Stewart Woods Tree Trail
(script)

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Intro
Welcome to Stewart's Woods. The trail starts in the northwest (NW) corner of the parking lot, just to the right of the sign that says "No Bikes, No horses, Pedestrian use only." It curves to the right before entering the woods.

Walk along the ridge, and go right when another trail enters from the left. The trail will "Y" next to yellow trail marker "4". Take a left, and the numbered trees will begin. Press pause now, and resume when you get to the first tree.

1. sugar maple (*Acer saccharum*)
- Look to your right and you will see Tree #1. It is a fairly large sugar maple with a sizable wound where a branch has fallen or been knocked off.
- This will begin a somewhat frustrating process of trying to identify sugar maple by its highly variable bark. On mature trees, the bark is grey or tannish-grey and fairly thick with ridges and plates.
- Starting with a maple is a great opportunity to introduce some of the basics of tree identification. One of the first things we want to do is determine whether the tree has *opposite* or *alternate* branching. Maples, family Aceraceae, have opposite branching. So, if you have a twig or seedling, you will see that the leaf scars (the indentations on the twig where last year's leaf fell off) occur just across from each other on the twig. If you don't have a twig or small tree, you can look up to the branches in the canopy. Just be careful: sometimes branches break and fall off, making an opposite-branching tree look like it has alternate branching.
- For tree and shrub identification in this region, we use the acronym/phrase "MAD B. CAP" to remember the families with opposite branching. That is *M* for maple (family Aceraceae), *A* for ash (family Oleaceae), *D* for dogwood (family Cornaceae), *B* for buckeye (family Hippocastanaceae), and *CAP* for the family Caprifoliaceae.
- If you look to the other side of the trail, you will see Tree #2.

2. American beech
- American beech, *Fagus grandifolia*, is an easily recognizable species by its very smooth, light-grey bark.
- Daniel Boone may have started the trend of tree carving in this species, but we dendrologists should know better than to destroy the secondary cambium by cutting away the very thin bark.
- Move closer and look at the low branch. It has alternate branching and zigzags from node to node. The terminal bud (the bud at the tip of the branch) is long, sharply pointed, smooth, and best described as resembling a cigar. This may seem a little strange, since America is not generally considered to be the country that produces the grandest cigars.

- Press pause and go about 10 paces up the trail. Press play when you reach tree #3 on your right.

3. American hornbeam

- American hornbeam also goes by water beech, blue beech, ironwood, and musclewood. Remember that this is NOT a beech tree, but its bark is smooth, grey, thin, and tight like the American beech. Musclewood is a preferred name, especially since it brings forth the best line from the *Native Trees of the Midwest* book, "It is impossible to miss a tree, since the fluted, muscle-like trunk catches the eye and tempts the visitor to examine its twisted, smooth grey bark".
- Take 4 steps up the trail and you will see Tree #4 on the left, just next to the trail.

4. sugar maple

- This is our second sugar maple on the trail. It is younger than the first one. The bark is much tighter and still interwoven.
- Sugar maple's scientific name is *Acer saccharum*, in the maple family, Aceraceae.
- Press pause and head up the trail about 12 paces.

5. sugar maple

- On your left is another middle-aged sugar maple, *Acer saccharum*. The bark is still tight. Look to the upper portion of the trunk. The silvery upper bark is very characteristic of sugar maples.
- Notice the sugar maple saplings all over the understory. You can identify them easily by the opposite branching. This means that the branches or leaf scars will occur just across from each other on the twig. The terminal bud is pointy and longer than the 2 "sub-terminal" buds just to its side. Together they make something of an M-shape. The twig itself is smooth, brown, and usually has little white dots called lenticels.
- Press pause and hike up the trail about 20-25 paces.

6. northern red oak

- Tree #6 gives us the opportunity to introduce you to the oaks, of the genus *Quercus*. Oaks are an extremely important group of species for timber, wildlife usage, historical significance, and other ecological functions.
- Identification to the genus *Quercus* should become easy. They are often dominant in the canopy, have large, spreading crowns, persistent foliage on the forest floor, and clustered terminal buds on the twigs.
- The genus *Quercus* can be divided into two sub-groups: the white oak sub-group and the red oak sub-group. Northern red oak obviously falls in the red oak sub-group, so we will run through some distinctive characteristics of the red oaks.
    - Leaves are lobed and have bristles on their tips.
    - The clustered terminal buds are bluntly pointed and angled in the cross-section.
    - The bark is usually dark and furrowed.
    - Acorns are bitter, take two seasons to mature, and do not germinate until the following spring. Acorn caps usually have smoother overlapping scales.
- Focusing specifically on northern red oak, we will start with the bark. The bark is dark with grey or silvery ridges that we like to call "ski tracks" running almost all

the way down to the base of the trunk. The dark northern red oak trunks stand out in the woods, especially from a distance.
- Press pause and take about 18 steps up the trail.

7. sugar maple
- On the left is an older sugar maple than the last 2 we've seen. Notice that the bark is starting to curl or protrude along vertical strips.
- Press pause and go about 20-25 paces up the trail.

8. red elm
- On your left is a fairly large red elm. In honor of the first elm on the trail, we will go through some characteristics of the elm family, Ulmaceae.
    - They have alternate branching.
    - The twigs zigzag from node to node and do NOT have a true terminal bud.
    - The false terminal bud is lop-sided at the end of the twig with a leaf scar at its base. Lateral buds (the buds along the twig) tend to lie against the twig. Both the false terminal bud and the lateral buds are pointy and are covered in overlapping scales.
    - The leaves are somewhat egg-shaped, are lopsided at the leaf base, and have serrate or toothed margins.
    - The bark is layered and feels slightly spongy if you press your thumb into it.
- The best way to distinguish between the two elm species that we learn in this class, red and American elm, is by the colors of the layered bark.
- Red elm will be red throughout.
- Up the trail about 20 feet is the next tree.

9. sugar maple
- This sugar maple tree has a noticeable wound, an infected branch scar. This is actually fairly common on this species.
- On this tree you can see the salmon-colored inner bark that appears on some middle-aged sugar maples.
- Press pause, walk past the bend in the trail, and tree #10 will be up the hill on the right.

10. pignut hickory
- Hickories comprise the genus *Carya* in the walnut family, Juglandaceae.
- Juglandaceae is the first family we have seen with a very important identification characteristic: compound leaves. This means that several "leaflets" are attached to one rachis that is attached to the twig. Furthermore, hickory leaves are "pinnately compound," meaning that the leaflets occur in two rows along the central rachis.
    - Hickory trees produce hickory nuts that are enclosed in husks of varying thicknesses. The wood is extremely hard, heavy, strong, and shock-resistant.
    - Leaf scars, which are the indentations on the twig where a previous year's leaf fell off, are large, shield- or heart-shaped with many bundle scars.
    - Hickory trees are intermediate in shade tolerance, much like the oaks.

- Pignut hickory has dark, very hard bark in narrow, flat, somewhat overlapping ridges.
- If you look on the ground, you can find remnants of the hickory husks that are relatively thin for a hickory.
- On the other side of the trail, you will see tree #11.

11. sugar maple

- Here we have another sugar maple.
- If you look to the right side of the trail again, you will find tree #12.

12. northern red oak

- Here we have a beautiful, large, straight northern red oak.
- *Quercus rubra* is easy to spot from a distance by its dark bark with grey ski tracks.
- Leaves have bristle tips and 7 to 11 lobes.
- All oaks are in the beech family, Fagaceae.
- Press pause and walk about 10 paces up the trail.

13. sugar maple

- This is a larger sugar maple, but its bark is still tight. The upper trunk is dominated by wide, uneven silvery tracks.
- Look west and you will see trees #14 and 15 in white letters.

14. shagbark hickory

- Mature shagbark hickory trees are unmistakable. Just look at that incredibly shaggy bark. This shaggy look is actually a result of long, wide, moderately thin plates that flip on one side or both the top and bottom.
- Walk into the woods toward the two shagbark hickories.

15. shagbark hickory

- Near the base of the shagbark hickory trees, you can find some remains of the fruit. The husk is especially persistent. The fruit is a rounded nut that is enclosed in a thick woody husk. The husk remnants are split into quarters and are about one quarter to one half inch thick.
- On the other side of the trail, you will see tree #16.

16. sugar maple

- Hopefully, you can recognize the sugar maple*, Acer saccharum* by now. This specimen has the silvery streaks in the upper bark. Like all members of the family Aceraceae, it has opposite branching.
- Press pause and go about 17 paces down the hill.

17. white oak

- Look down the hill and to the left and you will see the first *white oak* on the trail.
- The bark is light grey colored with thick, flat, blocky plates on the lower portion of the trunk. You may notice that there are large splotches missing on the thick, blocky bark. These patches are a result of a fungus that has actually eaten away the bark. The bark-less fungus patches occur on many (but not all) mature white oaks, making them easily identifiable.
- White oak belongs to the white oak subgroup. In contrast to the red oaks, white oaks:
    - Have leaves with no or rounded lobes and *no* bristle tips.

    - The clustered terminal buds are mostly rounded and round in the cross section.
    - Acorns are sweeter, only take one year to mature, and germinate soon after falling to the ground in the autumn. Cap scales are thicker and more warty than the red oaks.
    - The bark is scalier, rather than furrowed like the red oaks.
- Press pause and head down the hill to tree #18.

18. northern red oak

- You should be able to recognize northern red oak, *Quercus rubra*, by its dark bark and silvery-grey ski tracks that run nearly the entire length of the trunk to the base.
- This is a good opportunity to look at another identification tool: the acorns lying on the ground near the base. *Quercus rubra* acorns are fairly large (up to 1.5 inches) and barrel-shaped. The cap is shallow and has flattened scales.
- To the right, you will see tree #19.

19. white oak

- We see our second white oak, *Quercus alba*, now.
- In addition to the fungus patches, white oak bark is easily distinguishable by the change from blocky in the lower portion to papery or peeling plates in the upper portion of the trunk and on the branches.
- While you're looking up, notice the thick upper limbs and large, spreading crown.
- Look to the right of the white oak (still on the left side of the trail) for tree #20.

20. northern red oak

- Tree #20 is a northern red oak, *Quercus rubra*, in the family Fagaceae.
- This tree is either forked at the base or two separate trees. It is not uncommon for *Quercus rubra* to have multiple trunks like this. Most oaks can re-sprout from the stump if damaged.
- About 10 feet to the right (West) of the northern red oak is tree #21.

21. sugar maple

- Tree #21 is a small *Acer saccharum*.
- Look across the trail. The next tree on the trail is actually a stump.

22. white ash stump

- The majority of our woodland tree identification is done by bark alone, so looking at a stump shouldn't throw us off at all.
- White ash, *Fraxinus americana*, has the picture-perfect "diamond bark," which is created by interlacing ridges. You can see this on the stump and on the trunk resting beside it.
- Look up and you will see tree #23 in blue paint. Follow the trail downhill and to the right.

23. black cherry

- Black cherry, *Prunus serotina*, also has very distinctive bark. Mature bark is dark with small, irregular plates that flip outward on the edges resembling a bunch of burnt potato chips.
- Black cherry produces beautiful, valuable lumber, but trees usually have poor form in this part of its range.
- Across the trail, on the right, is tree #24.

24. American beech

- We have a small American beech, *Fagus grandifolia*, which is in the beech family, Fagaceae.
- The species name *grandifolia* means “large leaves.” They are not particularly large, but they ARE fairly thick and dark green. Leaves are ovate (or oval-shaped) with a distinct tip. They have conspicuous veins running diagonally to the midrib and parallel to each other. Young trees often hold their leaves all winter.
- Also, look at the pointy, brown, cigar-shaped terminal bud.
- Looking down the hill about 25-30 paces, you can see tree #25, a northern red oak.

25. northern red oak

- This northern red oak tree has a long, clear trunk. “Clear” refers to its lack of branch scars, which is quite desirable from a timber standpoint.
- Oaks, in general, are very important for timber. It is used to make furniture and flooring, as well as to burn as firewood.
- Look to the right side. Set back from the trail is tree #26.

26. white oak

- White oak’s scientific name is *Quercus alba*. The species name, *alba*, is easy to remember because it simply means “white” in Latin, which probably refers to its light-colored bark.
- From afar, you can see the prominently blocky bark in the lower portion and papery, peeling bark in the upper portion of the tree.
- Look to the left.

27. northern red oak

- Here we have another double-trunked northern red oak, *Quercus rubra*.
- Press pause and continue across the little valley.

28. black walnut

- Just across the trench is the first walnut.
- Black walnut, *Juglans nigra*, has dark outer bark and chocolate-colored inner bark.
- Black walnut and all members of the family Juglandaceae have alternate branching and compound leaves.
- This particular specimen has very flakey bark, which may indicate a poor site and/or slow growth rate.
- Look up the hill a few feet, and you will see Tree #29 to the left of the trail.

29. red elm

- Here we have a more mature red elm, *Ulmus rubra*. The species name *rubra* refers to the reddish tint to its bark and wood.
- Mature bark is light brown and forms thick, hardened, very three-dimentional, non-continuous vertical ridges. Remember that the layers are reddish throughout, not two-toned like American elm bark.
- Take about 8 steps along the path to Tree #30, which is also on your left.

30. white ash

- This tree marks our first *live* white ash, *Fraxinus americana*.

- Remember that white ash bark has very distinctive diamond-shaped interlacing ridges. Mature bark becomes blockier with age, which is already evident at the base of this tree.
- Make sure not to confuse mature white ash bark with that of black walnut. White ash bark is much lighter colored.
- White ash has compound leaves that can be up to 1 foot long. The 5 to 9 leaflets can have finely-toothed or smooth margins.
- You can also distinguish ash because it has opposite branching. Remember, ash is the "A" in our acronym "MAD B Cap."
- Press pause and go straight about 18 steps.

31. northern red oak

- This specimen of northern red oak, *Quercus rubra*, has slightly thinner bark than other *Quercus rubra*s that we have seen on the trail, but the ski tracks are still evident.
- If you dig in the leaf litter, you may be able to find some large, barrel-shaped acorns or, at least, some shallow acorn caps with flattened scales.
- On the right is Tree #32.

32. sugar maple

- This sugar maple's bark is thickening, has ridges and fissures, and is mildly interlacing.
- Look up to confirm that it has opposite branching.
- Take about 8 paces up the trail to the large Tree #33.

33. tuliptree

- You notice that the mature bark resembles that of white ash with its thick, interlacing ridges creating diamond-like shapes. However, tuliptree bark has a reddish tinge.
- By this point you should know to look up into the crown at the branching structure to confirm or deny your first identification. Tuliptree has *alternate* branching. If leaves are present, you will see that they are simple, not compound. In the absence of leaves, you will see the fruiting bodies sitting upright on the branches.
- Just to the left of the tuliptree is Tree #34.

34. American beech

- Look at this small American beech, *Fagus grandifolia*, and review the twig and terminal bud. The twig is smooth and slender and zigzags from node to node. The terminal bud looks like a cigar.
- Beech is a slow-growing, very shade-tolerant species. It does not grow incredibly large, but can live for several hundred years. Because American beech and sugar maple trees are so tolerant to shade, beech-maple forests will eventually replace oak-hickory forests in the absence of disturbance.
- Now turn around and look about 30 feet on the other side of the trail to tree #35.

35. chinkapin oak

- You might think that this is a white oak. This would be a good guess since chinkapin oak, *Quercus muehlenbergii*, is in the white oak subgroup.
- The mature bark looks like light-colored flakes running down the entire length of the tree. For a fun way to remember this bark pattern, pretend you won a million

dollars from a coin machine; those little round shapes would come “chinking” down the trunk.
- If you approach the tree, you can actually rub off the flakes with your hand.
- If you look in the leaf litter, you will find beech, northern red oak, white oak, and some chinkapin oak leaves. The northern reds are lobed with bristle tips; the whites are lobed *without* bristle tips; and the chinkapins are unlobed but with large “teeth” on the margins. They are somewhat egg-shaped with the widest portion occurring between the middle and tip. They narrow toward the base.
- Press pause, return to the trail, and go about 15 paces to tree #36.

36. northern red oak
- Tree #36 in yellow is a dying northern red oak. Behind it is another *Quercus rubra*, which is alive and well.
- Look to the right of the northern red oaks, and you will see tree #37.

37. tuliptree
- Here stands another nicely formed, dominant tuliptree.
- Although it is also called tulip-poplar and yellow-poplar, it is neither a tulip nor a poplar, as indicated by the hyphens in these common names. In fact, *Liriodendron tulipifera* is a member of the magnolia family, Magnoliaceae.
- The species name, *tulipifera*, refers to its tulip-shaped leaves. Leaves have 4 lobes and are termed “truncate” or fiddle-shaped. The top makes a very shallow V-shape, which looks nearly straight or chopped off. Margins and both surfaces of the leaf are smooth.
- Press pause and walk toward tree #38 in the creek bed.

38. black walnut
- This marks our first well-formed black walnut on the tree trail.
- Mature bark is dark and thick with interlacing ridges or blocky formations. The inner bark is a distinctive chocolate color, which is visible on this tree.
- This species prefers these deep, fertile, moist soils, but also likes them to be well-drained. It is commonly found in bottomlands and along streams like this.
- Black walnut is fast-growing and shade-*in*tolerant.
- It is usually a medium-size tree but can grow large on good sites.
- Look across the trail to Tree #39.

39. tuliptree
- At this point in the tuliptree patch, let’s discuss some ecology of this species. It prefers deep, rich, well-drained soils and is often found in bottomlands, like we have here, and on lower wooded slopes. Furthermore, tuliptree and black walnut are common associates. That is, they often occur on the same sites.
- Tuliptree is a prolific seeder, and those seeds can persist for 10 years until conditions are favorable for new seedling growth. It is *in*tolerant to shade, but will grow rapidly with enough light. Because of this, it can invade disturbed sites. Unlike most pioneer species, it is long-lived and can be dominant in a mature forest.
- Now look to your left, and you will see Tree #40 growing on a steep creek bank.

40. sugar maple
- This medium-sized tree gives us another bizarre, very peely version of the infamously, highly variable sugar maple bark.
- Strangely located between trees #39 and #40, you will find tree #41.

41. red elm

- Although this red elm, *Ulmus rubra*, is broken and beginning to deteriorate, we can identify it by its bark. Since it is already on its way out, this could be a good opportunity to break off a piece of bark and examine the layers. Every layer in red elm bark is reddish brown.
- Press pause and head uphill toward the massive 3-trunked tree marked 42.

42. tuliptree

- We have another tuliptree, *Liriondendron tulipifera*.
- Remember to look for persistent fruiting structures sitting upright in the canopy.
- Stump sprouts are common and vigorous in tuliptree and may result in multiple trunks like we have before us now.
- Press pause and go about 15-20 steps to the next tree.

43. American elm

- This is our first American elm, *Ulmus americana*.
- Its bark is spongy, like that of young red elms. However, the layers of bark alternate between brown and tan in American elms, rather than being all reddish-brown like in red elms.
- Twigs have the reverse trend: American elm buds and twigs are pretty much the same chestnut-brown color, whereas red elm buds and twigs are dark and light, respectively.
- Remember that all elms have slender twigs that zigzag from node to node. American elm leaf buds lie against the twig and are elongate, pointed, and covered in overlapping scales. Don't be confused by larger, more rounded flower buds that appear by mid-winter.
- Press pause and go about 20-25 steps to the next tree.

44. sugar maple

- Here is a medium-small sugar maple.
- You may be able to see a small branch. Look at the M-shape created by the pointy terminal bud and the two "sub-terminal" buds.
- From this tree, look to the right and you will see a five-trunked tree labeled 45. Also, take note that the trail turns left at this point.

45. American basswood

- Tree #45, in blue lettering, is a five-stemmed American basswood.
- This species sprouts prolifically and often has multiple stems like this. The trunks are often long, clear, and slightly bowed or crooked.
- To the left is a single-stemmed American basswood also labeled #45.
- Turn around to see tree # 46.

46. American basswood

- This is another American basswood, *Tilia americana*, in the basswood family, Tiliaceae.
- The bark is dark brown with narrow, vertically running, flat-topped ridges.
- Also notice the characteristically curved trunk.
- Basswood leaves are fairly large, broad, and heart-shaped with finely serrate or toothed margins.
- Now press pause and continue down the trail heading north. Remember that the trail split back at tree #44.

47. white oak

- On the right side of the trail is a large white oak, *Quercus alba*.
- In addition to its uses for furniture and flooring, white oak timber is famous for making whisky barrels.
- On the other side of the trail is tree #48.

48. American basswood

- Look closely at the bark on this American basswood, *Tilia americana*. The vertical strips (ridges) are fairly continuous but seem to be divided by strikingly perpendicular cuts or fissures.
- Look diagonally to the right.

49. black cherry

- Tree #49 is a large, mature black cherry, *Prunus serotina*. Do you recognize the burnt potato chip bark?
- This specimen is large and poorly formed from a timber perspective.
- Black cherry leaves are narrowly elongate; both ends are pointed; and margins are finely toothed. The upper surface is dark green; the lower surface is light green; both sides are shiny.
- *Prunus serotina* is actually in the rose family, Rosaceae.
- If you are looking at the black cherry perpendicularly from the trail, #50 will be on the opposite side of the trail.

50. northern red oak

- This is a younger northern red oak, *Quercus rubra*, in the family Fagaceae.
- The bark is lighter colored than bark on mature trees. The ski tracks are beginning to form.
- Return to the trail, and you will see a large white ash for tree #51.

51. white ash

- You should recognize the light-colored, diamond-shaped, interlacing bark as white ash, *Fraxinus americana*.
- White ash wood is strong and used to make tool handles, baseball bats, furniture, and cabinets.
- Immediately to the right of the white ash is tree #52.

52. eastern hophornbeam

- This small, twisty tree is eastern hophornbeam. It is also called ironwood because the wood is very hard and dense.
- Ironwood is in the birch family, Betulaceae.
- The bark is thin with narrow, vertically aligned shreds.
- Just on the edge of the valley is another ironwood, tree #53.

53. eastern hophornbeam

- *Ostyra virginiana* is in the family Betulaceae, the birch family.
- Members of family Betulaceae can be easily identified by catkins. Catkins are the male flowers that look like little sausages dangling from the end of the twig. The female flowers are less conspicuous.
- Press pause, cross the miniature valley, and continue another 15 paces to Tree #54 on the right.

54. shagbark hickory

- Here is a medium-sized shagbark hickory, *Carya ovata*.
- You may notice that the bark is a little less shaggy than the ones we saw earlier. Nonetheless, the bark is shaggy and the husk is thick.
- This may be a good time to mention that hickories can hybridize among each other. That is, they can produce viable offspring. The division between species is not always clear-cut.
- Press pause and go straight about 15 paces to tree #55.

55. American basswood

- The bark on this American basswood, *Tilia americana*, looks slightly different from the younger trees we saw earlier, but the narrow, flat-top ridges remain.
- Try this fun identification tool: knock on the trunk. It should sound hollow, which is unique to this species.
- Press pause and take about 20 steps to the next large tree.

56. white oak

- This mature white oak, *Quercus alba*, has every characteristic we have learned: papery upper bark and blocky lower bark complete with fungus patches.
- White oak leaves can be fairly variable but are always recognizable. They have smooth margins, narrow sinuses (the area between the lobes), and rounded lobes with*out* bristle tips.
- Press pause and go about 30 steps uphill.

57. sugar maple

- On your right is a medium-sized sugar maple.
- Notice that this mesic slope is once again dominated by sugar maple. Like most species, sugar maple prefers deep, moist, well-drained soils. Sugar maple, however, actually ends up occupying these choice sites. How? It is incredibly shade-tolerant, so small, suppressed trees survive in the understory for years. If the canopy opens, by a fallen tree, for example, the suppressed tree will respond with a rapid growth spurt until the canopy closes again. Our oaks and hickories can not do this. In this way, sugar maple, along with American beech, become dominant “climax” species in forests with low disturbance.
- Look to your left for tree #58.

58. white ash

- This tree is a dominant white ash, *Fraxinus americana*, which is in the olive family, Oleaceae.
- Dominant refers to its superior position in the canopy.
- Ash trees are common in both woodlands and urban environments, though their future is seriously threatened by the Emerald Ash Borer, an exotic insect.
- Press pause and go about 20 paces to tree #59 on the right.

59. northern red oak

- Among the common oaks in our area, northern red oak may have the lowest value to wildlife. The acorns are large, bitter, and come in notoriously undependable crops. Trees tend to produce “bumper crops” some years, which are separated by little or no acorn production for 3 to 5 years.
- Press pause and go about 15 to 20 paces to Tree #60 on the left.

60. white oak

- The fungus patches on this white oak seem to be extending quite high on the trunk.
- This tree looks like it may be dropping some branches, so let's look at the litter on the ground.
- You can recognize oak twigs by the clustered terminal buds. Remember that the buds in the white oak subgroup have rounded tips, and the cross-sections are round.
- Turn to the opposite side of the trail to see tree #61.

61. white ash

- Don't let the patch of missing bark fool you: this is a white ash. The bark is clearly interlacing and diamond-shaped.
- Although white ash is a prolific seed-producer, it is not used extensively by wildlife. Some finches and rodents occasionally feed on the seeds.
- Fruits hang in clusters. Each individual fruit is a flattened, single, winged seed that is shaped like a canoe paddle.
- Continue and the trail, and you will see Tree #62 in front of you.

62. pignut hickory

- This is a pignut hickory, *Carya glabra*, with somewhat shaggy bark.
- Remember to look for other clues, like the husks. You may use the acronym B-P-M-S to remember the relative thickness of the husks. From thinnest to thickest hickory husks, the order is bitternut, pignut, mockernut, and shagbark.
- If you can find an open hickory nut on the ground, look at the pig's nose design on the inside. Although not unique to pignut hickory, it is a sure sign that you have a hickory tree nearby.
- Press pause and go about 40 steps to tree #63 on the right.

63. northern red oak

- This is a large northern red oak, *Quercus rubra,* with prominent ski tracks on the bark.
- This tree has a dead limb in the canopy. It looks like some wildlife has made some homes in it. Oaks are not particularly cavity-prone, but they may form in older trees. These cavities are used by squirrels and woodpeckers, as well as secondary cavity nesters.
- Look down the trail. On the left side is tree #64 with multiple trunks.

64. American basswood

- This American basswood's trunk is hollowing out where branches have fallen off.
- This particular tree may be used by cavity-nesting species, but basswood is generally only lightly used by wildlife.
- Some small mammals eat its tiny, nut-like fruit. Twigs and leaves are occasionally browsed by deer and rabbits.
- Join the other trail and take it to the right. At the trail union is tree #65.

65. eastern hophornbeam

- This tree, Ironwood, *Ostrya virginiana*, is in the deterioration stage. The upper branches are dying and breaking off.
- This may be a somewhat ironic moment to mention that ironwood is fairly long-lived for a small tree and may live up to 150 years.

- Press pause, take about 22 steps to tree #66, which is very close to the trail on the right side.

66. white ash

- You should be able to identify white ash by now, so look up the trunk for a lesson in ecophysiology. The diameter is thin, especially compared to other trees of the same height. This indicates that this tree has allocated its limited photosynthate (or products of photosynthesis) on height growth at the expense of diameter growth. Now that this tree has nearly reached the top of the canopy, height growth may slow while diameter growth expands. However, the small crown indicates that this will be a slow process since there will not be extensive foliage to capture light and photosynthesize.
- Now press pause and go about 15 steps to tree #67.

67. black oak

- Take a good look at this tree. The thick, dark bark may remind you of northern red oak. However, the bark on this species, black oak, is divided into blocks rather than in continuous ski tracks.
- Black and northern red oaks are both in the red oak subgroup and are easily confused. You should look for multiple clues.
- First, black oak acorns are small and often have thin black stripes. The cap covers about half of the acorn, and its scales are fairly shaggy.
- Second, black oak tends to occur on dry sites, like uplands and ridges.
- Now, look farther into the woods. Diagonally and to the left is tree #68.

68. black cherry

- The burnt potato chip bark indicates that this is a black cherry, *Prunus serotina*.
- Twigs are dark red, have little white dots called lenticels, and develop a silvery covering with age. When scraped, they release a distinct “burnt-almond” scent.
- Be careful with wilted leaves on broken limbs: they contain cyanide, which is toxic!
- Press pause and continue to tree #69.

69. black oak

- This is another black oak, *Quercus velutina*. “Velutina” refers to the dense grey hairs that cover the clustered terminal buds (like velvet).
- If you step back, you see ski tracks only in the upper portion of the tree trunk, but the bark becomes dark and blocky near the base.
- To the right is tree #70.

70. American basswood

- You may notice that the crown of this medium-sized American basswood is suppressed. That is, the crowns of other trees cover it and block most of the direct sunlight. This indicates that basswood is shade-tolerant, especially when young.
- Look diagonally to the right for tree #71.

71. chinkapin oak

- This is a somewhat tricky ID. The fungus patches and blocky bark near the base seem to indicate that this is a white oak, but look in the upper trunk and limbs. The bark makes small flakes that are fairly uniform in size, so this is a chinkapin oak, *Quercus muehlenbergii*.

- Chinkapin oak acorns are small and nearly black when ripe. The caps are bowl-shaped with warty scales and cover the nut nearly halfway.
- Don't count on finding many residual acorns on the ground because chinkapin oak acorns are the sweetest and most preferred acorns by wildlife in this region.
- Press pause and go about 15 steps to tree #72.

72. sugar maple

- This is a fairly large sugar maple. Since we've been discussing crowns lately, look at this one. The trunk curves to the right, and the crown is highly lopsided in the same direction. There is a gap in the canopy created by the partially fallen white ash. It is at times like these that suppressed trees in the understory may grow rapidly until canopies from surrounding dominant trees fill the gap. Even if this leaning tree is removed, you could still look at growth responses in the remaining trees for clues about the site history.
- Look behind this sugar maple. Toward the fence is tree #73.

73. chinkapin oak

- We found another chinkapin oak!, *Quercus muehlenbergii*.
- The coarsely toothed, obovate leaves may be difficult to find among the northern red oak, white oak, and sugar maple leaves.
- Notice the shrubs taking over the understory near the woods' edge. This is Amur honeysuckle, an invasive, exotic species that is a serious problem in this region. It leafs-out early in the spring and retains its leaves late in the fall. This extended growing season not only enables it to grow and reproduce rapidly, but the shade produced inhibits the growth of small tree seedlings and many spring ephemeral flowers. Regeneration and biodiversity are threatened.
- Continue to tree #74, which is also on the left side of the trail.

74. white ash

- This diamond-shaped white ash bark is starting to become blocky, which indicates very slow growth.
- Ash twigs are thick; the terminal bud resembles a bishop's cap; and leaf scars are opposite from each other along the twig.
- Look to the left of the white ash for Tree #75.

75. American elm

- As if American elms don't have enough to worry about with Dutch Elm Disease, this tree has a large white ash resting on it. Dutch Elm Disease is caused by an exotic fungus that has been decimating woodland and urban American elm populations since the 1930s. You see that small American elms are still common, but large American elms are rare. Most are killed long before reaching maturity. Look around; you may see several small American elms with dropping bark.
- On the other side of white ash #74 is tree #76.

76. black walnut

- Black walnut, *Juglans nigra*, has compound leaves. They can be up to 2 feet long and have as many as 23 small, serrate leaflets. The terminal leaflet is often missing.
- Black walnut is usually one of the first trees to lose its leaves in the late summer, due a fungal disease called anthracnose.

- If trees are missing leaves, you can usually find long rachises persistent in the leaf litter.
- Turn to the right side of the trail and find tree #77.

77. American elm
- Now that you've seen a couple American elms, you might notice that it could be confused with ironwood. Make sure you look closely. Elm bark is spongy and layered, whereas ironwood bark is shreddy.
- Press pause and go about 15 steps to the large tree #78 on the left.

78. white oak
- Here is a dominant white oak.
- Notice the large crown and bulbous knots that have formed around old, dead branches. This is very common in old white oaks.
- Press pause and go about 20 steps to find tree #70 on the right.

79. shagbark hickory
- Shagbark hickory, *Carya ovata*.
- Shagbark hickory leaves usually have 5 leaflets, sometimes 7, with serrate margins. The terminal leaflet is large and the lateral leaflets decrease in size going toward the base.
- Just to the left of this tree is tree #80.

80. white oak
- This is a white oak, *Quercus alba*.
- Some foresters may call it a "wolf" tree, referring to the fact that it takes up more space than it's worth. Though this may hold some merit from a timber standpoint, this tree surely has a plethora of non-timber values.
- For example, it also performs many ecosystem functions, like soil improvement and regulation of the hydraulic cycle.
- White oak acorns are preferred by wildlife, though acorn production is highly variable from year to year.
- Press pause and go about 10 steps downhill.

81. sugar maple
- Here is a sugar maple with gnarly form! It looks like something caused its growth to change directions!
- If you don't see any leaves on the tree, just think of the Canadian flag. Leaves have 5 lobes, smooth margins (edges), and a fairly long leaf stalk.
- Look diagonally to the left to tree #82.

82. hackberry
- This is the first hackberry tree on the trail, *Celtis occidentalis*. Hackberry is in the elm family, Ulmaceae.
- Leaves resemble those of the elms. Like the elms, hackberry leaves are rough and lopsided at the base. However, the leaf margins on hackberry are only singly serrate, rather than doubly serrate like the elms. The tips on hackberry leaves also tend to be longer and are sometimes hooked.
- Young to middle-aged hackberry bark has very distinctive warty structures. The "warts" eventually grow together and create continuous ridges or scales on mature trees.

- To the right is the double-stemmed tree #83.

83. black walnut
- This is a somewhat atypical looking black walnut, but we can still identify it by its thick, dark outer bark and chocolate-colored inner bark.
- Branches are also often acutely angled upward, as demonstrated by this tree.
- We can also look for remains of the fruit: walnut shells. The hard covering is rounded and has many deep grooves. Nuts mature in autumn and are highly preferred by squirrels. The green, fleshy husk deteriorates fairly quickly.
- Look across the bend in the trail to tree #84.

84. tuliptree
- From a distance you can see the interlacing ridges on this tuliptree.
- You may also notice several series of holes running horizontally on the trunk. These are made by yellow-bellied sapsuckers. The tree responds to the wounds by producing sap in the holes. The sap attracts insects; and the clever birds return to eat both!
- From the tuliptree, move about 20 steps down the trail.

85. white oak
- At this large white oak, let's take a look at the acorns.
- They are about 1-inch in length and oblong. The cap has thick, warty scales, and it covers about one forth of the acorn. Acorns ripen in the autumn and germinate soon after falling to the ground.
- Press pause, go toward the cement post, and turn right.

86. bitternut hickory
- This is the first bitternut hickory, *Carya cordiformis*.
- Mature bark is hard, light grey, and tight with narrow, flat, interlacing ridges and shallow fissures. It becomes scaly or flakey at the base, as seen on this tree.
- The leaves are small for a hickory. The leaflets are yellow-green, smooth, and have serrate margins. They might resemble those of black walnut, but bitternut hickory leaves have only 7 to 11 leaflets.
- Return to the trail, if you left it, and continue about 10 steps to the decaying tree with illegible blue letters.

87. sassafras
- This sassafras tree is rotting from below.
- Luckily, we are skilled enough to identify trees by their bark. Ridges are reddish brown, thick, flat, and appear as if they have been smoothed or sanded. The inner bark is orange-colored, which is visible on this tree.
- Sassafras, *Sassafras albidum*, is in the family Lauraceae. Think of someone named Laura who is really sassy and smells good. All members of the family Lauraceae have a strong, spicy scent, though you will need to wait until we find a living tree to smell it for yourself.
- From here, turn right and turn down the ridge into the woods.

88. sugar maple
- Sugar maples produce fruit in the fall. The "helicopters" we played with as children are actually winged seeds called samaras. They are paired until broken.
- If this sugar maple is on your right, tree #89 is directly in front of you.

89. tuliptree

- Here is another tuliptree, *Liriodendron tulipifera*, with a tall, straight, clear trunk.
- Be aware that younger tuliptree bark is quite different than the bark on mature trees. It is smooth and gray with white inner bark that is exposed by developing shallow fissures.
- Look to the left for the next tree.

90. American basswood

- This large American basswood, *Tilia americana*, is hollow inside.
- Basswood grows on nutrient-rich, moist, well-drained sites. It is more common in northern hardwood forests.
- Cross the ephemeral streambed, go about 7 more steps, and you will find tree #91 on your left.

91. sugar maple

- Sugar maple, *Acer saccharum*.
- Remember that all trees in the maple family, Aceraceae, have opposite branching.
- Head downstream to tree #92.

92. northern red oak

- The scientific name for northern red oak, *Quercus rubra*, is easy to remember because “rubra” just means “red,” which probably refers to the reddish cast to the wood.
- Additionally, the numerous, overlapping scales covering the terminal buds are reddish-brown.
- The clustered terminal buds are bluntly pointed and have angled cross-sections.
- Look to the right for Tree #93.

93. sassafras

- Sassafras, *Sassafras albidum*, has 3 different leaf shapes:
  - The “ghost” shape has 3 lobes.
  - The “mitten” shape has 2 lobes. One is large and one is small.
  - The “football” shape is not lobed.
  - Mature trees only have this football shape.
  - All leaves are shiny, smooth, and have entire (un-serrated) margins. They give off a characteristic spicy scent when crushed.
- Look up the hill for the next tree.

94. red elm

- Red elm, *Ulmus rubra*, is also called slippery elm, which refers to the mucilaginous, slimy substance that oozes from the inner bark when cut. As the history goes, it was once used as a cure for cholera. Today, it is sold to sooth sore throats and other purposes.
- Look to the right for Tree #95.

95. bitternut hickory

- Look at this bitternut hickory’s thin, light grey, interlacing bark.
- With hickories, it is always a great idea to look at the husks in the leaf litter. Bitternut hickory husks are the smallest and thinnest of all that we see in lab.

Unlike the other hickories, the four parts of the husk come together and create winged sutures that split to the base when mature.
- The terminal bud is also different in that it is “naked” rather than being covered by scales. It is sulfur-yellow, so please do not confuse it with poison ivy or visa-versa!
- Look left (past red elm #94) to tree #96.

96. sugar maple
- This is a young sugar maple with thin, smooth, grey bark.
- Look to the right for tree #97.

97. eastern hophornbeam
- This eastern hophornbeam is much like the others we have seen, except that this specimen was double-stemmed before one died.
- Ironwood, *Ostrya virginana,* is very similar to musclewood, *Carpinus caroliniana*, in its niche as a small, shade-tolerant understory tree.
- Turn left, make your way through the downed debris to find tree #98.

98. sassafras
- This is a slightly better-formed sassafras tree.
- Sassafras fruits are impressive. They are small, dark blue, and berry-like. They are held on bright red, fleshy stalks that resemble golf tees.
- The fruits do not last long on the trees because they are highly preferred by fruit-eating birds and mammals, but the bright red stalks remain.
- Behind and to the left of this sassafras is tree #99.

99. pignut hickory
- Young pignut hickory bark is medium-dark grayish-brown. Ridges are narrow, flat, and interlacing. Some may flip outward slightly.
- A young, suppressed tree may produce only a modest nut crop, but some husks should still be available. Remember that pignut husks are thin in comparison to other hickories.
- Pignut hickory leaves are about 1 foot long and usually have 5 leaflets but can have 7. The leaflets increase in size from the base of the leaf toward the tip. They have smooth surfaces and serrate margins.
- Now turn around, gaze past the last sassafras, and tree #100 is on the right side of the trail.

100. sugar maple
- You guessed it, sugar maple!
- If you walk from the last pignut hickory toward this sugar maple, turn left.

101. sassafras
- Here are two tall, straight sassafras trees with beautiful bark.
- Sassafras twigs are also quite beautiful. They are smooth, curvy, green, and also release a spicy scent when scraped. Buds have overlapping, smooth, green scales.
- Look straight down the trail for tree #102.

102. red elm
- This red elm’s bark is uncharacteristically thin, but still recognizable.

- The red elm twig zigzags from node to node and is thicker than the American elm. Remember how American elm bark is two-toned. With the twig, it is the opposite. Red elm twigs are two-toned: the twig is pale and the buds are dark. You may recall the common name “slippery elm” to remind yourself that the twigs and leaves are scabrous, or covered in tiny, stiff hairs. This enables you to examine them without them slipping out of your hands.
- Look into the woods diagonally and to the right for tree #103.

103. black cherry
- Here is a black cherry with better form.
- Black cherry fruits are smaller than commercial cherries but are eaten extensively by wildlife when available in late summer.
- Black cherry is a fast-growing species, intolerant of shade, and is commonly found in woods, woods’-edges, fence-rows, and abandoned fields.
- To the left is tree #104.

104. American basswood
- This double-trunked American basswood, *Tilia americana*, conveniently has young stump sprouts which enable us to examine the leaves and twigs.
- Basswood has a fun twig. If you hold it horizontally and look at it straight on, the terminal bud looks like a smiling shark’s face. Technically, the terminal bud is ruby-red with 2 or 3 large scales and sits slightly lopsided on the twig.
- Reexamine the large, broad, heart-shaped leaves with finely serrate or toothed margins.
- Look to the left for tree #105.

105. tuliptree
- This is a tuliptree, which is in the magnolia family, Magnoliaceae.
- A characteristic of the entire magnolia family is that stipule scars encircle the entire twig. So, at each node you will see a line or ridge going around the entire circumference of the twig.
- On tuliptrees, the terminal bud is large and enclosed in 2, paired, valvate scales, which resembles a duck’s beak.
- Look diagonally to the left to the American beech on the bank.

106. American beech
- American beech, *Fagus grandifolia*, prefers moist, well-drained, fertile soils.
- It frequently suckers (sprouts from existing roots) and can form small colonies, like we see here.
- Press pause and go to the next little hilltop. Tree #107 is on the left.

107. American beech
- This is a large American beech.
- Old beech trees are prone to cavities, which are used by a variety of wildlife species. Be aware that not all cavities are as extreme as the one forming in the American beech just behind Tree 107.
- Beech nuts ripen in the autumn and are highly preferred by some birds and small mammals. They are 3-sided and about 1 inch long. The woody, burred husks are 4-sided and enclose 2 to 3 nuts each. Like the oaks, beech seed production varies greatly from year to year.
- Look straight down the trail, and you will see Tree #108.

108. sugar maple

- This is a large sugar maple.
- Press pause, cross the bridge, and look for the massive Tree #109.

109. tuliptree

- Looking at this impressive tulip-poplar is a good time to mention that tuliptree is the state tree of Indiana, Kentucky, and Tennessee.
- Past the American beech on the left side of the trail is tree #110.

110. red elm

- Red elm, *Ulmus rubra*, is somewhat susceptible to Dutch Elm Disease but much less so than American elm.
- Both red and American elm leaves are egg-shaped, lopsided at the base, doubly serrate on the margins, dark green on top, and paler green below. In contrast, red elm leaves are generally larger, up to 7 inches long; the tip is more elongate; and the surfaces are more scabrous or sandpapery.
- Press pause and continue about 15 paces to tree #111.

111. black walnut

- This black walnut, *Juglans nigra*, has fairly poor form and a small crown.
- Black walnuts have unique, dark-colored heartwood that is highly valued in the veneer lumber market. Because of this, black walnut genotypes have been selected for superior growth rates and form and are often grown in plantation systems.
- Look about 15 feet up the trail for tree #112 on the left side.

112. American hornbeam

- Here is a species that we have not seen for a while: musclewood, *Carpinus caroliniana*.
- This is a beautiful example of its smooth bark and fluted trunk.
- The leaves are about 4 inches long, ovate, and doubly serrate. This means that the edge has large serrations and small serrations on those large ones, making the leaf look “ragged.” They look much like ironwood leaves, but the veins in musclewood leaves are unbranched.
- The twigs are thin, smooth, and zigzag from side to side. The pointy, scaled terminal bud is not a “true” terminal bud, so it is situated slightly lop-sided and has a leaf scar near its base.
- Tree #113 is located deeper into the woods. Stay on the same side of the trail and look diagonally and to the left.

113. American hornbeam

- This musclewood, *Carpinus caroliniana*, has been dead and decaying for some time now. It looks like someone has been pecking at it, but the bark is still recognizable.
- Remember that, like ironwood, musclewood is a short, twisty, shade-tolerant, understory tree that provides a number of services to wildlife, like nesting for songbirds and seeds for squirrels.
- Unlike ironwood, musclewood is a relatively short-lived species.
- Turn so your back is toward the trail, and you will see a large tree, #114, farther into the woods.

114. black oak

- This is a large black oak, *Quercus velutina*.
- The bark is dark and blocky, especially near the base of the trunk.
- Look for leaves on the ground. Black oak is infamous for its highly variable leaves on the same tree. Sun leaves (leaves in the upper canopy) have very deep sinuses to protect their contents from intense incoming light; shade leaves (leaves in the lower canopy) have shallow sinuses to maximize surface area and, subsequently, capture light.
- Press pause, return to the trail, and Tree #115 is on the left side of the trail.

115. black walnut

- Here is another black walnut with poor form and a small crown.
- The twigs on this tree are easy to identify. They have a large terminal bud that is covered by 4 scales that fold in on themselves like a closed flower. These bud scales are covered with many fine, white hairs. The twigs are stout and dark brown, and the pith is chambered. So, if you cut the twig at an angle, the center of the twig will appear hollow and divided by easily visible walls. The leaf scars are large, heart-shaped, and resemble a smiling monkey face when viewed up-side-down.
- Follow the barkless, uprooted, leaning tree on the left into the woods again to find the final black walnut, tree #116.

116. black walnut

- The bark on this black walnut, *Juglans nigra*, displays an irregular pattern that resembles that of black cherry.
- Remember that black walnut has compound leaves, alternate branching, and chocolate-colored inner bark.
- The species name *nigra* simply means “black” in Latin.
- Walnuts and hickories are in the walnut family, Juglandaceae.
- Just next to this black walnut is tree #117.

117. hackberry

- This is the second and final hackberry, *Celtis occidentalis*, on the tree trail.
- The bark on very young trees is smooth and light grey, but warty-structures develop quickly, as you see near the base of this tree.
- The fruit is small, round, and dark purple. It is palatable, but not highly preferred by wildlife. As so, it often remains on the trees into the winter months.
- Another identification feature is the “witch’s broom” that often develops on the ends of small branches in response to a mite and fungus attack.
- To the left is a small tree, #118.

118. pignut hickory

- This pignut hickory is what we call a “pole-sized” tree, referring to its height and diameter.
- It has perfectly characteristic young bark. It has irregular interlacing patterns that are more obvious in the upper portion of the trunk.
- Pignut and all hickories have compound leaves, but do not confuse them with ash. Ashes have opposite branching, so you cannot confuse the two.
- Furthermore, pignut hickory leaves have only 5 or 7 leaflets, and the leaflets near the tip are larger, so you should not confuse them with walnut leaves, either.

- Return to the trail. On the right side of the black walnut (#115) and on the other side of the trail, is a forked tree marked 119.

119. red elm
- This is a large red elm, *Ulmus rubra*.
- On the twigs, the buds are pointed and have black overlapping scales with tiny orange-brown hairs on the edges of the scales. In the winter the lateral buds can be either the previously described leaf buds, or the much larger, rounded flower buds.
- Red and American elms are used similarly by wildlife. Squirrels eat swollen flower buds in spring; seeds are eaten by small rodents; foliage is eaten by deer and woodchucks; and some birds nest in its cover.
- To the left is tree #120.

120. pignut hickory
- This is another small pignut hickory, *Carya glabra*.
- "Glabra" means smooth or hairless in Latin. This probably refers to the glabrous twig, but you may think of a glistening roasted pig with a shiny apple in its mouth to connect the common and scientific names.
- The twig is moderately stout, brown, and smooth with shield-shaped leaf scars. The terminal bud is also smooth, tan, about ½ inch long, and does NOT have loose scales in the winter.
- Set back in the woods, between trees #119 and 120, is tree #121.

121. northern red oak
- Northern red oak, *Quercus rubra*, occurs on a wide range of sites but grows best on nutrient-rich, moist, well-drained sites. It is intermediate in shade tolerance.
- Step back on the trail so that you can easily view both this northern red oak and the last black oak (Tree #115). Observe the differences in the bark. Ski tracks on the northern red oak bark go all the way to the base, whereas, black oak bark is blocky near the base. In this case, the two trees are growing on similar sites.
- The next tree, #122, is to the left of trees #120 and #121 but still on the right side of the trail.

122. sugar maple
- Yes, this is a small sugar maple.
- Turn around to find tree #123.

123. red elm
- This red elm has been knocked over and partially uprooted by the large falling tree we see.
- It will probably not survive much longer because of a disrupted water balance. That is, the disturbed root system will not be able to support transpirational needs, and the deterioration process will begin.
- Turn around again to find tree #124 on the right side of the trail.

124. tuliptree
- We finally come across an immature tuliptree.
- Its bark is quite different from that of the mature trees we have seen. It is smooth and gray with white inner bark that is exposed by shallow, developing fissures.
- The next tree is to your left.

125. shagbark hickory

- Shagbark hickory is slow growing, fairly long-lived, and moderately shade tolerant.
- The wood is hard, dense, tough, and the most valuable hickory species in the United States. The green wood is used to get the hickory flavor in smoked foods.
- Look down the trail. On the right side is another shagbark hickory tree.

126. shagbark hickory

- From a distance, you can see that this shagbark hickory is leaning heavily over the trail. This must be a response to a temporary opening in the canopy.
- The species name, *ovata,* means “ovate” and refers to the shape of the terminal bud. The bud is large, ovoid, and has 3 or 4 loose, lightly hairy scales. In this way, the bud also looks “shaggy.” The twigs are stout, dark brown, dotted with pale lenticels, and also lightly hairy. Leaf scars on the twig are large and shield-shaped.
- You can see tree #127 down the trail on the left.

127. pignut hickory

- This is a medium-sized pignut hickory, *Carya glabra*.
- Mature pignut hickory bark is dark grayish-brown and very hard. Ridges are somewhat narrow, flat, and often interlacing. It can be slightly shaggy.
- Look at the next tree.

128. sugar maple

- A medium-sized sugar maple tree!
- The next tree is on the right side of the trail.

129. pignut hickory

- Pignut hickory frequently occurs on wooded uplands and dry sites, like this. We also see that common associates of pignut hickory are other hickory species, with whom it occasionally hybridizes.
- Pignut hickory nuts are used heavily by squirrels and other small rodents.
- Also on the right side of the trail is tree #130, which is one of pignut’s associates.

130. shagbark hickory

- Yes, this is a fairly large shagbark hickory, *Carya ovata*.
- The unique bark on this species is used by nesting Indiana bats and grey tree frogs.
- Notice that we are in an oak-hickory dominated patch of forest, but the entire understory is composed of sugar maple saplings.
- Press pause and continue along the trail until it Ys. Stop there, and tree #131 will be on your left.

131. American elm

- This American elm, *Ulmus americana*, is small but seems to be doing well. It has a nice opening in the canopy, where it is receiving a fair amount of light.
- Tree #132 is on the other side of the Y.

132. American basswood

- This is a very young American basswood. We call this the “sapling” stage. You can see that several stems have “suckered” or sprouted from the residual roots.
- The young bark is smooth and grey, but a pattern is starting to appear.

- Look at the red, smiling shark's face terminal bud and heart-shaped leaves.
- Press pause and take the trail to the right. At the bend, tree #133 is in front of you.

133. white oak
- We have a medium-sized white oak with the characteristic fungus patches on the bark.
- Take 15 to 20 steps to tree #134 on the left side of the trail.

134. northern red oak
- Northern red oak occupies a wide variety of sites, but we usually consider it to occupy mesic sites, like we have here. "Mesic" means "moderate" in terms of moisture supply, so these sites are not too wet or dry.
- The next tree is on the right.

135. shagbark hickory
- This shagbark hickory, *Carya ovata*, has slightly less shaggy bark than most. Remember that there is variation and diversity within every species.
- This tree is also occupying a mesic slope. Shagbark prefers rich, alluvial bottomlands, but also occurs on slopes and drier uplands.
- The next tree, #136, is on the right side of the trail.

136. sugar maple
- This is a medium-sized sugar maple tree that has reached a dominant position in the canopy.
- Sugar maple has brilliant, long-lasting fall colors. They are a tourist attraction in New England and other parts of the Central Hardwood Forest Region, but we can appreciate them for free anytime we take an autumn stroll in the woods!
- On the left side of the trail, located to the right of the last shagbark hickory, is tree #137. At this point, you will enter the woods and go from tree to tree.

137. white ash
- You can see the opposite branching in the upper branches of this white ash, *Fraxinus americana*.
- Recall that all ashes also have compound leaves and are in the family Oleaceae.
- Tree #138 is several meters to the right. The number is painted low on the trunk.

138. chinkapin oak
- This chinkapin oak, *Quercus muehlenbergii*, has a dominant position in the canopy, but its lower limbs are dropping.
- It is not a common tree, but is found on a variety of sites. It grows best on rich, deep soils, but is more often found on dry banks of streams and rivers and occasionally in drier woodland sites.
- Remember that chinkapin has flakey bark, coarsely toothed leaves, and sweet acorns.
- Tree #139 is located between trees #137 and #138.

139. sugar maple
- From a timber perspective, this is a nicely formed sugar maple tree.
- Sugar maple is a commercially important species for timber, especially in many northern hardwood forests. The lumber is quite valuable, especially that with rare, figured grains, like birdseye maple.

- To your left is tree #140.

140. sugar maple
- Yes, a northern forester would probably be thrilled to see that we have another sugar maple coming up in the world.
- If you are looking at the painted number on this tree, diagonally and to the right is tree #141.

141. sugar maple
- And, we have one more sugar maple, *Acer saccharum*.
- The species name “saccharum” means “sugar,” which makes sense because this is the classic maple syrup tree.
- In this case, a sap tapper would also love to have so many sugar maples in the forest. It can take up to 50 trees to make one gallon of syrup.
- To the left (east) is a very small tree #142.

142. American beech
- This is a suppressed, sapling-sized American beech, *Fagus grandifolia*. This species is very shade-tolerant.
- If you have a small tree, always use the opportunity to look at the twigs and leaves.
- Tree #143 is to the left.

143. northern red oak
- This is an incredibly large, impressive northern red oak. A forester would probably be salivating over the timber in this one tree.
- If you look closely at the fissures, you can see the reddish-colored inner bark.
- At this last northern red oak, let’s take a moment to review:
    - The leaves have 7 to 11 lobes with bristle-tips.
    - The acorns are large and barrel-shaped. The cap is shallow with flat, appressed scales.
    - The clustered terminal buds on the twig are reddish-brown, pointed, and angled in the cross-section.
- The next tree is located behind this one (going east/southeast).

144. red elm
- This is a fairly large red elm, *Ulmus rubra*.
- The bark is quite different from the young red elms. If you look closely, you see that the layers are red throughout.
- Diagonally and to the right is Tree #145.

145. American beech
- This is a nice, large American beech, *Fagus grandifolia*.
- Look up the trunk. A branch has fallen off. Since old beech trees are prone to cavities, we may expect that one will form as a result of this wound.
- Look toward the lowland; tree #146 is standing on the ledge.

146. sugar maple
- Yes, this is a sugar maple.
- To the left is the next tree. Go left on the trail to find the last four trees.

147. American beech

- This a small, “pole-sized” American beech.
- The next tree is clearly on the right.

148. sugar maple

- Wow, this is our last sugar maple!
- Notice the form of this tree. The top of the crown has hit the lower portion of the crown on the dominant sugar maple tree above it. Now, this suppressed tree’s crown is almost entirely on one side, extending to the right to capture available light.
- Take the trail to the left (east) and tree #149 is straight ahead.

149. pignut hickory

- Pignut hickory, *Carya glabra*.
- Multi-colored, mossy bark, like we see on this pignut hickory, is quite characteristic of hickories growing in lowlands. Pignut is usually found on drier uplands and ridges, but this mossy bark is quite common on the typical lowland hickories: bitternut and mockernut.
- Pignut hickory is slow-growing and long-lived.
- The last tree, #150, is to your right.

150. Ohio buckeye

- This is Ohio buckeye, *Aesculus glabra*, in the family Hippocastanaceae.
- Buckeye is the “B” in “MAD B Cap,” so it has opposite branching.
- Ohio buckeye leaves are palmately compound, meaning that all 5 leaflets are attached to the leaf stalk at one point and radiate out like fingers on a human palm. The leaflets are about 6 inches long, yellowish-green, smooth, and have finely toothed margins.
- Crushed leaves and scraped twigs release a “skunky” odor.
- Twigs are stout. The terminal bud is large with numerous, overlapping, peanut-butter-colored scales.
- Mature bark is light tan and spongy and does not have any clear pattern. It is often confused with the bark of two common associates: red and American elm.
- Ohio buckeye is a fairly common species that usually occurs on moist sites like this.
- Finally, the seed is large, round, and looks like a “buck’s eye.” It is supposedly poisonous, but Native Americans rendered its starchy meat edible.
- Keep an Ohio buckeye in your pocket, and it will bring you good luck!

EXITING

- Congratulations, you’ve finished the Dendrology tree trail and should now be able to identify over 20 common tree species!
- I hope you found an Ohio buckeye fruit, because you may need some luck to return home!
- Just kidding, you can backtrack on this small trail (going W), take a left when you hit the main trail, and go left again when the trail Ys.
- We hope that you have enjoyed this educational walk. Please come again, with or without this guided tour, even after you think you know all the wonderful species in Indiana. There is always something new to see and new to learn in the forests!