SUPPLEMENTAL DOCUMENT 4

DETAILED FOREST ASSESSMENT RESULTS

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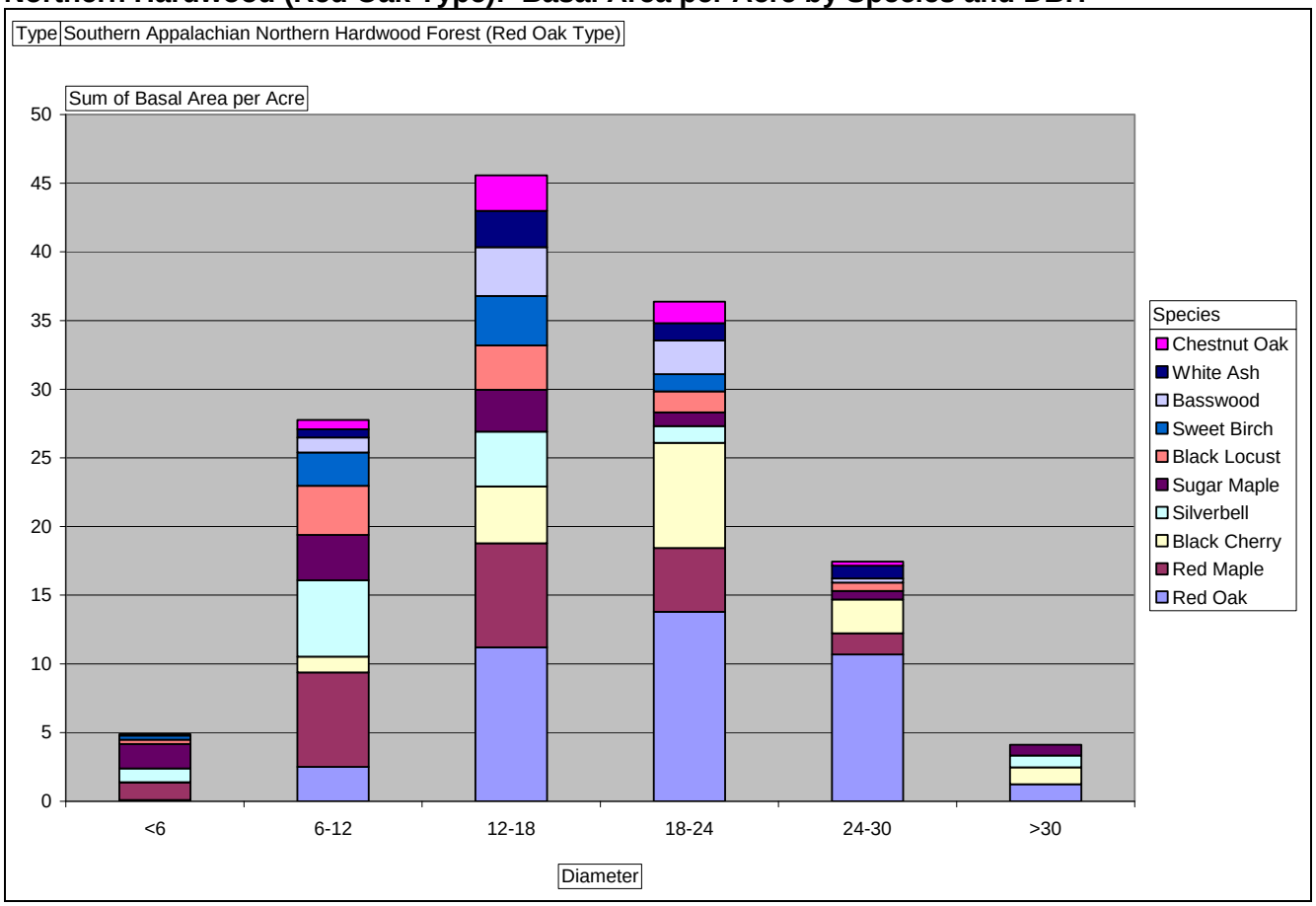
1. Northern Hardwood (Red Oak Type) (1254 acres)

This type occurs most commonly between 4000 and 5000 feet and on northwest and southeast facing slopes. This forest grows on somewhat mesic sites, existing in a broad transitional zone between more xeric High Elevation Red Oak forest and Typic or Rich Northern Hardwood forest. Most of the stands in this type contain trees approximating 85 years. Like much of the property, this forest is rebounding from a clear-cut during the era of the chestnut blight, and it has only been minimally selectively harvested since.

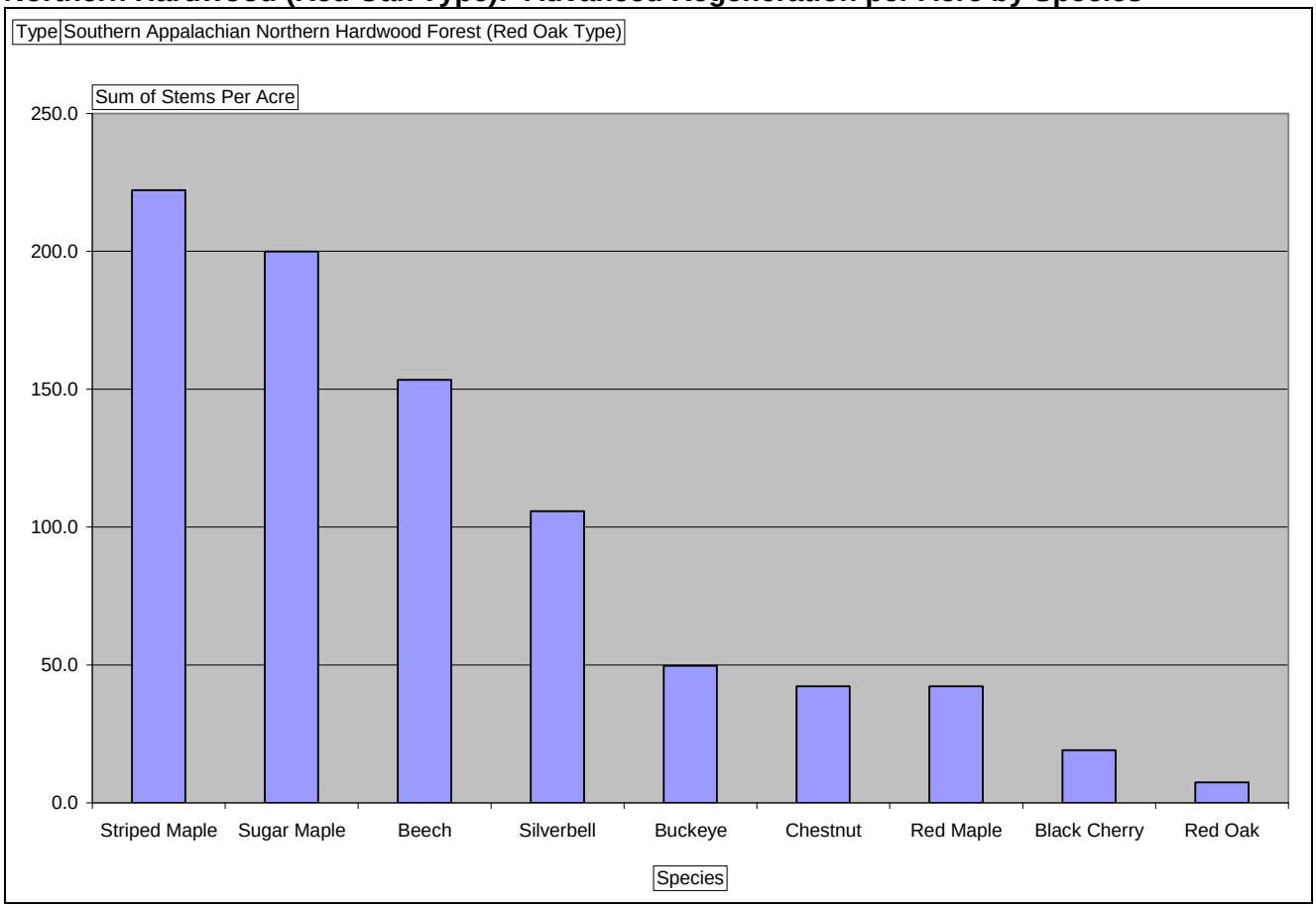
Due to the favorable site, this type is dominated by red oaks of high grade, as opposed to High Elevation Red Oak forests which contains lower grade oaks. Black cherry is also a very common species in this type, particularly in diameter classes greater than 12 inches. Other notable species include red maple, silverbell and sugar maple. These three shade tolerant species occupy most of the basal area in diameter classes less than 12 inches.

The understory is dominated by shade tolerant species, especially striped maple, followed by sugar maple, American beech, silverbell, buckeye, and red maple. This forest has a well developed deciduous shrub layer (15% coverage) and also a dense herbaceous layer (25% coverage) with numerous ferns (10% coverage). This forest is entering the Understory Reinitiation successional phase and has historically experienced regular fires to perpetuate red oak and American chestnut dominance. Without fire or other disturbances that would allow more light to reach the forest floor, it is likely that forests on these sites would move to a greater dominance of shade tolerant species.

Northern Hardwood (Red Oak Type): Basal Area per Acre by Species and DBH



Northern Hardwood (Red Oak Type): Advanced Regeneration per Acre by Species



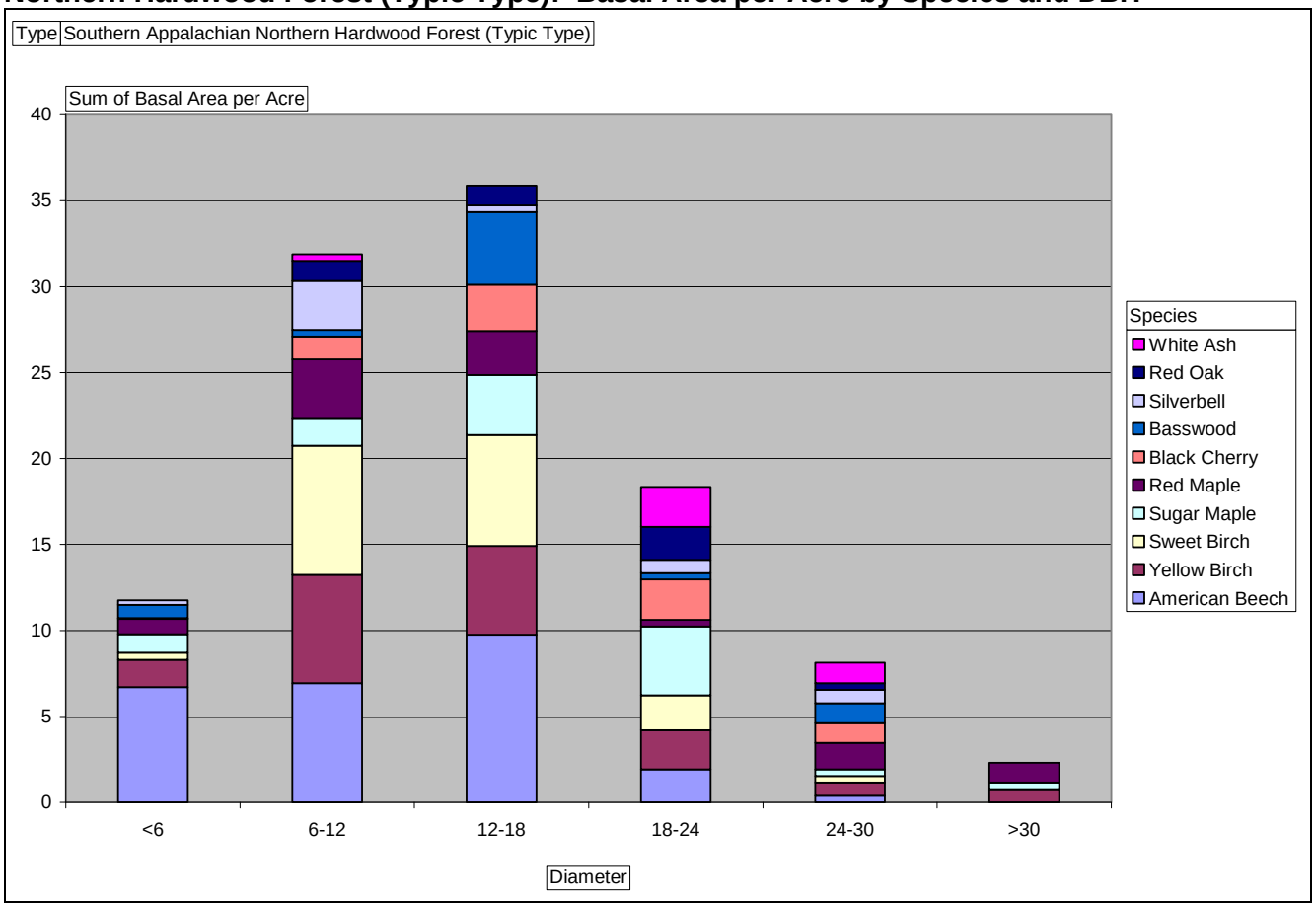
2. Northern Hardwood Forest (Typic Type) (1174 acres)

This type is found on moderate to steep north facing slopes above 4000 feet elevation. The trees in this stand are mostly near 80 years in age. These sites can be rich because of their cool north facing location, but are usually only moderately productive because of exposure, steepness of slope, and high elevation.

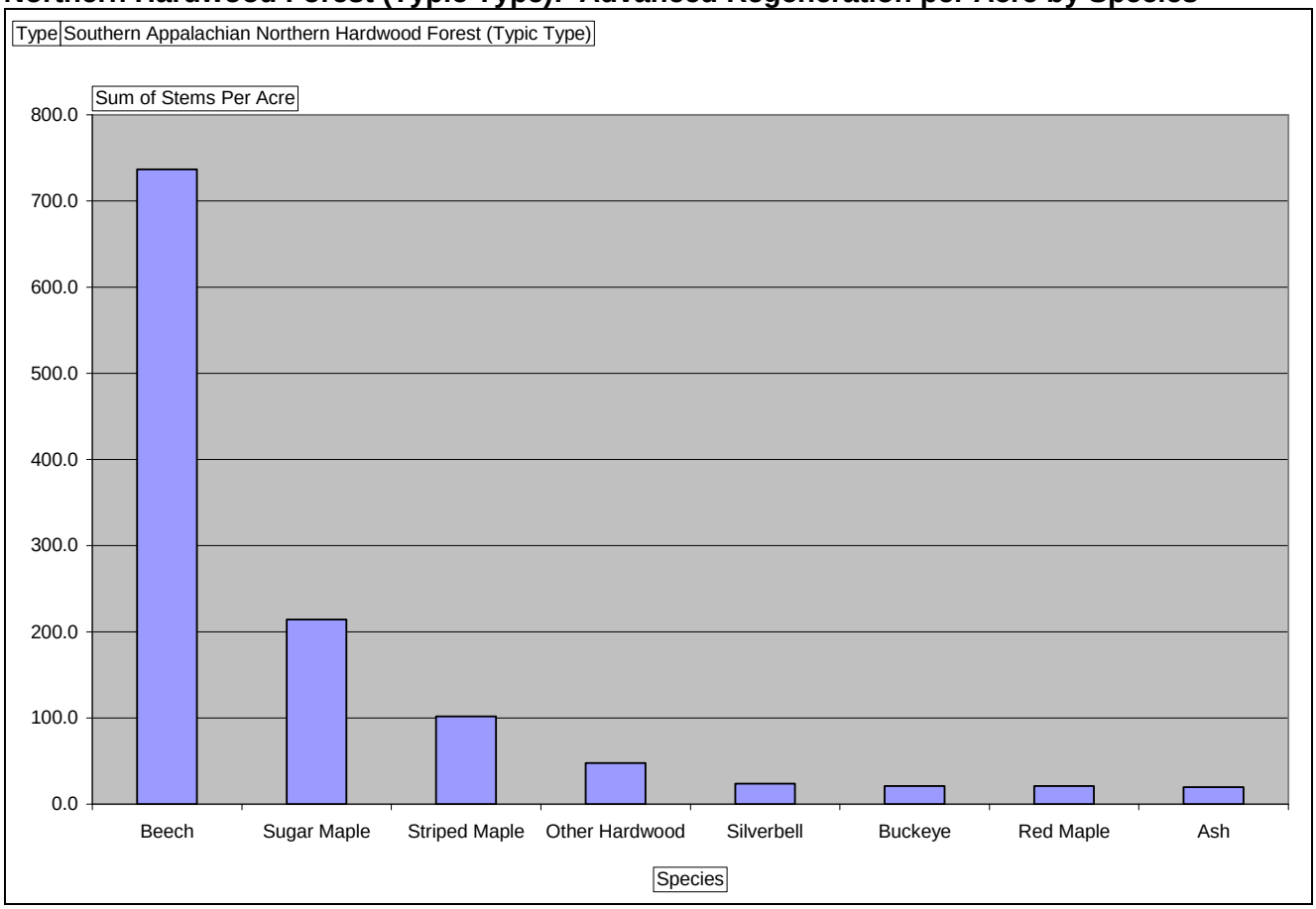
This type consists of mixtures of American beech, yellow birch, sweet birch, sugar maple, and red maple, with lesser amounts of black cherry, basswood, silverbell, red oak and white ash. The dominant species in this stand are shade tolerant. For this reason, species distribution is relatively even across age classes. However, beech is most common of trees less than six inches diameter and is very abundant in advanced regeneration with 735 stems per acre. The abundance of beech in the understory is likely due to its ability to sprout vigorously from the roots of more mature trees in addition to its shade tolerance.

Striped maple and American beech combine to make a patchy deciduous shrub layer (10% coverage). The herbaceous coverage is moderate (15%) with patchy grass and sedge (10% coverage) and moss and lichen coverage (10%). Similar to the rest of the property's forest of similar age, this type is transitioning from the Stem Exclusion to the Understory Reinitiation successional stages.

Northern Hardwood Forest (Typic Type): Basal Area per Acre by Species and DBH



Northern Hardwood Forest (Typic Type): Advanced Regeneration per Acre by Species



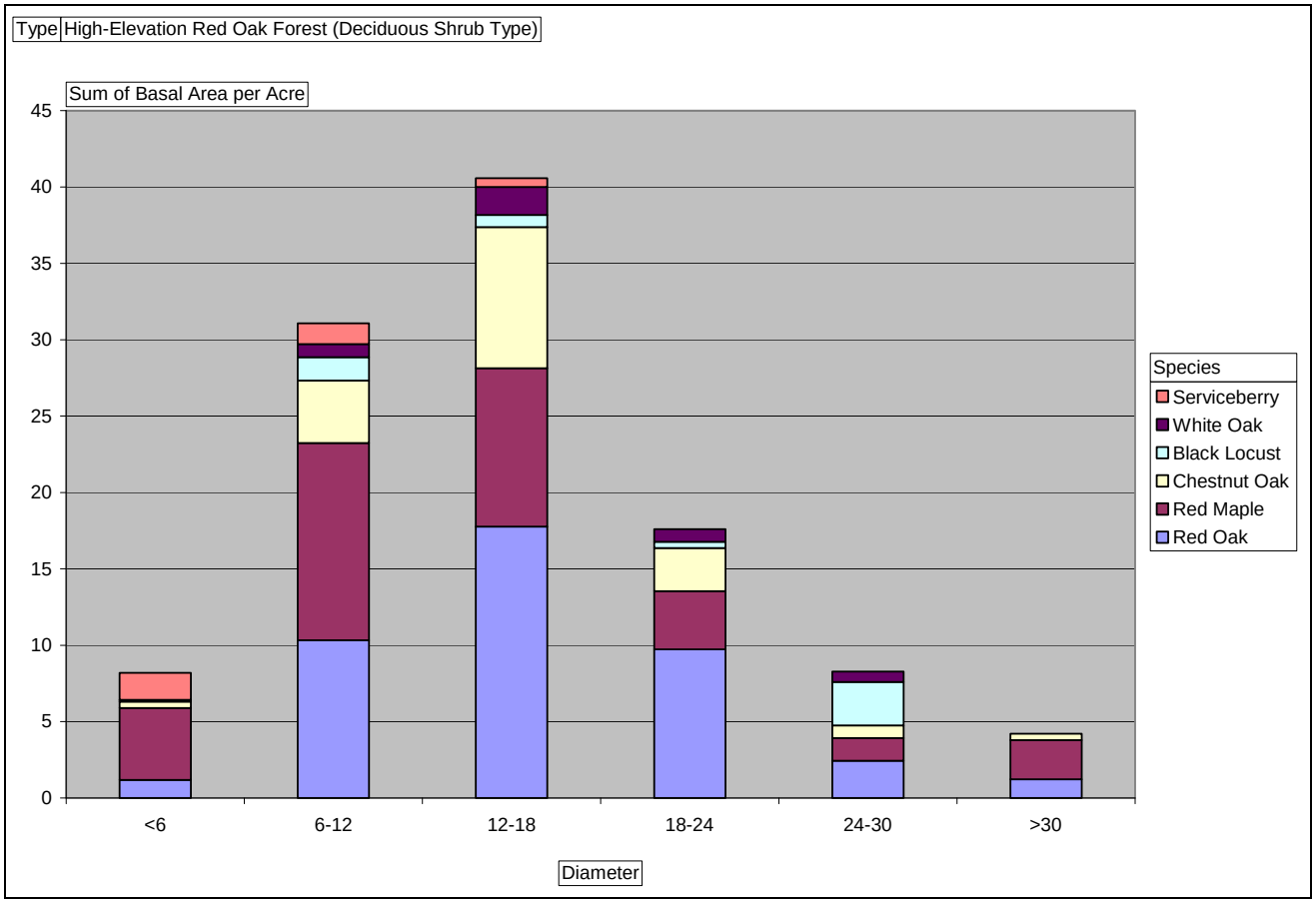
3. High Elevation Red Oak Forest (Deciduous Shrub Type) (1022 acres)

This type occurs most commonly on exposed ridges and south and west facing slopes above 4000 feet elevation. These sites are xeric, resulting in slower growing trees of lesser health and poor timber quality. Most of the stands in this type contain trees approximating 90 years. The persistence of American chestnut sprouts in the understory suggests that it was historically a significant, if not dominant, tree in this type. Like much of the property, this forest is rebounding from a clear-cut during the era of the chestnut blight.

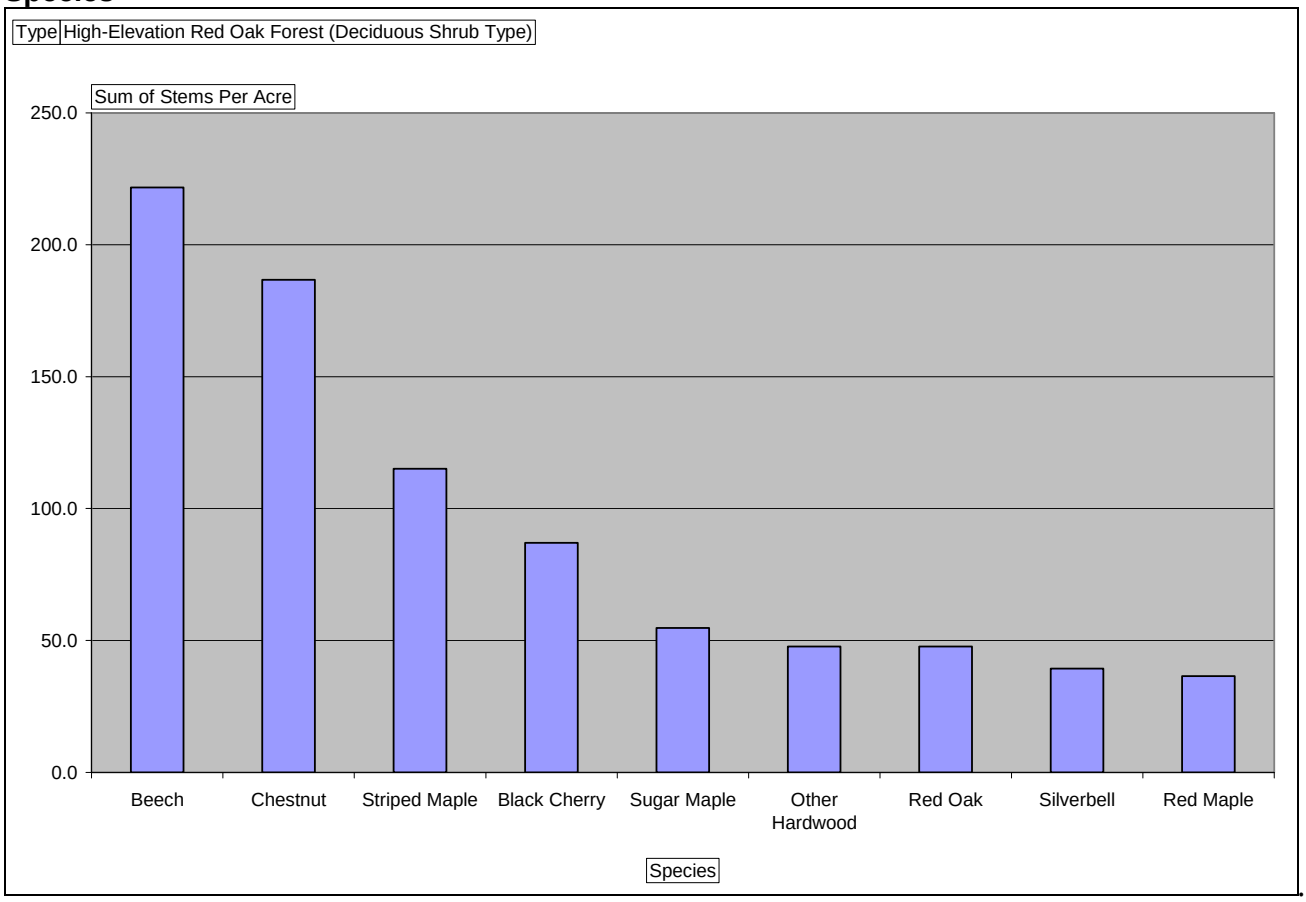
Red Oak occupies approximately 50% of the basal area of this stand. Other significant overstory species include red maple and chestnut oak. As is common in oak dominated forest types, red maple occupies the majority of the basal area in diameter classes less than 12 inches. American beech, American chestnut, and striped maple were the most common tree species in the advanced regeneration sub-plots.

As implied by its name, this forest has a well developed deciduous shrub layer (20% coverage) and also a moderate herbaceous layer (20% coverage). This forest is entering the Understory Reinitiation successional phase and has historically experienced regular fires to perpetuate red oak and American chestnut dominance. Without fire or other disturbances that would allow more light to reach the forest floor, it is likely that forests on these sites would move to a greater dominance of shade tolerant species.

High Elevation Red Oak Forest (Deciduous Shrub Type): Basal Area per Acre by Species and DBH



High Elevation Red Oak Forest (Deciduous Shrub Type): Advanced Regeneration per Acre by Species

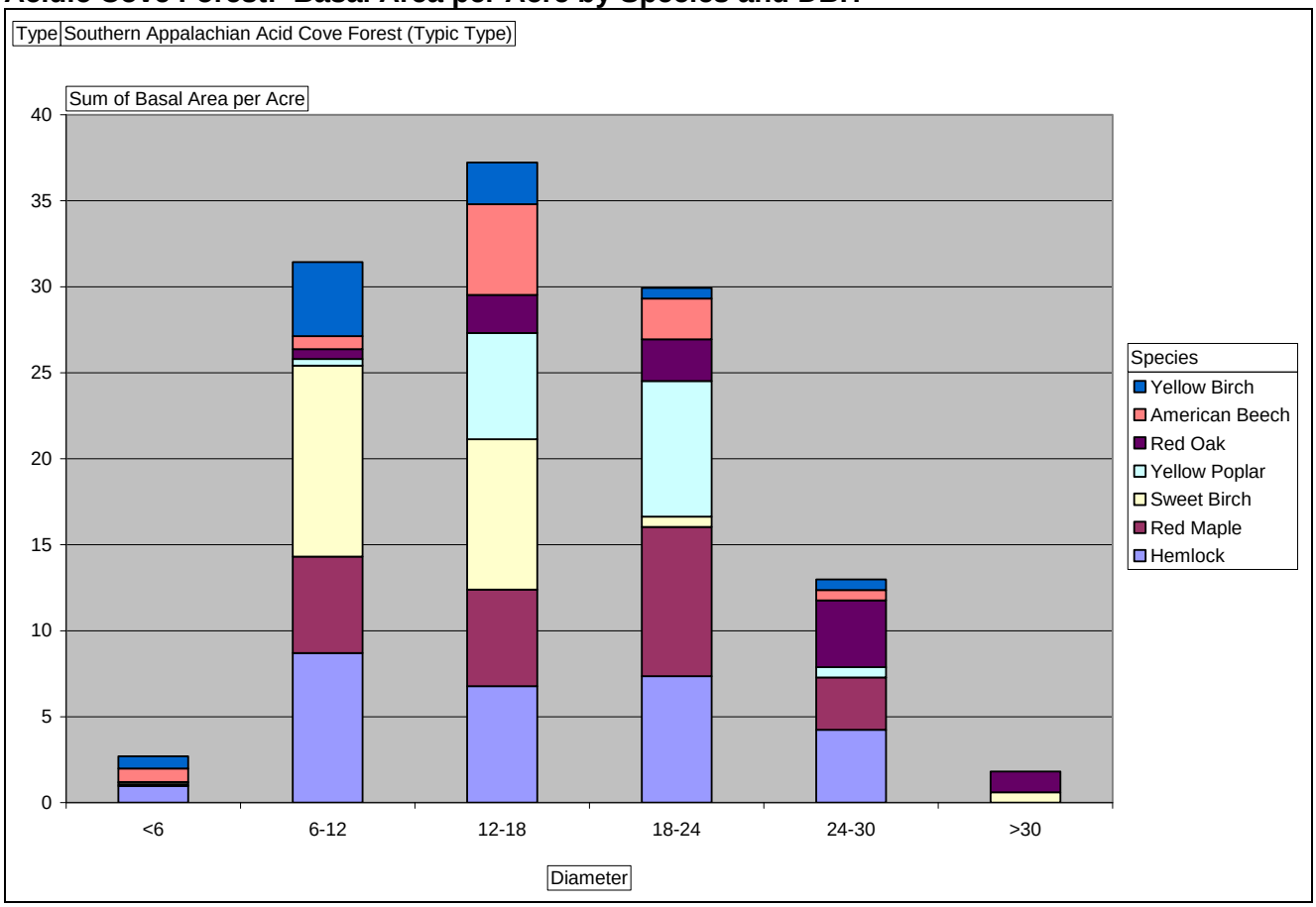


4. Acidic Cove Forest (788 acres)

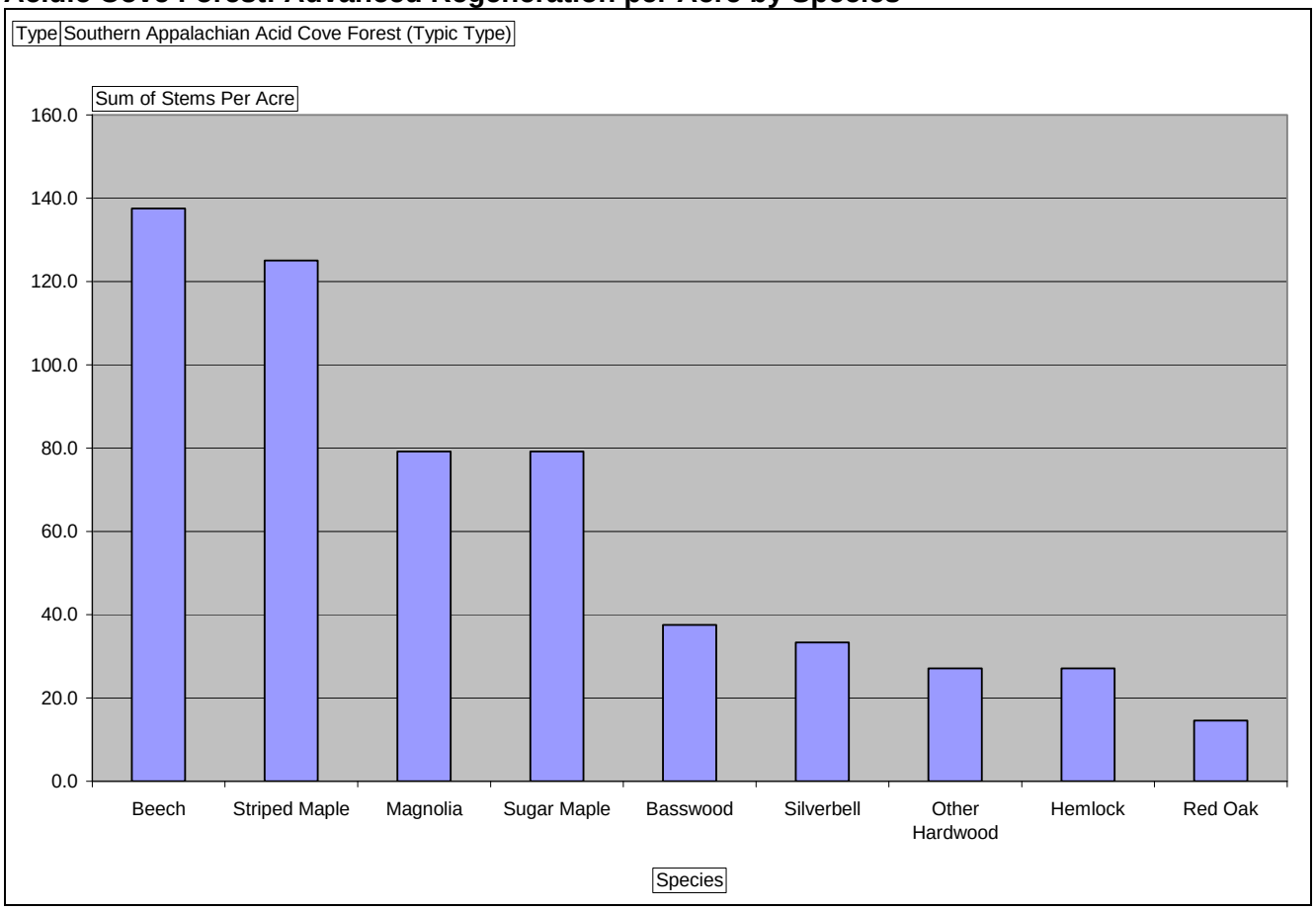
The acidic cove forest type is commonly found along streams below 4000 feet in elevation. Despite high soil moisture levels, their acidic soils make these sites less productive than those of rich cove forests. Most of the trees in this forest are approximately 95 years old, likely recovering from the same large-scale clear-cutting that occurred during the chestnut blight. The forest is defined by the prevalence of eastern hemlock and of rhododendron in the understory (10% coverage).

Unfortunately, the most dominant tree species of this type, eastern hemlock, will soon become a large number of snags as they succumb to the hemlock wooly adelgid (see glossary). While we did not find many trees that had already died due to the infestation, many hemlocks were infested and experiencing crown die back. In accordance with what has been seen in other infested areas, approximately 90-100% hemlock mortality can be expected in the next several years. As growing space becomes available through hemlock mortality, it is likely that shade tolerant species such as sweet birch and red maple will occupy that space under the shade cast by the dead hemlocks' ghostly crowns. Due to the hemlocks and the sometimes dense rhododendron understory, shade tolerant sweet birch and red maple regenerate better than shade intolerant species and occupy a significant portion of the stand. Nearly all of the advanced regeneration consists of shade tolerant species. Yellow poplar, which is the fourth most common species in proportion of basal area, is common in larger diameter classes but largely absent in the understory due to its shade intolerance.

Acidic Cove Forest: Basal Area per Acre by Species and DBH



Acidic Cove Forest: Advanced Regeneration per Acre by Species



5. Montane Oak-Hickory Forest (779 acres)

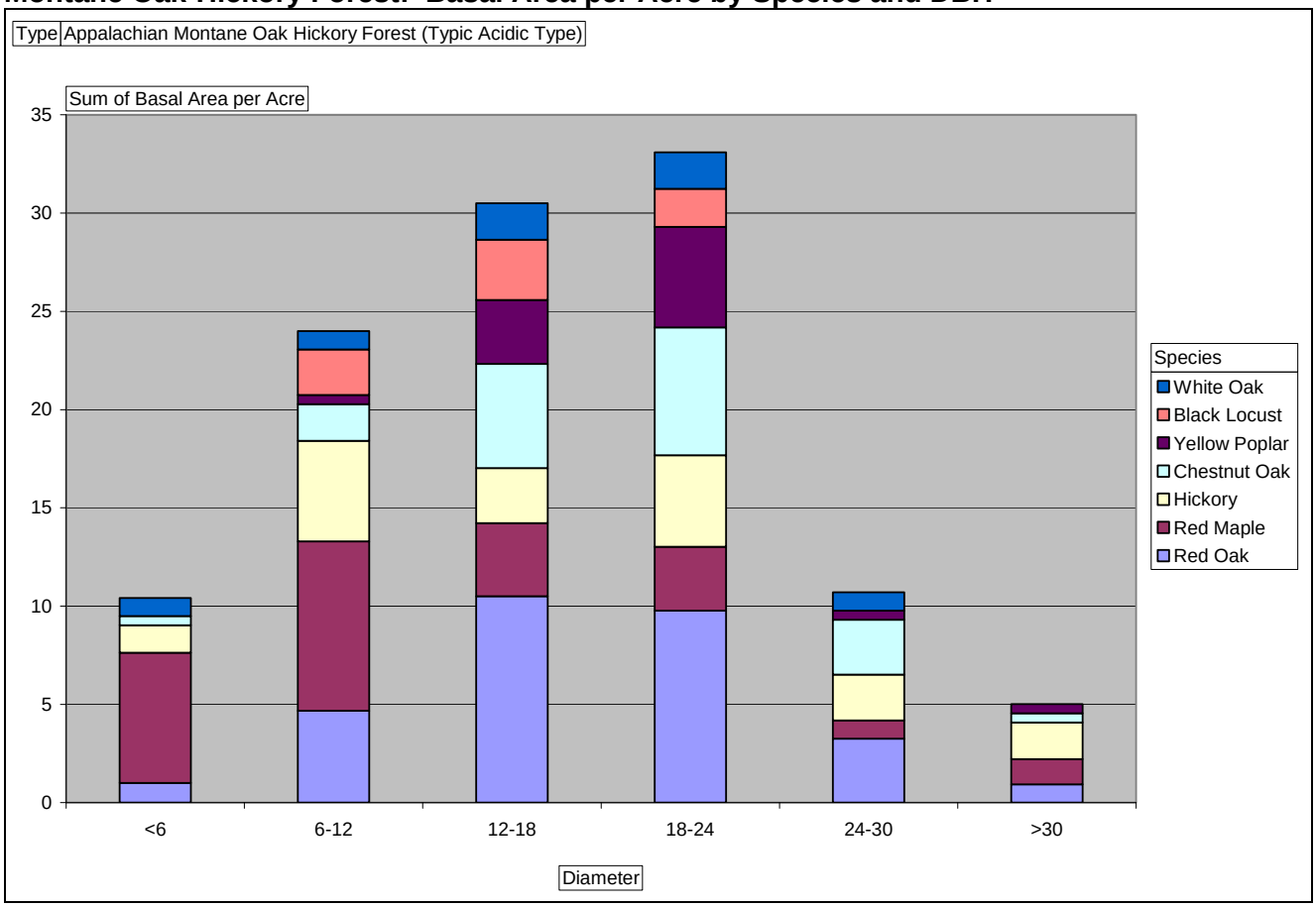
This type is found predominantly on upper to middle slopes and ridges and on south and west facing slopes, generally below 4000 feet elevation. These sites are more xeric and with less productive soils than found in rich cove forests. The dominant trees in this type are generally close to 80 years old. It is likely that this forest type was last clear-cut during the chestnut blight in the early part of the 20th century. The high number of American chestnut sprouts in the understory speaks to its past dominance in this cover type. Since the devastating blight, these forests may have been selectively harvested, but not clear-cut.

The forest is dominated by a relatively even mixture of red oak, red maple, hickory species (mostly pignut and mockernut hickory), and chestnut oak. Other common but less dominant trees include yellow poplar, black locust, and white oak. The trees in this type are distributed fairly evenly across diameter classes, though most of the basal area is taken up by trees between 6 and 24 inches diameter. As is commonly seen today in this forest type, the smaller diameter classes, less than 12 inches, have a much greater proportion of red maple than the larger diameter classes. In addition, striped maple and red maple were among the most common trees in our advanced regeneration sub-plots. These factors indicate this forest will slowly succeed to a larger dominance of red maple unless certain management practices or disturbances occur that favor oaks and hickories above red maple. Not only are oaks and hickories important for tree species diversity, but they also provide an important food source for numerous wildlife species.

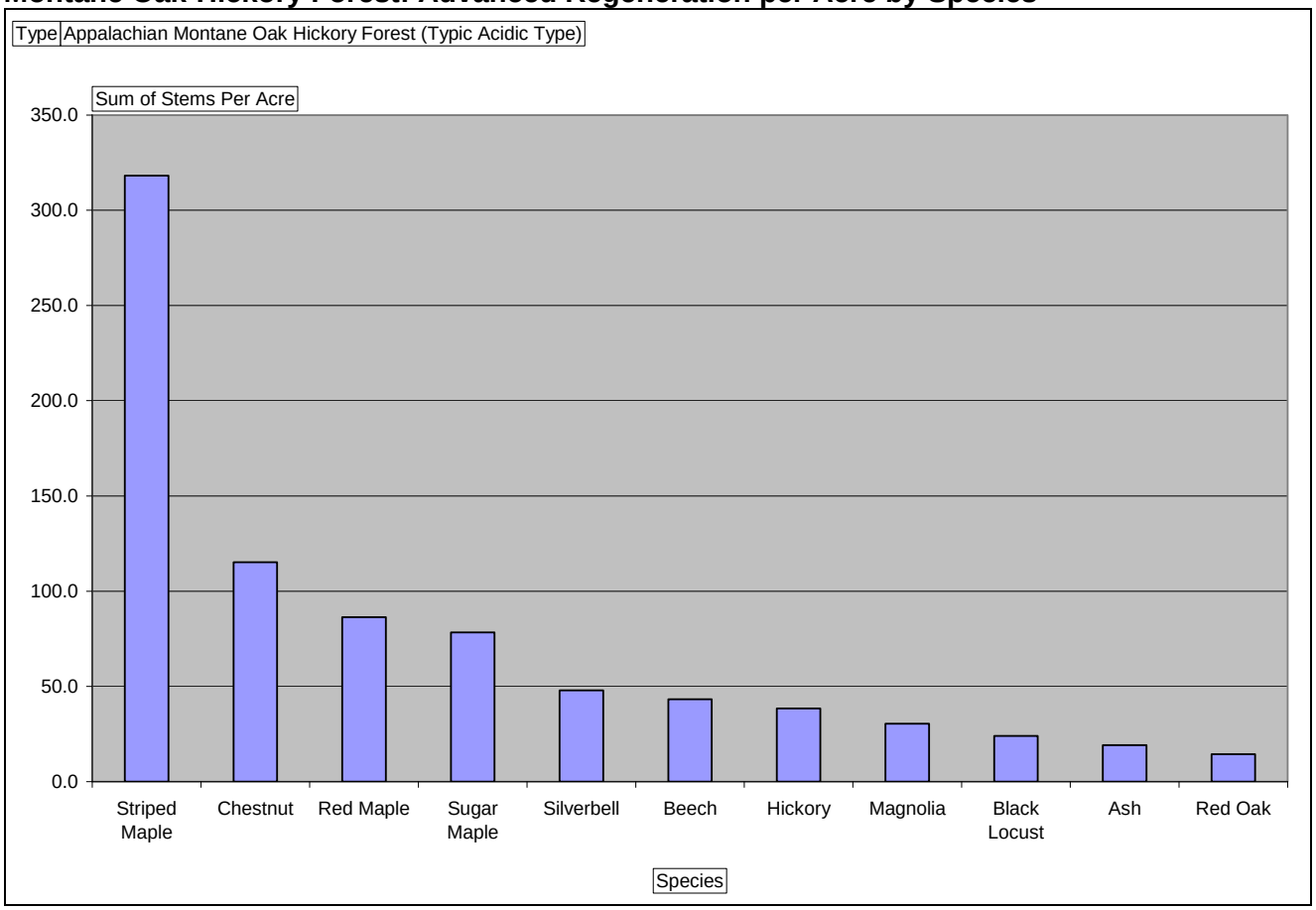
The oak-hickory forests of the watershed are currently succeeding from Stem Exclusion to the Understory Reinitiation phase (see glossary). This reinitiation is evidenced by occasional canopy gaps and a relatively dense understory of deciduous trees and shrubs (20% cover). Over the next several decades, more trees will fall out of canopy dominance due to increased competition and limited resources for growth, and more light will reach the understory allowing the growth of a younger age class of trees. This phase of Understory Reinitiation can last many decades. The ingrowth of younger trees creates multiple age-classes which increases structural diversity and subsequently increases biological diversity.

There is increasing evidence that much of the eastern forest, particularly the drier forest upon which oak and hickory are prevalent, were regularly burned for centuries by Native Americans. As a result this cover type was dominated by fire adapted species such as oak, hickory, and American chestnut. Without fire or other disturbances that would allow more light to reach the forest floor, it is likely that forests on these sites would move to a greater dominance of shade tolerant species, as previously mentioned with red maple.

Montane Oak-Hickory Forest: Basal Area per Acre by Species and DBH



Montane Oak-Hickory Forest: Advanced Regeneration per Acre by Species

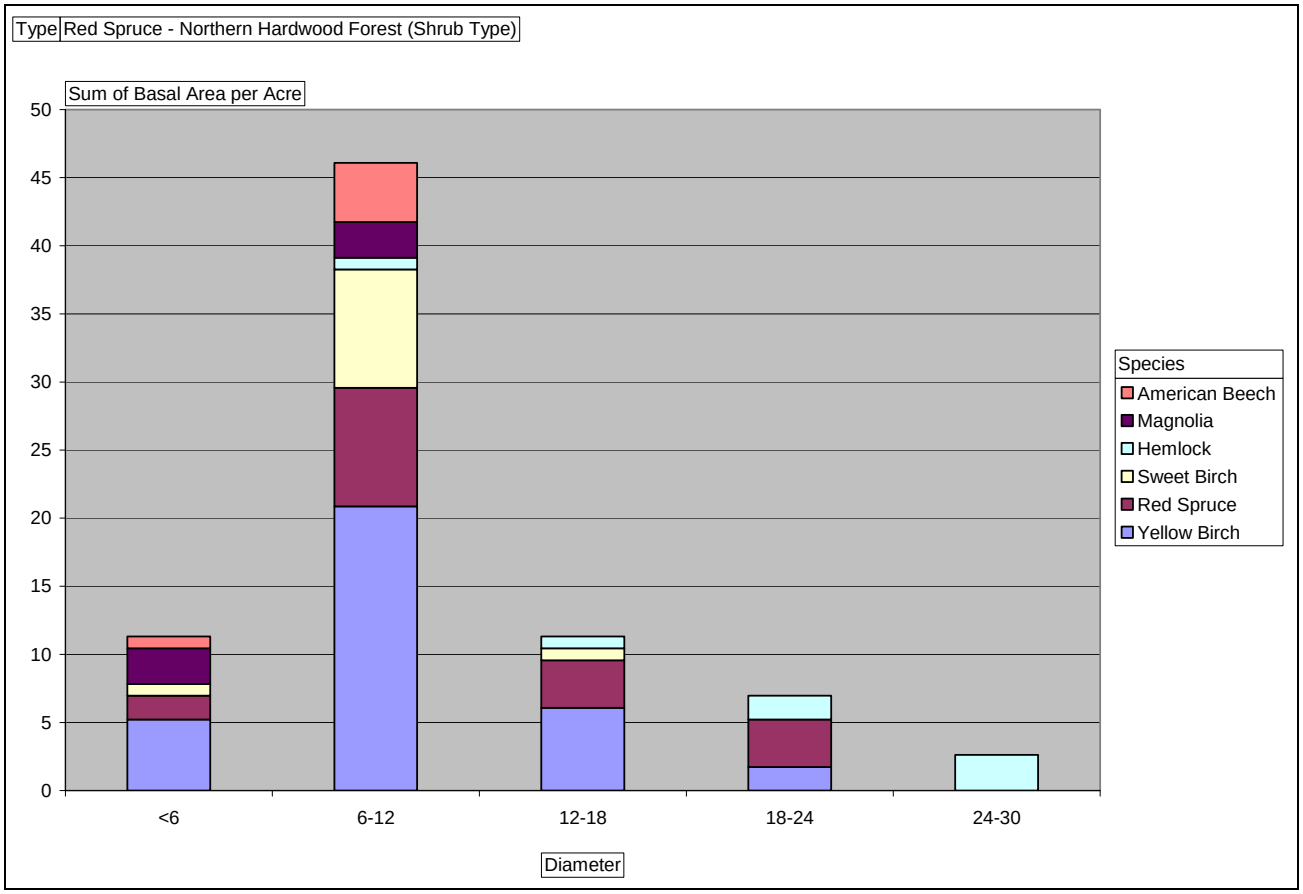


6. Red Spruce - Northern Hardwood Forest (Shrub Type) (663 acres)

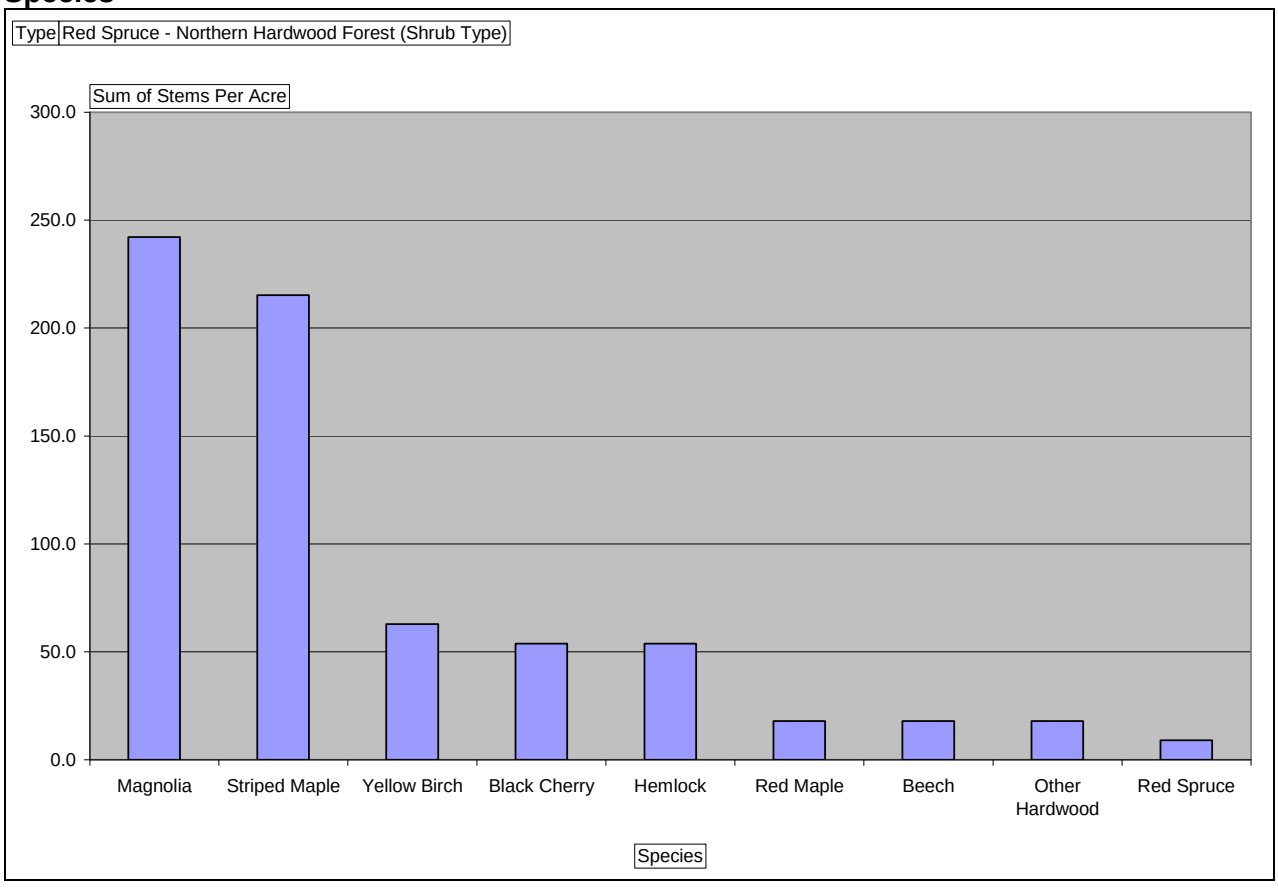
This type occurs in a transitional zone between the northern hardwoods type and the spruce-fir type, from 4,500 to 6,000 feet. These sites are steep to very steep, often with rocky terrain and shallow soils. These conditions create patch overstory trees with a sometimes dense rhododendron evergreen understory. Trees in these stands are approximately 70 years old. Many of these sites may have had more red spruce until they were repeatedly logged 75 to 100 years ago for pulp production.

These stands are dominated by yellow birch and red spruce with lesser amounts of other northern hardwood species. Most of the basal area in this stand is occupied by species in the 6-12 inch diameter class. This is probably due to the slow growing conditions of this type in addition to the age of trees. Rhododendron can occur in dense thickets but overall occupy 20% coverage of the entire type. The amount of rhododendron in this type may increase over time as it suppresses regeneration of trees in the understory.

Red Spruce - Northern Hardwood Forest (Shrub Type): Basal Area per Acre by Species and DBH



Red Spruce - Northern Hardwood Forest (Shrub Type): Advanced Regeneration per Acre by Species



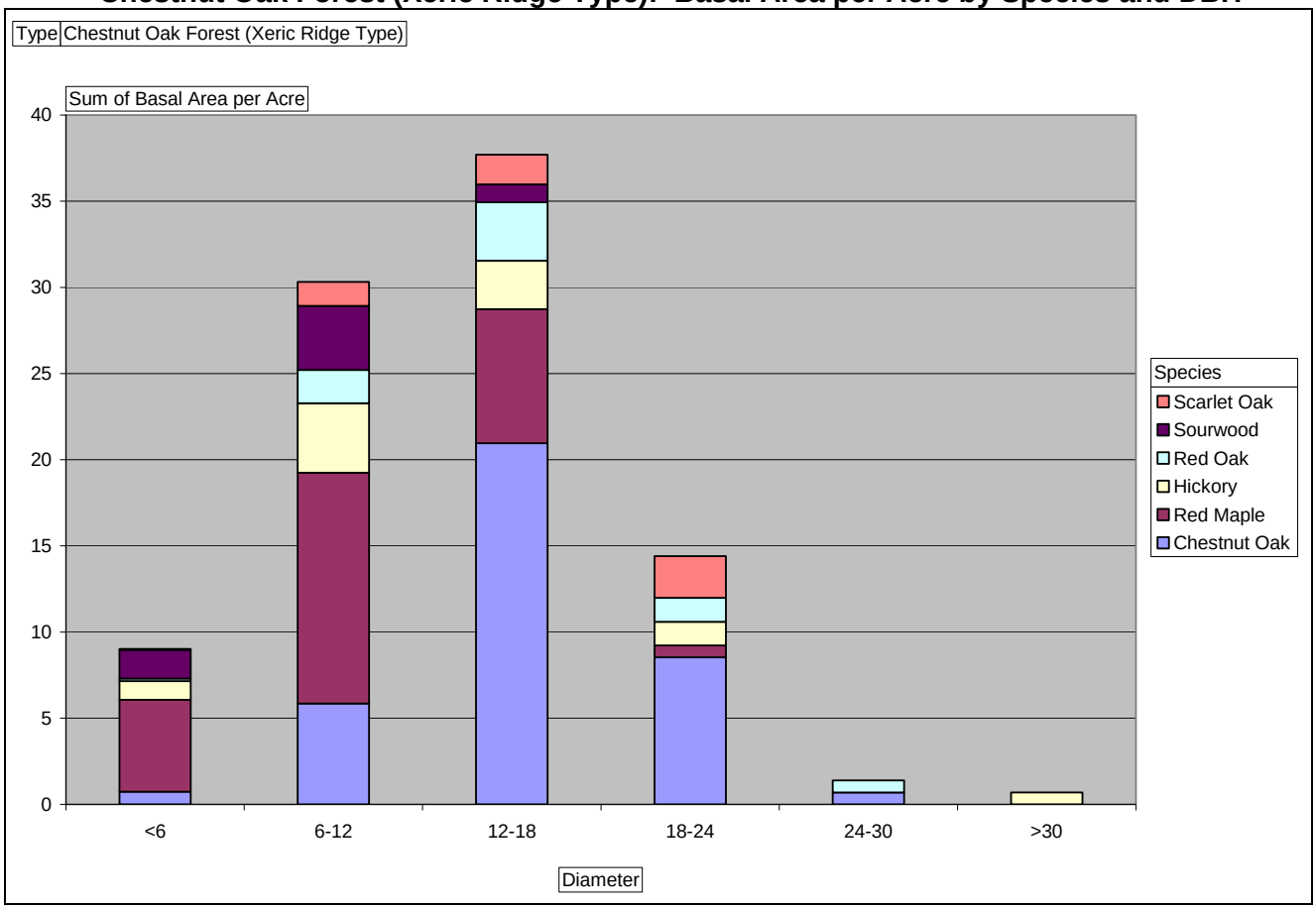
7. Chestnut Oak Forest (Xeric Ridge Type) (653 acres)

This cover type is found on extremely xeric sites, predominantly ridgelines and exposed south and west facing slopes below 4000 feet. Soils are very low in nutrients and subsequently cause slow tree growth. The natural history of this cover type is likely very similar to that previously described for the montane oak-hickory cover type. The forest is roughly 95 years old with a probable legacy of Native American burning, chestnut blight, and salvage harvest of chestnuts.

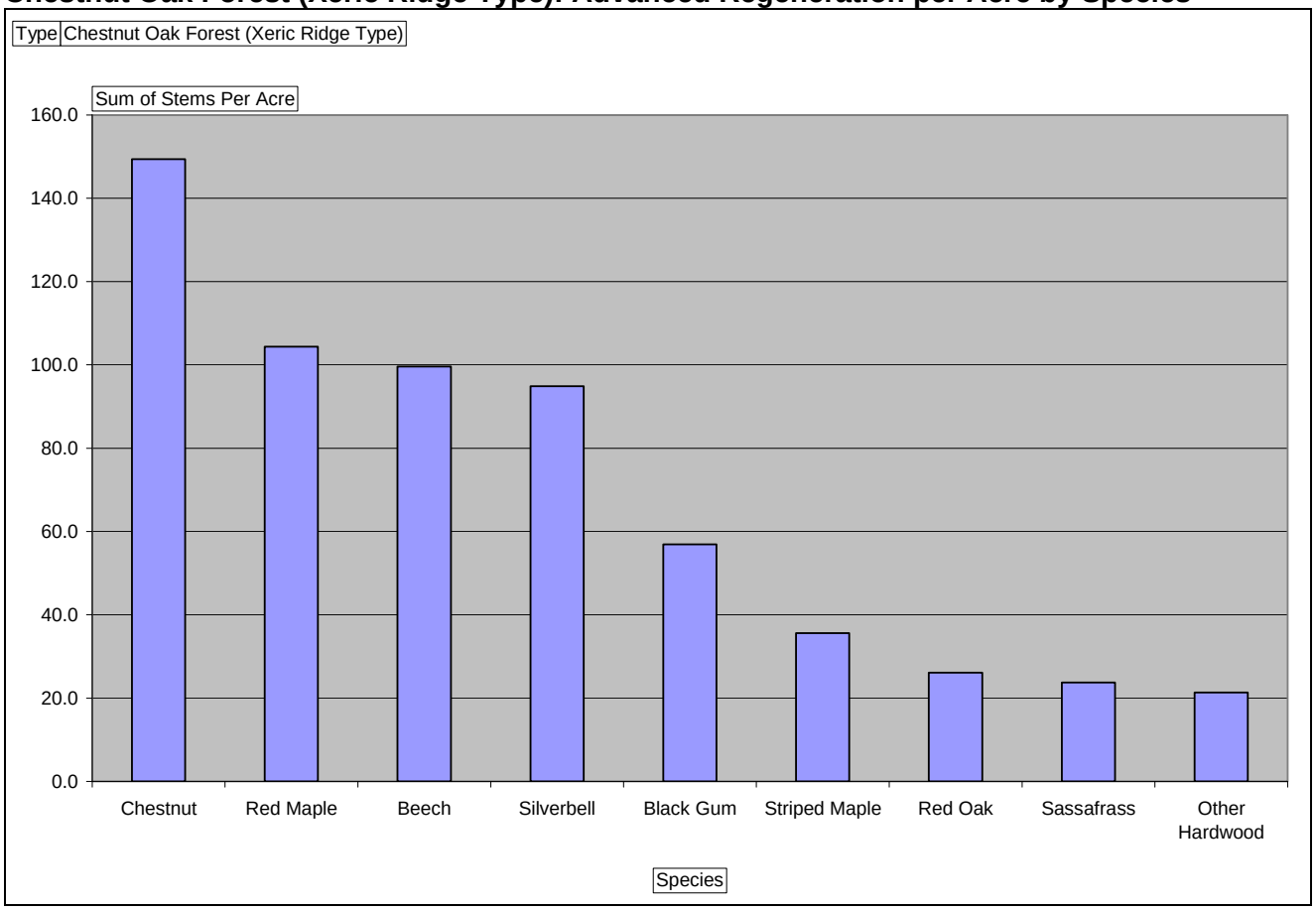
The most dominant tree in this stand is chestnut oak, though red maple is most prevalent in diameter classes less than 12 inches. Pignut hickory, red oak, scarlet oak, and black oak are also common species. Most of the basal area in this stand is occupied by trees less than 24 inches diameter. Small size of the trees is due to the poor site growing conditions. Similar to the montane oak-hickory type, the prevalence of red maple in smaller diameter classes and as advanced regeneration indicates that it will occupy a large component of the future forest. Maintaining oaks and hickories in the future stand would enhance diversity and provide an important food source for numerous wildlife species.

Mountain Laurel is prevalent in the understory (10% coverage) as are some species of deciduous shrubs such as flame azalea and huckleberry. The dense thickets of laurel are more prevalent today than they were when these forests were occasionally subject to fires. The dense evergreen understory poses a significant hindrance to the regeneration of tree species, especially shade intermediate to intolerant species. Mountain laurel thickets also reduce the herbaceous layer. Because site conditions are poor in this forest type, trees are generally under more stress and thus more prone to forest health related disturbances (i.e. mortality due to outbreaks insects or disease).

Chestnut Oak Forest (Xeric Ridge Type): Basal Area per Acre by Species and DBH



Chestnut Oak Forest (Xeric Ridge Type): Advanced Regeneration per Acre by Species



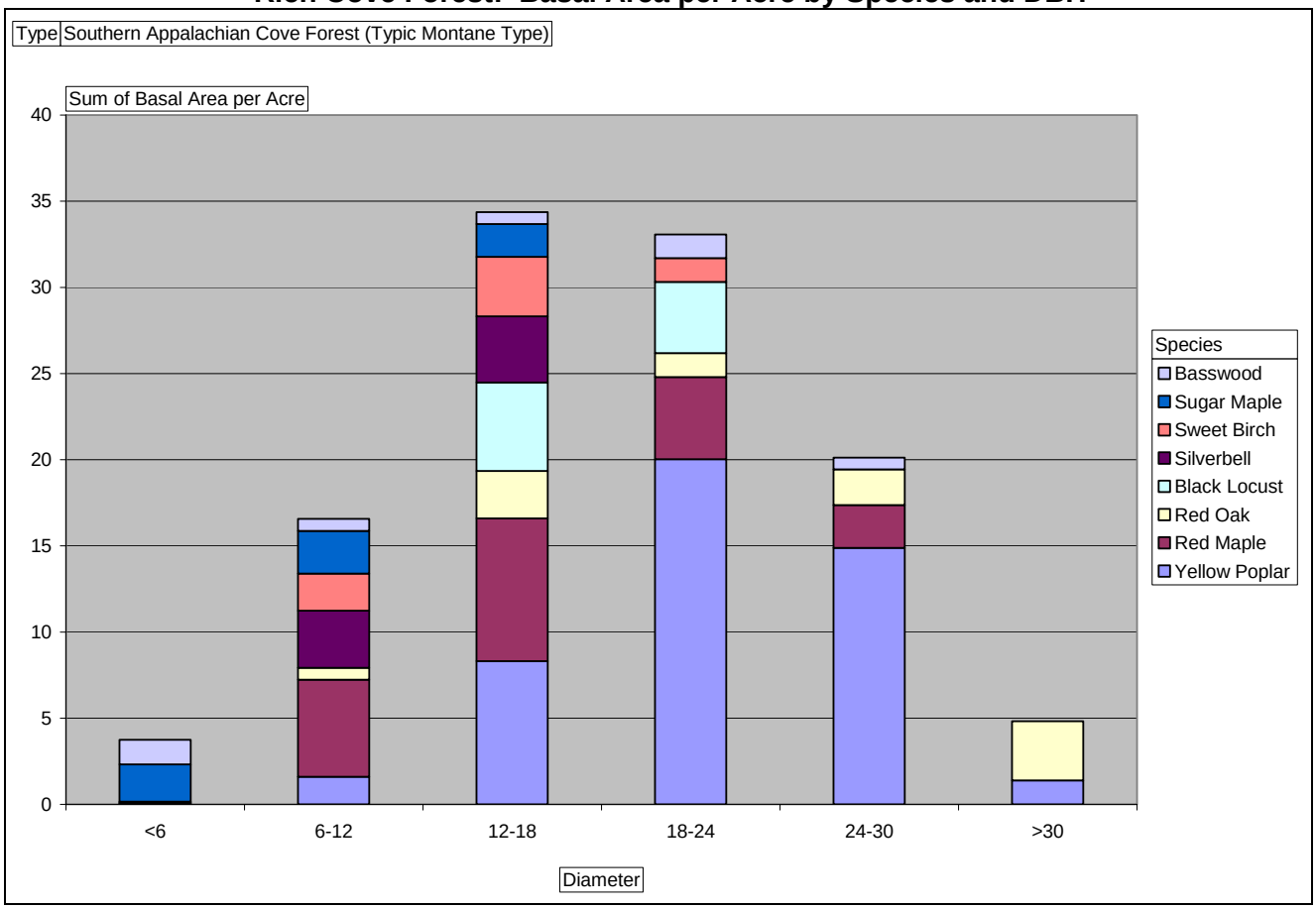
8. Rich Cove Forest (500 acres)

This type occurs on rich sites, generally found on lower slopes, coves, and north and east facing slopes below 4000 feet elevation. The sites are mesic and with soils that are generally rich and loamy. Most of the stands in this type contain trees that are approximately 80 years old. As what seems to be true with much of the rest of the watershed's more mature stands, this type was last clear-cut during the era of the chestnut blight. Because these sites are mesic, fire likely has not played as significant a role in this forest type's past than in oak dominated stands.

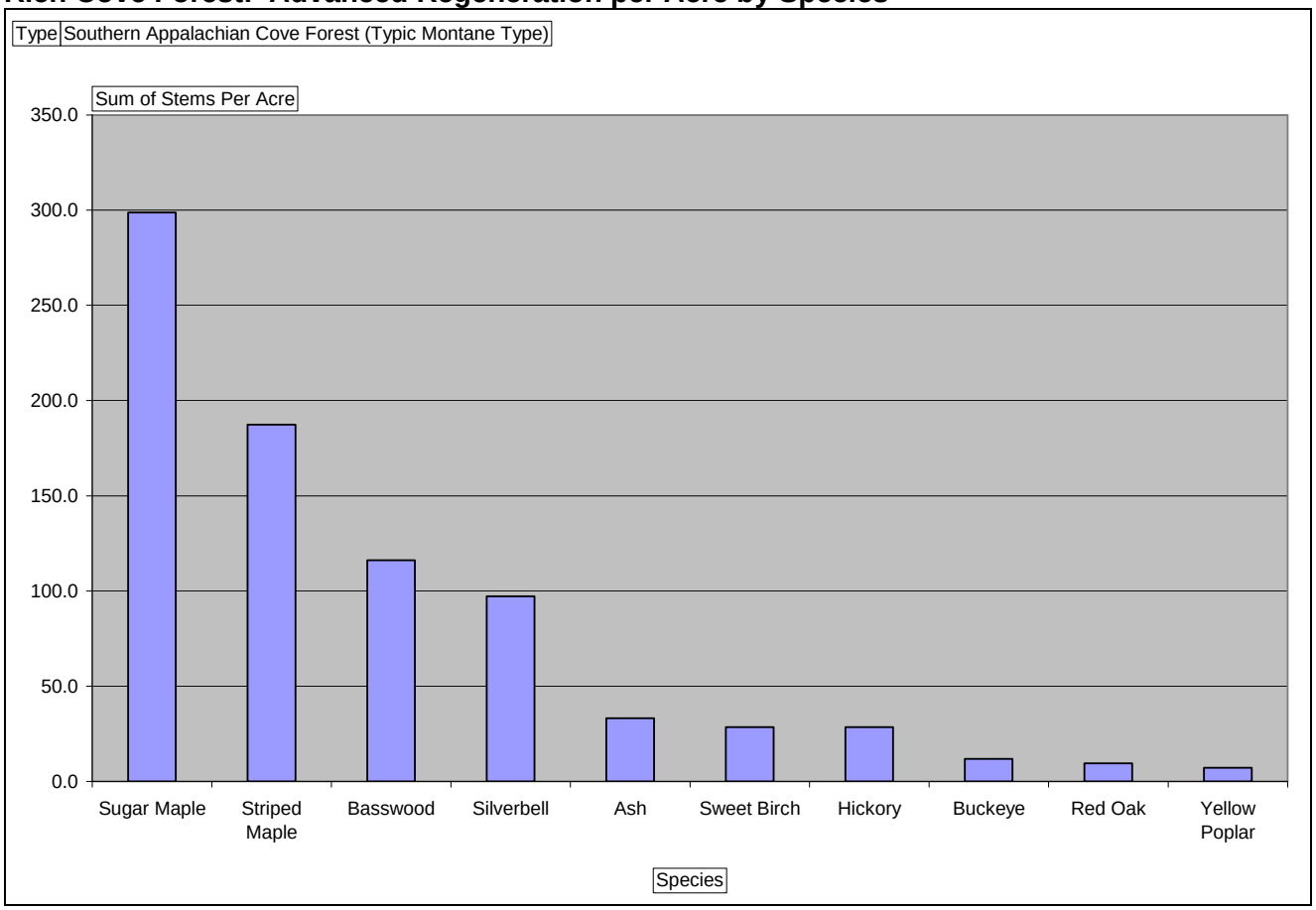
Rich cove stands are dominated by yellow poplar which occupies nearly 50% of the total basal area. Yellow poplar occupies a higher proportion of the basal area in larger diameter classes (18-30 inches) than in smaller diameter classes. This result is due to the regeneration of yellow poplar from the last major stand replacing disturbance 80 years ago, but because of its shade intolerance, yellow poplar has not regenerated in its own shade. Rather, shade tolerant red maple and sweet birch make up a larger proportion of the smaller diameter classes. The herbaceous layer is very dense (25% coverage) and diverse, and there were several occurrences of ginseng found in this type. There are also numerous ferns (20% coverage) and patchy deciduous shrubs (15% coverage).

This type is beginning the transition from the Stem Exclusion to the Understory Reinitiation successional stage. Over the next several decades, more trees will fall out of canopy dominance due to increased competition and limited resources for growth, and more light will reach the understory allowing the growth of a younger age class of trees. This phase of Understory Reinitiation can last many decades. The ingrowth of younger trees creates multiple age-classes which increases structural diversity and subsequently increases biological diversity.

Rich Cove Forest: Basal Area per Acre by Species and DBH



Rich Cove Forest: Advanced Regeneration per Acre by Species

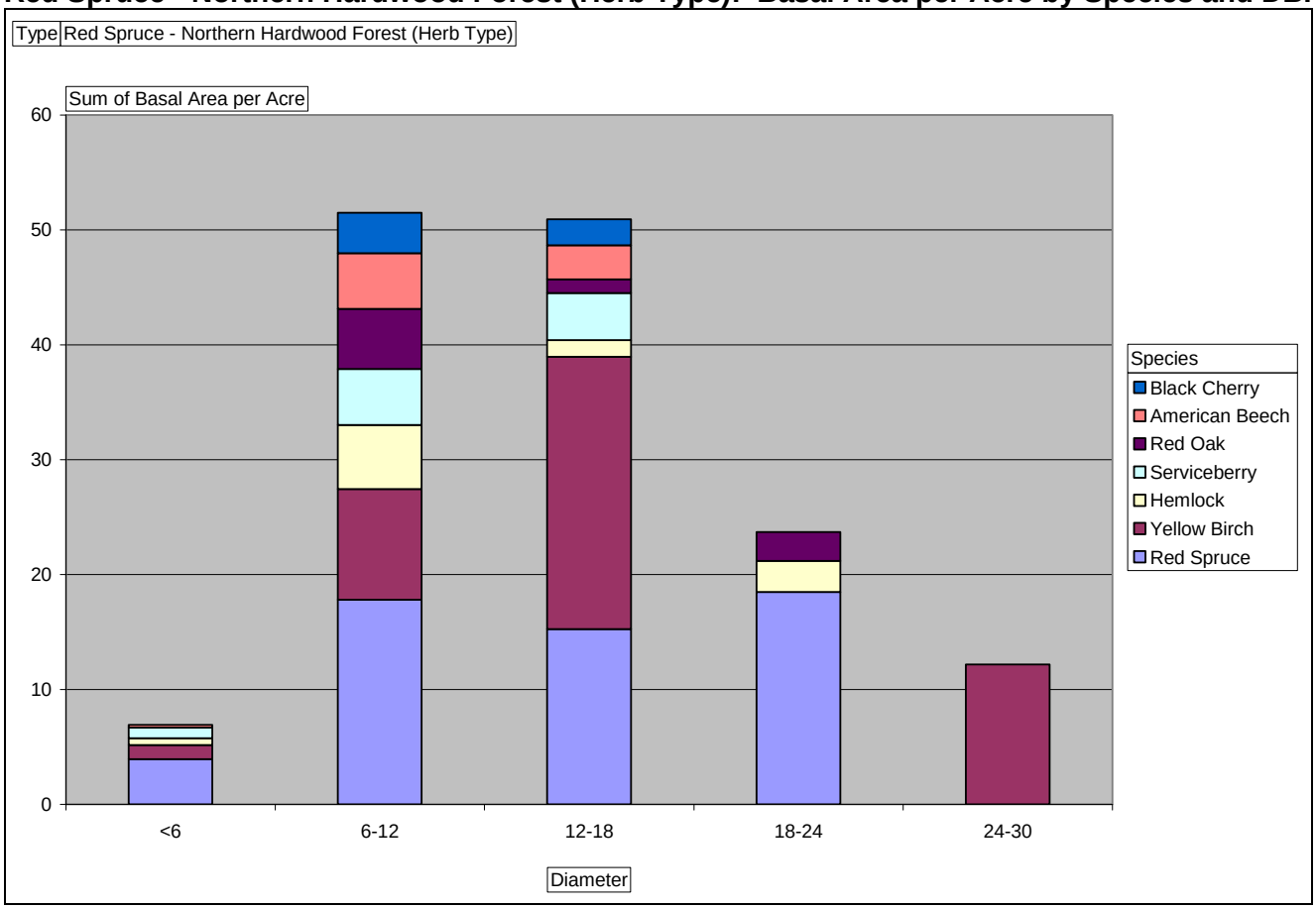


9. Red Spruce - Northern Hardwood Forest (Herb Type) (290 acres)

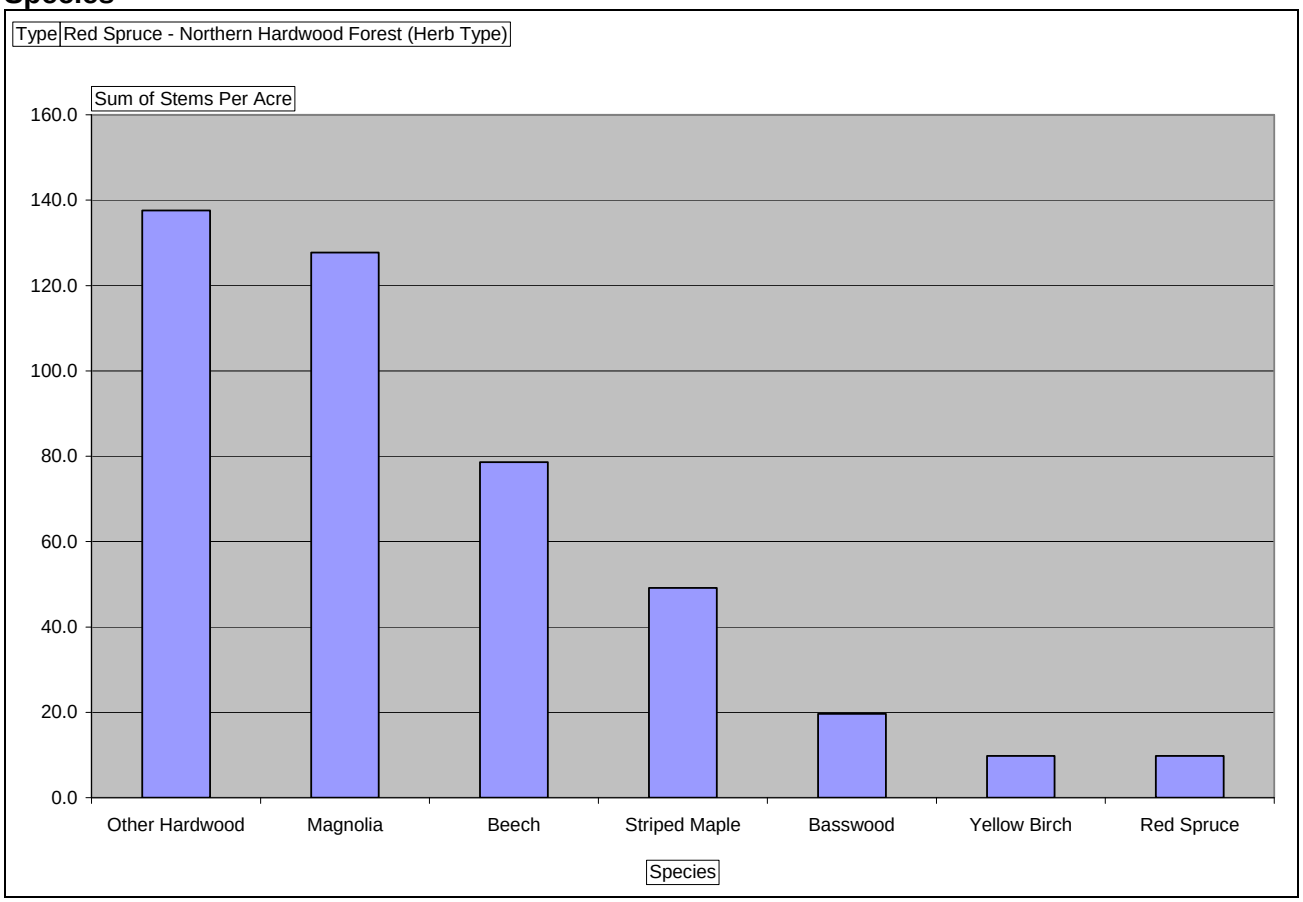
This type occurs in a transitional zone between the northern hardwoods type and the spruce-fir type, from 4,500 to 6,000 feet. This type is very similar to the previously described red spruce-northern hardwoods (shrub type) except that these stands are located on more protected sites with deeper and more stable soils. As a result this type is largely absent of rhododendron in the understory and instead has a groundstory of grass and sedge (25% coverage), herbs and forbs (20% coverage) and deciduous shrubs (15% coverage). Trees in these stands are approximately 70 years old. Many of these sites may have had more red spruce until they were repeatedly logged 75 to 100 years ago for pulp production.

These stands are dominated by red spruce and yellow birch with lesser amounts of other northern hardwood species. Most of the basal area in this stand is occupied by species between 6 and 18 inches. Species composition is relatively similar across diameter classes. For this reason and because of the shade tolerance of these species, it is likely that this species composition will persist indefinitely.

Red Spruce - Northern Hardwood Forest (Herb Type): Basal Area per Acre by Species and DBH



Red Spruce - Northern Hardwood Forest (Herb Type): Advanced Regeneration per Acre by Species



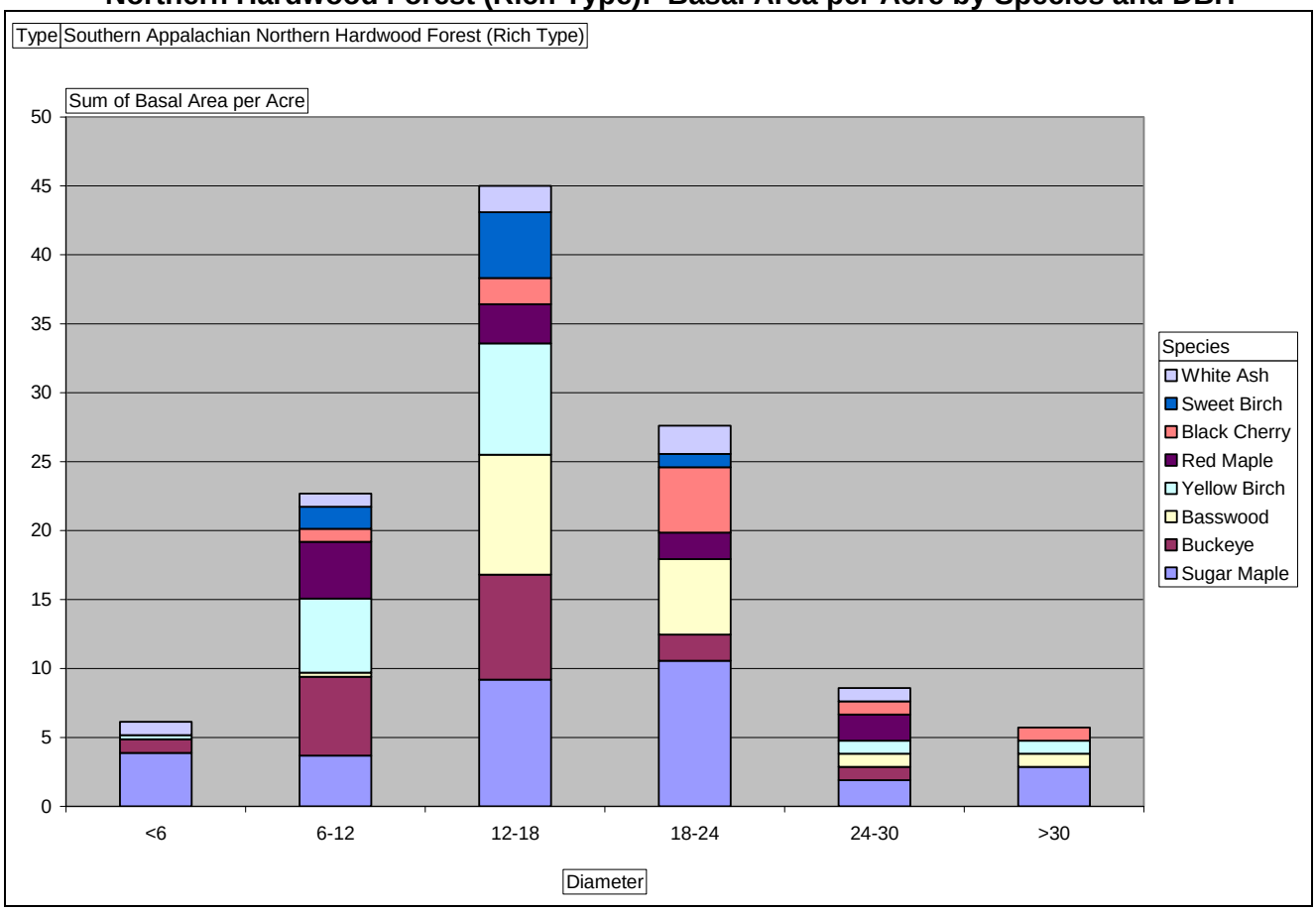
10. Northern Hardwood Forest (Rich Type) (277 acres)

This type occurs in deep rich coves, usually north and east facing, above 4000 feet elevation. These stands occupy relatively small pockets on these very mesic sites. These sites are often near springs and/or seeps, the headwaters of streams. The wet ground has frequent moss covered rocks (5% coverage) and a dense herbaceous layer (35% coverage) with numerous ferns (15%). There is often a moderate shrub layer (10% coverage) of mostly hydrangea. Most of these stands contain trees approximately 90 years old, and are succeeding from Stem Exclusion to Understory Reinitiation. These sites can be home to unique herbaceous species such as umbrella leaf or purple fringed orchid.

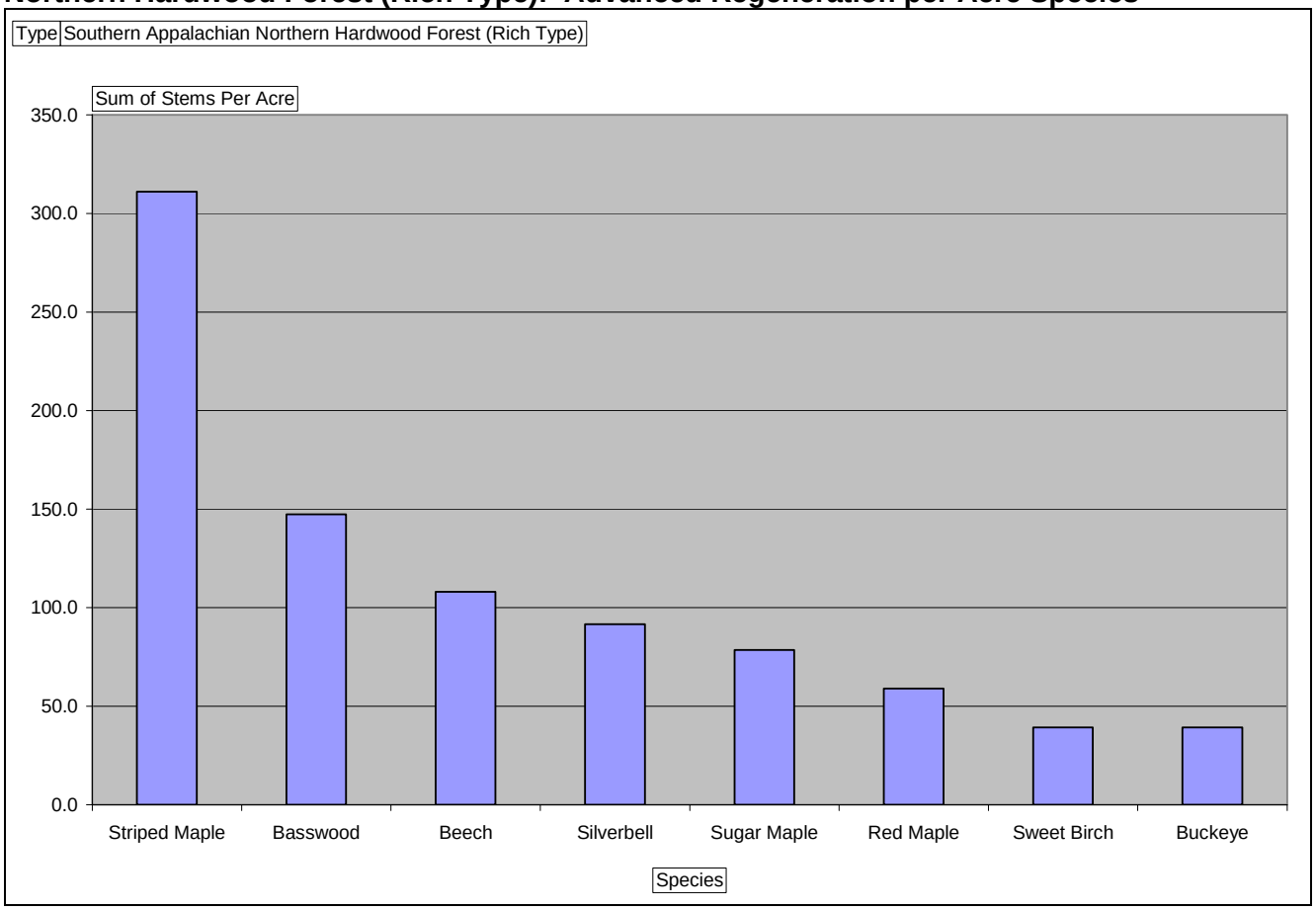
The overstory is dominated by a relatively even mixture of sugar maple, yellow buckeye, American basswood, and yellow birch. Red maple, black cherry, sweet birch and white ash are also common. As succession proceeds, this type will likely continue to be dominated by the existing mixture of shade tolerant species which will perpetuate itself in the shady understory. Yellow buckeye is a unique tree on the property and in the southern Appalachians. It is aesthetically pleasing for its unique foliage and the buckeye nuts provide a good source of food for wildlife.

This type only occupies 277 acres of the total property, is found near or on sensitive sites with running water, and perpetuates itself through succession of shade tolerants. The forest is currently relatively healthy and with a species mix similar to likely historical conditions. In addition, this type seems to develop structural complexity more rapidly than on its own than do other types. This is likely due to the mesic growing conditions combined with abundant soil moisture that occasionally causes root rot and splotchy overstory mortality.

Northern Hardwood Forest (Rich Type): Basal Area per Acre by Species and DBH



Northern Hardwood Forest (Rich Type): Advanced Regeneration per Acre Species



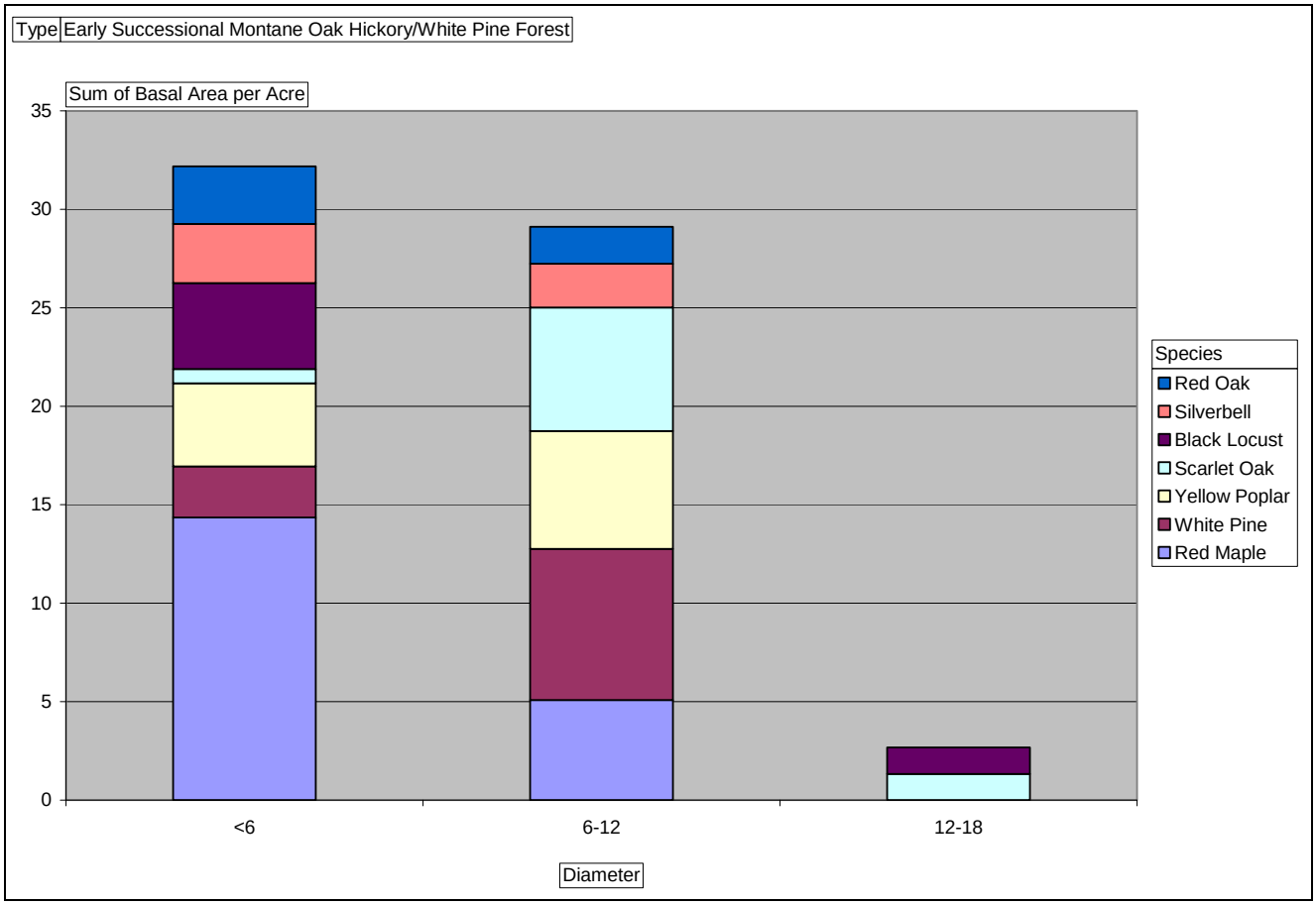
11. Early Successional Montane Oak-Hickory/White Pine Forest (239 acres)

This forest type exists as one contiguous stand with site conditions similar to the previously described Montane-Oak Hickory Forest type. However, this type differs in its disturbance history, regenerating from large-scale clear-cutting approximately 25 years ago.

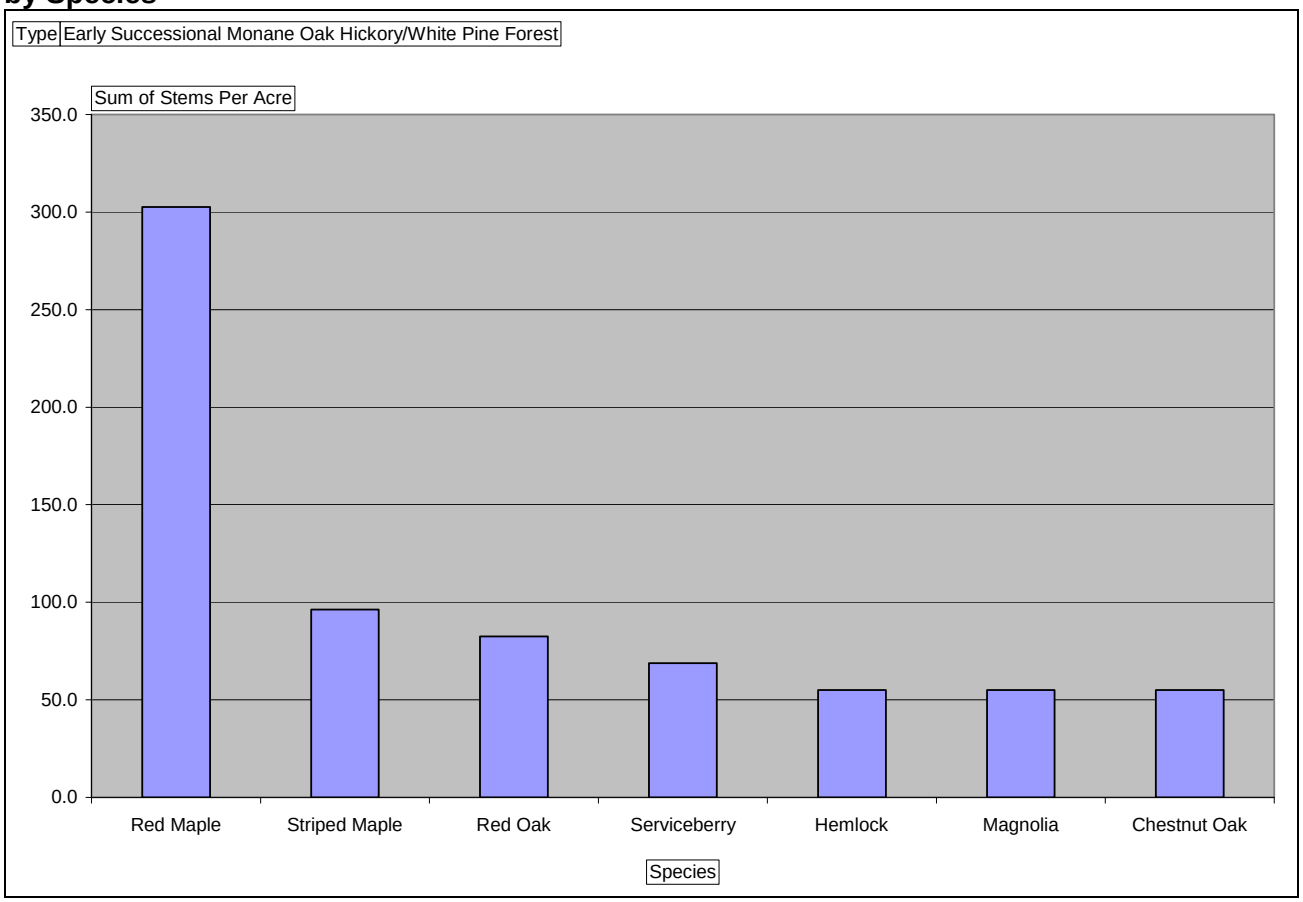
Many of the hardwoods in this stand are regenerating as coppice, particularly red oak, scarlet oak, and red maple. Yellow poplar, a species that responds well to clearcuts due to its rapid growth in full sun and widely distributed seed, is also common in this stand. White pine is also common because it was planted after the clearcut, creating a stand that is mixed deciduous and evergreen. Nearly all of the trees in this stand are between 4 and 12 inches dbh. Unfortunately, there is a high density of vines per tree, mostly grapevine, which is suppressing the growth of many trees.

Because this forest type has only developed approximately 30 years following a clear-cut, there is little structural complexity. The forest is in a successional stage known as Stem Exclusion (see glossary). The result is a very dense and even overstory with little to no understory trees. While there are exceptions, this successional stage has the least amount of biological diversity when compared to earlier and subsequent stages.

Early Successional Montane Oak-Hickory/White Pine Forest: Basal Area per Acre by Species and DBH



Early Successional Montane Oak-Hickory/White Pine Forest: Advanced Regeneration per Acre by Species

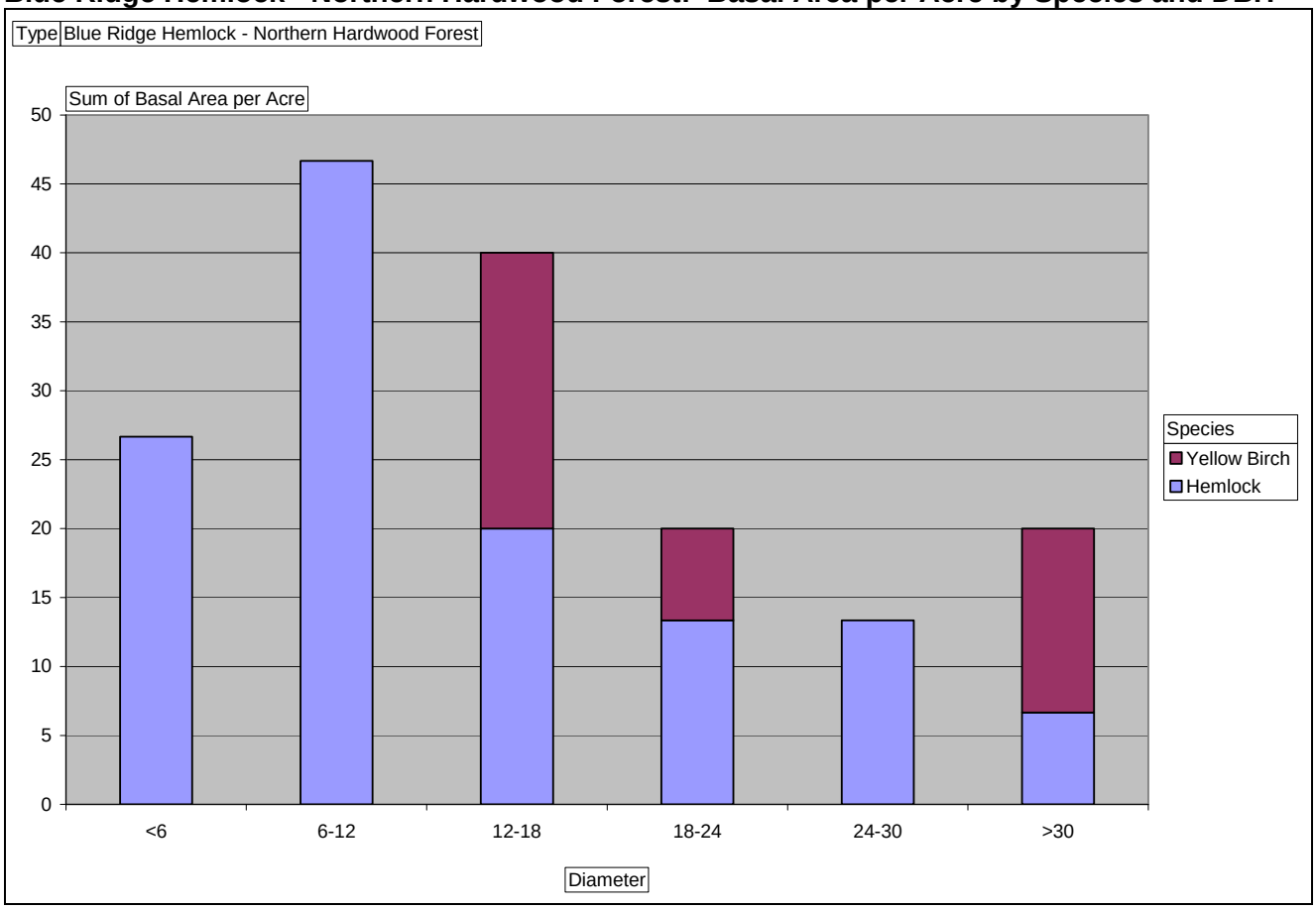


12. Blue Ridge Hemlock - Northern Hardwood Forest (211 acres)

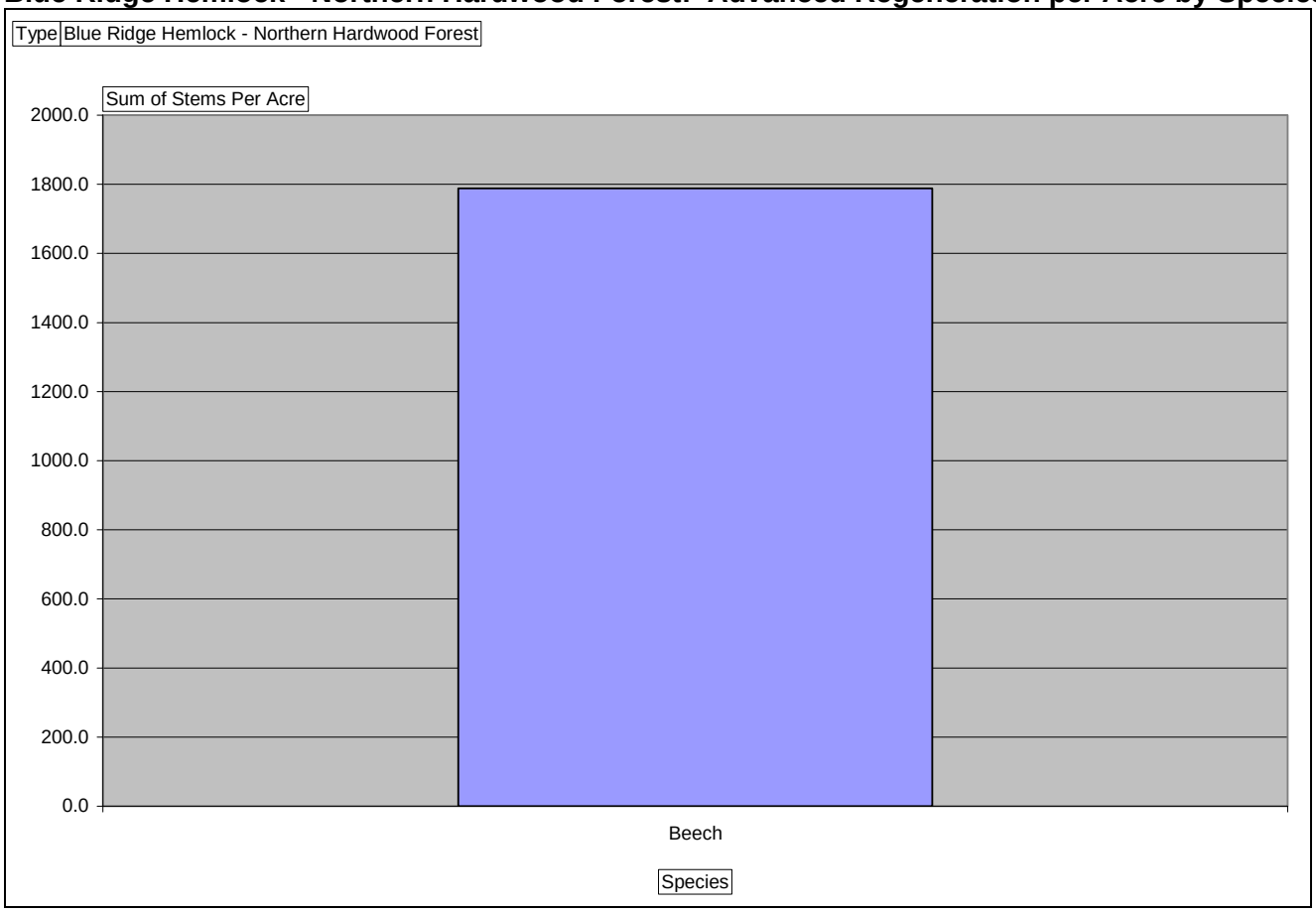
This community exists as one large stand in the watershed found on steep mostly north-facing slopes along and above streams between 3,400 and 4,400 feet. This stand is often rocky with large boulders and talus, and with stony soils. The overstory trees in this stand were found to be approximately 95 years old. The stand is defined by the dominance of only two tree species, eastern hemlock and yellow birch. The understory is dominated by American beech.

Unfortunately, the most dominant tree species of this type, eastern hemlock, will soon become a large number of snags as they succumb to the hemlock wooly adelgid (see glossary). While we did not find many trees that had already died due to the infestation, many hemlocks were infested and experiencing crown die back. In accordance with what has been seen in other infested areas, approximately 90-100% hemlock mortality can be expected in the next several years. As growing space becomes available through hemlock mortality, it is likely that shade tolerant species such as American beech will occupy that space under the shade cast by the dead hemlocks' ghostly crowns.

Blue Ridge Hemlock - Northern Hardwood Forest: Basal Area per Acre by Species and DBH



Blue Ridge Hemlock - Northern Hardwood Forest: Advanced Regeneration per Acre by Species



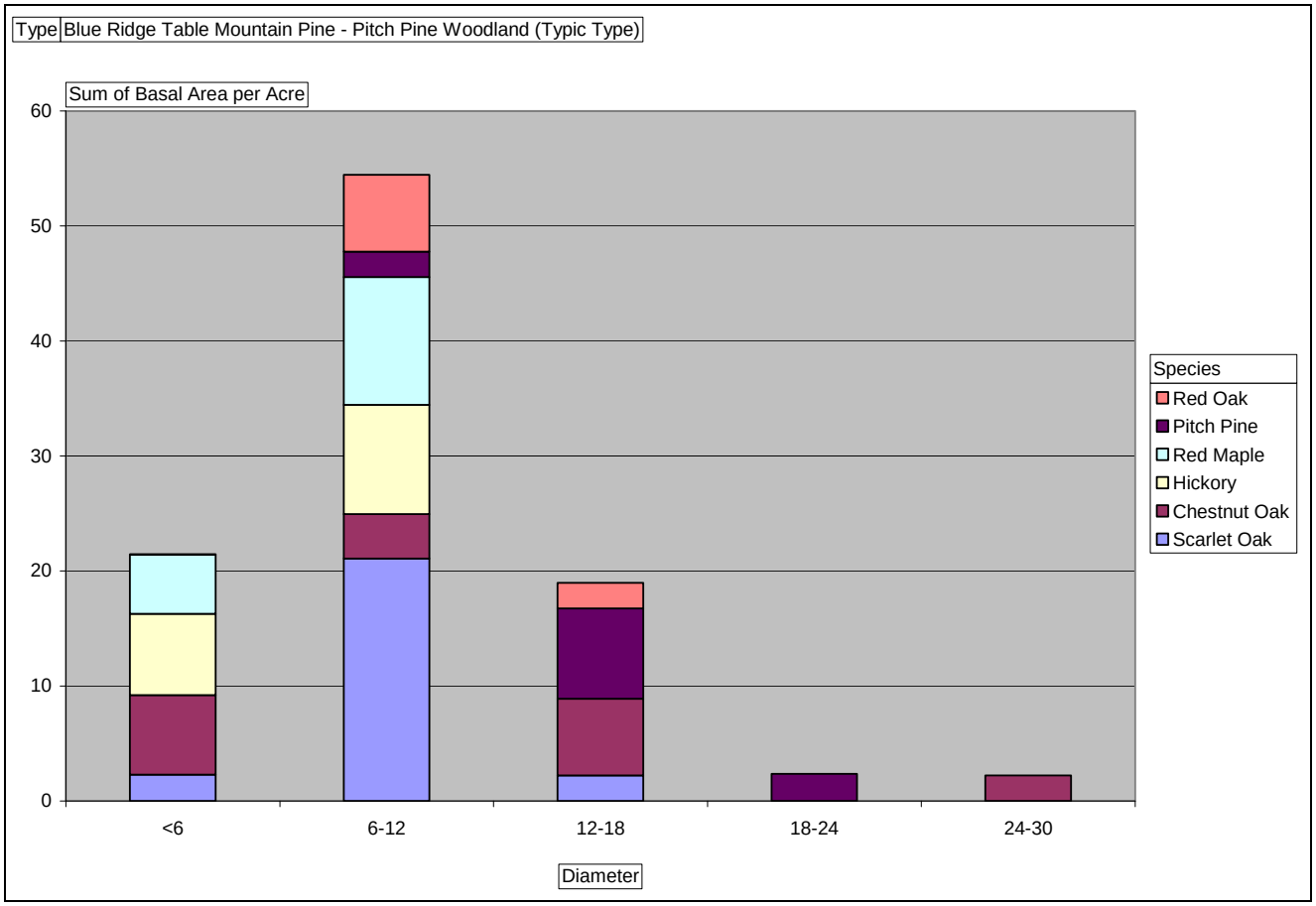
13. Blue Ridge Table Mountain Pine - Pitch Pine Woodland (Typic Type) (174 acres)

This type was historically dominated by table mountain pine and/or pitch pine, occurring between 2,000 and 4,000 feet on exposed ridges and upper slopes with southerly and westerly exposures, over thin, excessively drained, nutrient-poor soils. However, this is a fire dependent community and the suppression of fire over the past half century has caused succession of this type towards chestnut oak and scarlet oak dominance within the watershed. Absence of fire has also led to a dense understory of mountain laurel (40% coverage) which thrives on dry south facing sites. The average age of trees in this stand was 70 years old, suggesting it was last clearcut during the chestnut blight.

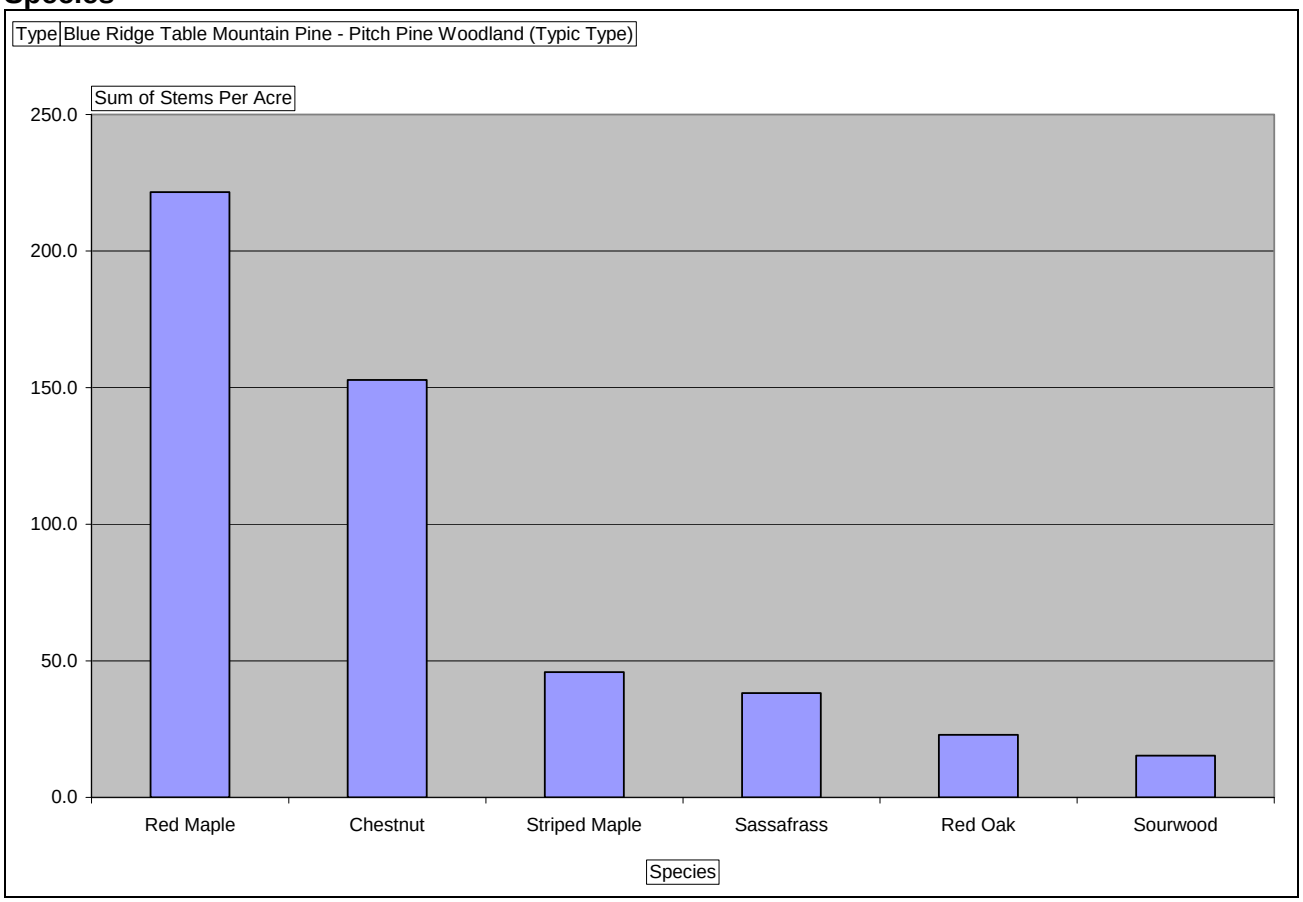
Due to the absence of fire, pitch pine is currently only the fifth most common species in this type and rapidly being replaced by oaks, hickories, and red maple. Table mountain pine was not found in the watershed's stands, though it may have been prevalent historically. The pitch pines, which are highly shade intolerant, only persist in the larger diameter classes, 12-24 inches. The dominance of hardwoods in smaller diameter classes and mountain laurel in the understory casts too much shade on the forest floor for shade intolerant species such as pitch pine to regenerate.

Without active management such as prescribed fire or patch cutting that allows light to reach the forest floor, pitch pine will eventually fall out of these stands entirely, being replaced by some oaks and even more red maple which thrives in the shady understory conditions. In addition to the loss of pitch pine and table mountain pine in this type, there are also a number of rare herbaceous plants that need this fire dependent community to survive.

Blue Ridge Table Mountain Pine - Pitch Pine Woodland: Basal Area per Acre by Species and DBH



Blue Ridge Table Mountain Pine - Pitch Pine Woodland: Advanced Regeneration per Acre by Species



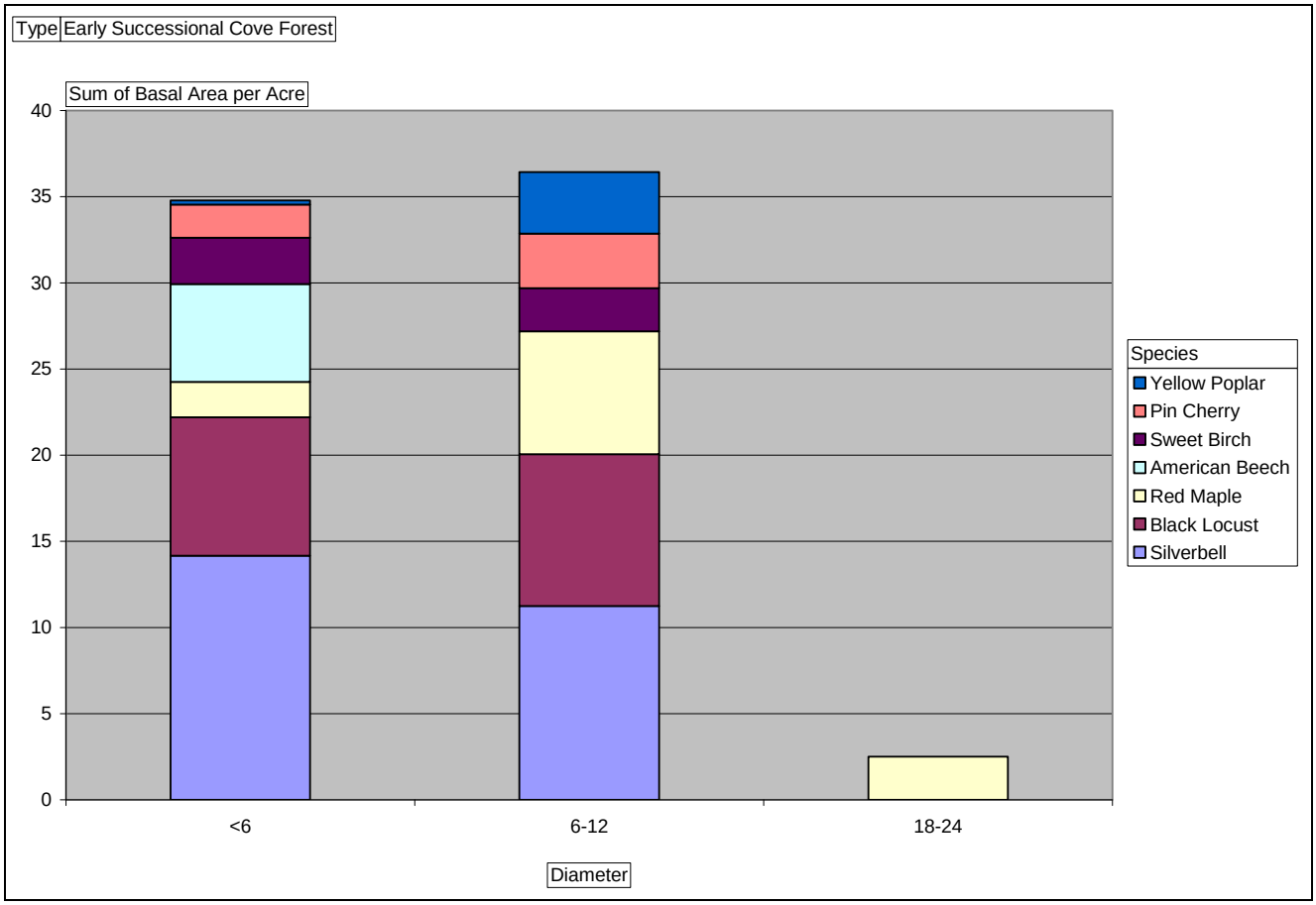
14. Early Successional Rich Cove Forest (130 acres)

This cover type occurs primarily on middle slopes and coves below 4000 feet elevation, most frequently on north and east facing slopes. The sites are mesic and with soils that are generally rich and loamy. It is defined its early successional stage, recovering from clear-cuts approximately 25 years ago. This type is dominated by a mixture of species common to rich cove sites. Nearly all of the trees in this stand are between 4 and 12 inches diameter at breast height (dbh). Unfortunately, there is a high density of vines per tree, mostly grapevine, which is suppressing the growth of many trees.

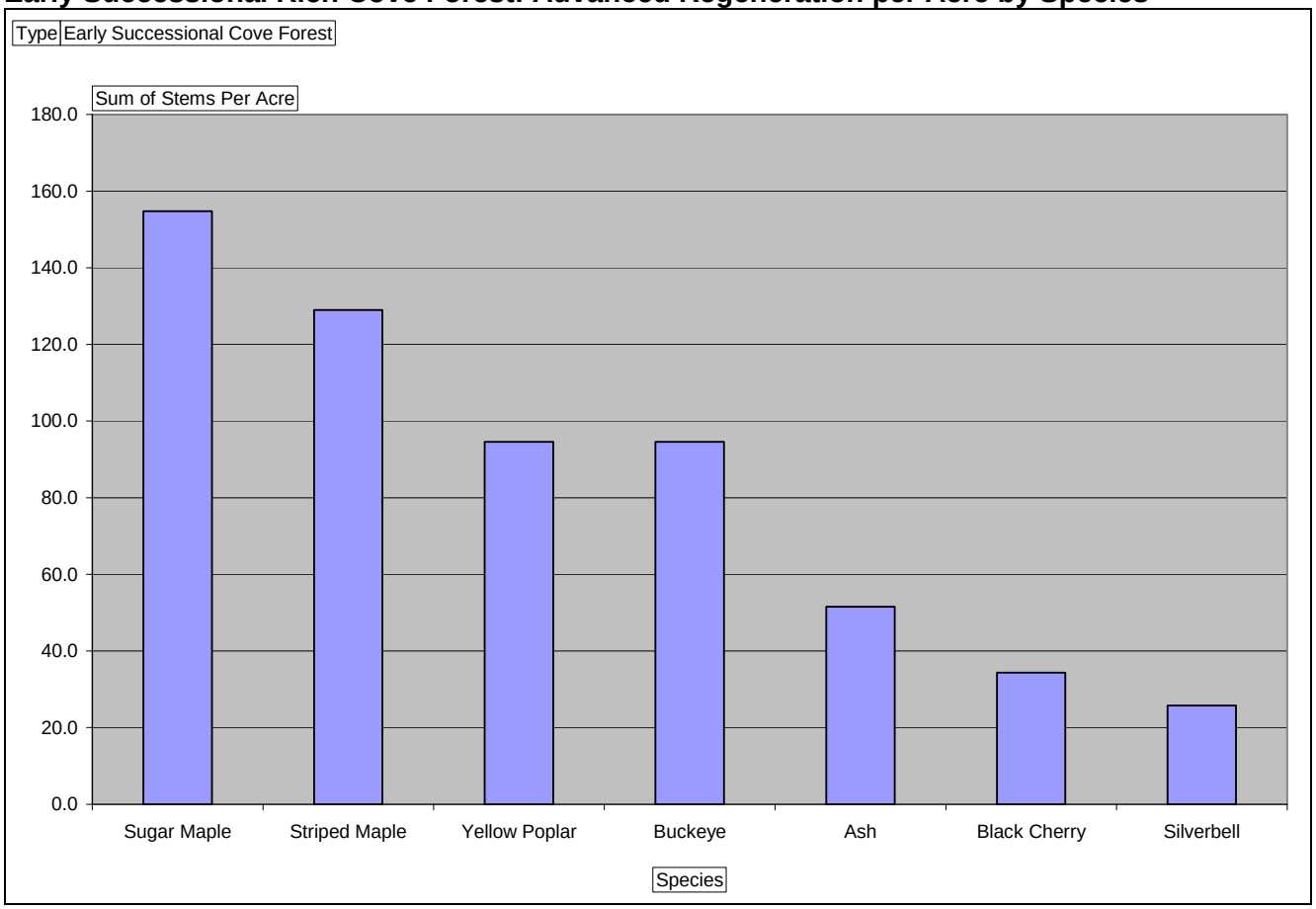
Because this forest type has only developed approximately 25 years following a clear-cut, there is little structural complexity. The forest is in a successional stage known as Stem Exclusion (see glossary). The result is a very dense and even overstory with little to no understory trees. While there are exceptions, this successional stage has the least amount of biological diversity when compared to earlier and subsequent stages.

Photo shows vines in early successional rich cove forest.

Early Successional Rich cove Forest: Basal Area per Acre by Species and DBH



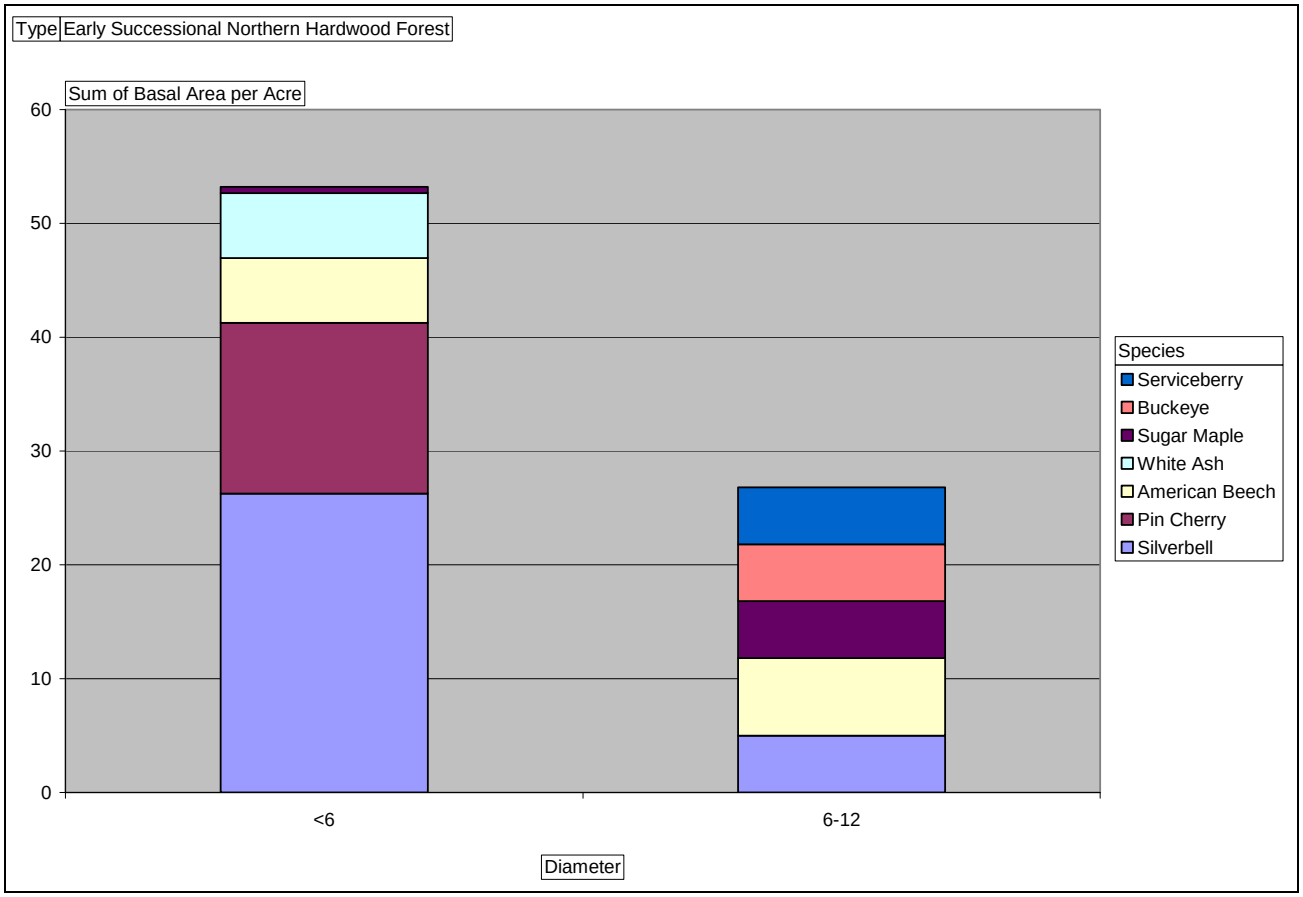
Early Successional Rich Cove Forest: Advanced Regeneration per Acre by Species



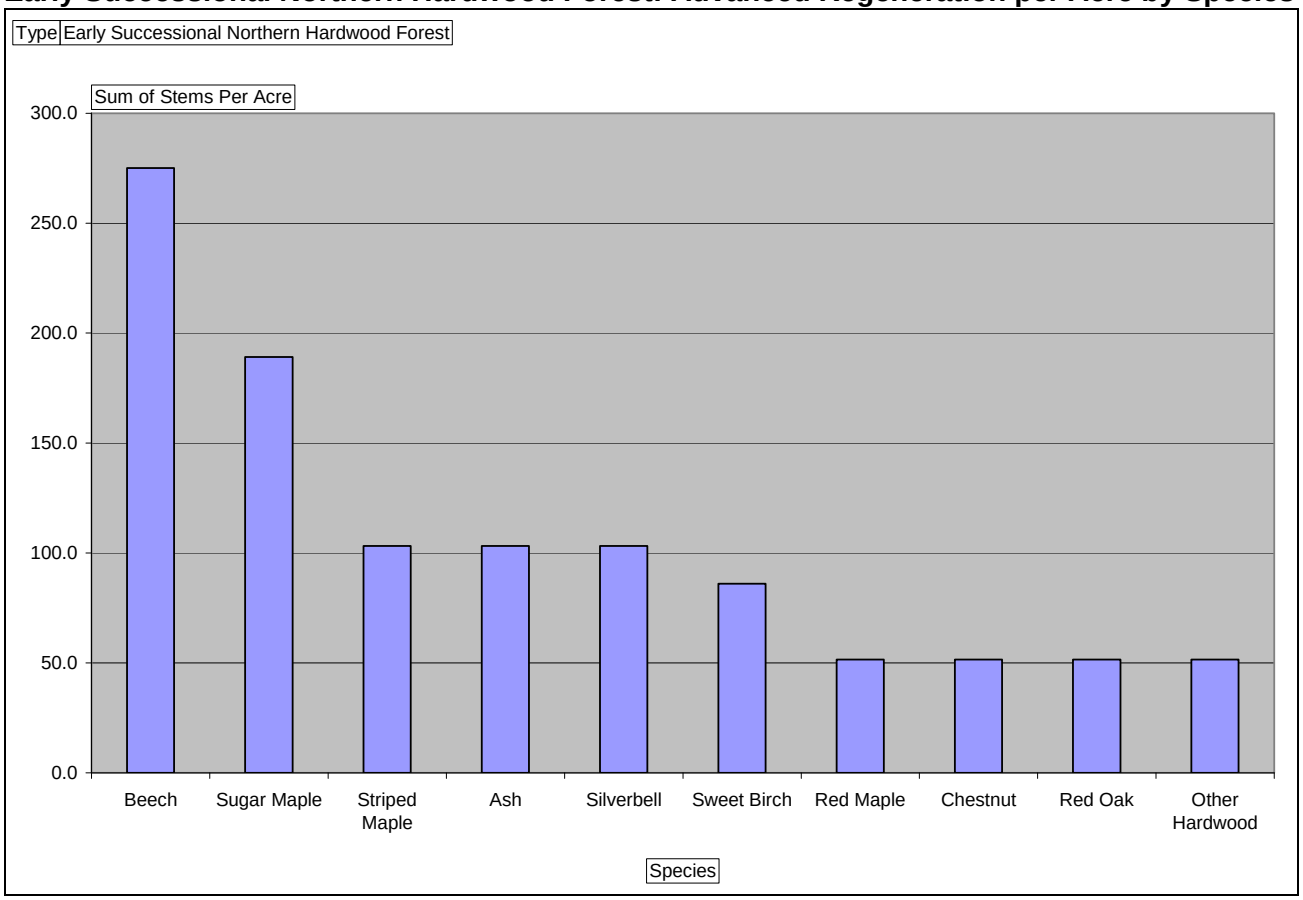
15. Early Successional Northern Hardwood Forest (111 acres)

This type occurs above 4000 feet and includes all sites typically occupied by northern hardwoods, including red oak, rich, and typic types. This forest is defined by its early successional stage, Stem Exclusion. Recovering from recent clear-cuts, most of the stands in this type contain trees 25 years old. This type is dominated by a mixture of species common to rich cove sites. Nearly all of the trees in this stand are between 4 and 12 inches diameter. Unfortunately, there is a high density of vines per tree, mostly grapevine, which is suppressing the growth of many trees.

Early Successional Northern Hardwood Forest: Basal Area per Acre by Species and DBH



Early Successional Northern Hardwood Forest: Advanced Regeneration per Acre by Species

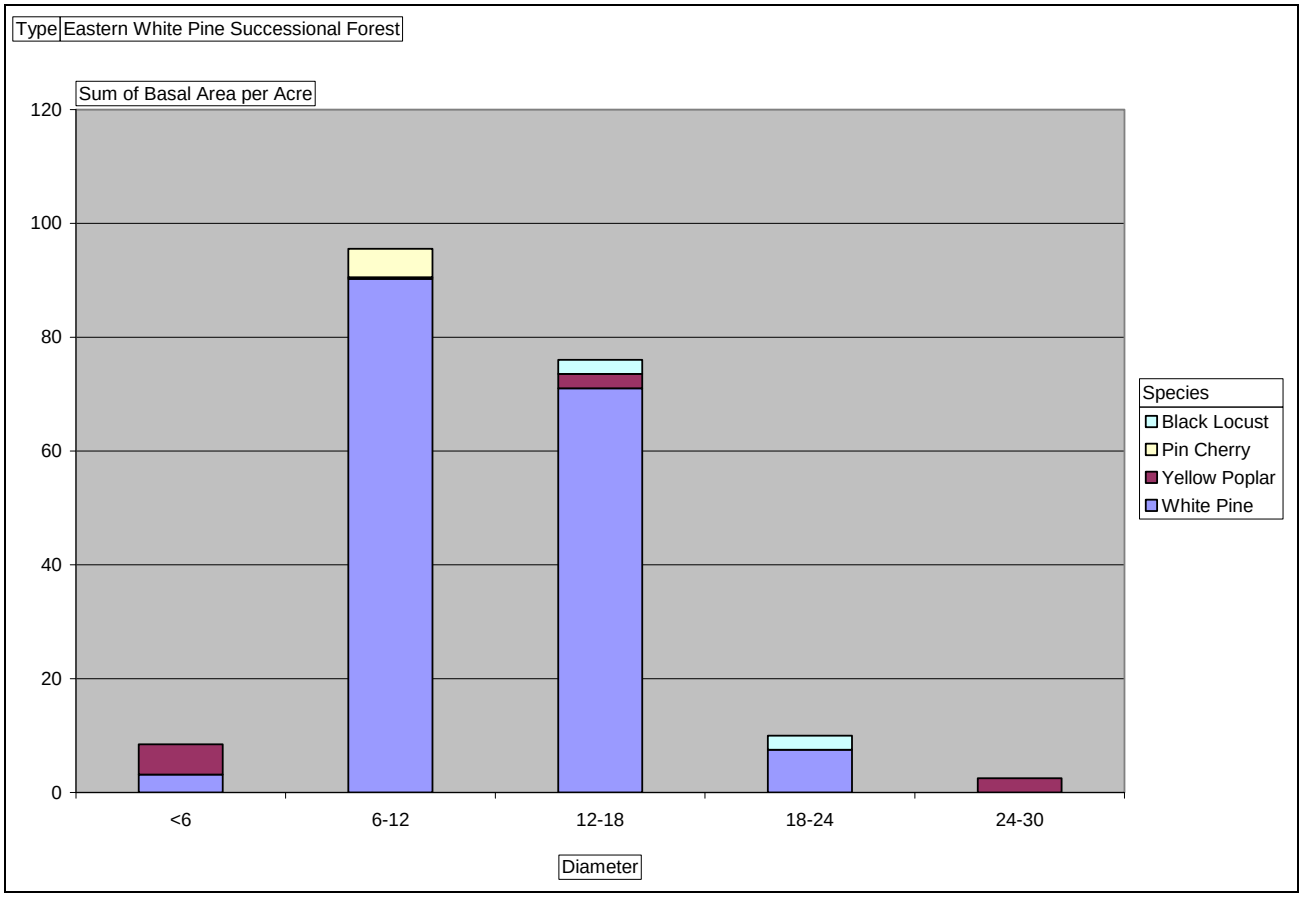


16. White Pine Successional Forest (79 acres)

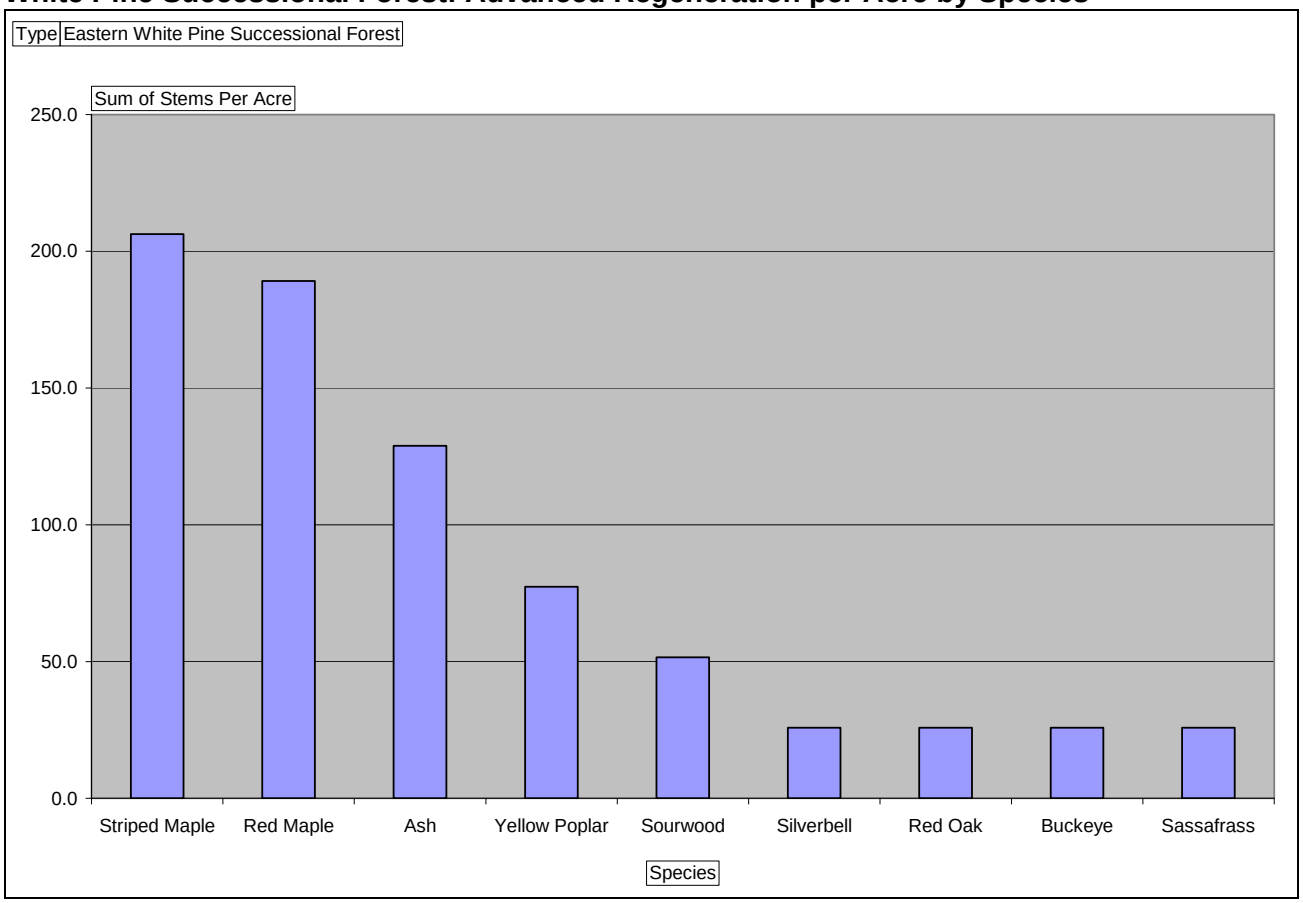
White pine forests such as this were commonly planted in many areas during the past century to stabilize bare soils and to initiate forest restoration activities. In some cases these trees were planted on severely disturbed or eroded soils that lack much of there original productivity. While white pine is native to the region, pure planted stands of pine are not. White pine is the dominant overstory species in these stands, though there are also occasional yellow poplars in the overstory which regenerated naturally and grew up with the planted pine.

The pines in these stands range from about 30 to 60 years old, depending on when they were planted. Those in the older age classes are nearing their biological maturity for this region. The low live crown to height ratio, a measure of a trees health, is an indicator that many trees in this stand are starting to decline. Over the next decade, it is likely that many of the pines will succumb to wind throw, pine beetles, or disease. The mesic location of this stand also makes the pines susceptible to root rot. However, the abundance of hardwoods in the understory in most areas of this stand will quickly fill in the growing space left by future pine mortality. In many cases these pines have accomplished the goals that justified their planting, and it would now be appropriate to allow these areas to succeed to native hardwood stands.

White Pine Successional Forest: Basal Area per Acre by Species and DBH



White Pine Successional Forest: Advanced Regeneration per Acre by Species



17. Grassy Bald (Southern Grass Type) (44 acres)

This community occurs in two separate stands in the watershed near its highest elevations, above 5,000 feet, on gentle slopes and ridge tops. This community is dominated by grasses and a diverse community of herbs and scattered shrubs. Red spruce and frazier fir are found in scattered patches throughout these stands.

These communities are fairly rare and unique in the southern Appalachians and sometimes contain populations of rare plants. It is believed that these balds may have been originally created either by fire or by grazing, but without reoccurrence of such disturbances they are currently disappearing rapidly as trees seed in from the edges.

18. Southern Appalachian Boulderfield Forest (Currant and Rockcap Fern Type) (34 acres)

This type exists as one stand along the headwaters of shiny creek. Shiny creek in its upper most reaches flows through a steep gorge that rises steeply and abruptly toward the highest elevations of the property around Richland Balsam. Because of the steepness of the terrain, the creek is filled with boulders from rockslides that have occurred sporadically over many millennia. This condition is ideal for the growth of yellow birch because of its ability to perch on rocks and fallen logs and send its roots around to the ground below. Basswood, yellow poplar, yellow buckeye, hemlock, and sweet birch are also found in this stand. This is an incredibly unique habitat and contains a unique herbaceous community that thrives in the cool moist conditions and rocky terrain.

19. Southern Appalachian Montane Alluvial Forest (33 acres)

This stand occurs along the lower stretches of shiny creek before it enters the reservoir. Shiny creek is of good size and a briskly flowing mountain stream at this point. As a result of the streams size and occasional flooding, the habitat surrounding the stream is modified into an alluvial forest. This forest grows along narrow, rocky floodplains. The canopy is dominated by sycamore, yellow poplar, red maple, and sweet birch and with an occasional river birch. Ironwood is a common understory tree.

20. Southern Appalachian Felsic Cliff (21 acres)

This type represents several recent landslides that occurred during the 2004 hurricanes. These slides occurred in the upper reaches of shiny creek and cherry cove creek on very steep ground. The removal of vegetation and soil from these slides has left almost solid bedrock in linear swaths that trace the path of the landslide. These cliffs are often moist, with seeps and springs occurring along them. Populations of unique and rare plants often establish in this habitat.

21. Meadow (17 acres)

This is an area near the reservoir which has not established a forested overstory. The reason this area is still open meadow is unclear, though without active management this area will slowly succeed to forest cover over the next decade. Currently, this early successional community provides habitat for numerous species. We encountered abundant dear sign in this small area.

22. Cove Forest/White Pine Successional Forest (17 acres)

This is a small stand where equal amounts of yellow poplar have established dominance with planted white pine.

23. Artificial Lake Drawdown Zone (13 acres)

This type occurs in the area immediately surrounding the reservoir and is sometimes flooded when the reservoir is at full capacity. There are some scattered young trees in this type, but it is largely open with rocky ground colonized by weedy herbaceous species.

24. Rocky Bar and Shore (Alder-Yellowroot Type) (11 acres)

This type occurs just upstream from the previously described montane alluvial forest. Similar to that type, this forest is occasionally flooded by shiny creek in its lower stretches before meeting the reservoir. It is dominated by alder thickets on rocky substrates along the creek's margin. This is a unique habitat and provides cover and forage for numerous wildlife species.