

Tree Workshop

Question 1: Humans like to break things down into clearly defined groups when trying to identify things. But, there always seem to be items that never fit neatly into these groups. When it comes to trees, the first breakdown that is used is determining if the tree falls into the classification of conifer or broadleaf trees. Use your computer and search both classifications and list the differences between them below.

Conifers

Broadleaf

___ **Needle Leaves** _____

___ **Broad flat leaves** _____

___ **Cones** _____

___ **Flowers and seeds** _____

___ **Conical shaped** _____

___ **Columnal or ball shaped** _____

Was there one feature that you were expecting to be a clear defining separation of the two types of trees? **Conifers are not always evergreen and Broadleaf trees can be evergreen.**

Question 2: Conifers are any tree that have cones and have needle-like or scale-like leaves. They are typically evergreen but do not have to be. Specie/Family type identification can be determined by examining the features of the needles. Search for descriptions on the following Family types of Conifer Trees and record your finds about the unique features of each family type.

Pine: **Their needles come in bundles of 2, 3, & 5s**

Spruce: **Single needles attached to the branch by a small stem. The shafts of the needles have four sides.**

Fir: **A flattened needle that is attached to the branch stem by what looks like a suction cup formation.**

Cedar: **There needles are scale like.**

Larch: **A cluster of needles that emerge from a single point. Tree is also deciduous (drops its needles).**

Now that you looked up the type of conifer needles, which two tree types are represented by the pictures below?



Fir



Pine

Question 3: As mentioned, all conifers have cones. Therefore, every Pine Tree has Pine Cones, but not every Cone is a Pine Cone. While not as distinctive as needles, there are still some unique traits to some of the cones of our local conifers. Look up and record your descriptions of the cones to the following species.

Eastern White Pine: A stalked cone with scales that open to irregular distances, usually covered by some resinous material.

Colorado Blue Spruce: The scales of the cone have a dense but papery texture to them. A favorite of squirrels and often chewed down to the stem of the cone.

White Fir: An oval cone that is about half as wide as it is long, usually holding its scales compressed tightly together.

Eastern Red Cedar: Because the cone is coated in a waxy blue flesh, it is often inaccurately referred to as a berry. The cone is revealed after it dries out during the Winter and the flesh falls off to release its seeds in Spring.

Eastern Hemlock: A small cone about 3/4" long that starts out green and slowly turns brown. Remains soft and flexible until the seeds drop in the fall.

With using what you learned about these cones, which two tree types are represented by these pictures below?



___ Spruce ___



___ Fir ___

Question 4: To identify broadleaf tree species, multiple features need to be examined. The first characteristic to determine is the pattern of the tree branches. There are two main patterns: Opposite and Alternate. Find the definition of both patterns online.

Opposite: Consist of side branches growing exactly opposite of each other.

Alternate: Consists of side branches growing staggered throughout the main branch but on opposite sides.

There are only three major tree types that have the opposite branch pattern. What are the three types of trees: Maple, Ash, and Dogwood.

Question 5: Leaves of broad leaf trees contain many key features in identifying the species. The first step is determining if the leaf is a “simple leaf” or a “compound leaf.” Explore the difference between the two online and then make a general sketch of both types of leaves below.

Simple Leaf

Compound Leaf

Question 6: When it comes to defining what a leaf looks like there are many different names that are used to describe the pattern of the leaf shape and the pattern at the edge of the leaf. Below are just a few of the terms used. Find out what they mean and then add a few others that you found interesting.

Leaf Shapes:

Cordate: Heart-shaped

Linear: Long and narrow

Lobed: Divided by deep cuts into the leaf

Edge Pattern:

Entire: Even, smooth

Serrate: Saw-toothed pattern

Below are some pictures of leaves. Using the terms that you learned from the last two questions, how would you describe these leaves?



Simple leaf, Serrate,

Uneven ovate (oval shape)

Compound leaf, Entire,

Linear leaflets

Simple leaf, Entire, Cordate

Question 7: Instead of producing cones, Broadleaf Trees produce a type of fruit to create their seeds. Some are fleshy, some are not. Below are the major types of fruit types. Use your resources to define each type.

Berry: A soft fruit containing many seeds.

Drupe: A fleshy fruit with thin skin whose seed is enclosed in a central stony covering

Nut: A dry, one seeded fruit with a hard shell

Pod: A case that splits along its side or bursts open when ripe to release its seeds that were attached to the case.

Pome: A fleshy fruit consisting of a developed pistil (female part of the flower.)

Samara: A dry fruit bearing a wing.

Which fruit types are represented by the pictures below?



Berry

Pod

Pome

Nut

Question 8: You can still make some conclusions with broadleaf trees even after the leaves have fallen off. You can still determine if the tree branches are opposite or alternate. You can try to look at the overall branching throughout the tree structure or you can look at a single branch. Leaves leave a scar on the branch when they fall off. These scar patterns can be used the same way as branching structure is used to determine if it is opposite or alternate. Query “leaf scars” online to make sure you understand what to look at and then try and figure out in the pictures below if these branches are Alternate or Opposite?



Opposite



Alternate

Question 9: Below are some images of tree cookies. As you know, one can count the rings to get an approximate age of the tree. But, tree cookies can show you more. Look at the cookies below, closely. Are the rings always circular? Is the center of the cookie, the center of the rings? Are there scars in the rings? What happened on the edge of the Ash Tree cookie (last one)? Share below what you can find online that can answer these questions?



Rings are not always circular nor centered within the cookie. Distortions to the rings can be caused by trees leaning and adding more mass to one side of the tree. Scars can be caused by insect damage, fire damage, and other diseases. The Ash Tree had a branch grow from the tree that distorted the tree rings.

Question 10: While it will not give you the full history of the tree, you can see back a few years on a tree by examine the locations of the terminal bud scars of a branch. These scars are made by the formation of a terminal bud which will burst forth and put on new growth for the branch. Follow the link below and read the article and examine the picture.

<https://www.washingtonpost.com/wp-srv/special/metro/urban-jungle/pages/100209.html>

When you can go outside and find a branch or two and see how far back you can count using terminal bud scars. _____

(Note: If you do not have a tree to look at, look back at the opposite branch in Question 8. You can see one terminal bud scar on the opposite branch.)

You should have enough basic knowledge now to start identifying our local trees with a guidebook. One of my favorites is "Trees of New Jersey & the Mid-Atlantic States" available through the NJ DEP – Forestry Website. When you can, take a hike and try using your knowledge and test yourself on some of the trees in your area.