

# Idlewild and SoakZone

*presents*

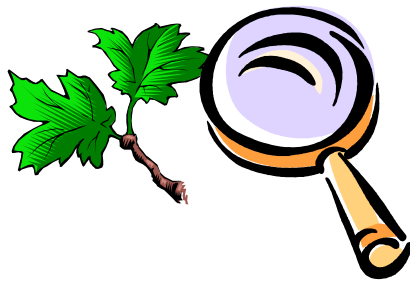


# IT'S ALIVE!

*AN EXCITING TREE IDENTIFICATION  
PROGRAM!*

Pennsylvania is home to 108 species of native trees and many others that were introduced by its settlers. The inhabitants of Pennsylvania have always been dependant on these trees as a source of lumber, paper, food and chemicals. Trees also clean the air we breathe, provide a home for many animals, and protect us from hot summer sun or harsh winter winds.

Many of Pennsylvania's native and introduced trees can be found right here at Idlewild and SoakZone. Today at the park you will learn some techniques on how you can identify some of them.



There are many different parts of a tree that we can look at when trying to identify it, such as: the bark; the flower; the fruit; and the overall shape. In our exercises, however, we will concentrate on how the leaf can help you name some of the trees that you encounter on your visit to Idlewild today.

Trees are usually divided into two main groups:

Conifer and Broadleaf.

**CONIFERS** are trees that have needle-like, scale-like, or awl-shaped (long, narrow, and taper to a fine point) leaves. Most conifers are evergreen trees since they do not lose their leaves all at once. Their fruit is generally a cone composed of brown, woody scales. Additionally, conifers usually have an overall shape of a cone.



**BROADLEAF** trees are called "deciduous" because they shed their leaves annually. Their fruit can be a berry, acorn, capsule, nut, or pod. The overall shape of a broadleaf is a broadly spreading top (or crown) supported by a single trunk or multiple stems.

Leaves provide life for the tree through photosynthesis. Photosynthesis is the process where water and carbon dioxide are taken in through the leaf and transferred into carbohydrates. Carbohydrates provide the tree with energy or "food" for it to grow.

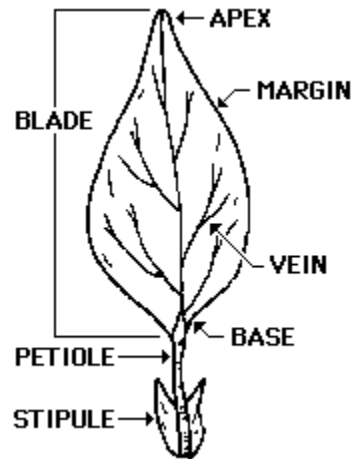
Although all leaves function in a similar way, each kind of tree makes its own distinctive leaf. Closely related trees will have leaves that look very much alike while distantly related trees will have leaves that are very different.

Understanding the structure and characteristics of a leaf will help you learn how to identify trees.



## LEAF STRUCTURE

The leaf *blade* is the entire leaf unit. Within the blade you will notice small lines called *veins*. These veins can run from the part of the leaf closest to the stem, the *base*, to the very tip of the leaf, the *apex*. The *margin* is the edge of the blade. A leaf is connected to the stem by a thin stalk called the *petiole*, which may or may not have small leaf-like structures, called *stipules*.



## LEAF SHAPES

Some common leaf blade shapes are found below.



OVATE



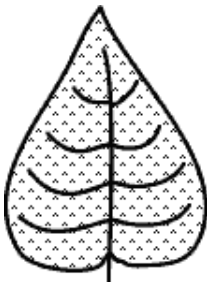
LINEAR



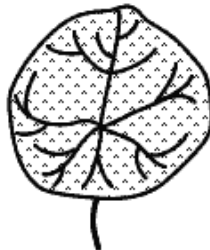
LANCEOLATE



OBLONG



HEART



ORBICULAR



ELLIPTIC

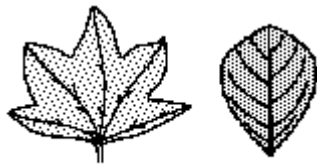


SPATULATE

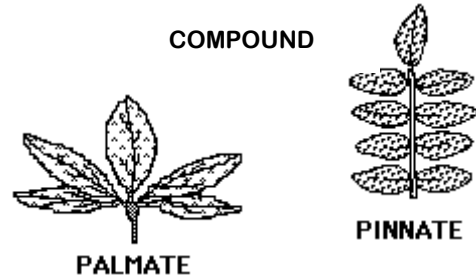


## LEAF GROUPINGS

If a leaf has a single undivided blade it is said to be a **simple leaf**. A **compound leaf** is one that is divided into several smaller leaflets. Compound leaves can be **palmate** with fan-shaped leaflets, or **pinnate** with leaflets opposite each other.



SIMPLE



COMPOUND

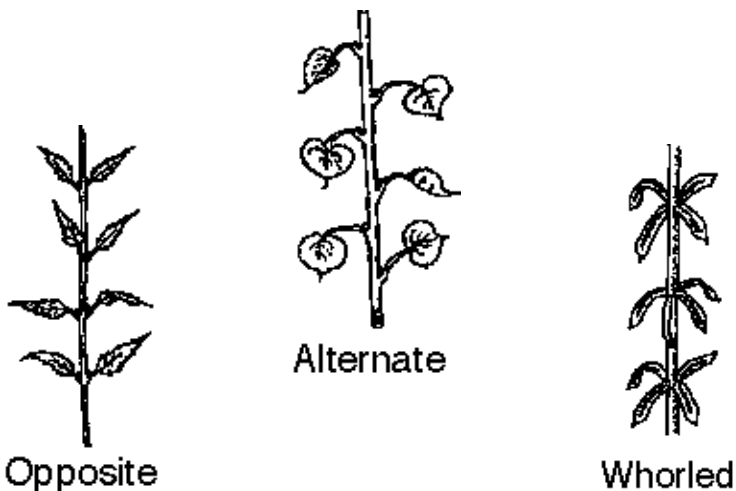
PALMATE

PINNATE



## LEAF ARRANGEMENT

Arrangement describes the way in which leaves are attached to a stem or twig. Leaf arrangement can be opposite, alternate, or whorled. When leaves are arranged **opposite** they are directly across from each other on the stem. When leaves are **alternate**, they are on both sides, but not directly across from each other. Finally, when leaves are **whorled** three or more leaves attach to the stem at a single point.



Opposite

Alternate

Whorled



## LEAF MARGINS

The shape of the margin, or edge of the leaf is another characteristic used to identify trees. Three types of margins are entire, toothed, and lobed. A margin that is *entire* is smooth, a *toothed* margin has shallow bumps, and a *lobed* margin has deep indents. These indents are called clefts, while the portion of the leaf jutting out are called lobes.



## A KEY TO IDENTIFY TREES

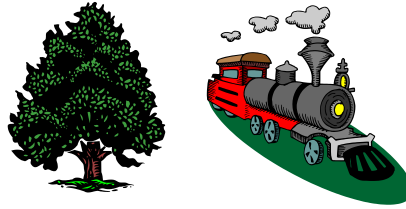


A Taxonomic Key is a tool designed to distinguish the differences among a set of objects, in this case a group of trees. The key separates trees into various categories, based on physical characteristics, until you have only one tree remaining. It's sort of a process of elimination. On the following page you will find a simple taxonomic key using leaf characteristics to help you with today's activities. Two choices are presented in the Key, either a characteristic is or is not present; these are the only two choices possible. The two opposite characteristics are presented in the Key by two statements with the same number (1 and 1, or 2 and 2...etc.). Carefully read both statements before making a decision. When you decide which statement best reflects your leaf, follow the directions to the next set of statements.

### TAXONOMIC KEY

1. Leaves are needle-like, awl shaped, or scale-like: usually evergreen (go to 2s)
    2. Leaves are needle-like (go to 3s)
      3. Leaves are in clusters (go to 4s)
        4. Clusters contain 2-5 needles (Pines)
          - a. needles in clusters of 5 {**White Pine**}
          - b. needles in clusters of 3 {**Pitch Pine**}
          - c. needles in clusters of 2 {**Austrian Pine**}
        4. Clusters contain more than 5 needles, and are lost in winter {**Larch**}
      3. Leaves are borne singly (not in a cluster)(go to 5)
        5. Needles are without stems (go to 6s)
          6. Needles are four-sided and are sharp-pointed (Spruce)
            - a. needles are dark, yellowish-green {**Engelman Spruce**}
            - b. needles are bluish-green or silvery white {**Norway Spruce**}
          6. Needles are flat, blunt-pointed {**Fir**}
        5. Needles have short stems {**Redwood**}
  2. Leaves are awl-shaped or scale-like (go to 7s)
    7. Foliage is *both* scale-like and awl-shaped, with awl-shaped foliage particularly on young growth {**Eastern Redcedar**}
    7. Foliage is scale-like, is distinctly flattened and fan-like {**Northern White-cedar**}
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1. Leaves are broad, not needle-like or scale-like, and are lost in winter (go to 8s)
    8. Arrangement of leaves is opposite (go to 9s)
      9. Leaves are single (Maples)
        - a. pale green under surface, clefts are rounded, lobes sparsely toothed {**Sugar Maple**}
        - b. whitish beneath, usually 3-lobed, clefts are shallow and sharp-angled {**Silver Maple**}
        - c. silvery white beneath, usually 5-lobed, clefts are deep {**Japanese Maple**}
      9. Leaves are compound (Ashes, Hickories)
        - a. leaflet with stems {**White Ash**}
        - b. leaflet without stems {**Black Walnut**}
    8. Arrangement of leaves is alternate (go to 10s)
      10. leaves are simple (go to 11s)
        11. leaves are lobed, bristle-tipped {**Oak**}
        11. leaves are entire, not lobed or deeply cut {**Bradford Pear**}
      10. leaves are compound {**Buckeye**}

Now that you know a little about leaf characteristics and how to use a key, let's take a look at some of the trees around the park. Let's begin at the train station in Hootin' Holler.



## **HOOTIN' HOLLER TRAIN STATION**

Near the train station there is a group of trees marked A, B, C, D and E.

**EXERCISE #1** See if you can locate a **tulip-tree**. Tulip-trees grow to be very tall and straight and are the tallest hardwood tree east of the Mississippi River. The one you are searching for however is still pretty young, but has plenty of room to grow. Look for a broadleaf tree that has simple, alternate leaves with lobes. The leaves will be bright green in summer and will have a distinctive square look. Can you find it? Circle the correct answer.

Tree A

Tree C

Tree E

Tree B

Tree D

**EXERCISE #2** For our next exercise, go to Tree B. We will use the taxonomic key found on the previous page. To the left of the entrance for the train, you will see a small planter with two trees and some shrubs. Study the tree that is in the front of the planter, or farthest from the train tracks. Examine the leaf closely and use your taxonomic key.

Begin by reading both statements that are marked with the number 1. Read each statement carefully and consider which statement best matches the leaf of this tree. Are the leaves needle-like, awl-shaped, or scale-like, or are the leaves broad? The leaves on this tree are broad, therefore we will continue from the second statement #1. It tells us: "go to 8s". Therefore, read both statements marked with the #8. Is the leaf arrangement opposite or alternate? From examining the tree, you can see that the leaf arrangement is alternate, therefore, follow the directions to the two statements marked #10. Are the leaves single or compound? The leaves are single so we continue to the #11 statements. Check the correct statement:

\_\_\_\_\_ The leaves are lobe, bristle-tipped, therefore an **Oak Tree**.

\_\_\_\_\_ The leaves are entire, not lobed, therefore a **Bradford Pear**.



Continue your exploration by taking the train or walking to Raccoon Lagoon.

## **RACCOON LAGOON**

**EXERCISE #3** Examine the marked tree in the fenced area behind Ricky's Gifts Shop. Use your Taxonomic Key to determine what species of tree it is and record your answer below.

Answer:

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**EXERCISE #4** Next, visit the picnic area across from Ricky's Grill and discover why it's such a cool and shady place. This is a grove of **Beech trees**. These are stately and beautiful trees with smooth, gray bark. See if you can answer the following questions below.

Are the leaves simple or compound? \_\_\_\_\_

Do they appear alternate, opposite or whorled? \_\_\_\_\_

Are the margins entire, toothed, or lobed? \_\_\_\_\_

Cross the bridge into Olde Idlewild for some more fun with trees.

## **OLDE IDLEWILD**

**EXERCISE #5** Look for the marked tree to the left of the Odds and Ends gift shop. This is a Linden Tree. Linden trees have very soft wood that is easy to carve.

What leaf blade shape best describes the Linden leaf?

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Is the margin entire, toothed, or lobed?

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**EXERCISE #6** Locate the trees across from the entrance of the Rollo Coaster and to the side of the Merry Go Round. Use your taxonomic key to identify these two types of trees. One of these trees produces a product many of us use for breakfast. The other tree produces a fruit that squirrels love to eat.

1. \_\_\_\_\_
2. \_\_\_\_\_

**EXERCISE #7** Our last stop is the near the Ferris Wheel. On the hillside is a grove of evergreen trees. These trees have needles that can remain on their twigs for up to seven years. Under the trees you may find cones stripped of their scales like empty corncobs. This is the work of red squirrels who love to eat the seeds from the cones. Again using the taxonomic key, can you name this tree?

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Trees are beautiful, majestic, and graceful. Many are a joy just to look at. They have many important uses for which humans and animals are very much dependant. PLEASE, do not damage trees by carving on them or damaging their limbs. Just as you may become infected when your skin is cut, trees may become infected when their bark is damaged.

Thanks for joining us for a look at some of Idlewild's trees. We hope that you continue to admire, no matter where you are, these beautiful works of art.



A	I	R	P	P	L	B	K	G	K	W
B	L	A	H	N	E	E	D	L	E	S
R	O	D	O	T	H	E	D	O	L	I
N	B	C	T	F	N	I	G	R	A	M
E	E	O	O	E	R	E	J	A	F	P
E	D	M	S	N	I	E	V	M	X	L
R	D	P	Y	O	I	D	Q	E	L	E
G	E	O	N	P	K	F	P	V	I	X
R	L	U	T	P	C	A	E	D	N	W
E	R	N	H	W	O	E	W	R	E	H
V	O	D	E	D	N	L	H	O	A	O
E	H	G	S	T	I	D	P	R	R	R
F	W	A	I	E	D	A	L	B	B	F
T	I	R	S	M	Y	O	V	A	T	E
O	E	E	T	O	H	R	O	M	C	D
O	V	N	A	C	O	B	L	A	E	A
T	E	T	I	S	O	P	P	O	G	N
H	A	L	T	E	R	N	A	T	E	P
E	V	E	C	L	E	F	T	R	E	E
D	E	C	I	D	U	O	U	S	I	P

***TREE IDENTIFICATION SEARCH AND FIND***

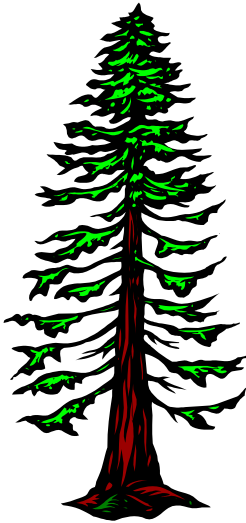
All of the following tree identification terms are located in the puzzle above. Be sure to look up, down, across, forward, backward, and diagonally to see how many you can find. Good Luck!

ALTERNATE  
APEX  
BLADE  
BROADLEAF  
CLEFT  
COMPOUND  
CONIFER

DECIDUOUS  
ENTIRE  
EVERGREEN  
LINEAR  
LOBED  
MARGIN  
NEEDLES

OPPOSITE  
OVATE  
PHOTOSYNTHESIS  
SIMPLE  
TOOTHED  
VEINS  
WHORLED

## DID YOU KNOW...?



- The tallest trees in the world are the California Redwoods. These trees can grow to be 325 feet tall, or the height of a 30-story building. Some Redwood trees can live for 2000 years.
- The oldest trees in the world are the Bristlecone pines, found in many parts of the western United States, which may be as old as 5000 years.
- The state tree of Pennsylvania is the Eastern Hemlock.
- Indiana, Pennsylvania, located not far from Idlewild, is known as the "Christmas tree capital of the world."

