



## Teacher Directions for Evaluating Overall Tree Health (Adapted from American Forests' CITYgreen)

To complete the “Tree Inventory Data Sheet,” students will need assistance with special identification and proper data collection techniques. You may want to invite someone knowledgeable about trees (e.g., a local forester, naturalist, arborist, or Master Gardener) to assist with this activity.

### Follow the steps below to assist students in completing the “Tree Inventory Data Sheet.”

- 1. Enter basic information.** At the top of the data sheet, record student and group name, study site, and date. Leave the verification line blank.
- 2. Record a Tree ID#.** Assign each tree an ID number for easy reference.
- 3. Identify the tree species.** Use a dichotomous key or tree field guide to identify the tree species.
- 4. Assess the tree's understory.** Circle the appropriate ground cover under the tree canopy, using the following categories:
  - Forest litter (includes leaves, twigs, flower, fruit, or other natural tree droppings)
  - Grass (includes other vegetative groundcover)
  - Impervious (includes all paved and unpaved surfaces, e.g., concrete, asphalt, bare soil, and compacted gravel)
- 5. Measure the tree's Diameter at Breast Height (DBH).** Use a regular tape measure to determine the trunk diameter (in inches) at four-and-a-half feet above the ground. If the tree is located on a slope, measure four and a half feet from the uphill side. If the tree has a multi-stem trunk, measure the largest stem. Convert the circumference measurement using this formula:  
$$\text{Diameter} = \text{Circumference} / \pi$$
- 6. Measure the tree's height.** Estimate the height by comparing it to a building. Each story of a building is typically ten feet tall. Alternatively, help the students create their own clinometers to measure the height. See the Extension activity for directions.
- 7. Evaluate the tree's overall health.** Inspect the tree's crown, trunk, and roots. Unhealthy signs include exposed roots, missing bark, decay, dead or dying branches, an exposed tree cavity, unbalanced foliage, or regrowth from a previous topping or line clearance (a poor pruning practice in which branches are cut back to an individual **branch node** or without regard to the tree's form). Use the “Health Class” section on the back of the data sheet to calculate a number value (1 = Dead; 5 = Excellent) for the tree's health. Record this number on the front of the sheet.
- 8. Assess the tree's condition.** Site characteristics affect a tree's ability to reach full mature size, determining its overall viability. A forest or park tree growing in clay loam with no obstructions and minimal competition, for example, will fare better than the same tree found beside a large building in compacted, nutrient-poor soils. Make a determination of growing condition based upon your knowledge of the site characteristics and the tree species' preferences (if known). Characteristics to consider include soil type; available light; nutrients and water; competition with other plants; and potential for physical damage (e.g., in a parking lot, under low power lines, growing into a building, etc.). Use the “Growing Conditions” section on the back of the data sheet to determine an overall point total for the tree's condition (3 = Good; 1 = Poor) and record this on the front of the sheet.

### To guide your class in completing the “Tree Inventory Data Sheet,” follow these steps:

1. Distribute one “Tree Inventory Data Sheet” to each student.
2. Evaluate the first two trees as a class, encouraging students to ask questions and become familiar with the data collection process.
3. Split the students into pairs or small groups, depending on the number of trees at the study site. Give each group a clipboard, tape measure, and tree identification guide or dichotomous key. Assign the students a group of trees to identify and assess. Tell students to use only one evaluation sheet for each tree.

To extend this project, visit American Forest's CITYgreen web site (<http://www.americanforests.org/productsandpubs/citygreen/>) to explore a GIS map of your area. On this web site, you may also use additional teacher resources to complete an extensive inventory and study of the tree canopy in your area.