

ARBOR SLEUTH

BEFORE 2: Trees in your Schoolyard modified from PLT's Trees in Trouble

Overview: Students practice observation skills as they assess the trees in and around their schoolyard. This information will be reviewed after the Blandy visit when students will create a report on schoolyard habitat improvement. Objectives: Students will recognize symptoms of unhealthy trees and describe possible causes.

VA Standards addressed: Science (2018): 5.1, 6.1, 7.1

Instructional Strategy

Background: Trees require some of the same things people and other animals need to grow and thrive, For example, they need plenty of water, nutrients, room to grow, and a stress-free environment. If these requirements are not met, a tree may grow slowly or even die. When a person is ill, we look for symptoms to help us identify what is wrong. Similarly, distressed trees exhibit symptoms that can help determine the problem. Loss of vigor, discolored or misshapen leaves, insect bore holes and weeping wounds are all signs that something is wrong. The student pages provide specific information about signs you might find and what they might tell you about the tree's health.

Getting Ready: Plan a trip on the school grounds, in a park, in the woods, or along a tree-lined street. Make copies of student pages.

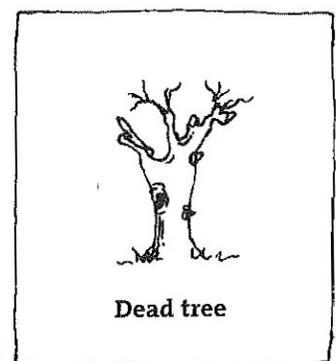
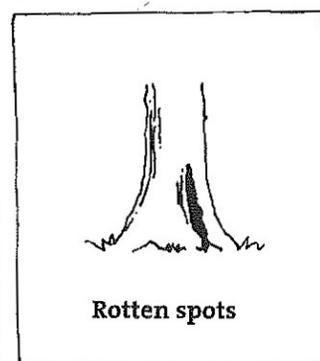
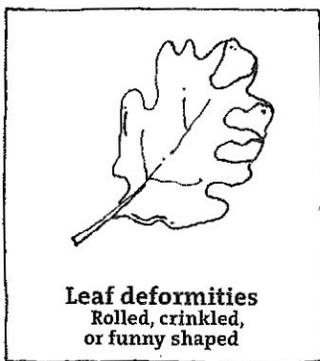
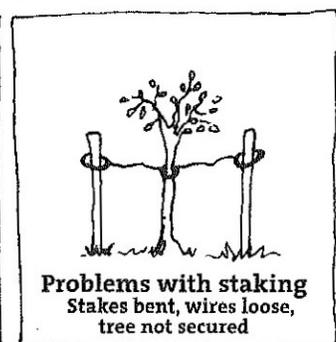
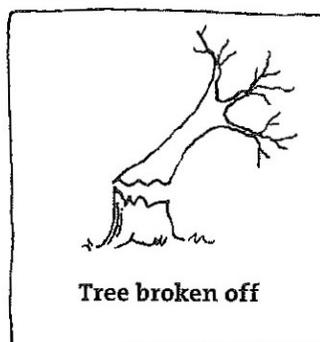
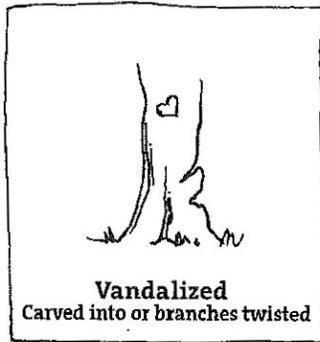
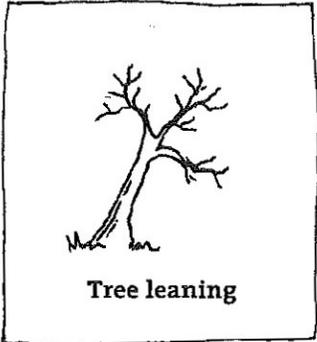
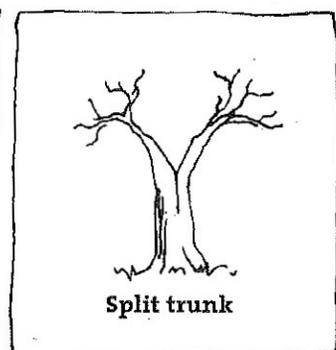
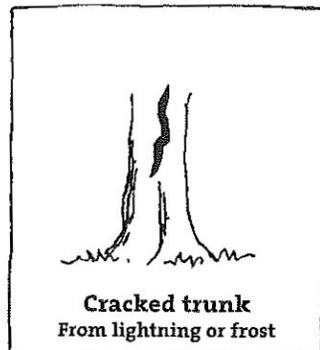
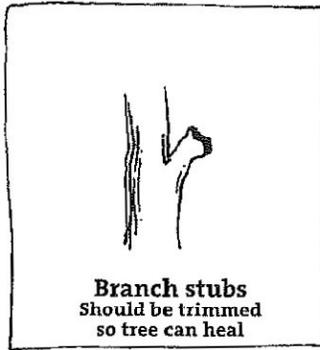
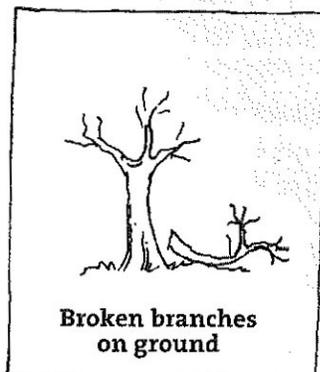
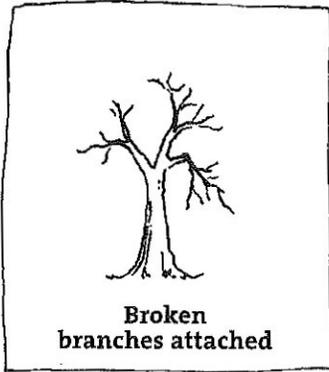
Doing the Activity:

PART A: Neighborhood Checkup

1. As a group, discuss what causes a person to get sick or become unhealthy. Responses might include poor nutrition; unclean water; a lack of food or water; toxic substances like smoke or drugs, disease, and physical injury. Students should also think of ways to prevent or combat these things, like proper diet, regular exercise, and safe behavior. With older students, ask them to name several human diseases or illnesses and their causes, symptoms, and cures.
2. Compare elements that keep humans healthy with those that keep trees healthy. (You can use a T-chart on a white board or Smart Board.
3. Tell students that they will become "tree-tectives" (tree detectives) and search their neighborhood for healthy and unhealthy trees.
4. Students should use the "tree-Tectives Trouble Guide" and "Reading Leaf Symptoms" student pages to identify symptoms of unhealthy trees. They should take additional notes and make sketches of their findings such as broken branches; unusual leaf colors or shapes; holes; trunks damaged from scratches, carvings, or graffiti; or uprooted, fallen trees that still appear to be alive.
5. Have students hypothesize about what caused the damage. Note that some problems may be more common in certain regions than in others.



Tree-tective Trouble Guide



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Student Page

Reading Leaf Symptoms

Trees can't tell us when they are sick. Instead, we must interpret the signs trees show to determine what and how serious their health problems are. The leaves usually show the first symptoms of disease, insect, or physical damage. By learning leaf-reading, you can diagnose your tree's condition. Here are some common leaf symptoms and their probable cause.

<p>Ragged leaves with holes in them. Suspect insect feeding, especially if it is summer and the leaves were not showing damage earlier. But if it is springtime, and the leaves never developed properly, chances are the damage is due to either low temperatures during the bud stage or being banged around by high winds as small leaves.</p>	<p>Leaves suddenly turn brown or black. If a frost occurred a day or two earlier, that's probably the cause. Sudden high temperatures in springtime also cause problems. If no temperature extremes are noted, suspect either a leaf or a stem disease. If the symptoms show up on a branch or two at a time, trunk or branch invasion or injury is probably the cause.</p>
<p>Spots or bumps on the leaves. Insects and mites cause most leaf swellings. Leaf spots are usually the result of disease or insect activity. Chemicals, such as sulfur dioxide from nearby coal burning plants, or improperly applied fertilizer or pesticides, can cause leaf blotches, too.</p>	<p>Leaves twisted or malformed. The most common cause for this is stray herbicide drift, but insects, mites, occasionally a disease, and sometimes low temperature injury can all produce similar-appearing symptoms.</p>
<p>Margins of leaves turn brown. Moisture deficiencies or high temperature stresses are usually to blame. Sometimes root or trunk damage, including injury from road salt, can be involved.</p>	<p>Light green or yellow leaves. Probably a "micronutrient" disorder, such as iron or manganese deficiency. Curiously, trees rarely show deficiencies of the major plant nutrients such as nitrogen and potassium.</p>
<p>Leaves turn fall-colored prematurely. A serious symptom suggesting trunk or root damage of some kind. Trees can withstand a certain amount of abuse to the leaves, but leaf injury becomes serious when: heavy losses occur two or more years in a row, early season loss causes a new flush of leaves, the tree is marginally hardy to the area, or the tree is under some form of stress, such as recent transplanting. Check with your county extension agent or you may need to call an arborist.</p>	<p>Sudden leaf drop If inner leaves are dropping during a dry spell, or if a few leaves fall from throughout the tree, it shouldn't be serious. Drought or squirrels may be to blame. But if leaves are dropping heavily from one branch and then another, there is a problem somewhere with the water-conducting system of the tree-probably disease, possibly insect borers.</p>

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