Tree Identification

This material was obtained from the publication *Tree Identification, 4-H Project*, published by the West Virginia University Extension Service, written in 1995 by William N. Grafton, Extension Wildlife Specialist and Associate Professor.

West Virginia Forests

West Virginia was almost all covered by forests when the first European explorers began searching for adventure and wealth in the late 1600s. By the early 1900s most of West Virginia had been timbered. More than half of the land was cleared for farms, town, cities, and roads.

The number of trees of different species has decreased greatly over the past 200 years. The American Chestnut was eliminated by a disease brought in from China. Only root sprouts remain of this valuable tree of our early forests. Trees with valuable wood, such as black walnut, white oak, and red spruce were over-cut in early timbering operations. Red spruce once grew in pure stands on more than a million acres of West Virginia mountaintops. Heavy cutting, wildfires, and insect attacks killed so many spruce that we now have less than 100,000 acres of them.

The most common forest type in West Virginia is the *central hardwoods*, covering the western half of the state. Common trees in this forest type are elms, poplar, maples, oaks, basswood, sycamore, and ash. The *northern* hardwood forest type covers most of our higher elevations. Common trees in the northern hardwoods are maples, birches, beech, black cherry, hemlock, and red spruce. The eastern ridge and valley portion of West Virginia is covered with the oak-pine forest type. Common trees in this area are black, scarlet, and chestnut oaks, and Virginia and white pines.

Nearly 105 trees can be found quite easily in West Virginia forests. Another dozen species are rare. Twenty or so trees are commonly planted as shade trees or forest plantations.

Trees can be identified by leaves, twigs, bark, flowers, fruits/seeds, wood, shape, and habitat. Leaves are the easiest characteristic for identification but are useful only on deciduous trees from late spring to early autumn.

A Tree

Trees are different from woody shrubs. Trees normally have a single stem and are more than 20 feet tall when full grown. Even seedlings of trees should have a single stem. Shrubs normally have two or more stems and are less than 20 feet tall when mature.

Leaves

Leaf arrangement, type, shape, margin, size, and hairiness are common characteristics used to identify trees. *Leaf arrangement* refers to how leaves are attached to the woody stem. Maples, ashs, dogwoods, buckeyes, honeysuckles, and viburnums have opposite (pairs) leaves. Catalpas have leaves that are whorled (three leaves in a circle around the stem). Other trees, such as oaks, birches, hickories, and poplars, have alternate leaf patterns. *See Figure 1.*

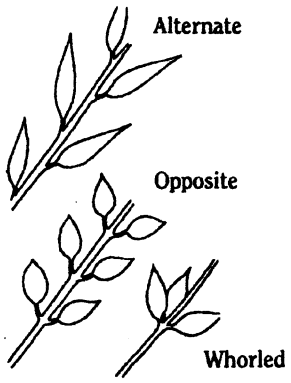

Figure 1

Leaf Types

A leaf with a single blade is termed a *simple leaf.* But the leaves of some trees consist of three or more blades attached to a common stalk. Leaves of this type are said to be *compound,* and the individual blades are called *leaflets*. If the leaflets are attached along the sides of the stalk, the leaf is called *pinnately compound*. On the other hand, if a number of leaflets radiate from the top of the stalk, the leaf is *palmately compound. See Figure 2.*

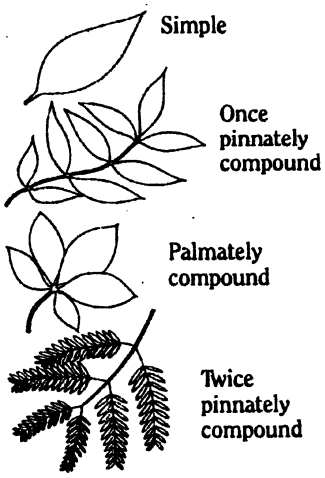

Figure 2

Leaf Shapes

The shape of a leaf is usually characteristic of a species. Figure 3 shows common leaf shapes.

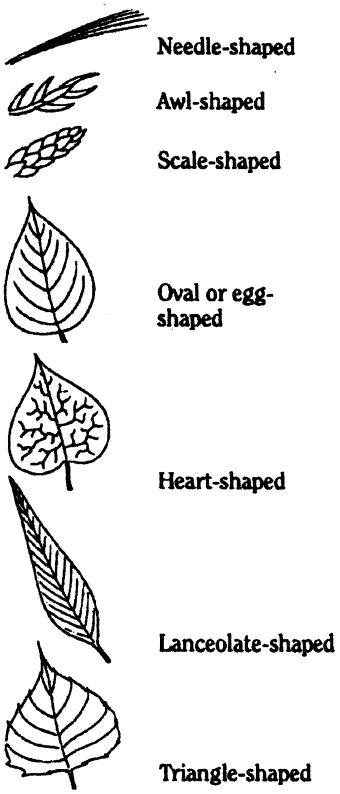

Figure 3

Leaf Margins

The edge of a leaf blade is called the margin. Figure 4 shows common types of leaf margins.

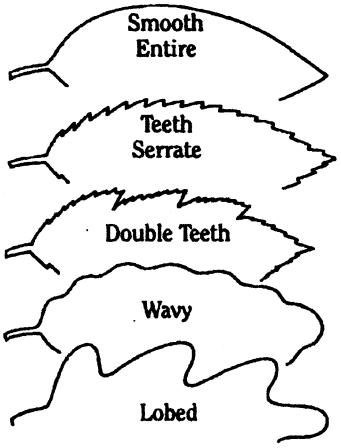

Figure 4

Twigs and Buds

Twigs are an excellent way of identifying trees in the winter. The most obvious features of twigs are their buds, leaf scars, stipule scars, and pith. *See Figure 5.*

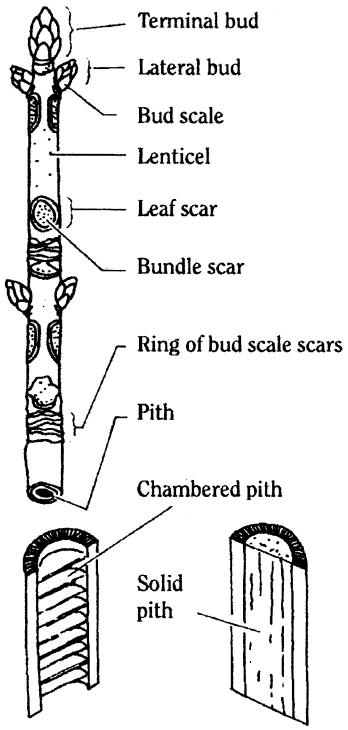

Figure 5

Key to Trees

A "key" is a scientific way of making choices to identify plants, animals, birds, insects, etc. This tree key primarily uses twigs and leaves to identify a tree.

Use the key the same way as a road map. Both of the number 1's on the left margin represent forks in a road. You will choose the characteristics that fit your twig/leaf sample. The numbers on the right tell you which set of left numbers to go to for your next decision.

You keep moving left to right, down, and left to right until you finally reach the tree you are trying to identify. Its name will appear on the right.

You then can look in the illustrations to make sure your identification is correct. Although the key looks complicated, a few practice tries will help you learn to use it.

Key to West Virginia Forest Trees

1. Conifers - mostly evergreen with needles, having awl-like

   or scale-shaped leaves and bearing cones 2

1. Deciduous - broadleaf hardwoods that mostly lose leaves in winter..... 15

   2. Leaves are needles..... 3

   2. Leaves scale-like or awl-shaped 14

3. Needles in clusters or bundles (Pines and Larches) 4

3. Each single needle attached to twig (Spruce, Fir and Hemlock)..... 8

4. Needles in clusters of 8-30 on short spur twigs,

needles drop in autumn, cones upright..... Tamarack or American Larch

4. Needles in bundles of 2-5 (Pines)..... 5

5. Needles in bundles of 5, 3-5" long..... White Pine

5. Needles in bundles of 2 and 3 6

6. Needles in bundles of 3, 3-5" long ..... Pitch Pine

6. Needles in bundles of 2 or 3, 3-5" long..... Shortleaf Pine

6. Needles in bundles of 2 7

7. Needles 5-7" long, dark green, brittle when bent in circle..... Red Pine

7. Needles 1-4" long..... 8

7. Needles less than 2" long 10

8. Needles 2-4" long, blue-green; cones large,

in clusters and covered with sharp prickles..... Table Mountain Pine

8. Needles 1-3" long, twisted..... 9

9. Twigs often whitish, old cones hang on trees and
covered with sharp curved prickles..... Virginia or Scrub Pine

9. Twigs brownish, cones fall each year and have no prickles ..... Scotch or Scots Pine

10. Needles 4-sided, stiff and sharp-pointed (Spruces)..... 11

10. Needles flat and flexible with 2 white lines beneath..... 13

11. Needles more than 1" long, green or blue ..... Colorado Blue Spruce

11. Needles 1" long or less..... 12

12. Needles 1-1 ½" long, twigs not hairy, hanging branchlets..... Norway Spruce

12. Needles ½" long and spread from all sides of twig, twig hairy..... Red Spruce

13. Needles 1-½" long, fallen needles leave a circular scar..... Balsam Fir

13. Needles ½ - ¾" long, fallen needles leave a peg ..... Eastern Hemlock

14. New growth needles awl-shaped, old growth scale-like and twigs 4-sided ..... Eastern Red Cedar

14. Leaves and twigs flattened and scale-like ..... Arbor Vitae or Northern White Cedar

15. Leaves compound 16

15. Leaves simple 36

16. Leaves alternate 17

16. Leaves opposite 31

17. Leaves 2 or 3 times pinnately compound 18

17. Leaves 1 time pinnately compound 20

18. Leaves mostly 2 times (sometimes 1 time) pinnately compound, leaflets small (Va-1" long) with rounded tips ..... Honeylocust

18. Leaves mostly 2 times (sometimes 3 times) pinnately compound, leaflets over 1 inch long, leaf tip pointed 19

19. Leaves mostly 2 times pinnate, twigs large and without thorns ..... Kentucky Coffeetree

19. Leaves 2 or 3 times pinnately compound, twigs covered with thorns ..... Hercules Club

20. Leaflets 11-41 26

20. Leaflets 5-11 (Hickories) 21

21. Leaflets 5-11, bud with 2 long flat yellow scales ..... Bitternut Hickory

21. Leaflets 5-9, buds large, round, tan, or brownish 22

22. Leaflets 5-7 23

22. Leaflets 7-9 25

23. Leaflets 7 ..... Oval Pignut Hickory

23. Leaflets 5 24

24. End leaflet slightly larger than side leaflets, husk on pear-shaped nut not splitting to base, bark not shaggy..... Pignut Hickory

24. End leaflet much larger than side leaflets, husk on round nut splits freely to base, bark on older stems shaggy .....Shagbark Hickory

25. Leaf 8-14" long, crushed leaves fragrant, bark on older stems not shaggy..... Mockernut Hickory

25. Leaf 14-20" long, crushed leaves not fragrant, bark on older stems shaggy..... Shellbark Hickory

26. Leaflets 7-21, egg-shaped, smooth margin and round tips ..... Black Locust

26. Leaflets lance-shaped with sharp tips..... 27

27. Leaves 1-2" long, leaflets 13-41 with smooth margin except for a lobe at the base of each, crushed leaflets with foul odor..... Tree-of-heaven

27. Leaflets with small teeth on margin..... 28

28. Leaflets and twigs very hairy with milky sap..... Staghorn Sumac

28. Twigs with no milky sap..... 29

29. Leaves 5-10" long, buds sticky..... American Mountain-Ash

29. Leaves 12-24" long, buds white and wooly..... 30

30. Terminal leaflet often missing, pith light yellow..... Black Walnut

30. Terminal leaflet present, pith chocolate brown ..... White Walnut

31. Leaves palmately compound..... 32

31. Leaves pinnately compound 33

32. Broken twig with foul odor, spiny fruit husk..... Ohio Buckeye

32. Broken twig with no foul odor, yellow or smooth fruit husk .....Sweet Buckeye

33. Leaflets 3-5, notched or lobed ..... Boxelder or Ashleaf Maple

33. Leaflets 5-13, margin with small teeth or smooth (Ashes)..... 34