into two matching parts by a line of symmetry.
2. Symmetrical objects may be found in nature.
3. There is order and beauty in nature.

III. Materials & Supplies

A. Gathered by the teacher

1 piece of string/yarn & 1 baggie per 4 students, cardboard squares & a sketch pad sheet for each student, pencils, lined paper

B. Kit(s) to use from Env Learn Center:

Tree Kit (leaf and flower presses - optional for further exploration after the basic lesson)

IV. Pre-Planning

1. Introduce the basic concept of symmetry in math.
2. Assign cooperative learning groups: investigator, reporter, recorder, and gatherer for each group

V. Estimated Time for Activity: 45 minutes

VI. Procedures:

1. Meet in outdoor classroom. Review symmetry. Review groups. Distribute supplies.
2. Each group will gather 4 leaves and 4 other natural items (pine straw, cones, lichen, etc.) in baggies.
3. Students will take turns applying the yarn as the line of symmetry to the natural specimens. The recorder will record the findings (yes/no).
4. As a whole group, listen to each group's results. Brainstorm and list other natural matter, rocks, insects that are symmetrical.
5. Have each student find a quiet spot to do a pencil drawing of one symmetrical thing in nature that is observed & considered beautiful.
6. Share symmetrical drawings with the group & relate to the group why this natural item was selected by the individual.

VII. Follow-Up Activity

1. In the classroom, lead students in a discussion of order and beauty in nature.
2. Take a walk around the school grounds to find natural symmetrical specimens closer to home. Lead a discussion of further patterns & shapes in nature that may be observed at their homes. Challenge students to find numerical patterns by looking closely at nature.

Submitted by: Angeline Burns
School: Walker Elementary

ADOPT A TREE HABITAT

I. GRADE LEVEL: 3-8

II. CONCEPTS:
- A. Organisms are interdependent.
- B. Forest contain many habitats that support different populations.

III. MATERIALS AND SUPPLIES:
- A. Gathered by teacher - questionnaire, notebooks, pencils, colored pencils or crayons.
- B. From Environmental Learning Center - Field Guides for trees, leaves, insects and birds, hand lenses, binoculars.

IV. PRE-PLANNING:
- A. Identifying tree types (oak, hickory, and pine) and basic leaf identification lessons would precede this lesson. This can take place outdoors at the school or on previous trips to the Environmental Learning Center.
- B. Vocabulary: Habitat, organisms, populations
- C. Find an area with several trees ("the outdoor classroom"-see map) that the student can examine.

V. ESTIMATED TIME FOR ACTIVITY: 40-45 minutes

VI. PROCEDURES:
1. Divide students into groups of about 4. Each group needs an "Adopt a Tree" notebook, pencils, a pair of binoculars, hand lenses, field guides, and colored pencils. Let each group "adopt" a tree in the designated area.
2. Have groups follow the directions on the questionnaire (see below) and write answers in their notebooks.

   Page 1 - Draw a picture of your tree from different perspectives: from a distance, from close up, from lying underneath looking up, etc.

   Page 2 - Draw a picture of a leaf from your tree. How does the leaf smell? How does it feel?

   Page 3 - Do you know the name of the tree you have adopted? Write the name. Does your tree have any fruits, nuts, or seeds that help identify it? Use a field guide to look up your tree.

   Page 4 - Make a rubbing of your tree's bark. How does the bark feel? How does it smell?

   Page 5 - Are any animals on or near your tree? Don't forget to look for insects, spiders, and other small animals. Are there any signs that animals have used your tree in the past? Look for holes, nests, trails, and other signs. How do these animals depend on your tree? Do they harm it? Draw pictures of any insects, animals or animal signs that you can not identify.

   Page 6 - What did you find on the tree's trunk? the tree's branches? the tree's leaves?

3. Back in the classroom, have groups present their data to the class. Record each group's data on a chart. You may organize the data by plants, insects, birds, animals in the tree habitat or by where the organisms were found (trunk, branches, leaves), and whether it lives on the tree or just visits the tree.
4. Discuss how the tree might be affected by the plants and animals that live on it. Which organisms seem to harm the tree? Which seem to benefit the tree? In what ways?

VII. FOLLOW-UP ACTIVITIES:

1. On additional visits to the Environmental Learning Center, add to your notebook on how your tree has changed and how it has stayed the same.
2. Have each student write a poem describing his/her tree habitat.
3. Have the class work together on a "Tree Habitat" mural.
4. Raise money to buy a class tree. Take students to a nursery to pick out the tree and hold a "tree-planting ceremony".

Submitted by: Kim Carey
Ideas from "Project Learning Tree: Environmental Education Activity Guide"
School: Crestmont Elementary

Title: Looking for Things in Common

I. Grade Level(s): 03-06

II. Concepts:

1. Leaves are different in shapes and sizes.
2. Sunlight affects the growth and color of leaves.
3. Trees are plants.

III. Materials & Supplies

A. Gathered by the teacher

Ziploc bags, leaf identification pictures

B. Kit(s) to use from Env Learn Center:

Trees/Succession

IV. Pre-Planning

Students will study leaves and their parents from pictures, filmstrips and videos.
Discuss characteristics of leaves and trees.

V. Estimated Time for Activity:

VI. Procedures:

1. Find a leaf with 5 points.
2. Find a leaf with smooth edges.
3. Find a leaf with tooth edges.
4. Find a leaf that is green; orange; brown; yellow; red.
5. Try to find its parent plant.
6. Find a leaf that could catch a lot of sunlight; whose stem is stiff; flexible.
7. Find a leaf whose stem is waxy or rough.

VII. Follow-Up Activity

1. Identify the tree the leaf is from.
2. Make a tree in the classroom using all of the leaves that have been found.

Submitted by: Linda E. Payne and Jeff Carr
School: Myrtlewood Elementary

Title: Measuring Leaf Surface Area

I. Grade Level(s): 03-06

II. Concepts:

1. The area of an irregularly-shaped object such as a leaf can be figured out on a grid.
2. A 1 square centimeter grid covers the leaf.
3. By counting the number of covered squares, you can figure out the leaf size in square centimeters.

III. Materials & Supplies

A. Gathered by the teacher

Grid worksheet, calculators

B. Kit(s) to use from Env Learn Center:

IV. Pre-Planning

Gather as many types of leaves as possible. Have students to sketch different leaves on grids, color and work the simple math problems.

V. Estimated Time for Activity:

VI. Procedures:

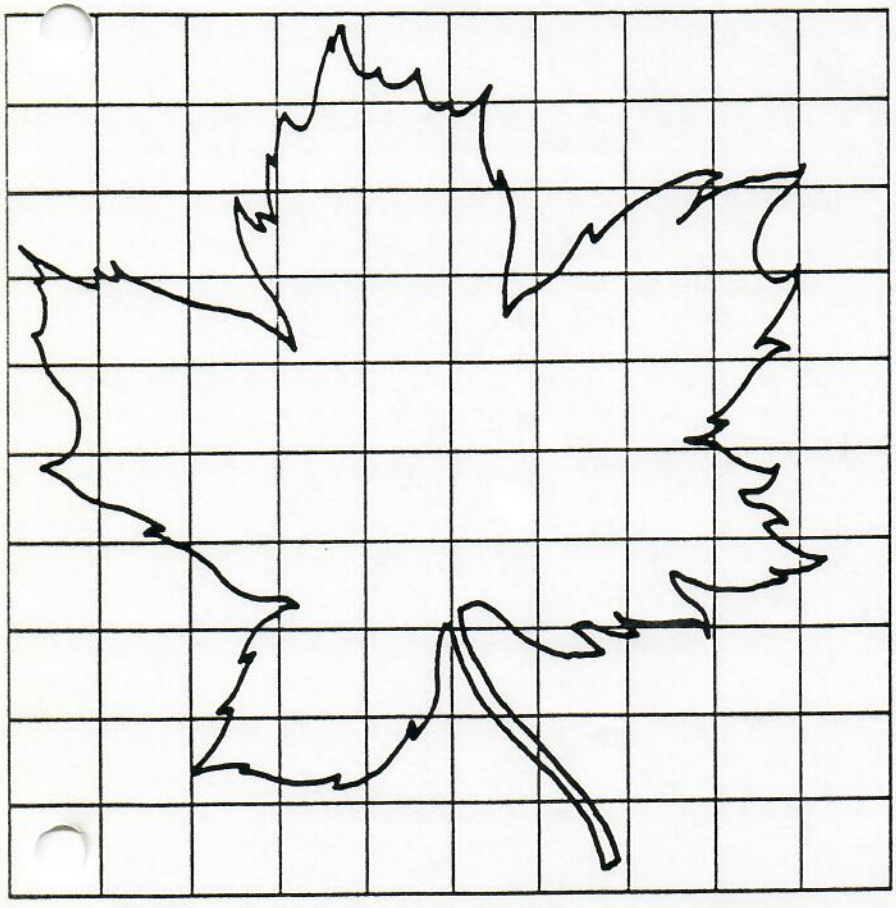
1. Sketch the leaf on the grid.
2. Color in red the squares that are completely or nearly completely covered.
3. Color in blue the squares that are about half covered.
4. Color in green the squares that are less than half-covered.
5. Complete the chart by multiplying the number of squares by the fraction that the squares were covered. Then total the numbers in the last column to determine the size of the leaf in square centimeters.

VII. Follow-Up Activity

1. Have students to do different sizes of leaves on grids to compare findings.
2.

Submitted by: Linda E. Payne and Jeff Carr
School: Myrtlewood Elementary

Number of Squares	Multiply by	Number of square centimeters
Red = _____	× 1	= _____
Blue = _____	× 0.5	= _____
Green = _____	× 0.25	= _____
Total square centimeters		_____



Number of Squares	Multiply by	Number of square centimeters
Red = _____	× 1	= _____
Blue = _____	× 0.5	= _____
Green = _____	× 0.25	= _____
Total square centimeters		_____

SUCCESSION

GRADE LEVEL: 5-12

CONCEPT:

Students will learn about the natural changes that occur in enviroments, some reasons for these changes and understand how the changes effect what survives in these enviroments. Pre-camp activities, camp activities and post-camp activities will show changes in various enviroments to accomplish the learning of this concept. Interpreting various graphs, plotting points on graphs and measuring areas with meter sticks are math skills used in these activities.

PRE-CAMP ACTIVITY:

Before discussing succession in any detail do the following activity.

CONCEPT: Students will observe succession of a microscopic enviroment by starting with yeast eating the carbohydrates of molasses and noticing other microorganisms (fungi and bacteria) invading the molasses solution. The yeast will deplete their source of food (the molasses) and the other microorganisms from the air will eat the yeast waste products. The population of yeast will decrease as the population of other microoganisms will increase.

MATERIALS: (per group or one for the entire class):

- 1/4 cup of molasses
- 1 package of yeast
- 1/4 cup of warm water
- 1 spoon (or something to stir with)
- 2 bowls
- 1microscope
- 1 slide and cover slip

INSTRUCTIONS:

1. Pour 1/4 cup of molasses in a bowl;

2. Mix 1/4 cup of warm water with one package of yeast in a second bowl;
3. Make slides of yeast solution and focus under the microscope;
4. In one "field of view" under the microscope count the number of yeast you see;
5. Mix molasses and yeast solution;
6. Make a chart to record the number of yeast you see IN ONE TYPICAL FIELD OF VIEW under the microscope; then record any changes you observed in your solution and slides for the next 10 school days. (If several groups are doing this in one class, a teacher might like to make a classroom chart and record the averages for each day for the entire class); and then,
7. At the end of the 10 day period list the changes you have seen and try to hypothesize why another group of living organisms have envaded your molasses-yeast solution.

CONCLUSION:

After students have completed their experiment, list their responses to step 7. Discuss each hypothesis and allow students to pick those hypotheses that make the most sense. (Hopefully the students can relate the changes in populations to availabilty of food. If not, you might try hinting by using key terms such as food chain or asking "What do organisms need to survive?") Be sure your students understand that ONE reason organisms live in a certain area is due to food availability.

NOW would be a good time to introduce the terms succession, primary succession, secondary succession, pioneer community, climax community and seral community. In class discussion relate these terms to beginning of their experiment (pioneer community and primary succession) to the changes in their experiment (seral community and climax community).

Next, apply these terms to the picture on the next page which illustrates the succession of vegetation and wildlife of a New York conifer forest. (This can be done in groups or whole class discussion.) Ask students if they know what wildlife and vegetation can be found

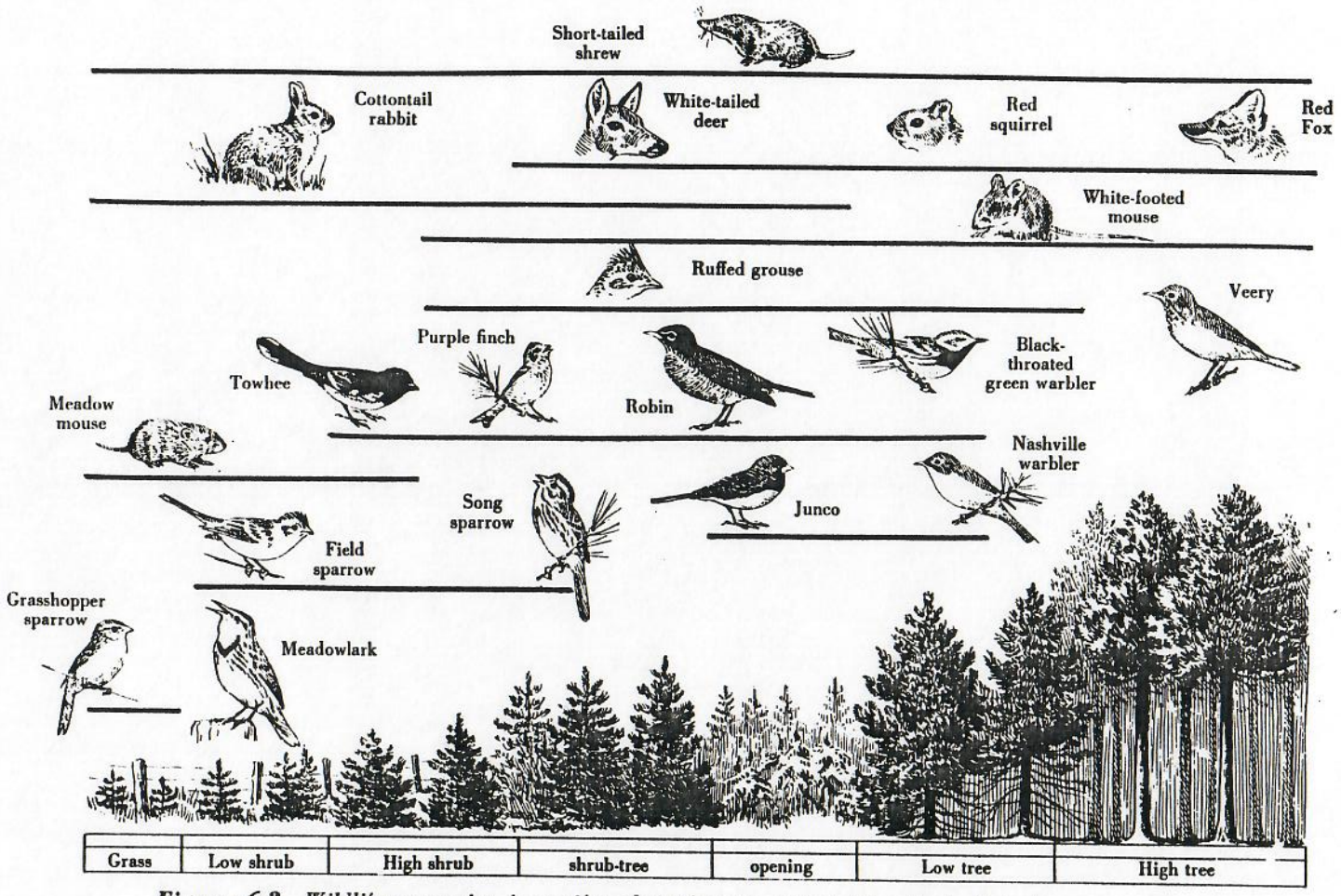


Figure 6-3 *Wildlife succession in conifer plantations in central New York. Note how some species appear and others disappear as vegetation density and height changes. Other species are common to all stages.*

Identification Sheet

Names: _____

_____

_____

TREE COMMON NAME	SCIENTIFIC NAME	LEAF SKETCH	BARK DESIGN

Discussion:

1. Give two primary features used to identify trees.
2. Why are scientific names better than common names when referring to specific organisms?
3. What is a dichotomous key?
4. List four characteristics of leaves which are helpful in tree identification.

(For use with "Using a Key to Identify Alabama Trees")

in their communities and forest areas.

CAMP HORNE ACTIVITIES

There are two activities which make up the Succession Lesson Plan: Leaf Identification and Succession. Students must be able to identify 3 types of trees- pine, oak and hickory -before they can do the succession activity. Leaf identification can be done before they come to the camp if the instructor can teach this on their own.

CONCEPT:

Students will identify the amount of three types of trees (oak, hickory and pine) in five plots each of 100 meter square area, plot this data on "THE COMMUNITY AS AN ECOLOGICAL UNIT" graphs on the corresponding line and tell how many years it took EACH PLOT to grow and how long it will take EACH PLOT to become a climax community.

TERMS:

Seedling
Sapling
Overstory
Understory

MATERIALS (per group):

5 copies of the graph "The Community as an Ecological Unit"
1 role of property ribbon
1 colored pencil or pen
1 metric ruler
1 watch

INSTRUCTIONS:

1. Gather students around the outdoor classroom (look on map) and divide them into 5 groups (A teacher could assign groups the day before coming to the camp- it might help cut down on any confusion);
2. Use the identification letters A through E on the following map of Camp Horne to tell each group where to go for their tree counts in 20 minute time limit (this can vary);
3. When each group gets to the identified area, mark off a

ten by ten square meter area (100 m2) with the property ribbon;

4. Assign group members to count the number of oak (all oak species should be counted) and hickory mature trees (overstory), another member to count the number of mature pine trees (overstory), another to count the number of oak and hickory seedlings and saplings-understory- (all species of oak trees should be counted), and another member to count the number of pine seedlings and saplings;
5. Record each amount on the paper and place a dot on the correct line of the graph for each group of tree counts;
6. Gather materials up and meet back at outdoor classroom and go to next assigned area and do steps 4 through 8 in the new area; and,
7. Continue to do this until all 5 areas are counted.

CONCLUSIONS:

These forest communities are all different stages of seral communities. (whereas a pioneer community would be grasses and shrubs and a climax community would be an area of all hardwoods.) Start your class discussion by asking students leading questions to see if they realize that the communities they did their counts in were seral communities. Then have each group use one of their graphs to tell how long it will take for pine-oak-hickory areas to go from pioneer to climax communities (greater than 200 years). Next have each group call out their counts for each area category. (example: What was the amount of mature pine trees in community A from group one's data? From group two's data? etc. Or, a teacher could have a record sheet to combine the class data as the groups come in from each area.)

When the students get back into the class, the teacher or students can be given every groups data and class averages for each type of tree in each area can be recorded on total sheet and graph these points for each community. Ask the students the following list of questions:

How many more years will it take each community to mature into a hardwood forest?

Why will these communities change? (Available sunlight and depth of root system and soil nutrient competition are major factors-- you will

probably have to lead the students with "What do plants need to survive and how do they get these things? --root system and leaf shape of these tree types.)
Why are forest important? (niches for animals, esthetic qualities and products)
Why don't we have more hardwood forest? (man's influence)
What type of organisms would live in these communities?
Did anyone see signs of these organisms?

POST-CAMP ACTIVITIES :

If time permits, it would be an excellent idea to take the students to a orphan strip mined area. (There is one located 5 miles further down highway 11 towards Brookwood, turn left at the Camp Cherry Austin sign.) Allow students to get off the bus and feel the amount of heat and identify the types of vegetation in the area. Another idea is to gather pictures and slides of human influenced areas and discuss how this slows down natural succession of vegetation and wildlife. Ask students how the influence of man is good, necessary or bad in specific situations.

Continue this discussion by showing these facts:

1. A rainforest can develop on fresh lava in Hawaii in 400 years.
2. A pine scrub can develop on bare granite outcrops in Georgia in 700 years.
3. A spruce-hemlock forest can develop on river terrace sediment in Washington in 750 years.
4. A beech maple forest can devlop on a sand dune in 1000 years.
5. A moss birch tussock grass tundra can develp on glacial remains in Alaska in 5000 years.

All these can happen if man or geological forces do not slow them down.

PLOT:_____

OVERSTORY:

OAK AND HICKORY:_____

PINE:_____

UNDERSTORY:

OAK AND HICKORY SEEDLINGS AND SAPLINGS:_____

PINE SEEDLINGS AND SAPLINGS:_____

GRAPH POINTS ON APPROPRIATE LINES.

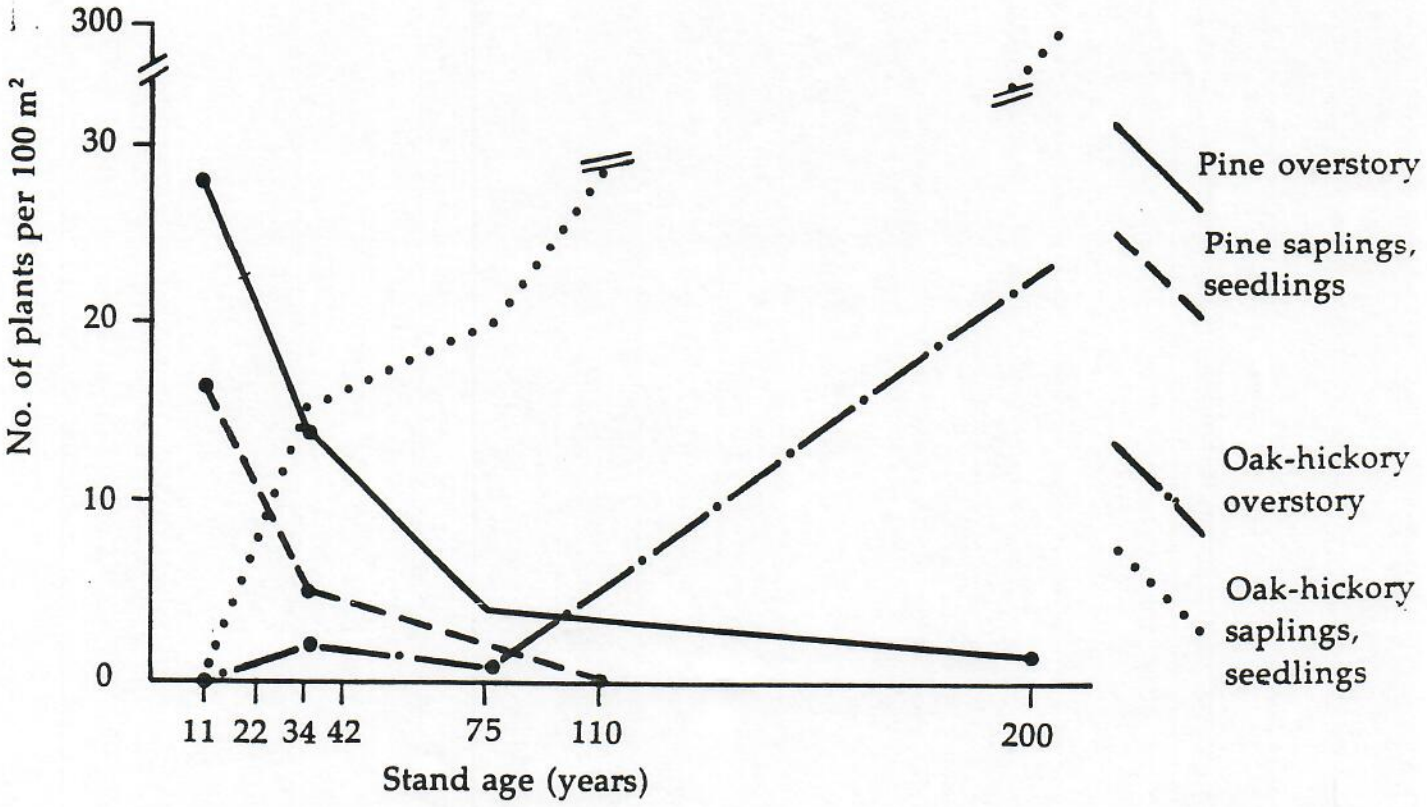
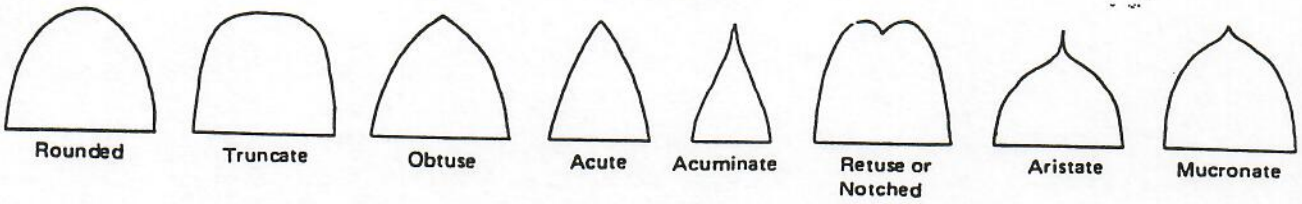


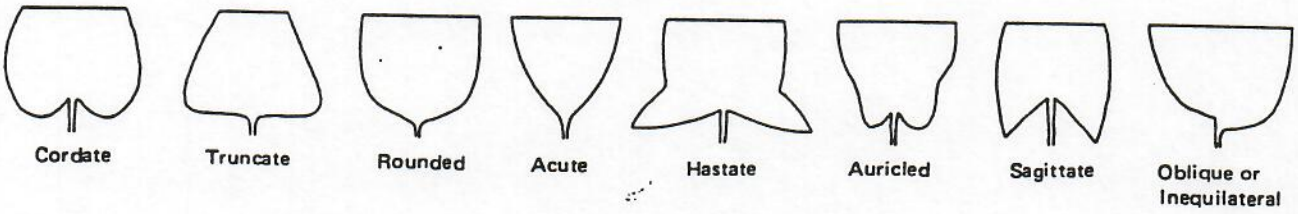
Figure 10–15. Density (per 100 m^2) of overstory and understory pines and oaks and hickories throughout secondary succession in the Piedmont of North Carolina. (From Oosting 1942. Reprinted by permission of *American Midland*

LEAVES

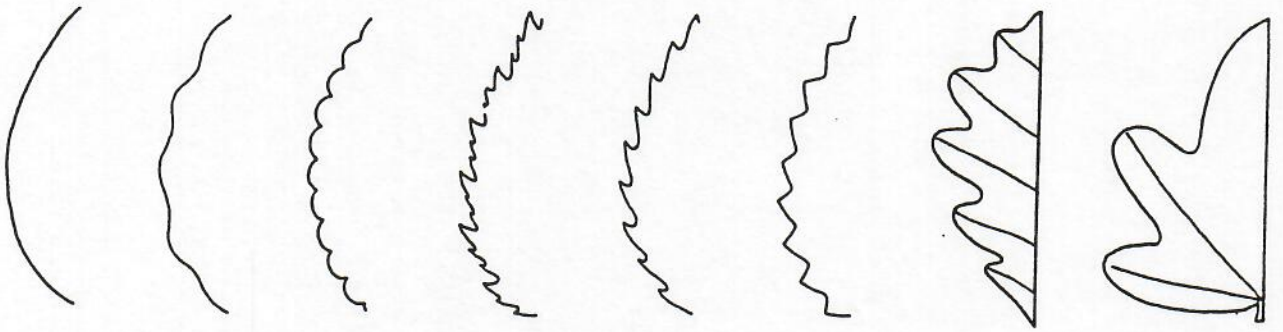
Tips of Blades



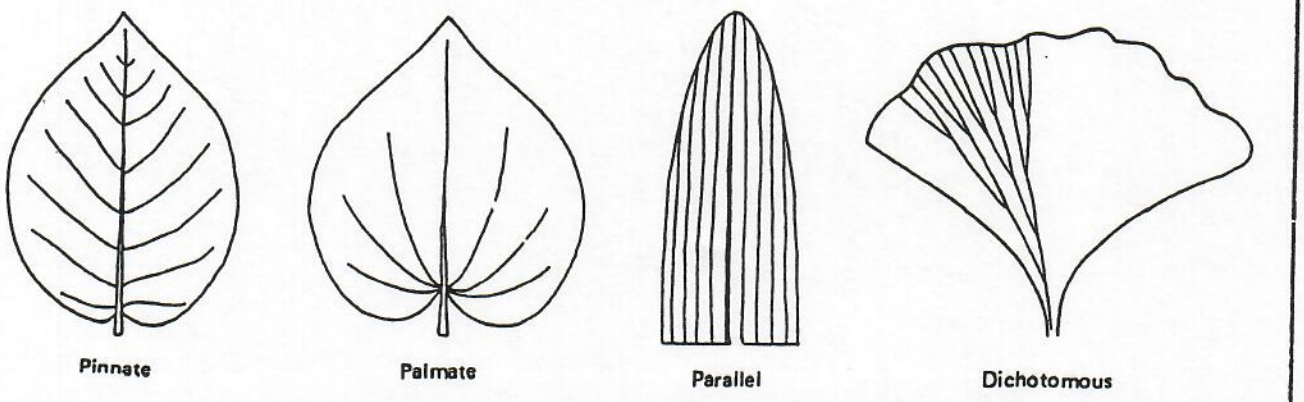
Bases of Blades



Margins of Blades



Venation



Leaf Identification

I. Grade Levels: K - 4

II. Objective:
Students will be able to identify 5 leaves using an identification card. (Number may vary depending on level of group.)

III. Materials and Supplies

A. Gathered by the teacher
crayons for each child
small brown paper bag for every 3-4 children
drawing paper
copies of leaf identification sheet (attached)
pencils

B. Included in "Trees" kit
laminated picture cards with identified leaves

IV. Pre-Planning:
Students should be familiar with the various types of leaves and characteristics to look for when identifying a leaf. Discuss care of natural environment and the careful collection of leaves. Every child does not need a leaf!

V. Estimated Time of Activity:
60 minutes (perhaps longer depending on level of group)

VI. Procedures:

1. Remind children about identifying characteristics.
2. Caution children about collecting leaves. Only one leaf per group is needed; if you are simply identifying, you may not even need to collect a leaf (except perhaps one that has already fallen to the ground).
3. Divide into small groups and assign adult supervision. Determine boundary area and time frame for exploration and collection.
4. Distribute identification cards and paper bags (one per group?).
5. Let groups explore and begin collecting and identifying leaves. Have a signal or set time for all to return.
6. After all groups have returned and all leaves have been identified, have a discussion about the various types of leaves.
7. Have students to make crayon rubbings of the various leaves they have found and write the name of the leaf below it.

VII. Follow-Up Activity

1. Compare and sort leaves by color, shape, and size.
2. Make a leaf collage.
3. Make a leaf booklet.
4. Make a tree mural using the leaves collected and identified by students as a guide.
5. Complete leaf activity sheet.

Leaf Activity Sheet

LEAF	Are the leaves in an opposite or alternate arrangement?	Is the leaf simple or compound?	Is the edge smooth or jagged?	Is the leaf round-shaped?	Sketch the leaf
1					
2					
3					
4					
5					
6					

NATURE TRAIL

The nature trail at the **Environmental Learning Center** has a great variety of trees that exist commonly throughout Alabama. Students of all ages will enjoy the short walk along this beautiful trail. Trees are identified by markers that contain the following about each tree:

picture of leaf
common name
scientific name
short description and information section

Teachers are asked to remind their students about the importance of preserving this natural area. Students SHOULD NOT collect leaves along this trail. Use this area as a guide and then move to another area with unmarked trees to explore and collect leaves.

The pages that follow are actual copies of the information to be found along the trail. This is not meant to be in any order and please realize the trail will be enhanced as possible.