

NON-TECHNICAL KEY TO WV & PA
FOREST TREES

Harry V. Wiant, Jr.

Larry H. McCormick

School of Forest Resources

Penn. State Univ.

1. Tree form xmas-tree-like;
leaves needle-shaped,
or scale-like..Group A (p. 1)
1. Tree form not xmas-tree-like;
leaves broad and flat..2
2. Leaves simple (one leaf attached
to twig with bud in axis)..3
2. Leaves compound (leaf, with bud
in axis, consists of more than one
leaflet)..4
3. Leaves and buds opposite on
twigs...Group B, p. 3
3. Leaves and buds alternate on
twigs..Group C, p. 4
4. Leaves and buds opposite on
twigs..Group D, p 12
4. Leaves and buds alternate on
twigs..Group E, p 12

GROUP A: xmas-tree-like

1. Leaves needle-like in clusters of
2 to 5..2
1. Leaves not needle-like, or if
needle-like not in clusters of
2 to 5..7
2. Needles in clusters of 5
..east. white pine
(*Pinus strobus*)
2. Needles in clusters of 2 or 3..3
3. Cone scales without prickles
..red pine
(*Pinus resinosa*)
3. Cone scales with prickles..4
4. Some or all needles in clusters
of 3..5
4. Needles in clusters of 2..6
5. Bark surface has pencil-point
size holes often filled with
resin (pitch pockets); most
needles in clusters of 2..

- shortleaf pine
(*Pinus echinata*)
- 5. Bark surface without pitch pockets;
needles in clusters of 3..
pitch pine
(*Pinus rigida*)
- 6. Cone small, scales with
deep purple inner lips..
Virginia pine
(*Pinus virginiana*)
- 6. Cones large, scales without deep
purple inner lips..
table-mountain pine
(*Pinus pungens*)
- 7. Needles in clusters of 8 or
more on short lateral twigs,
shed in winter..
larch
(*Larix* spp.)
- 7. Leaves, if needle-like, not
in clusters, evergreen..8
- 8. Fruit berry-like..
east. redcedar
(*Juniperus virginiana*)
- 8. Fruit a woody cone..9
- 9. Leaves scale-like (as on a fish)
..north. white-cedar
(*Thuja occidentalis*)
- 9. Leaves not scale-like..10
- 10. Needles with 2 distinct white
bands beneath, soft, flexible;
top twig droops..
eastern hemlock
(*Tsuga canadensis*)
- 10. Needles without distinct white
bands beneath..11
- 11. Needles with rounded tips; cones
stand upright and fall apart when
mature..
balsam fir
(*Abies balsamea*)
- 11. Needles sharp-pointed and attach
to twig on woody peg-like
projections; cones not upright..
red spruce
(*Picea rubens*)

GROUP B: Leave simple & compound.

1. Leaf margins without teeth
..2
1. Leaf margins toothed..3
2. Leaves 3 to 5 inches long,
veins curve and follow margin;
berry-like fruit red and in
small clusters..
flowering dogwood
(Cornus florida)
2. Leaves 4 to 8 inches long;
berry-like fruit blue and in
drooping clusters..
fringetree
(Chionanthus virginicus)

Note: Northern catalpa (Catalpa speciosa) whose cigar-shaped fruit is 1/2 to 3/4 inches thick, and southern catalpa (Catalpa bigno-nioides), whose fruit is 1/4 to 1/2 inches thick, are not native but have naturalized.

3. Leaves lobed..4
3. Leaves not lobed..9
4. Leaves with few remote teeth..5
4. Leaves with many teeth..6
5. Leaves mostly 3-lobed, top lobe usually with 1 tooth, usually hairy beneath..
black maple
(Acer nigrum)
5. Leaves mostly 3 to 5 lobed, top lobe with more than 1 tooth, usually smooth beneath..
sugar maple
(Acer saccharum)
6. Bark greenish to reddish-brown with pale stripes..
striped maple
(Acer pennsylvanicum)
6. Bark gray to brown without pale stripes..7
7. Leaves deeply 5-lobed, sides of middle lobe spread outward, silvery-white beneath..
silver maple
(Acer saccharinum)

7. Leaves 3 to 5 lobed, sides of middle lobe usually taper toward tip..8
8. Leaves downy beneath..
mountain maple
(*Acer spicatum*)
8. Leaves smooth beneath..
red maple
(*Acer rubrum*)
9. Tip of leaf tapers into long slender point..
nannyberry
(*Viburnum lentago*)
9. Tip of leaf only slightly pointed ..blackhaw
(*Viburnum prunifolium*)

GROUP C: Leaves simple & alternate

1. Leaf margins not lobed..2
1. Leaf margins lobed..51
2. Leaf margins entire or slightly wavy..3
2. Leaf margins toothed..14
3. Leaves thick, evergreen..4
3. Leaves relatively thin, shed in fall 6
4. Leaves 4 to 11 inches long; flowers pale rose to white ..rhododendron
(*Rhododendron maximum*)
4. Leaves 3 to 5 inches long..5
5. Leaves usually rounded at both ends; flowers lilac-purple..
mountain rose bay
(*Rhododendron catawbiense*)
5. Leaves not rounded at both ends; flowers pink or white..
mountain laurel (*Kalmia latifolia*)
6. Fruit a bean-like pod; leaves heart-shaped..
eastern redbud
(*Cercis canadensis*)
6. Fruit not a bean-like pod..7
7. Lengthwise cut of twig reveals sections of pith with empty chambers; fruit edible berry about 1 ^ inches in diameter ..common persimmon

- (*Diospyros virginiana*)
7. Twig pith not chambered..8
8. Lengthwise cut of twig shows
solid pith with lines crossing
at regular intervals (diaphragmed
pith)..9
8. Twig pith not diaphragmed..13
9. Buds fuzzy brown; leaves 4 to
12 inches long; fruit banana-like,
3 to 5 inches long..
pawpaw
(*Asimina triloba*)
9. Buds not fuzzy brown..10
10. Buds covered with several overlap-
ing scales; leaves 2 to 5 inches
long; fruit berry-like..
blackgum
(*Nyssa sylvatica*)
10. Buds covered with single scales;
leaves 4 to 24 inches long; fruit
cone-like or cucumber-like in shape
..11
11. Base of leaf margin turns in to
appear ear-like; leaves 10 to 20
inches long; flowers white, 8 to
10 inches wide..
mountain magnolia
(*Magnolia fraseri*)
11. Base of leaf not ear-like..12
12. Leaves 4 to 12 inches long;
flowers greenish or yellow,
2 1/2 to 3 inches long, not showy
..cucumbertree
(*Magnolia acuminata*)
12. Leaves 12 to 24 inches long,
arranged near end of branch like
umbrella; flowers white..
umbrella magnolia
(*Magnolia tripetala*)
13. Leaf veins curve and follow margin;
fruit berry-like..
alternate-leaf dogwood
(*Cornus alternifolia*)
13. Leaf veins do not curve and follow
margin; fruit an acorn; buds
clustered near end of twig..
shingle oak (*Quercus imbricaria*)
14. Branches armed with stiff, sharp
thorns..
hawthorn

(Crataegus species)

- 14. Branches unarmed*..15
- 15. Base of leaf margins uneven, not symmetrical..16
- 15. Base of leaf margins nearly symmetrical..20
- 16. Bark appears warty; sweet berry-like fruit..
hackberry
(Celtis occidentalis)
- 16. Bark not warty in appearance..17
- 17. Leaves heart-shaped; fruit berry-like and falls attached to leaf-like stem..18
- 17. Leaves not heart-shaped; fruit winged..19
- 18. Lower surface of leaf smooth ..American basswood
(Tilia americana)
- 18. Lower surface of leaf covered with white fuzz..
white basswood
(Tilia heterophylla)
- 19. Leaves smooth above, downy below; small teeth on large teeth; crosssection of bark shows alternating brown and white layers..
Am. elm
(Ulmus americana)
- 19. Leaves rough and hairy on both sides; small teeth on large teeth; margins of fruit wings smooth; crosssection of bark shows brownish layers only..
slippery elm
(Ulmus rubra)
- 20. Teeth coarse, 2 to 5 to the inch..21
- 20. Teeth fine, 6 or more to the inch..30
- 21. Fruit berry-like..22
- 21. Fruit not berry-like..23
- 22. Leaves thick and leathery, evergreen, armed with spiny teeth..
Am. holly
(Ilex opaca)
- 22. Leaves thin, shed in fall, margins not spiny..

mountain holly
(*Ilex montana*)

- 23. Fruit a nut in a bur.. 24
- 23. Fruit not a nut in a bur..26

- 24. Nuts angled, bur with weak
prickles; buds sharp; bark
smooth and gray..
American beech
(*Fagus grandifolia*)
- 24. Nuts round, bur with stiff, sharp
prickles..25

- 25. Lower surface of leaves smooth
..American chestnut
(*Castanea dentata*)
- 25. Lower surface of leaves woolly
..Allegheny chinquapin
(*Castanea pumila*)

- 26. Buds without scales; leaves with
rounded teeth; flowers yellow,
appearing in fall..
witch-hazel
(*Hamamelis virginiana*)
- 26. Buds with scales..27

- 27. Fruit not an acorn, buds not
clustered at end of twig.. 28
- 27. Fruit an acorn; buds clustered
at end of twig..29

- 28. Tip of leaf tapers to a sharp point;
rounded teeth, bud almost an inch
long ..eastern cottonwood
(*Populus deltoides*)
- 28. Tip of leaf does not taper to a
sharp point; teeth very coarse
..bigtooth aspen
(*Populus grandidentata*)

- 29. Teeth rounded..
chestnut oak
(*Quercus prinus*)
- 29. Teeth sharp..
chinquapin oak
(*Quercus muehlenbergii*)

- 30. Little teeth found on bigger teeth
on leaf margin (doubly serrate)..31
- 30. Leaves not doubly serrate..39

- 31. Twigs armed with stiff thorns
..hawthorn
(*Crataegus species*)
- 31. Twigs unarmed..32

- 32. Fruit resembles miniature pine cone..33
- 32. Fruit does not resemble miniature pine cone..36
- 33. Chewed twig gives strong wintergreen taste; bark black..
black birch
(*Betula lenta*)
- 33. Chewed twig without strong or with only slight wintergreen taste..34
- 34. Bark silvery or yellow-gray to golden ..yellow birch
(*Betula alleghaniensis*)
- 34. Bark not silvery or yellow to golden..35
- 35. Bark salmon-pink to red-brown, peels in thin layers..
river birch
(*Betula nigra*)
- 35. Bark white..35a
- 35a. Bark has papery layers..
paper birch
(*Betula papyrifera*)
- 35a. Bark without papery layers..
gray birch
(*Betula populifolia*)
- 36. Fruit a sour apple about 1 inch in diameter..
sweet crab apple
(*Malus coronaria*)
- 36. Fruit not an apple..37
- 37. Leaves with pimple-like glands near base of margin or on leaf stem; fruit a plum..
Am. wild plum
(*Prunus americana*)
- 37. Leaves without pimple-like glands; fruit not a plum ..38
- 38. Bark has muscled appearance, gray to bluish..
Am. hornbeam
(*Carpinus caroliniana*)
- 38. Bark finely divided into thin scales, shreddy appearance, brown or reddish-brown..
east. hophornbeam
(*Ostrya virginiana*)
- 39. Chewed twig gives strong wintergreen taste..

- black birch
(*Betula lenta*)
- 39. No wintergreen taste..40
- 40. Fruit a sour apple about 1 inch in diameter..
sweet crab apple
(*Malus coronaria*)
- 40. Fruit not an apple..41
- 41. Fruit berry-like..42
- 41. Fruit not berry-like..47
- 42. Pimple-like glands on leaf stem or lower leaf margin..43
- 42. No pimple-like glands..45
- 43. Leaves with incurved teeth
..black cherry
(*Prunus serotina*)
- 43. Teeth not incurved..44
- 44. Fruit 5 or less in clusters
..fire cherry
(*Prunus pennsylvanica*)
- 44. Fruit close to a dozen in clusters
..common chokecherry
(*Prunus virginiana*)
- 45. Silk-like strands show across break in twig, sap milky; fruit about 1 inch long
..red mulberry
(*Morus rubra*)
- 45. No silk-like strands across break in twig..46
- 46. Three dots (bundle scars) show in scar when leaf removed from twig
..downy serviceberry
(*Amelanchier arborea*)
- 46. One bundle scar shows when leaf removed..
mountain holly
(*Ilex montana*)
- 47. Lengthwise cut of twig shows pith with empty chambers..
Carolina silverbell
(*Halesia carolina*)
- 47. Pith notchambered..48
- 48. Leaf stems long and flattened..49
- 48 Leaf stems not unusually long..50
- 49. Tip of leaf tapers to a sharp point
..east. cottonwood

- (*Populus deltoides*)
49. Tip of leaf does not taper to sharp point
..quaking aspen
(*Populus tremuloides*)
50. Leaves 1/2 inch wide or less black
..willow
(*Salix nigra*)
50. Leaves 1 1/2 to 2 1/2 inches wide
..sourwood
(*Oxydendrum arboreum*)
51. Margins of leaves without teeth but
may have bristles..52
51. Margins of leaves toothed..64
52. Leaves often 3-lobed or with
2-lobed mitten-like outline;
roots have strong, pleasing odor
..sassafras
(*Sassafras albidum*)
52. Leaves without mitten-like outline;
roots without pleasing odor..53
53. Leaf outline resembles a tulip;
fruit cone-like cluster of winged
seeds..
yellow-poplar
(*Liriodendron tulipifera*)
53. Leaf outline does not resemble a
tulip; fruit an acorn; buds
clustered at twig tips..54
54. Lobes without bristle tips .. 55
54. Lobes with bristle tips..58
55. Leaves not fuzzy below
..white oak
(*Quercus alba*)
55. Leaves fuzzy below..56
56. Leaves cross-shaped
..post oak
(*Quercus stellata*)
56. Leaves not cross-shaped..57
57. Acorn large and almost enclosed
by fringed cup; deep cuts in
leaf margins almost divide leaf
in half..
bur oak
(*Quercus macrocarpa*)
57. Acorn cup encloses about 1/3 of nut,
acorn stems 1 to 4 inches long..
swamp white oak
(*Quercus bicolor*)

58. Leaves white to red-woolly below..59
58. Leaves green below..60
59. Leaves leathery; usually a shrub
..scrub oak
(*Quercus ilicifolia*)
59. Leaves not leathery, lobes
usually come to one point,
scythe-shaped..
southern red oak
(*Quercus falcata*)
60. Leaves very wide toward the tip
(blackjack shape)..
blackjack oak
(*Quercus marilandica*)
60. Leaves not blackjack-shaped..61
61. Leaf margins cut 2/3 toward middle
of leaf..62
61. Leaf margins cut not over 1/2
toward middle of leaf..63
62. Lower live branches droop; acorn
cup saucer-shaped..
pin oak
(*Quercus palustris*)
62. Lower live branches do not droop,
but dead drooping branches usually
present; acorn cup top-shaped..
scarlet oak
(*Quercus coccinea*)
63. Inner bark yellow, bark blocky without
smooth vertical streaks..
black oak
(*Quercus velutina*)
63. Inner bark light red, bark with smooth
vertical streaks..
north. red oak
(*Quercus rubra*)
64. Twigs armed with sharp thorns
hawthorn..
(*Crataegus* species)
64. Twigs unarmed.. 65
65. Fruit a sour apple about 1 inch in diameter
sweet crab apple..
(*Malus coronaria*)
65. Fruit not an apple..66
66. Leaves often 3-lobed or with 2-lobed
mitten-like outline; fruit berry-like,
about 1 inch long; silk-like strands
show across break in twig, sap milky
..red mulberry

- (*Morus rubra*)
66. Leaf outline not mitten-like; no silk-like strands across break in twig ..67
67. Leaf star-shaped; limbs and twigs often have corky wings..
sweetgum
(*Liquidambar styraciflua*)
67. Base of leaf covers winter bud; bark a mixture of brown and white..
Am. sycamore
(*Platanus occidentalis*)

GROUP D: Leaves compound & opposite

1. Leaflets attach to one point on leaf stem (palmately compound)..2
1. Leaflets attach at different points along the leaf stem (pinnately compound)..3
2. Husk around nut has spines
..Ohio buckeye
(*Aesculus glabra*)
2. Husk around nut without spines
..yellow buckeye
(*Aesculus octandra*)
3. Paired winged fruit; 3 to 5 coarsely toothed leaflets; new twigs bright green
..boxelder
(*Acer negundo*)
3. Winged fruit not paired; 5 or more entire or finely toothed leaflets..4
4. Leaflets attach directly to main leaf stem
..black ash
(*Fraxinus nigra*)
4. Each leaflet has a stem which attaches to main leaf stem..5
5. Scar left when leaf removed deeply notched
..white ash
(*Fraxinus americana*)
5. Scar left when leaf removed usually straight on upper edge..
green ash
(*Fraxinus peimsylvanica*)

GROUP E: Leaves compound & alternate

1. Thorns present..2
1. Thorns absent..4
2. Thorns generally 3-branched; fruit a pod 10 to 18 inches long..

- honeylocust
(*Gleditsia triacanthos*)
- 2. Thorns not branched; fruit not a large pod..3
- 3. Thorns present on leaf stem; leaf consists of compound leaflets attached to main leaf stem (doubly compound).. devil's walkingstick
(*Aralia spinosa*)
- 3. Thorns not present on leaf stem; leaf not doubly compound.. black locust
(*Robinia pseudoacacia*)
- 4. Leaves consist of compound leaflets attached to main leaf stem (doubly compound); fruit a pod.. Kentucky coffeetree
(*Gymnocladus dioica*)
- 4. Leaves not doubly compound; fruit not a pod..5
- 5. Leaves consist of 3 leaflets; fruit with circular wings.. common hoptree
(*Ptelea trifoliata*)
- 5. Leaves consist of more than 3 leaflets; fruit without circular wings..6
- 6. Lengthwise cut of twig reveals empty chambers..7
- 6. Pith not chambered..8
- 7. Nut round; twig pith light yellow ..black walnut
(*Juglans nigra*)
- 7. Nut football-shaped; twig pith chocolate brown.. butternut
(*Juglans cinerea*)
- 8. Leaf margins entire; leaf stem winged with leaf-like material.. shining sumac
(*Rhus copallina*)
- 8. Leaf margins toothed..9
- 9. Fruit berry-like..10
- 9. Fruit a nut..12
- 10. Fruit in flat-topped clusters ..Am. mountain-ash
(*Sorbus americana*)
- 10. Fruiting heads elongated..11
- 11. Leaf stem winged with leaf-like material

- ..shining sumac
(*Rhus copallina*)
- 11. Leaf stem not winged; twigs covered with
velvety hair..
staghorn sumac
(*Rhus typhina*)
Note: Tree-of-heaven (*Ailanthus altissima*)
resembles sumac, but each leaflet has a small
lobe near its base. It is not native but is
now naturalized.
- 12. Buds long and sulfur-yellow..
bitternut hickory
(*Carya cordiformis*)
- 12. Buds not sulfur-yellow..13
- 13. Bark on old trunks shaggy with loose
plates..14
- 13. Bark on old trunks tight..15
- 14. Leaflets usually 5, smooth or
slightly hairy below..
shagbark hickory
(*Carya ovata*)
- 14. Leaflets usually 7, hairy below
..shellbark hickory
(*Carya laciniosa*)
- 15. Leaflets 7 to 9, hairy beneath;
nut husk about 1/4 inch thick
..mockernut hickory
(*Carya tomentosa*)
- 15. Leaflets 5 to 7, almost smooth
beneath; nut husk about 1/8 inch
thick..
pignut hickory
(*Carya glabra*)

Note: Hawthorns hybridize making
identification of species difficult
even for the expert.