Winter Woody Plant Key for More Common Native Species in Columbia County, NY.

If you're trying to work with this info. and have questions, please feel free to contact us (fep@hawthornevalleyfarm.org); please include a photo of your mystery tree's buds and bark.

This key keeps evolving, but it still isn't perfect (for example, not all species are included, and this key is not very efficient). Individual species get their own steps in the key when they are common and easily separated; otherwise, they get lumped together (e.g., "ashes"), although I do try to provide species-specific ID'ing tips in the group's account. A few of the domestic trees or species which I see less often have not been integrated into the key at all; I have stuck them in under the "See also" heading so, if you're absolutely stumped, check out those options. Emphasis is on native species, a few common exotics are included. There are many cultivated or naturalized species which are not included here. Several rarer native woodies are also missing.

For your convenience, I've included indexing information for three useful books: *Woody Plants in Winter* by Core and Ammons ("C&A."), *Flora of the Columbia County Area, New York* by Rogers McVaugh ("McV."), and *Bark: A Field Guide to Trees of the Northeast* by Michael Wojtech ("Woj."). There is a short glossary at the end of this document.

The following is a dichotomous key. To use it, you read the first two pairs of options (both preceded by the number "1"). You then choose which of the two options most closely fits the specimen you're looking at and proceed to the numbered pair indicated by that option. You continue working your way through the maze until you come to a plant name which, we hope, corresponds with the name of what you have in your hand. However, *don't just trust the key* – take your tentative ID and look at the bud photos provided here and consult your field guides. If everything seems to fit, great; if not, retrace your steps and try out other answers at the points where you felt least certain of your choice. Make sure to use all the clues that are available to you including tree/shrub form, bark characteristics, bud and twig characteristics (emphasized here), and any leaves and/or seeds you may find on the ground. Buds and this key are only one tool for what should be a bigger toolbox.

1. Leaf scars all opposite. Go to 2.
1. At least some leaf scars alternate. Go to 8.
(Buckthorn is both opposite and alternate; I've keyed it out under opposite.)

2. Tree (that is, having distinct main trunk). Go to 3.
2. Shrub. (Small – rarely greater than 2" diameter – with multiple shoots). Go to 7.
(The distinction between a small tree and a shrub is not always clear; if in doubt, try both options.)

3. End bud like cardinal's mitre; stocky branches; bark on mature trees usually with many thin, parallel, vertical ridges = **ASHES**.

Fraxinus spp.; p. 179 of C&A, p. 190 of McV., p. 174 of Woj.
Twigs stout, bundle scars large and blunt end bud. There are three species in the County: White (*F. americana*; photo 1), Green (merged with Red; *F. pennsylvanica*) and Black Ash (*F. nigra*; photo 1.bottom). White is generally upland, Green is stream edge and Black is swamp. Ash have thick, not frequently branching, and not very graceful twigs that give them almost a tinker-toy look. Bark generally has deep vertical ridges.White Ash is the most common species. Green Ash is distinguished from White Ash by its sometimes pubescence and the lesser indentation of the bud atop the leaf scar. Black Ash has corky bark and circular leaf scars together with smooth twigs.

3. Not as above. Go to 4.

4. End buds pointed, numerous scales, twigs often rich brown = **SUGAR MAPLE**.

Acer saccharum; photo 2a-b; p. 142 of C&A, p. 167 of McV., p. 100 of Woj.
Look for white crustose lichen on rough bark. Black Maple is sometimes considered separate species; sometimes as a variant of Sugar Maple. Rich soils

4. Not as above. Go to 5.

5. End buds blunt, twigs and buds usually reddish = **RED MAPLE**.

Acer rubrum; photo 3a-b; p.142 of C&A, p. 167 of McV., p. 94 of Woj.
A wide variety of soils and barks; look for bull's eye bark marking. Often with bulbous flower buds (photo 3b) on mature trees.

5. Not as above. Go to 6.

6. Small tree, sometimes appearing shrub-like; bark green with white stripes; paired bud scales; buds often reddish = **STRIPED MAPLE**.

Acer pensylvanicum; photo 4; p. 141 of C&A, p. 167 of McV., p. 90 of Woj.
Cooler hillsides; also called Moosewood.

See also SILVER MAPLE (found on floodplains or as a street tree; similar to Red Maple, but buds are brighter red; photo 5) and NORWAY MAPLE (an invasive exotic; the local maple with the largest buds; photos 6a-6b)

6. Small tree; bark made up of small squares (C & A call it 'alligator skin') bark; pagoda-like flower buds often present; end buds narrow, shriveled = **FLOWERING DOGWOOD**.

Cornus florida; photo 7a-b; p. 159 of C&A, p. 181 of McV.
Richer woods, generally more common south and west.

7. End buds small, narrow, shriveled, without obvious scales; twig tips often with reddish tinge = **DOGWOODS**.(There is one alternate-leafed species with leaves scars clustered in whorls, bark usually deep burgundy, occasional)

Cornus spp.; photo; p. 159 of C&A, p. 181 of McV.
There are at least three shrubby, opposite-leaved Dogwoods in the County: Grey Dogwood (with grey twigs; *C. racemosa,* photo 9), Silky Dogwood (with red twigs and brown pith; *C. amomum;* photo 10 and see pith photo), and Red Osier Dogwood (with red twigs and white pith; *C. sericea*; see pith photo).

See also: Alternate-leaf Dogwood (photo 8), our only alternate-leaved native dogwood; moist forests; reddish twigs.

7. Not as above. End buds if narrow, then long and well-developed; twigs not reddish = **VIBURNUMS**.

Viburnum spp.; photo; p. 193 of C&A, p. 210 of McV.
There are about 7 species of Viburnum in Columbia County. They are all shrubs, although some may reach 20' or so. Common species are Arrowwood (*V. dentatum;* photo 11), Nannyberry (*V. lentago*; photo 12) and Maple-leaf Viburnum (*V. acerifolium*). The former two species are common in fencerows; the last is a forest species. All Viburnum are opposite but there is quite a bit of variation in bud shape. Those with long, skinny buds are unmistakable; those with shorter, rounder buds sometimes resemble maple.

See also: ELDERBERRY (*Sambucus spp*.), a spindly shrub of edges and fencerows, with bulbous, opposite flower buds on some stems (photo 13), and HONEYSUCKLE (*Lonicera spp.*) generally non-native, often invasive; usually fencerows and edges, although persists in some secondary forests; opposite, divergent, small lateral buds (photo 14); leafs out early.

8. Twigs aromatic. Go to 9.
8. Twigs not aromatic. Go to 12.

9. Bitter almond smell, branches often have black rot = **CHERRIES**.

Prunus spp.; p. 127 of C&A; p. 153 of McV.; p. 214 of Woj.
There are four native species in Columbia County; two of which (Black Cherry, *P. serotina* (photo 15) and Choke Cherry, *P. virginiana*; photo 16) are relatively common. Cherries as a whole can best be distinguished by their bitter, medicinal scent that sometimes reminds people of almonds. As a mature tree, Black Cherry has distinctive, black, "potato-chip" bark. Choke Cherry is usually a shrub, sometimes a small tree. Choke Cherry buds that are somewhat bicolor. All cherries are sometimes attacked by Black Rot which causes woody, black swellings on the branches.

9. Not as above. Go to 10.

10. Wintergreen smell, branches often have spur shoots and catkins = **BLACK** or **YELLOW BIRCH**.

Betula lenta and *B. alleghaniensis*; p. 69 of C&A, p. 114 of McV., p. 106 of Woj.
These two species can be distinguished by habitat and bark. Black Birch has a dark grey, non-peeling bark and is generally an upland species; Yellow Birch (photo 17a-b) has peeling, yellow-brown bark and is generally associated with wetter areas.

10. Not as above. Go to 11.

11. Sweet, root-beer smell; twigs often greenish = **SASSAFRAS**.

Sassafras albidum; photo 18; p. 98 of C&A, p. 135 of McV., p. 168 of Woj.
In our area, near the northern edge of this species' distribution, these are often twisted and battered trees.

11. Sharp, medicinal smell; often has small, BB-like lateral flower buds = **SPICEBUSH**.

Lindera benzoin; photo 19; p. 98 of C&A, p. 135 of McV.

This is a small bush of wet areas**.**

12. Has thorns or spines or prickers (there are specific botanical definitions for each of these terms; here, I will just use 'thorns' and apply it to all sharp, pokey structures). Go to 13.
12. No thorns. Go to 19.

13. Brambly; usually with tips of larger twigs touching ground; armed with short thorns, often no longer than width of twig. Go to 14.
13. Upright tree or shrub with distinct trunk. Go to 15.

14. Unbranching; leaf base tearing off and so leaving ragged protrusions from twig = **RASPBERRIES/BLACKBERRIES**.

Rubus spp.; photo 20; p. 117 of C&A, p. 149 of McV.
Another of the Rose family's banes to taxonomy. We won't worry about species. As a whole, these are generally prickly, sprawling plants of edges or openings.

14. Without torn leaf bases; sometimes branching; fruits (hips) often present = **ROSES**.

Rosa spp.; p. 117 of C&A, p. 150 of McV
We have two common native species (Pasture and Swamp Rose; *R. carolina* and *R. palustris;* photo 23a-b); these co-occur with at least two introduced species (Dog and Multiflora Rose; *R. canina* [photo 22] and *R. multiflora* [photo 21]). The latter is an invasive species that readily invades pastures. As whole, Roses are prickly bushes, distinguishable from Blackberries by their clean-cut leaf scars. The species are best distinguished by size and number of fruits or hips. Multiflora Rose has distinct bunches of small hips; the hips of Dog Rose are large (approaching 1"), elongate and not bunched; Pasture and Swamp Rose hips are round and only slightly larger than those of Multiflora Rose, but are not bunched. Habitat also helps – Swamp Rose is found in wetlands.

15. Thorns terminal, when present, extending straight from end of twigs. Leaf scars alternate and/or opposite = **BUCKTHORN**.

Rhamnus spp.; p. 145 of C&A; p. 167 of McV.
Two species in Columbia County. However, one of these (*R. alnifolia*) is native and apparently limited to calcareous wetlands. It is a short (<3') shrub that grows in clumps. By far our most common species is European Buckthorn (*R. cathartica;* photo 24a-b), from Eurasia. It is widely naturalized. It can reach the size of a small tree.

15. Not as above (thorns lateral). Go to 16.

16. Thorns paired, extending symmetrically from sides of lateral bud or leaf scar. Go to 17.
16. Thorns not as above. Go to 18.

17. Sometimes medium sized tree, lateral bud hidden by splitting leaf scar, can bear pea-like pods = **BLACK LOCUST**.

Robinia pseudoacacia; photo 25; p. 130 of C&A, p. 156 of McV., p. 126 of Woj.
a coarsely-barked tree; not native but widely naturalized; look for flat, pea-sized pods.

17. Shrub or small tree, lateral bud (red fuzzy) and leaf scars distinct, fruit not pea-like pod = **PRICKLY ASH**.

Zanthozylum americanum; not pictured; p. 130 of C&A, p. 163 of McV.,
Occasional thickets in semi-open areas.

18. Thorns long (length of match or more) and smooth (generally not bearing buds), fruits looking somewhat like crab-apples = **HAWTHORNS**.

Crataegus spp.; photo 26a-b; p. 112 of C&A, p. 153 of McV.
Hawthorn are a taxonomic nightmare; there are probably 15-20 species in the County. We'll only worry about ID'ing the genus as a whole. These plants are shrubs to small trees usually with massive, sharp, lateral spines. While other native woody plants in our area have thorns, and Buckthorn sometimes has terminal spines, these armaments are distinct. Hawthorns are usually found on the edges of old fields; their presence in a forest often indicates past grazing.

18. Thorn-like structures are spur shoots with buds, fruits are crab-apples = **CRAB APPLES**.

Malus spp. (except apples). Not pictured; p. 108 of C&A, p. 151 of McV.
Some native, some exotic; many cultivars, can be quite variable, not all are thorny; generally edges, fencerows, gardens.

See also: APPLE (*Malus domesticus*; photo 54) and PEAR (*Pyrus communis*; photo 55). Aside from obvious differences in the fruits; apples tend to have fuzzy buds and a somewhat more rounded tree form while pears tend to have smooth buds and a more upright structure; pears will also more often also have thorn-like shoots off of their twigs. The thorns of HONEY LOCUST, a naturalized legume with large pods, are characteristically large and branching. They can emerge from the tree trunk itself.

19. Shrub. Go to 20.
19. Tree (although, of course, with seedling and sapling stages). Go to 24.

20. In wetlands, leaf buds appearing naked and rough, fruits are catkins = **ALDERS**.

Alnus spp.; p. 71 in C& A, p. 114 in McV.
There are two Alder species in the County, both occur in wet areas. Alder are shrubby plants, although sometimes growing to 3" or more in diameter. They have thick, woody catkins that look like radiatore noodles. Their habitat and their opposite, rusty, naked buds make them distinct. Speckled Alder (*A. rugosa*, photo 27a-b) generally has drooping cones, while Smooth Alder (*A. serrulata*; photo 28a-b) holds its more upright and slightly smaller cones.

20. Not as above. Go to 21.

21. Buds are blunt; lateral buds with three distinct scales, at least central one fuzzy; has catkins = **HAZEL**.

Corylus spp.; p. 67 in C & A; p. 111 in McV.
These are true hazels, i.e., the same genus from which hazelnuts are collected. Here, one rarely finds intact hazelnuts. They are generally small to medium bushes. American Hazel (*C. americanus*; photo 29 – this species is usually more bristly than shown here) is apparently the more westerly species in the County. Its branches are covered with a coarse, reddish-brown fuzz; catkins are about the width of a paper match; they are roughly half the length of such matches. The catkins also have a brownish, reddish color. Beaked Hazel (*C. cornuta*; photo 30a-b) is the more easterly species in the County. The catkins are usually greyer, shorter and stouter than the above species, although there is some overlap in length. Beaked Hazel twigs are fuzz-less.

21. Not as above. Go to 22.

22. Goosehead buds (i.e., generally long and narrow with one bud scale forming a forehead-like swelling and another jutting forward in a beaklike fashion) = **SERVICEBERRY** (larger species is small tree).

Amelanchier spp.; photo 31; 111 in C&A, p. 151 in McV., p. 212 in Woj.
There are about 6 species of Serviceberry (aka Juneberry, Shadblow, Shadbush) in the County; our largest (*A. arborea*) is a small tree. Bark is smooth with dark, sometimes purplish strips; sometimes suffers from witch's broom.

22. Not as above. Go to 23.

23. Buds appearing naked, twigs at least slightly zig-zaggy because of swollen bases of leaf scars = **WITCH HAZEL**.

Hamamelis virginiana; photo 32; p. 103 of C&A, p. 145 of McV.
A common and unique understory shrub; widespread, but generally associate with upland deciduous forests. This plant blooms in late autumn, and flowers are usually visible throughout winter, as are old fruit husks.

23. Twigs long and wispy, often in wetlands, bud scales single and appearing to cover lateral buds with tiny bedroom slipper = **WILLOWS** (can also be large tree).

Salix spp.; photos 33-34; p. 51 of C&A, p. 108 of McV., p. 234 of Woj.
There are many species (McVaugh cites about 17). Supposedly, the larger, tree-sized willows are fairly easy to tell apart, at least in leaf. Core and Ammons presents a key. Willows are found mainly around our water bodies.

24. Bark of mature tree usually smooth, not ridged, flaking or coarsely rough, although may peal in papery, horizontal sheets. (Bark of diseased or very old trees may be roughened at least at base). Go to 25.
24. Bark of mature tree with ridges, flakes, or rough, at least at base. Go to 29.

25. Buds long and skinny, like miniature cigars = **BEECH**.

Fagus americana; photo 35; p. 73 of C&A, p. 115 of McV., p. 128 of Woj.
American Beech is our only native species in the area. Beech twigs have unique, alternate, cigar-shaped buds. The bark of a healthy tree is smooth and grey, but many have beech bark disease which roughens the bark with cracks. Dried leaves often remain on the tree through much of the winter.

25. Not as above. Go to 26.

26. Small tree (diameter usually less than 5"), buds are small, but clearly squarish in cross-section when inspected with magnifying glass. Buds tend to be two-tone in color. = **MUSCLEWOOD**.

Carpinus carolinensis; photo 36a-b*;* p. 68 in C & A; p. 111 in McV., p. 116 of Woj.
There is but one native species in our area (also called Blue Beech, American Hornbeam and Ironwood). This is a small tree with silver-grey, "spandex" bark clinging to muscular-appearing trunk. It is usually find in moist habitats and often grows in loose clusters.

26. Not as above. Go to 27.

27. Also small tree, bark with purplish tone and darker strips, goose-head buds = **SERVICEBERRY** (see account above).
27. Not as above. Bark white or off-white. Go to 28.

28. Branch tips wispy, often drooping slightly; spur shoots common; often bearing catkins; bark sometimes pealing in papery strips = **WHITE** or **GREY BIRCH**.

Betula paperyfera (photo 37a-b) and *B.populifolia* ; p. 71 in C & A, p. 111 in McV., p. 112 of Woj.

There are six native species in the County. Four of these are fairly common (Black, Yellow [see above], Grey and White Birches). The two others (River and Bog Birch) are scarcer, both of these are lowland/wetland species. White and Grey Birch are best distinguished by bark and form: White Birch has the classic white peeling bark and generally occurs as individual trees with fairly stout, upright trunk. Grey Birch is most commonly seen in multi-trunk clusters; it tends to be a more drooping tree than the White Birch. The bark of the Grey Birch is white but doesn't usually peel to papery sheets; the chevrons at the base of each branch tend to be more pronounced.

28. Branch tips stouter, no spur shoots or pealing bark, leaf buds sharp-pointed, buds (but not twigs) sometimes with strong chemical smell when crushed = **TREMBLING** or **BIG-TOOTH ASPEN**.

Populus tremuloides (photo 38) and *P. grandidentata* (photo 39) ; p. 57 of C&A, p. 107 of McV., p. 226 of Woj.
We have at least three native species of this genus: Trembling/Quaking Aspen, Big-tooth Aspen and Cottonwood (see below). Trembling and Big-tooth Aspens are upland trees, often growing in openings. Both have tight bark that can vary from the white of white birch to a greenish, off-white. The buds of Trembling are a rich, shiny brown; those of Big-tooth have a dusty grayish bloom on them.

29. End buds clustered at twig tips; often relatively large trees; acorns often found under tree; some leaves often remain on tree during winter = **OAKS**, go to 37
29. Not as above. Go to 30.

30. Along banks of waterways, often relatively large, bark deeply furrowed, twigs not wispy, leave buds pointed and with shiny brown/tan scales = **COTTONWOOD**.

Populus deltoides; photo 40; p. 57 of C&A, p. 107 of McV., p. 224 of Woj.
Cottonwood can be a massive tree. It grows on floodplains, often in the company of Sycamore. It has a grayish bark that becomes rough with age. During the right season, it rains 'cotton' (the wind-dispersed seeds).

30. Not as either of above. Go to 31.

31. Also along water; but twigs drooping and wispy; bark sometimes resembling braided cordage; lateral buds covered by single, bed-room slipper-like scale = **WILLOW (see above)**.
31. Not as above. Go to 32.

32. Buds nearly conical with base almost surrounded by narrow leaf scar; often reddish = **SYCAMORE**

Platanus occidentalis; photo 41a-b; p. 105 of C & A, p. 145 of McV., p. 208 of Woj.
Streamside location, often grows to very large tree. Scaley bark is shed in cardboardy flakes and results in patches of light and dark. Look for the remains of large, coarse, somewhat maple-shaped leaves on the ground.

32. Not as above. Go to 33.

33. Buds relatively large, bulbous-globular, and often colored (reddish, greenish). Go to 39.
33. Not as above. Go to 34.

34. Yellow, rough, naked-appearing buds; relatively large leaf scars = **BITTERNUT HICKORY**.

Carya cordiformes; photo 42a-b; p. 65 of C&A, p. 106 of McV., p. 156 of Woj.
There are four species of hickory in our area; only three of these are widespread (Bitternut, Shagbark and Pignut Hickories; see below for last two). Mockernut is also a Hudson Valley Species. Bitternut seems to be most common in floodplains or other somewhat wet areas. It has a mesh-like bark that seems to have stretched like a Chinese finger trap. Round nuts with thin, raised-seam husks often present around base of tree.

34. Not as above. Go to 35.

35. Leaf scars relatively large (usually bigger than lateral buds) and semi-circular or heart-shaped. Go to 38.
35. Not as above. Go to 36.

36. Buds with longitudinal ridges that are visible with magnifying glass; twigs are thin and delicate, with the end buds noticeably wider than the twig = **HOP HORNBEAM**.

Ostraya virginiana; photo 43; p. 68 in C & A; p. 111 in McV., p. 118 of Woj.
There is a single species in our area, and it is most typical of upland woods. Also called Ironwood. This is usually a small (<6" dbh), understory tree; however, we've seen full-fledge trees with a dbh of 8-10". Tree has distinctive bark that peels off in fine vertical strips (what we call "French-fry" bark because the strips are about the size of a McDonald's French fry) and a delicate, almost oriental structure. The seed clusters resemble hops.

36. End buds bent; lateral buds off-center above leaf scars = **AMERICAN** or **SLIPPERY ELM**

Ulmus americana (photo 44a-b) and *U.rubra*; p. 85 of C&A, p. 117 of McV., p. 240 of Woj.
We reportedly have three species in the County, but only these two are common. A third species, Rock or Cork Elm (*U. thomasii*), is very rare locally and 'Threatened' at the state level; we don't know it. American Elm populations have been severely reduced by Dutch Elm Disease, but it is still common in some parts. Both of these tend to be most common on moist but not wet sites. They are best distinguished by the inner color of their rough and ragged barks: a cross-section of American Elm bark shows a oreo-cookie alternation of light and dark; a cross-section of Slippery Elm is a nearly uniform 'chocolate truffle' color. When chewed, Slippery Elm twigs become slimy and almost soapy.

37. These two groups are best distinguished by looking at the leaves you are almost certain to find around the tree base. Leaf lobes ending in sharp tips or points = **RED/BLACK OAK GROUP**

Quercus rubra and friends; p. 81 of C & A, p. 115 of McV., p. 150 of Woj.
We have at least four trees in this group: Red Oak (photo 47) is the most common; Black, Scarlet (photo 48) and Pin Oak (*Q. velutina*, *Q. coccinea*, and *Q. palustris*, respectively) also occur in the County. The leaves of the last two are distinctly more finely cut than those of Red and Black Oak. Both Red and Black Oak have pointed buds, but the buds of the latter are generally covered with fine grey hairs, whereas Red Oak buds are smooth and brown. The Red Oak acorn cap is tight around the edges, whereas that of Black Oak tends to be frayed. Scarlet and Pin Oak may be differentiated somewhat on habitat: Scarlet tends to be in drier areas whereas Pin Oak tends to occur along streams. Leaf and acorn characteristics also differ slightly. Bear Oak (*Q. ilicifolia*) is generally a shrub and has a simple, five-lobed leaf.

37. Leaf lobes rounded and without sharp points = **WHITE OAK GROUP**

Quercus alba and friends; p. 77 of C & A, p. 115 of McV., p. 132 of Woj.
We have three common trees: White Oak (photo 45) is most probably most common, but Swamp White Oak (photo 46) and Chestnut Oak (*Q. bicolor* and *Q. montana*) are also regularly seen. White Oak prefers moderately rich soils, Chestnut Oak is found on dry hills (and has wavy-edged but unlobed leaves), and Swamp White Oak grows true to its name. Bur or Mossycup Oak (*Q. macrocarpa*) occurs sporadically in the County; look for its distinctly shaggy acorn caps. Two other species with Chestnut Oak-like leaves, the Chinkapin and Dwarf Chinkapin Oaks (*Q. muehlenbergii* and *Q. prinoides*), may also occur in the County.

38. Twig pith solid, lateral buds singular, end buds with scales = **SHAGBARK or PIGNUT HICKORY**.

Carya ovata (photo 50) and *C. glabra* (photo 49a-b); p. 65 of C&A, p. 106 of McV., p. 158 of Woj.
Shagbark, as the name implies, has bark that flakes off in broad, short strips; its buds are noticeably larger than those of Pignut, and its edible nuts have thick husks that easily fall away. Pignut has a tighter bark that's less apt to flake; its unpalatable nuts are pear-shaped and relatively thin husked.

38. Twig pith chambered, lateral buds tending to be doubled, end buds naked= **BLACK WALNUT** or **BUTTERNUT**.

Juglans spp.; photos 51a-b and see pith; p. 61 of C&A, p. 105 of McV., p. 164 of Woj.
Butternut and Black Walnut occur in our area, although the latter may not be native. In Columbia County, Black Walnut is mainly a tree of gardens, edges, and roadsides, rarely occurring in deep forest. Butternut is a moist forest tree, but has

been extensively reduced by a fungal disease. The nut of the Butternut is football shaped with sharp ridges; the Black Walnut nut is semi-spherical and its shell has rounded ridges. The leaf scar of Butternut is surmounted by a tuft of hairs.

39. Buds somewhat spatulate (smooth and slightly flattened); leaf scars prominent and almost circular, surmounted by a thin scar which encircles twig completely =**TULIP TREE**

Liriodendron tulipifera; photo 52; p. 95 of C&A ; p. 129 of McV.; p. 170 of Woj.
A straight-trunked, often relatively large tree; bark with tight furrows reminiscent of Ash; look for remains of cup-like seed clusters (or their central core) on tree or search for individual, ski-like seeds on the ground. Richer soils, mainly in the southwestern part of the County.

39. Not as above. Buds more bulbous, usually distinctly reddish **= BASSWOOD**.

Tilia americana; photo 53; p 153 of C&A; p. 168 of McV., p. 236 of Woj.
There is one species native to the County. Basswood grows to be a large tree, and is often found on rich soils. Reportedly favors calcareous soils, but also common on moist streambanks. The bark has long narrow furrows, although they are somewhat less regular than those of White Ash. Very commonly root-sprouts.

See also: RUSSIAN OLIVE and AUTUMN OLIVE (*Elaeagnus* spp.; photo 56, at bottom of 5th photo plate). Exotic species which will invade old fields and fencerows. Their twigs and buds are roughened by brown speckling.

GLOSSARY:

Alternate leaves/buds/leaf scars: The arrangement of leaves etc along the twig so that such structures are not opposite each other but rather switch from side to side as one progresses along the twig (for example, see photo 15); compare with the Opposite arrangement.

Bud Scale: The outer covering of most buds; these are often hardened structures somewhat resembling miniature versions of artichoke leaves (for example, see photo 11).

Bundle Scar: The scar or marking visible within many leaf scars (see for example photo 51b); these result from the severing of the leaf's vascular or circulatory tissue bundles when the leaf drops. The number and pattern of bundle scars can be diagnostic, but we haven't used them in this key.

End Bud: The bud located at the terminus (as opposed to the sides) of the twig (see for example, photo 17a). Distinction is sometimes made in the botanical literature between true and false end buds; in the latter, one can see that the twig itself continues beyond the location of the end bud (see for example, photo 24b).

Lateral Bud: A bud located to one side of the twig as opposed to at the end (for example, photo 30b).

Leaf Scar: The scar left behind when the leaf falls from the twig (for example, see photo 49b)

Naked Bud: Some buds appear to lack scales and so a textured leaf primordial is visible; such buds are termed 'naked' (for example, photo 32)

Opposite leaves/buds/leaf scars: As contrasted with an alternate arrangement of such structures, leaves, etc. emerge directly across from each other along the twig (see for example, photo 6b)

Pith: The 'heartwood' of a twig. Most twigs possess a core of tissue that is distinct from the surrounding twig wood; the color and/or structure of this core tissue can be diagnostic (see for example photos at the bottom of photo sheets 2 and 6).

Spur Shoot: A short branching off of a twig, the base is usually a cluster of leaf scars and there is an end bud; characteristic of birches and some other trees (see for example, photo 17b – although this is not a great photograph many spur shoots have a longer basal portion and a stack of leaf scars).