

Tree Detectives!



Background

Learning how to identify trees by studying their different parts and examining their habitats can help participants become familiar with local plant life. In addition, once participants learn good observation and identification techniques, it is easier for them to transfer these skills to the study of other organisms that live in the area, such as songbirds or native flowering plants.

A good rule of thumb when working to identify trees, or most other life forms, is to observe three or more characteristics about the organism before heading for a field guide or making a final decision. At least two of these characteristics should not be related to the size of the specimen. Relying too heavily on one type of clue can lead to incorrect identification.

For example, imagine that a participant knows that the leaves of a quaking aspen tree flutter in the wind and that the tree generally grows somewhere between 40 and 70 feet tall. With nothing else to go by, he or she might spot a young 40 foot tall eastern cottonwood (they grow to about 100 feet!), its leaves fluttering much the same way an aspen's would, and incorrectly call the tree an aspen. Examining other details, such as the bark of the tree, the leaf shape, and its habitat would make correct identification much more likely.

The following are things to consider when identifying trees:

- Does it have needles or leaves?
- Does it lose its leaves in the winter (deciduous), or not (evergreen)?
- What is the size, shape, color and general appearance of the leaves or needles?
- Look closely at the color, texture (scaly, smooth, ridged, fissured, etc.), thickness, and anything unusual about the bark.
- How are the leaves attached to the stem (facing opposite each other, alternating, etc.)?
- Look closely at the flower, fruit (including nuts and acorns), or cone of the tree.
- Estimate the size (in height and diameter) and general shape of the tree.
- What does the crown, or top area of the tree, look like?
- Look closely at its habitat. What is growing around the tree? What is the area like (swampy, mountainous, near a lake, desert-like, in the tundra, etc.)?
- Consider its geographic region. Some trees, like the live oak (found almost exclusively along Southeastern U.S. coastlines), are confined to certain regions.
- Consider any unusual characteristics, such as the great height and width of the California Redwoods.

Activity

1. Find a wooded area that has at least five different types of trees, preferably native trees, to conduct the activity. If no such stand exists near the place your group meets, consider planning a field trip to a nearby park. Have volunteers help as needed.

Objectives

- Demonstrate basic observation and identification skills
- Describe different characteristics of two (or more) different tree species
- Associate particular characteristics with different tree species

Grade Level

3-6; modifications for grades 1-2 and 7 and up

Materials

- Tree Detectives worksheets
- Age-appropriate field guides, including the Audubon Society's Nature Guides, Golden Guides, Peterson's Field Guide Series (Peterson First Guide to Trees for younger participants), Nature Study Guild's Tree Finder, etc.
- For younger participants, large pictures of leaves and tree bark to examine
- Small notebooks and pencils
- Clipboards or other portable writing surface

Note: A local arborist, either from a private tree care company or a county/municipal government office, can serve as an excellent resource for information on local tree species and identification. Consider contacting an arborist from the community to help with this activity.

2. Ask participants, *Do you know how to tell one kind of tree from another?* Have them name different characteristics that can help them to identify trees. Brainstorm a list. With visual aids such as posters, or the accompanying worksheet (Leaf and Bark Clues, etc., below), explain the different parts of a tree and how needles, leaves, and bark can all vary from one tree to the next. *What do trees need to survive? What kinds of things do they need in their habitat?* Discuss with participants the idea that, like animals, trees have different habitats and need varying levels and/or types of sunlight, water, soil, and space.
3. Tell participants that they are all going to become “tree detectives” and will have the opportunity to study different trees in detail. Each participant should have at least one partner with whom he or she will work. Make sure that at least one of the partners has a clipboard or other hard surface, copies of both the Leaf and The Whole Tree Clue sheets, and a pencil. Tell participants that these worksheets are a part of their field notebook, in which they will carefully describe different tree characteristics.
4. Begin by exploring leaves. Ask the teams or small groups to find at least three leaves on the ground, and on the leaf worksheets, to write their best description of the color(s), shape, texture, and size of each of the leaves. If participants can see how the leaves are arranged on a twig (i.e., alternating, opposing, etc.—see Leaf and Bark Clues below), have them note that as well. They can also draw the leaves in a notebook. Once they have done this, ask all the participants to throw their leaves in a large pile and mix them up. Then, ask them to look at their notes and try to locate their own leaves. Often, participants will have studied their leaves well enough that they will be able to find the leaf without their notes; encourage them to cite evidence in their notes, too.
5. Once all participants have located their leaves, have them use field guides to try to find out what kind of tree the leaves came from. Encourage them to use several characteristics of the leaves to find their tree. Assist where necessary.
6. After they have completed their leaf hunt, have partner groups find a single tree to study. Using the Whole Tree Clue worksheet, have them take notes on every detail of the tree they can find, including the appearance of the leaves, flowers, fruits (including nuts and acorns), or needles and cones. They should also consider the color, texture, and patterns in the bark, and the general size and shape of the tree. Also ask them to consider the area in which the tree is growing. Participants can also draw a picture of their trees in their field notebook.
7. When they have finished taking notes on their tree, have them investigate what kind of tree they have found using field guides. Ask each pair or small group to make a short presentation to the whole group about their tree and any interesting information the field guides may have told them about this species. In particular, encourage small groups to discuss what wildlife might depend on the tree they have studied, and what kinds of native plants might grow nearby. Ask participants if they can find other trees of the same kind at their study site.
8. Ask participants, *Why do you think tree identification can be useful?* (Helps to evaluate the health of the forest, the kind of habitat available, the amount of biodiversity present, the kinds of trees certain animals use, etc.) Ask them what interesting things they learned about the process.

Note: The leaf hunt portion can also be done with nuts, seed pods, other fruits, or pine cones. Consider doing a nut/fruit/cone hunt in addition to the leaf hunt if the items are available.



For Younger Participants (Grades 1-2)

Prior to the activity, select a number of different tree leaves and paste one of each on a sheet of paper. Make several sets of these guides, enough for one for each small group. On the tree hunt, have participants try to find a leaf that matches each of those in their guide. If the leaves can be found on the ground, have them take one that matches each sample. Ask participants to explain what is similar about the leaves they found and to describe some differences. *How can they tell which ones match?* Have participants draw pictures of the leaves they found.

For Older Participants (Grades 7 and up)

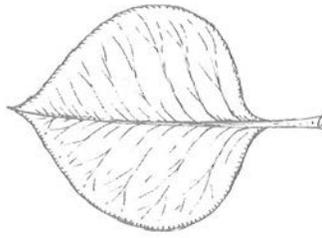
Instead of using the Leaf and The Whole Tree Clue Sheets below, have participants create their own field notebook. Have them answer the same questions, but do so by organizing their own notes. Older participants may come up with their own method for identifying trees.

Leaf and Bark Clues

Leaves:



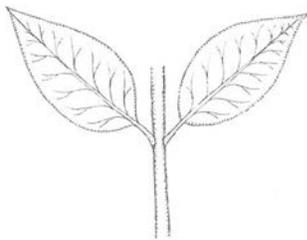
Needles



Simple leaves



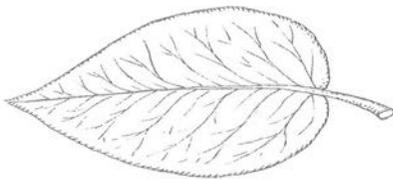
Compound leaves



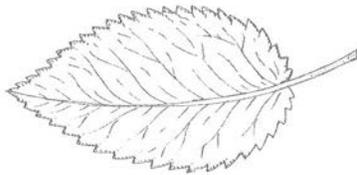
Attached opposite



Attached alternating



Smooth edged leaves

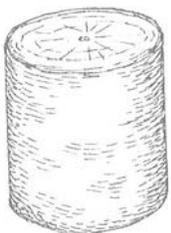


Toothed edged leaves

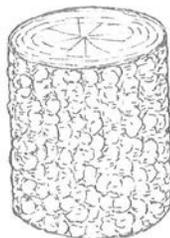


Lobed leaves

Bark:



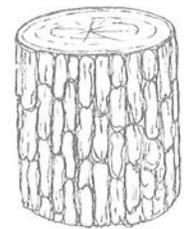
Smooth



Bumpy



Ridged



Scaly

Leaf Clue Sheet

DIRECTIONS: Draw a picture of your leaf in the middle, where it says "Leaf," and briefly describe or draw each characteristic of the leaf (e.g., color, shape, size, etc.) in the spaces provided.

Leaf

The Whole Tree Clue Sheet

DIRECTIONS: Draw a picture of your tree in the middle, where it says "Tree," and briefly describe or draw each characteristic of the tree (e.g., location, flowers, bark, etc.) in the spaces provided.

