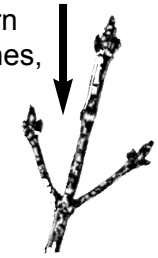
# TREE IDENTIFICATION TERMS

## BRANCHING

**ALTERNATE BRANCHING:** A branching pattern where side branches, leaves, and leaf scars do not grow directly across from each other.

**OPPOSITE BRANCHING:** A branching pattern where side branches, leaves, and leaf scars grow directly across the stem from each other.



## CONIFERS

**BUNDLES:** Groups of needles held together at the base by a small papery wrap called a fascicle.

**CONIFEROUS:** A tree that bears cones and has needles. Also called evergreens.

**EVERGREEN:** A tree that bears cones and has needles. Also called coniferous.

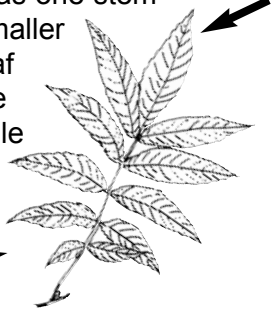
**SCALY:** Conifer needles that are flat and overlapping, like fish scales.

## DECIDUOUS

**BROAD-LEAFED:** A tree that sheds all of its leaves annually. They have leaves as opposed to needles. These trees are also called deciduous.

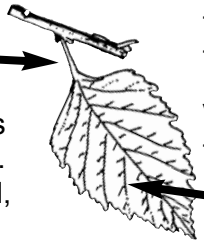
**DECIDUOUS:** A tree that sheds all of its leaves annually. These trees are also called broad-leafed.

**COMPOUND LEAF:** A type of leaf that has one stem and many smaller leaflets. A leaf begins where the leaf petiole attaches to the twig.



**LEAFLETS:** Smaller parts of leaves that often resemble leaves themselves. They join together along the petiole. The leaf petiole attaches to the twig.

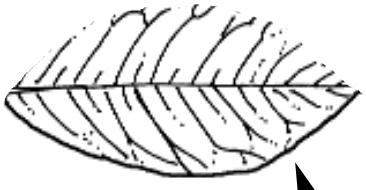
**PETIOLE:** The stalk that supports a leaf and attaches the leaf to the twig. They can be round, flat, or square.



**SIMPLE LEAF:** A type of leaf that has one blade attached to a twig by a petiole.

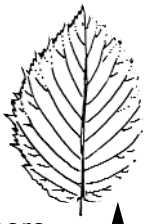
**VEINS:** Distinct lines of tissue that form the framework of a leaf. Used for food and water transport.

## LEAF MARGINS

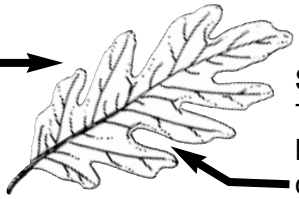


**ENTIRE:** A type of leaf edge that is smooth and has no wavy or rough edges.

**TOOTHED:** A type of leaf edge that has small points or bumps along it (teeth). Single-toothed means that all the teeth are about the same size. Double-toothed means that on each tooth there is a smaller tooth.



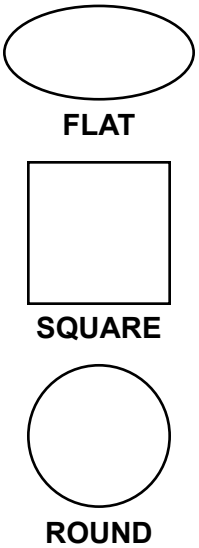
**LOBED:** A type of leaf edge that has large rounded parts.



**SINUSES:** The spaces in between lobes on a leaf.

**MARGIN:** The outer edge of the leaf.

## PETIOLE AND NEEDLE SHAPE CROSS-SECTIONS



# TREE IDENTIFICATION KEY

**BEGIN HERE:**

Tree has needles use.....use **CONIFEROUS TREE KEY**

Tree has broad leaves.....use **DECIDUOUS TREE KEY**

## CONIFEROUS TREE KEY

1. Needles in bundles or groups (2)
1. Needles single or flattened and scaly (3)
   2. Needles in clusters of more than 5 needles.....**Tamarack*** ***(Larix laricina)***
   2. Needles 2 to 5 per bundle: Pine species (see a-c below)

      a. Five needles per bundle.....**White Pine** ***(Pinus strobus)***
      b. Needles in pairs, 3 to 4 inches long.....**Red Pine** ***(Pinus resinosa)***
      c. Needles in pairs, under 2 inches long, bark dark gray.....**Jack Pine** ***(Pinus banksiana)***

3. Needles scaly and flattened (4)
3. Needles single (5)
   4. Has cones, scales flat, branches fan-like.....**Northern White Cedar** ***(Thuja occidentalis)***
   4. Has berries, may have scaly and prickly needles on same tree, scales rounded.....**Eastern Red Cedar** ***(Juniperus virginiana)***
5. Needles flat (6)
5. Needles square, 4-sided, stiff, sharp: Spruce species (see a-b below)

      a. Needles 1/3 to 3/4 inch long, twigs hairless.....**White Spruce** ***(Picea glauca)***
      b. Needles 1/3 to 3/4 inch long, twigs have hair, grows in wet areas.....**Black Spruce** ***(Picea mariana)***

6. Needles 1/2 inch long with short petiole.....**Eastern Hemlock** ***(Tsuga canadensis)***
6. Needles 3/4 inch to 1 1/4 inches long, no petiole, bubbles in bark.....**Balsam Fir** ***(Abies balsamea)***

*Note: A tamarack is a deciduous conifer.

# TREE IDENTIFICATION KEY
## DECIDUOUS TREE KEY

1. Opposite branching (2)
1. Alternate branching (4)
   2. Compound leaves (3)
   2. Simple leaves: Maple species (see a-c below)

      a. Leaf margins smooth, 5 lobes .....**Sugar Maple *(Acer saccharum)***
      b. Leaf margins double-toothed, 3 to 5 lobes.....**Red Maple *(Acer rubrum)***
      c. Leaf margins single-toothed, 3 to 5 lobes, lobes separated by deep, angular openings .....**Silver Maple *(Acer saccharinum)***

3. 3 (rarely 5) leaflets.....**Box Elder *(Acer negundo)***
3. 5 to 11 leaflets: Ash species (see a-c below)

      a. 9 to 11 leaflets, leaflets do not have petiole.....**Black Ash *(Fraxinus nigra)***
      b. 5 to 9 leaflets, leaflets have petiole, smile-shaped leaf scar extending up sides of new bud .....**White Ash *(Fraxinus americana)***
      c. 7 to 9 leaflets, leaflets have petiole, leaf scar ends at base of new bud.....**Green Ash *(Fraxinus pennsylvanica)***

   4. Compound leaves (5)
   4. Simple leaves (8)

5. 7 or fewer (usually 5) leaflets, egg-shaped nut .....**Shagbark Hickory *(Carya ovata)***
5. 7 or more leaflets (6)
   6. Leaflets rounded .....**Black Locust *(Robinia pseudonacacia)***
   6. Leaflets pointed (7)

7. Leaf 6 to 8 inches long .....**Mountain Ash *(Sorbus americana)***
7. Leaf 8 to 24 inches long .....**Black Walnut *(Juglans nigra)***
   8. Leaves not lobed (9)
   8. Leaves lobed: Oak species (see a-f below)

      a. Rounded lobes, 5 to 9 deep even lobes and sinuses, leaves hairless .....**White Oak *(Quercus alba)***
      b. Rounded lobes, pair of deep sinuses near middle of leaf, hairy underside of leaves .....**Bur Oak *(Quercus macrocarpa)***
      c. Rounded lobes, leaf narrow at base and broad near middle, hairy underside of leaves .....**Swamp White Oak *(Quercus bicolor)***
      d. Pointed lobes, sinues extend halfway to mid-vein, leaves hairless, dull green .....**Red Oak *(Quercus rubra)***
      e. Pointed lobes, deep sinues extend 3/4 of the way to mid-vein, leaves hairless, bright green and shiny .....**Northern Pin Oak *(Quercus ellipsoidalis)***
      f. Pointed lobes, deep sinues, young leaves hairy underneath, dark green and shiny, leathery .....**Black Oak *(Quercus velutina)***

# TREE IDENTIFICATION KEY
## DECIDUOUS TREE KEY

9. Bark not papery (10)
9. Bark papery: Birch species (see a-c below)

a. Leaves single-toothed, white peeling bark .....**White Birch *(Betula papyrifera)***
b. Leaves double-toothed, dull green leaves, yellow or bronzed bark .....**Yellow Birch *(Betula alleghaniensis)***
c. Leaves double-toothed, shiny green leaves, reddish-brown to silvery-gray bark.....**River Birch *(Betula nigra)***

10. Leaf petioles flat (11)
10. Leaf petiole round (12)
11. Leaf triangular-shaped with coarse teeth .....**Eastern Cottonwood *(Populus deltoides)***
11. Leaf oval: Aspen species (see a-b below)

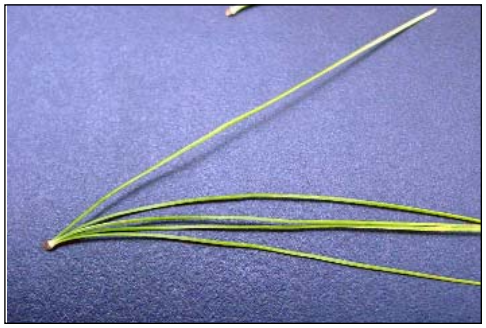
a. Leaves have small, fine teeth less than 1/16 inch .....**Trembling Aspen *(Populus tremuloides)***
b. Leaves have large teeth.....**Big-toothed Aspen *(Populus grandidentata)***

12. Leaves nearly as wide as long (13)
12. Leaves longer than wide (14)
13. Leaves finely toothed .....**Balsam Poplar *(Populus balsamifera)***
13. Leaves coarsely toothed.....**Basswood *(Tilia americana)***
14. Leaf less than 3 times as long as wide (15)
14. Leaf at least 3 times as long as wide.....**Willow species (Common species include Weeping Willow and Black Willow)**
15. Leaf veins thin and branch often (16)
15. Leaf veins thick and run from center to edge of leaf without branching (17)
16. Fine blunt teeth, leaves 2 to 6 inches long, bark dark .....**Black Cherry *(Prunus serotina)***
16. Sharp pointed teeth, leaves 2 to 4 inches long and hairy.....**Hackberry *(Celtis occidentalis)***
17. Leaf shiny and leathery (thick), coarse sharp teeth.....**Beech *(Fagus grandifolia)***
17. Leaf dull and rough (18)
18. Most leaf bases even, seed in elongated clusters.....**Ironwood *(Ostrya virginiana)***
18. Leaf base uneven, seeds flat and papery.....**Elm species (Common species include American Elm, Rock Elm, and Slippery Elm)**

# LEAF Tree ID Card Answer Key

**A =** White Pine
**B =** Tamarack
**C =** Red Oak
**D =** White Birch
**E =** Black Cherry
**F =** Basswood
**G =** Shagbark Hickory
**H =** Box Elder
**I =** Black Spruce
**J =** Jack Pine
**K =** Ironwood
**L =** Black Oak
**M =** Red Maple
**N =** Bur Oak
**O =** Black Walnut
**P =** Red Pine
**Q =** Silver Maple
**R =** Northern Pin Oak
**S =** Elm species
**T =** River Birch
**U =** Hackberry
**V =** Northern White Cedar
**W =** Willow species
**X =** Eastern Red Cedar
**Y =** Eastern Hemlock
**Z =** Sugar Maple
**AA =** Black Ash
**BB =** White Oak
**CC =** White Ash
**DD =** White Spruce
**EE =** Beech
**FF =** Eastern Cottonwood
**GG =** Green Ash
**HH =** Balsam Fir
**II =** Yellow Birch
**JJ =** Swamp White Oak
**KK =** Black Locust
**LL =** Trembling Aspen
**MM =** Big-toothed Aspen
**NN =** Mountain Ash
**OO =** Balsam Poplar

**B**



**A**

D

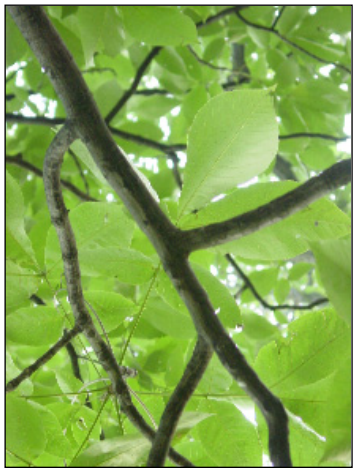
C

F

Photo: Gil Wojciech, Polish Forest Research Institute, www.forestryimages.org

E

H



G

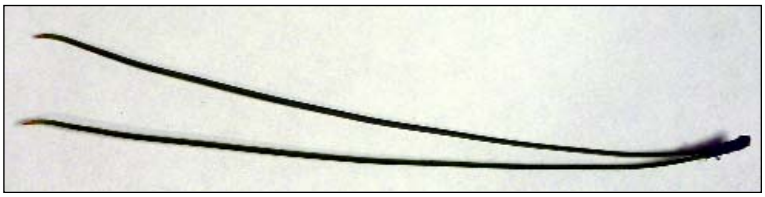


L

K

N

M



**P**

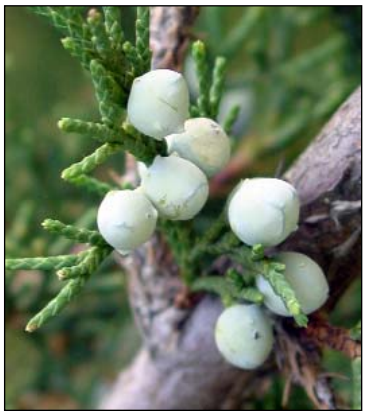
**O**

**R**

**Q**

T

S



X

3

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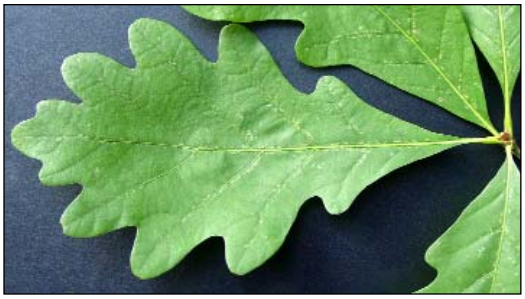
Z

Y



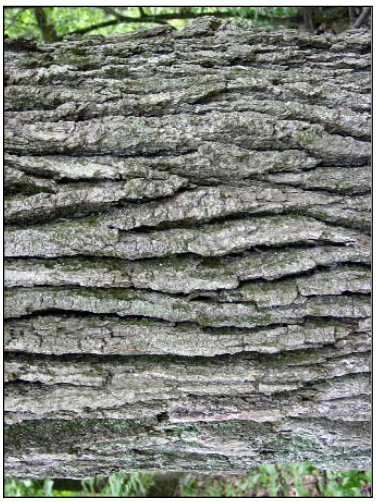
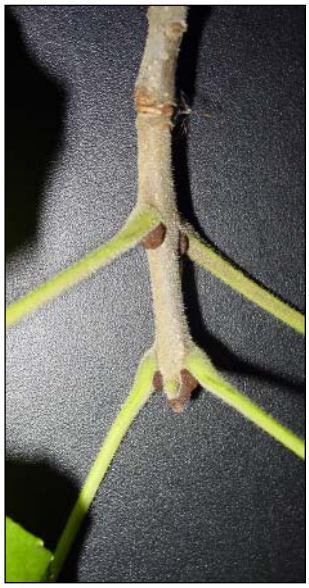


Photo: Paul Wray, Iowa State University, www.forestryimages.org

BB



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AA

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Photo: Bill Cook, Michigan State University, www.forestryimages.org

Photo: Paul Wray, Iowa State University, www.forestryimages.org

**DD**

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Photo: Paul Wray, Iowa State University, www.forestryimages.org

**CC**

FF

EE

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HH

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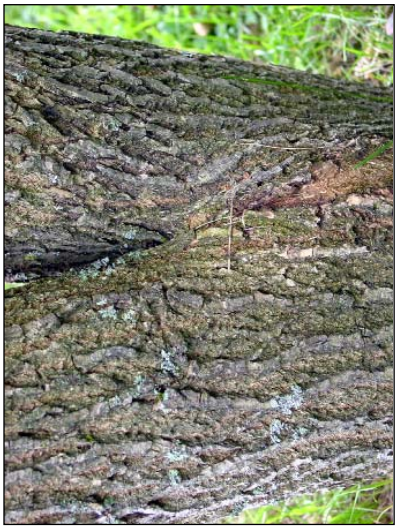
Photo: Paul Wray, Iowa State University, www.forestryimages.org



GG

Photo: Paul Wray, Iowa State University, www.forestryimages.org

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Photo: Bill Cook, Michigan State University, www.forestryimages.org

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Photo: Paul Wray, Iowa State University, www.forestryimages.org

Photo: Paul Wray, Iowa State University, www.forestryimages.org

**LL**

Leaf, Seed, Flower, Bark Photos: Paul Wray, Iowa State University, www.forestryimages.org

Branching Photo: Gil Wojciech, Polish Forest Research Institute, www.forestryimages.org

**KK**

NN

MM

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OO