

TREE IDENTIFICATION

(Using a dichotomous key)

Grades: 5th-12th

Subject Areas: Science, Environmental Education, and Social Studies

Objective

Students will learn to identify various species of trees common in Northeast Georgia by using a dichotomous key. Terminology basic to leaf types, leaf margins, and venation will be introduced.

Method

A guided walk along the Wetlands Loop trail is most often used for this activity, although any other location may also be used. The facilitator should be familiar with the trees that will be discussed in order to teach the activity. Take a few minutes to review the information provided on the laminated sheets with basic leaf ID terms before using the dichotomous key. Terminology needed for the activity is as follows: broadleaf, needle, simple leaf, compound leaf, leaflet, opposite, whorled, alternate, leaf margin, smooth (entire), toothed, lobed, venation, parallel, pinnate, palmate.

Materials

Laminated dichotomous key sheets

Pocket guides,

Clipboard

Laminated answer sheets

Dry erase markers

Laminated information sheets

Tree note cards

Procedure

Discuss background information with the students before beginning the nature walk. Tell them that trees are the oldest and largest living organisms. Trees serve as habitats and food sources for many species of plants, animals, fungi, protists and bacteria. Trees produce oxygen and remove carbon dioxide and other pollutants from the air. They are the source of many raw materials for products that we use daily. Trees serve as buffers for wind and noise, prevent erosion, transport water, and slow runoff from rain thus protecting water quality in streams and lakes. Trees also provide shade and are valuable aesthetically in landscaping.

To really appreciate trees, it helps to learn their names. One method of identifying a tree is to use a "dichotomous key". The word **dichotomous** means "divided into two parts". The concept of using a dichotomous key is to make a choice between two alternatives. In identifying the trees along the trail, always start at the beginning (No. 1) and work through the key one step at a time. Look at the two alternatives. Each pair of phrases describes different leaf features.

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Only one of the two will describe the leaf being "keyed out". Decide which phrase applies to the

leaf you are trying to key out. The correct phrase either guides you to the next pair of phrases or states the name of the tree. Now we are ready to begin our trek through the woods.

Divide the students into groups with no more than 3 students per group. Give each group a clipboard with a laminated dichotomous key, a pocket guide, an answer sheet, and a dry erase marker. Ask the students to key out each tree marked by a lettered wooden block, then write the name of the tree next to the corresponding letter on their answer sheet. (This activity can be approached as a competition, with points being given for each correct answer. Encourage students to work discretely in their groups. Wait until the end of the walk to reveal the correct answers. As you stop at each tree, give some details about uses for the wood or fruit.)

(Alternative) If you are not using the key, give the students the laminated form with pictures of trees. Students can identify the trees marked by wooden blocks with the letters engraved on them.

The following pages are formatted as note cards to be used as tree notes. They contain interesting background information on trees that are common to Smithgall Woods, and that are either found in the dichotomous key or the tree ID picture page.

TREE ID – Dichotomous Key

(middle school age and above)

- 1. Leaves are evergreen.....2
- 1a. Leaves are deciduous (not evergreen).....6
- 2. Evergreen leaves are needle-like or scale-like.....3
- 2a. Evergreen leaves lack needles or scales and are broadleaf.....**American Holly**
- 3. Leaves are needle-like.....4
- 3a. Leaves are scale-like.....**Red Cedar**
- 4. Needles are rounded, have pointed tips, and more than 1 inch long.....5
- 4a. Needles are flattened, have blunt tips, and are about ½ inch long.....**Eastern Hemlock**
- 5. Long, pointy needles are twisted and are in bundles of 2's..... **Virginia (scrub) Pine**
- 5a. Long, pointy needles are straight and are mostly in bundles of 5's **White Pine**
- 6. Deciduous leaves are simple.....7
- 6a. Deciduous leaves are compound.....8
- 7. Simple, deciduous leaves are alternate.....9
- 7a. Simple, deciduous leaves are opposite.....10
- 8. Compound, deciduous leaves are alternate.....11
- 8a. Compound, deciduous leaves are opposite.....**Ash**

- Alternate, simple leaves have “lobes”12
- 9a. Alternate, simple leaves lack “lobes”13
- 10. Opposite, simple leaves are elliptical with smooth or wavy edges.....**Flowering Dogwood**
- 10a. Opposite, simple leaves are palmately lobed with reddish stems (petioles).....**Red Maple**
- 11. Alternate, compound leaves have 5-9 tapered, finely toothed leaflets.....**Hickory**
- 11a. Alternate, compound leaves have 7-19 oval, smooth margin leaflets..... **Locust**
- 12. Leaves are alternate, simple and lobes are star-shaped.....**Sweetgum**
- 12a. Leaves are alternate, simple and lobes are not star-shaped.....14
- 13. Margin of slender, lance-shaped leaf is very finely toothed.....**Willow**
- 13a. Margin of tapered, oval leaf is double-toothed.....**Birch**
- 14. Leaves are alternate, lobed and tree produces acorn-type fruit in fall.....15
- 14a. Leaves are alternate, lobed and tree lacks acorn-type fruit.....16
- 15. Lobes are somewhat pointed with bristle-like points present.....**Red Oaks**
- 15a. Lobes are rounded with bristle-like points are absent.....**White Oaks**
- 16. Leaves have 4 lobes that are squared at the end, and bark is gray.....**Tulip Poplar**
- 16a. Leaves have 3-5 lobes on wide-based stems, and bark is mottled and peeling.....**Sycamore**