



Dichotomous Key

Objectives

Students will learn about a dichotomous key and how to use it to identify plants.

Background

A dichotomous key is a scientific term for a road map that is used by scientist to identify an organism. It is used to help tell the difference between similar subjects which is useful for Botanists, a person whose job it is to study plants, when they need to identify plant species from each other. This is especially helpful when two plants look alike but may be very different species.

The key is made up of descriptive questions that allow the person using it to look an organism's visible features in order to tell it apart from other organisms. A dichotomous key can be very detailed or not, but the more detailed the questions are, the easier it is to identify a subject. If two plants have the same leaf shape, you will need to look further through the key to see if you can find the features that make them different from each other such as how their bark looks.

Activity

- 1) Introduce the students to the dichotomous key, describing its features and uses.
- 2) Guide students through the key that is provided on page 2 using the images of the given species on pages 4 and 5. Allow them to break into small groups and see if they can follow through the key to identify the plant based on the picture and write their answer under the image.
- 3) Have students get creative and make their own key by choosing objects around the room as their subjects. Have them choose any objects they like and draw boxes and arrows that could lead someone through their key to identify any of the objects. Guide them through by helping them choose adjectives that distinguish each object from the next. Also, make sure to print the dichotomous key to bring for the next part.
- 4) Bring students to a forested area or field near a tree line. Break them up into groups and have them work together to use the key on any trees you can find in the area. It may be that not all of the species on the key are found in your outdoor location but all of the species are located in North Carolina so the students should be able to identify at least one of the species on the key. In the rare case that nothing can be found, challenge the students to take the key home and use it in their own backyard or local park with the help of their parents. Have them report back with what they were able to key!

For more advanced students, have them create a key based on plants you will be taking them to observe. This is especially useful if you have limited access to an outdoor space but can find some easy plants to I.D.

Age Group

Grades 3-5

Duration

1 Hour

Materials

Paper

Pencils

Printed Dichotomous Key

Location

Inside and Outside

Grade Standards

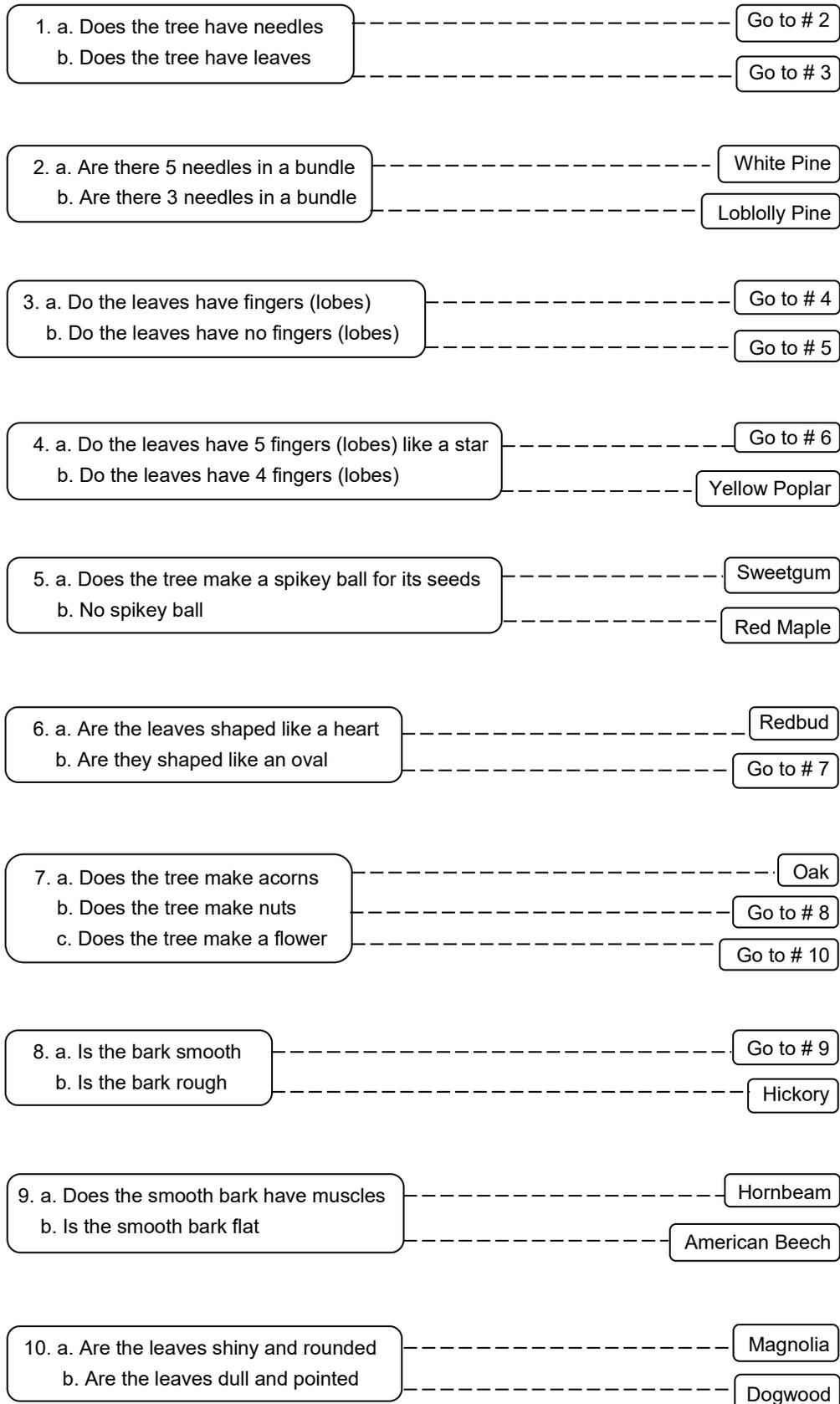
3 = Ecosystems;
Structures and
Functions of Living
Organisms

4 = Ecosystems

5 = Ecosystems



Dichotomous Key to NC Trees



Tree Species Leaves Answer Key

- 1) Loblolly Pine
- 2) Red Maple
- 3) Sweetgum
- 4) Oak
- 5) Yellow Poplar
- 6) Hickory
- 7) Magnolia
- 8) American Beech
- 9) White Pine
- 10) Redbud
- 11) Hornbeam
- 12) Dogwood

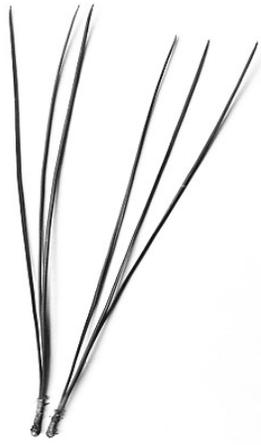
Some Fun Tree Talking Points

- A fun and easy way to remember the difference between loblolly pine and white pine:
 - * Loblolly has 3 syllables and has 3 needles in a bundle or you can spell out L-O-B on the 3 needles
 - * White has 5 letters and 5 needles in a bundle that can spell out W-H-I-T-E
- The spikey ball that drops from sweetgum trees is actually a fruit and contains seeds that will create new sweetgum trees.
- There are many species of oak trees in North Carolina. Each ones acorn (fruit) and leaf is different from the others. Our picture is of a White Oak which has rounded, lobed leaves and a long, pointed acorn with a cap. Try to find acorns on the ground when looking for oaks outside, then you can use this site to find your oak based on its leaf shape:
<https://projects.ncsu.edu/cals/plantbiology/ncsc/tnc/quercus.htm>
- There are also multiple hickory species in NC. Our picture is of a pignut hickory which has a nut that opens up. Each species of hickory has a unique nut (which is the fruit part of the tree) that it produces. Which hickory tree can you find in your area?
<https://projects.ncsu.edu/cals/plantbiology/ncsc/tnc/carya.htm>
- The yellow poplar is also called the tulip poplar because it makes a tulip-like flower that attracts pollinators, such as bees and birds. It also gets the name of yellow poplar because the wood under the bark turns a greenish-yellow when it grows big enough.
- Hornbeam is also called ironwood or muscle wood due to its strong, muscle-looking wood. It is often used to make levers and handles due to this quality!
- Did you know that the flowering dogwood tree is our state flower? Our state tree is actually the long-leaf pine since it used to be the most common pine species in North Carolina!

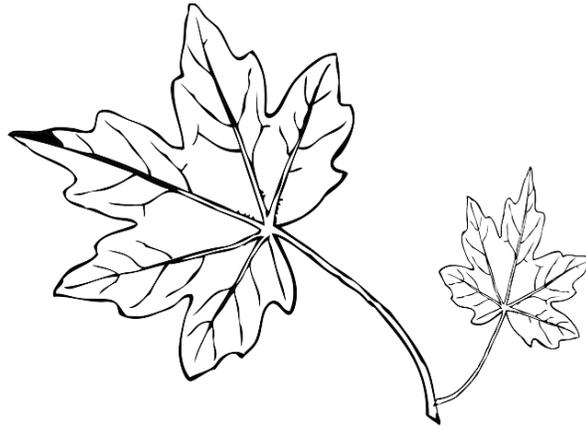
Attribution for images used:

- 1) Credit to JMK: https://commons.wikimedia.org/wiki/File:Pinus_taeda,_a,_naaldbundels.jpg (Changes: recolored to black and white)
- 2) No copyright
- 3) No copyright
- 4) No copyright
- 5) Designed by Creazilla: <https://creazilla.com/nodes/70564-tulip-tree-autumn-leaf-clipart>
- 6) No copyright
- 7) Credit to Florida Center for Instructional Technology (FCIT): https://etc.usf.edu/clipart/81400/81452/81452_sweetbaymag.htm
- 8) USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. 3 vols. Charles Scribner's Sons, New York. Vol. 1: 615.
- 9) USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. 3 vols. Charles Scribner's Sons, New York. Vol. 1: 56.
- 10) Credit to Klikini: https://commons.wikimedia.org/wiki/File:Cercis_Canadensis_Leaf.png (Changes: recolored to black and white)
- 11) USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. 3 vols. Charles Scribner's Sons, New York. Vol. 1: 606.
- 12) USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. 3 vols. Charles Scribner's Sons, New York. Vol. 2: 664.

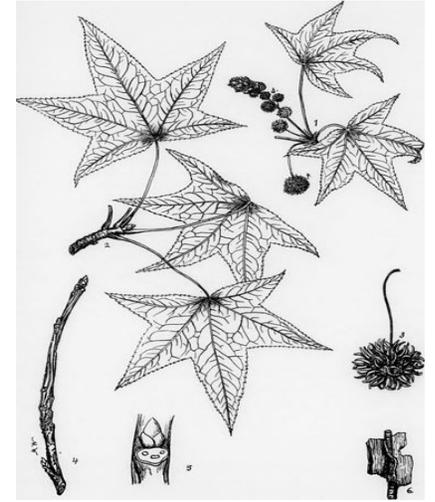
1



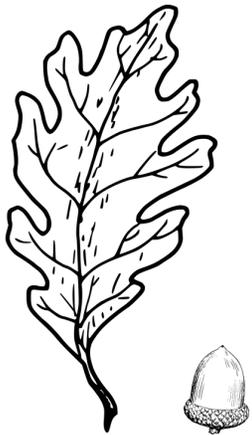
2



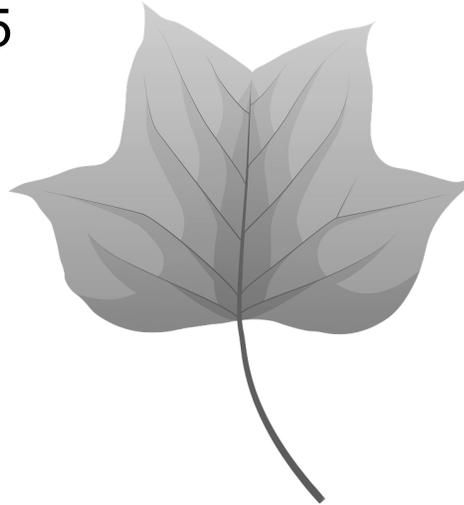
3



4



5



6

