

Taking It Outside in Fall

The essence of outdoor education, according to J.A. Partridge author of *Natural Science Through the Seasons*, is “to initiate children into the romance and wonder of science, and to enhance their natural desire to get to know the world around them and find an explanation of its phenomena.”



Here are some projects that appeal to youngsters and have proven successful in giving children more insight into their surroundings, including the flora and fauna, than can be obtained solely from books. These are starting points in areas of exploration and study. They may be supplemented by use of books such as the *Peterson First Guide* series and DNR publications.

(1) Tree Map-Make a map of one block on a suitable street, locating the trees in the parkway on one side (and on the private property if desired). Number them consecutively, identify them, measure their breast high (4-1/2 ft.) diameters, and collect leaf samples. Learn commercial uses if any. Study shape, branching, twigs, leaves, flowers, seeds and bark. Visit the street regularly classroom tours regularly to record comparative seasonal changes.

Don't let identification scare you from doing this activity. It is sufficient to recognize a bur oak as "the one with very rough bark, gnarly branches, and hard strong wood." Eventually they should learn to distinguish oaks from maples, elms, cottonwoods, etc.,

and tell why.

(2) Tree Diary- Have your students or child adopt a tree and keep a diary of what happens: when it blooms, puts on leaves, bears seeds, and loses its seeds; what birds visit or nest in it; when the leaves change color in autumn and when



Check out pond life by identifying creatures with a "key." Take a sample of pond water and watch what grows in it.

it becomes bare; broken branches or other accidents to it; and how much its diameter increases. Your student or child may also study its twig characteristics, including the leaf scars and the buds; the kind and color of its flowers; the shape and sizes of its leaves; and its value to people.

(3) One Small World- Select a small area, perhaps 3 feet by 3 feet, in a place not likely to be disturbed

and preferably one with various plants. If some are unknown to you, collect and press samples from nearby areas. Use guides to help identify them. Keep watch for blooming and seeding dates, and emergence of new plants. Collect specimens of insects that visit it.

Dig a hole nearby and measure the depth of humus (if any), top-soil (what color), sand (if any), and how far it is to the mineral subsoil such as clay. Also on a nearby similar spot, conduct the next experiment (4).

(4) Life In The Soil-Mark a 12" x 12" square of ground. Carefully skim off the grass and other plants. Remove the top one-inch layer of soil and place in a receptacle or on a newspaper. Do likewise with successive one-inch layers (6 or more). Assign 6 or 8 children to each layer to crumble and pick it apart (or screen it) to find and count every kind of animal life: ants, beetles, eggs, larvae, pupae, sow bugs, spiders, worms, millipedes, thrips, etc. Tabulate and total. Multiply by the number of square feet in an acre or in a standard vacant lot. This can be done on various types of areas: vacant lot, old fields, woodland, etc.

(5) Pond Life- Into a wide-mouth jar put a gob of mud from the bottom of a pond, perhaps a couple of dead leaves, and fill it with the pond water. Add a teaspoonful of sugar for food. Keep undisturbed and fairly cool. Examine frequently with a strong magnifying glass to see what develops: algae, pondweeds, rotifers, water fleas, cyclops, insect

larvae, etc. Examine tiny animals with a microscope and use keys to help identify what you see.

(6) *Hitchhikers*- In autumn, some plants have seeds that cling to animals' hair and to woolly clothing as you walk through them. Collect burdock burs, beggar lice, sticktight, Spanish needles, etc. in plastic bags. Examine each under a magnifying glass and mount a specimen on cardboard, identifying it by name, name of parent plant, and an enlargement of what enables

it to steal a ride. Count the seeds in burdock burs.

Other projects may be conducted to demonstrate how seeds are widely dispersed: (a) by winds; (b) by water; (c) on the feet of waterfowl and wading birds; (d) eaten but not digested by birds or mammals; (e) buried by squirrels.

Good luck with the projects and have fun while learning!

Adapted from The Nature Bulletin, Roberts Mann, Conservation Editor.

NATURE NOTE: Changing Colors

There are few sights in the world as beautiful as the leaves changing colors in the fall of the year. Unable to simply glide from fall to winter, the leaves turn to brilliant oranges, yellows, reds and purples. In New England the sugar maple turns to bright oranges and yellows. The Rockies have the glistening gold of the aspens, and in the Appalachians, there are the scarlet red of the red oaks and the regal purple of the black gums.

Have you ever asked yourself what determines the color of a certain tree? What makes the tree automatically start to change colors? The answer is found in the sap. The sap gives instructions to the tree on what color its leaves should turn.

The amount of iron, magnesium, phosphorus or sodium in the tree, and the acidity of the chemicals in the leaves determine whether the tree turns amber, gold, red, orange, purple, or just fades

from green to brown. For example, scarlet oaks, red maples and sumacs have a slightly acidic sap which causes their leaves to turn bright red. On the other hand, the leaves of some varieties of ash, growing in areas where limestone is present will turn a regal purplish-blue.

What triggers the change? Popular myth credits Jack Frost with orchestrating the color transformation, but in reality, the thermometer has little to do with it. The answer lies in the shifting of the day and night. As the days grow shorter and the nights longer, a chemical clock inside the tree starts up, releasing a hormone which stops the flow of sap to each leaf. The sap stands still, unable to move, and becomes very thick. As it dries, the colors of fall emerge to paint our forest landscape.

Adapted from Exploring the Forest, a teacher's handbook published by the USDA Forest Service.



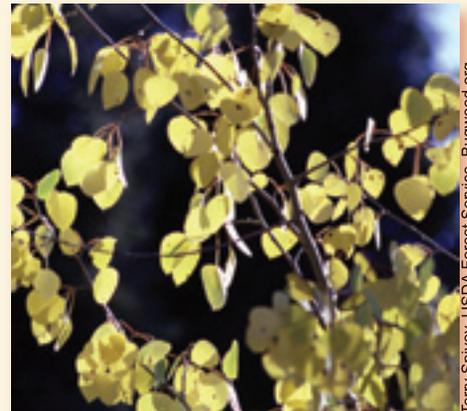
Orange: sugar maple

Steve Shaluta



Red: red oak

The Dow Gardens Archives, Bugwood.org



Yellow: Aspen

Terry Spivey, USDA Forest Service, Bugwood.org



Purple: black gum

The Dow Gardens Archives, Bugwood.org